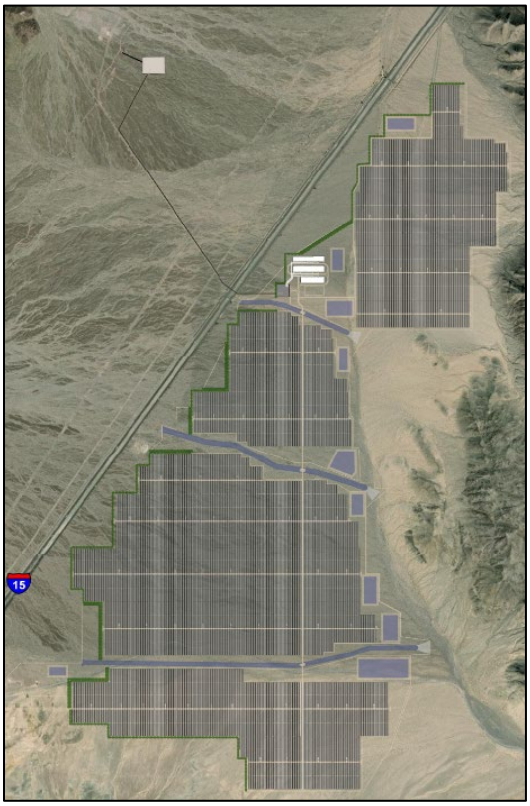
Soda Mountain Solar Project

Staff Assessment

SCH #2025080161



CALIFORNIA
ENERGY COMMISSION
Gavin Newsom, Governor

December 2025
CEC-700-2025-009-SA

DOCKET NUMBER 24-OPT-03

STAFF ASSESSMENT

Soda Mountain Solar Project

(24-OPT-03)

Lead Agency

California Energy Commission

December 2025

Table of Contents

1 Executive Summary **1-1**
2 Introduction **2-1**
3 Project Description **3-1**
4 Engineering Evaluation
4.1 Facility Design **4.1-1**
4.2 Facility Reliability **4.2-1**
4.3 Transmission System Engineering **4.3.1**
4.4 Worker Safety and Fire Protection **4.4-1**
5 Environmental Impact Assessment
5.1 Air Quality **5.1-1**
5.2 Biological Resources **5.2-1**
5.3 Climate Change and Greenhouse Gas Emissions **5.3-1**
5.4 Cultural and Tribal Cultural Resources **5.4-1**
5.5 Efficiency and Energy Resources **5.5-1**
5.6 Geology, Paleontology, and Minerals **5.6.1**
5.7 Hazards, Hazardous Materials/Waste, and Wildfire **5.7-1**
5.8 Land Use **5.8-1**
5.9 Noise and Vibration **5.9-1**
5.10 Public Health **5.10-1**
5.11 Socioeconomics **5.11-1**
5.12 Solid Waste Management **5.12-1**
5.13 Transmission Line Safety and Nuisance **5.13-1**
5.14 Transportation **5.14-1**
5.15 Visual Resources **5.15-1**
5.16 Water Resources **5.16-1**
6 Environmental Justice **6-1**
7 Public Benefits **7-1**
8 Alternatives **8-1**
9 Compliance Conditions and Compliance Monitoring Plan **9-1**
10 Mandatory Opt-In Requirements **10-1**

11 Overriding Findings and Recommendations **11-1**

12 Authors and Reviewers **12-1**

Appendix A: Cumulative Scenario

Appendix B: Mailing List

Section 1

Executive Summary

1 Executive Summary

Pursuant to California Code of Regulations, title 20, section 1879, the California Energy Commission (CEC) staff has prepared a Staff Assessment (SA), which includes a draft environmental impact report (EIR), to evaluate the potential environmental effects of the construction and operation of the Soda Mountain Solar Project (SMSP or project) (24-OPT-03), in compliance with the California Environmental Quality Act (CEQA), the CEQA Guidelines, the Warren-Alquist State Energy Resources Conservation and Development Act, and California Code of Regulations, title 20, chapter 5, article 4.1 (Opt-In Certification Program). The SA also evaluates whether the construction and operation of the project would be consistent with all applicable local, state, and federal laws, plans, policies, and regulations.

The applicant is seeking a certification from the CEC to construct and operate the SMSP. The SMSP proposes to construct, operate, and maintain a utility-scale solar photovoltaic (PV) electrical generating (solar facility) and battery energy storage facility (battery energy storage system [BESS]) and associated infrastructure to generate and deliver renewable electricity to the statewide electricity transmission grid. The project is proposed on approximately 2,670 acres of land administered by the U.S. Department of Interior, Bureau of Land Management (BLM), California Desert District, within the jurisdiction of the Barstow Field Office in San Bernardino County. The project would disturb approximately 2,059 acres overall. The applicant proposed to change the project design to remove previously proposed stormwater berms and associated drainage features. These revisions are achieved through COC **WATER-9**, in **Section 5.16, Water Resources**, which minimizes grading and ground disturbance by preserving existing drainage patterns and applying fluvial geomorphic stormwater design principles rather than engineered berms and channels. More complete project details are set forth in **Section 3, Project Description**.

The SMSP includes project components that are outside of the CEC's jurisdiction. These components would be subject to Los Angeles Board of Water and Power Commissioners jurisdiction. The components include the Los Angeles Department of Water and Power (LADWP) operation of a new utility switchyard (to be constructed by the applicant) and operation of two segments of 500 kilovolt (kV) transmission line and steel towers to support them (to be constructed by the applicant) to loop in and out of the new utility switchyard.

Interconnection of the SMSP into the California Independent System Operator (California ISO) regulated electric grid would require LADWP make downstream network upgrades to protection equipment. These upgrades would be made at the existing Marketplace and Adelanto substations and are described in **Section 3, Project Description**. As a part of the whole of the action for CEQA, the SA analyzes the potential environmental impacts of the construction and operation of these network upgrades, and operation of the section of transmission loop-in line and associated

towers and the new utility switchyard and recommends mitigation measures for adoption by the licensing authority, as necessary.

Based on the staff's analysis in this document, staff recommends the CEC issue a certification for the Environmentally Superior Alternative, the Big Horn Sheep Buffer and Relocated BESS Alternative #2, as described in **Section 8, Alternatives**, of the SA.

1.1 CEC Project Application Review History

This SA contains CEC staff's independent and objective evaluation of the proposed project and examines engineering, environmental, public health and safety, and environmental justice impacts of the proposed project, and consistency with additional statutory provisions, based on the information provided by the applicant, government agencies, interested parties, independent research, and other sources available at the time the SA was prepared.

On August 1, 2024, the CEC received an application for the SMSP (CEC docket 24-OPT-03). Consistent with Public Resources Code section 25545.4, CEC staff reviewed the application materials within 30 days and on September 3, 2024, the CEC's Executive Director notified the applicant that the application was incomplete, identifying numerous specific informational deficiencies required under California Code of Regulations, title 20, section 1877. Over the following eleven months, the applicant submitted the missing information. On July 31, 2025, staff determined the supplemental information required to complete the application was acceptable and issued a Determination of Completeness signed by CEC's Executive Director.

With the application complete, staff met the procedural requirements of Public Resources Code sections 25545.7.2 and 25545.7.4 by issuing a notice of preparation of an EIR on August 1, 2025, holding an environmental scoping and public informational meeting in Barstow, San Bernardino County, on August 29, 2025, and notifying the relevant California Native American tribes of the application and inviting consultation.

1.2 Summary of Engineering Evaluation

Below is an overview of the analysis included in **Section 4, Engineering Evaluation**.

Facility Design. Staff concludes that the design and construction of the project, including the solar PV facility, BESS facility, and linear facilities would be consistent with the applicable plans, policies, and regulations. In addition, staff-proposed COCs include measures to ensure consistency with applicable plans, policies and standards.

Facility Reliability. The SMSP would be built to operate in a manner consistent with industry norms for reliable operation and the solar PV and BESS would be expected to demonstrate an equivalent availability factor of 99 and 98 percent, respectively, which is an acceptable level of availability.

Transmission System Engineering. With implementation of staff's proposed COCs, the project would be consistent with applicable plans, policies, and regulations.

The LADWP interconnection area report found that the project would affect the transmission grid. These projects, including the SMSP, are responsible for the effects identified and the necessary mitigation measures. The system impacts are due to fault duty increases and reactive power deficiencies. The mitigation measures include upgrading the area transmission system breakers and installing shunt capacitor banks at area substations.

In addition, the System Impact Study (SIS) results show that the Q6 project imposes a fault current duty that exceeds the short-circuit interrupting capability of the McCullough and Eldorado 230 kV circuit breakers. However, the fault current at McCullough and Eldorado 230 kV will be investigated by the Joint facility owners to validate the cause and identify a mitigation option, due to changes and modeling practices. The minimum system additions required to accommodate the Q6 project include a new 500 kV switching station with two 500 kV bays equipped with three circuit breakers, six disconnect switches, and other switchyard equipment.

Section 4.3, Transmission System Engineering, summarizes detailed project impacts, system upgrades as mitigation measures, and the COCs required to interconnect the SMSP into the LADWP grid. Section 4.3 also identifies the project's benefits to electric system reliability. Implementing the staff's proposed COCs and LADWP's proposed system mitigation measures would reduce the project's impact on the transmission system and comply with applicable plans, policies, and regulations.

Worker Safety and Fire Protection. Implementation of staff's proposed COCs, combined with measures identified by the project and compliance with worker safety and fire protection plans, policies, and regulations, would mitigate impacts associated with worker safety and fire protection. Staff's proposed COCs, which include a Construction Health and Safety Program, an Operations and Maintenance Health and Safety Program, a Construction Safety Supervisor, a Construction Safety Monitor, and an on-site automatic external defibrillator (AED) would mitigate worker safety risks. Fire protection impacts include the risk of potential fires at the BESS. Staff's proposed COCs, which include National Fire Protection Association 855 compliance, additional engineering controls, enhanced administrative controls (e.g., annual training, command and control procedures, reporting of any incidences, preparing a root-cause analysis), and engineering design feedback from the San Bernardino County Fire Protection District, would mitigate these risks. Staff identified both direct and cumulative impacts on emergency response (fire, medical services, and rescue) which would be mitigated by staff's proposed COCs. Additionally, impacts from the non-jurisdictional project components, subject to permitting by the Los Angeles Board of Water and Power Commissioners, would be less than significant.

1.3 Summary of Environmental Impact Assessment and Conditions of Certification

Below is an overview of the analysis included in **Section 5, Environmental Impact Assessment**. Impacts are categorized by the type of impact as follows:

- No Impact. The scenario in which no adverse changes to (or impacts on) the environment would be expected.
- Less Than Significant Impact. An impact that would not exceed the defined significance criteria or would be eliminated or reduced to a less than significant level through implementation of the applicant's project measures and/or compliance with existing federal, state, and local laws and regulations.
- Less Than Significant with Mitigation Incorporated. An impact that would be reduced to a less than significant level through implementation of the identified mitigation requirements.
- Significant and Unavoidable Impact. An adverse effect that meets the significance criteria, but there appears to be no feasible mitigation available that would reduce the impact to a less than significant level. In some cases, mitigation may be available to lessen a given impact, but the residual effects of that impact would continue to be significant even after implementation of the mitigation measure(s).

Table 1-1 summarizes the environmental impacts and consequences of the project, including mitigation proposed.

TABLE 1-1 SUMMARY OF ENVIRONMENTAL IMPACTS

Technical Area	Impacts Mitigated?
Air Quality	Yes
Biological Resources	No
Climate Change and Greenhouse Gas Emissions	Yes
Cultural and Tribal Cultural Resources	Yes
Efficiency and Energy Resources	Yes
Geology, Paleontology, and Minerals	Yes
Hazards, Hazardous Materials/Waste, and Wildfire	Yes
Land Use	Yes
Noise and Vibration	Yes
Public Health	Yes
Socioeconomics	Yes
Solid Waste Management	Yes
Transmission Line Safety and Nuisance	Yes
Transportation	Yes

TABLE 1-1 SUMMARY OF ENVIRONMENTAL IMPACTS	
Visual Resources	No
Water Resources	Yes

Not all potentially significant impacts of the proposed project would be reduced to less than significant levels with Conditions of Certification (COCs) and Mitigation Measures (MMs) incorporated. The proposed SMSP would have significant unavoidable impacts to biological resources and visual resources. The Environmentally Superior Alternative, the Big Horn Sheep Buffer and Relocated BESS Alternative #2, proposes a project design that would reduce impacts to biological resources to less than significant but impacts to visual resources for this alternative would remain significant and unavoidable. The COCs are proposed for the jurisdictional project components, and the MMs are recommended for the non-jurisdictional project components. The project would not be consistent with all applicable plans, policies, and regulations. The following summarizes staff's conclusions.

Air Quality. *Less Than Significant with Mitigation Incorporated*. With the implementation of staff-proposed COCs, the project would have a less than significant impact on air quality and be consistent with applicable plans, policies, and regulations. The COCs require the project owner to sufficiently reduce fugitive dust and other criteria pollutants from project construction and operation. Staff's proposed COCs are effective and comprehensive for reducing air quality impacts during construction and operation. No mitigation measures for the non-jurisdictional components are recommended for Air Quality and impacts would be less than significant.

Biological Resources. *Significant and Unavoidable Impact*. The proposed project would result in significant and unavoidable impacts to desert bighorn sheep (*Ovis canadensis nelsoni*) individuals and their movement within and surrounding the project area. This species is designated as Fully Protected by the California Department of Fish and Wildlife (CDFW), pursuant to California Fish and Game Code Section 4700. Additionally, significant and unavoidable impacts would occur as a result of inconsistencies with applicable California Fish and Game Code sections that prohibit take of fully-protected species. Desert bighorn sheep in the Soda and Cady Mountains form a critical part of the Mojave Desert metapopulation and rely on intermountain movement corridors for gene flow, recolonization, and access to seasonal resources. While desert bighorn sheep are known to move within and around the project area, staff is concerned that these areas would be avoided during construction and operation due to increased human presence and limited site availability through the solar arrays. Additionally, the proposed project could compromise the use of the planned wildlife crossing being installed as part of the Brightline West High-Speed Rail Project, which is located within 1.25 miles of the project area and is designed to restore connectivity between desert bighorn sheep populations fragmented by I-15. Impacts that displace sheep, remove important foraging habitat, or result in mortality or decreased fitness would be considered significant and unavoidable. Staff has proposed COCs to reduce

construction-related impacts to desert bighorn sheep, including implementing seasonal work restrictions to avoid critical lambing periods, installation of artificial water sources and exclusionary fencing, funding radio collaring to better understand how the project influences movement in the region, and ongoing monitoring. With the implementation of these COCs, project impacts would be reduced but not to levels that would be less than significant.

Construction and operation of the proposed project would not have any impact on federal or state listed plants but may impact federal or state listed wildlife and other wildlife species designated as special-status by CDFW and/or BLM, including, but not limited to, Crotch's bumble bee (*Bombus crotchii*), monarch butterfly (*Danaus plexippus*), desert tortoise (*Gopherus agassizii*), Swainson's hawk (*Buteo swainsoni*), and western burrowing owl (*Athene cunicularia hypugaea*), as well as native and migratory birds occurring within and adjacent to the project area. With the implementation of staff's proposed COCs, impacts to these species would be reduced to less than significant and would be consistent with applicable plans, policies, and regulations. The proposed COCs include the presence of qualified biological monitors during construction activities, environmental training for all project personnel, applicable species-specific surveys, exclusionary fencing, acquisition of compensatory lands, and additional measures to avoid, minimize, and mitigate potential environmental effects. The proposed COCs also fulfill standards to fully mitigate for impacts to listed species under the California Endangered Species Act.

The proposed project would also result in impacts to drainage features that meet the jurisdictional definitions of non-wetland waters of the state under the Lahontan Regional Water Quality Control Board (LRWQCB) and are considered streambeds under CDFW regulations. Staff has proposed COCs that are consistent with conditions that are typically required in a CDFW Lake and Streambed Alteration Agreement permit and include the implementation of Best Management Practices and the acquisition of mitigation lands to offset permanent and temporary impacts to these features and to reduce impacts to less than significant.

Climate Change and Greenhouse Gas Emissions. *Less Than Significant with Mitigation Incorporated*. The project would lead to a net reduction in greenhouse gas emissions across the State's electricity system. With the implementation of staff's proposed COC, the greenhouse gas emissions related to the jurisdictional portion of the project would not conflict with any plans, policies, or regulations adopted for the purpose of reducing the emissions of greenhouse gases applicable plans, policies, and regulations. Staff's proposed COC requires the project owner to demonstrate the project would use refrigerants that comply with the California Air Resources Board Hydrofluorocarbons prohibitions in all onsite cooling/refrigeration/air conditioning units. The project would therefore have less than significant greenhouse gas-related impacts to the environment with mitigation. For the non-jurisdictional portion of the project, no diesel generators or other nonelectric equipment would be used that result in GHG emissions. The operation and maintenance activities anticipated for the downstream

network upgrades are those that are already in practice and would not therefore result in an increase in GHG emissions.

Cultural and Tribal Cultural Resources. *Less than Significant with Mitigation Incorporated*. There are no recorded historical resources or tribal cultural resources that will be significantly impacted by the project. However, there is a possibility that undocumented archaeological resources might be discovered during construction and that such a discovery could be a historical resource or tribal cultural resource. With implementation of staff's proposed COCs, the proposed project's impacts on cultural and tribal cultural resources would be less than significant and would be consistent with applicable plans, policies, and regulations. The COCs require implementation of a monitoring program involving appropriately qualified specialists who would observe and manage inadvertent discoveries of historical resources during construction, train the construction workforce in basic identification of historical resources, implement stop-work procedures (if required), and report to the CEC on all activities. Additionally, the monitoring program would include California Native American tribal monitors if the consulting tribes wish to participate. No mitigation measures for non-jurisdictional project components are recommended for cultural and tribal cultural resources.

Efficiency and Energy Resources. *Less Than Significant Impact*. Energy consumed by the SMSP during construction and operation would not create significant adverse effects on energy supplies or resources, nor would it consume energy in a wasteful or inefficient manner. Furthermore, through energy-efficient design and increased renewable electricity generation, the project would neither conflict with nor obstruct state or local plan, policies, and standards for renewable energy or energy efficiency and, therefore, would have no impact on those plans.

Geology, Paleontology, and Minerals. *Less Than Significant with Mitigation Incorporated*. The impacts on, and from, potential geologic hazards would be mitigated to less than significant through appropriate methods for project design, grading, construction, and operation that are based on the results of a site-specific geotechnical investigation, consistent with the California Building Code (CBC) and other applicable plans, policies, and regulations, and comply with staff's proposed COCs. Staff's proposed COC requires the project owner to perform geotechnical and geohazard investigations and incorporate that investigation's proposed mitigation into project design, grading, and construction. Compliance with staff's proposed COC, and Facility Design COCs, and Water Resources COCs, would mitigate potential impacts the project may have on geologic hazards to less than significant. Compliance would also mitigate potential impacts from geologic hazards on the project to less than significant.

The project's ground disturbing activities would likely encounter and disturb Quaternary sedimentary deposits with a high paleontological sensitivity. Potential impacts to paleontological resources would be mitigated to less than significant through conformance with applicable plans, policies, and regulations and implementation of staff's proposed COCs. Paleontological COCs require training, monitoring, and protection

of paleontological resources that may be encountered during ground disturbing activities.

No known mineral resources or unique geologic features of commercial, scientific, and recreational value occur at the project site. The project would have less than significant impacts on these resources. Most potential impacts related to construction and operation of non-jurisdictional project components at the existing Adelanto and Marketplace switchyards would be less than significant because construction would occur at existing facilities and not include ground disturbance. Construction and operation of non-jurisdictional project components should comply with the CBC and all applicable plans, policies, and regulations. During construction of non-jurisdictional project components, staff recommend compliance with Water Resources mitigation measure to mitigate potential impacts on soil erosion and topsoil loss to less than significant.

Hazards, Hazardous Materials, and Wildfire. *Less than Significant with Mitigation Incorporated*. The impacts associated with the routine transport, use, disposal or accidental release of hazardous materials/waste during construction and operation would be less than significant with the implementation of staff's proposed COCs. Impacts related to unknown environmental contamination on the project site would be less than significant with the implementation of staff's proposed COCs. Impacts related to schools and airports would be less than significant as no such facilities are within the project vicinity. The project would not impair or interfere with emergency response or evacuation planning and would have a low potential for wildfire because the solar facility and BESS are not in or near a State Responsibility Area (SRA) or lands classified as a Very High Fire Hazard Severity Zone (VHFHSZ), and implementation of staff's proposed COCs would further mitigate potential wildfire impacts to less than significant.

The COCs require the following: a Hazard Materials Business Plan (HMBP) and Spill Prevention Control and Countermeasure Plan (SPCC); advance approval for changes in hazardous materials; hazardous waste generator identification numbers; site security plans for construction and operation; a Soils Management Plan; procedures for professional staffing, management, and actions in the case of suspected contaminated soil and/or groundwater; and an air quality and water quality sampling plan in case of a container fire at the BESS.

With implementation of staff's proposed COCs, the jurisdictional project components would be consistent with applicable plans, policies, and regulations, and the project would have less than significant impacts related to hazards, hazardous materials/waste and wildfire. Additionally, the hazards, hazardous materials/waste and wildfire impacts from the construction and operation of non-jurisdictional project components, subject to permitting by the Los Angeles Board of Water and Power Commissioners, would be less than significant and no mitigation would be required.

Land Use. *Less than Significant with Mitigation Incorporated*. Rasor Road is the primary access route to the Rasor Off-Highway Vehicle (OHV) Special Recreation Management Area (SRMA), and the proposed project would utilize Rasor Road during project construction and operation. Staff assumes that public access along Rasor Road would need to be limited or closed during road improvement and realignment activities and during movement of heavy equipment. Closure of Rasor Road would effectively preclude access to the Rasor OHV SRMA, which is a designated recreational resource. With implementation of staff proposed COCs, project activities would not preclude access to the Rasor OHV SRMA, and any temporary restrictions or access delays along Rasor Road would be communicated to the public. Potential impacts to recreation access would be mitigated to less than significant.

The proposed project would only be subject to federal policies and management actions set forth in BLM's adopted resource management plans and decision documents. Potential impacts associated with BLM's land use plans and policies adopted for the purpose of mitigating an environmental effect would be less than significant, because there would be no new policy conflicts created by the project.

Noise and Vibration. *Less Than Significant with Mitigation Incorporated*. Despite the generation of noise louder than ambient levels, such as from pile driving and other construction activities, with the implementation of staff's proposed COCs, the project's construction and operation would have a less than significant impact related to noise and vibration and would be consistent with applicable plans, policies, and regulations. The COCs require a noise complaint process, restrictions on construction activities, the use of pile driving noise controls, and an occupational noise survey to verify project noise limits are met. The Noise and vibration impacts from the construction and operation of the non-jurisdictional project components would be than significant and would not require any MMs.

Public Health. *Less Than Significant with Mitigation Incorporated*. With the implementation of staff's proposed COCs to minimize personnel and public exposure to Valley fever, the project would have a less than significant impact on public health and the jurisdictional project components would be consistent with applicable plans, policies, and regulations. No MMs for non-jurisdictional project components are recommended for public health and impacts would be less than significant.

Socioeconomics. *Less Than Significant Impact with Mitigation Incorporated*. Construction and operation of the Soda Mountain Solar Project would not induce unplanned population growth in the region. The regional labor force within a practical commuting distance of the project site is adequate to meet construction labor demands, and the project would require only a minimal number of permanent operations staff, resulting in no long-term housing demand. Temporary construction workers who elect not to commute would have access to sufficient short term lodging accommodations in nearby communities, avoiding any displacement or strain on local housing resources.

Accordingly, the project would result in less than significant impacts related to population growth or the displacement of people or housing.

Construction and operation of the project would also result in less than significant socioeconomic impacts on public services. Although construction activities would incrementally increase demand for fire protection, emergency medical response, law enforcement, and related public services, these effects would be minimized by implementation of staff's recommended COCs for socioeconomics; hazards and hazardous materials; transportation; and worker safety. With these COCs in place, the project would not substantially degrade service ratios, response times, or service capacities. The project would not necessitate the construction of new public service facilities or the expansion of existing ones, and it would be consistent with applicable regional plans, policies, and regulations.

The project would not require new or expanded recreational facilities and would not interfere with existing recreational uses in the surrounding region. Additionally, socioeconomic impacts associated with any necessary utility interconnections and downstream upgrades would also be less than significant with implementation of applicable mitigation for hazards, hazardous materials, wildfire risk, and worker safety.

Solid Waste Management. *Less Than Significant with Mitigation Incorporated*. Solid waste produced during project construction and operation would be recycled to the extent possible or otherwise disposed of at certified local landfills with available capacity. This would be reinforced by implementation of the construction and operational waste management plans included in staff's proposed COCs. Therefore, waste generated by the proposed project, including those sent to landfills, as well as materials handled by third party waste disposal resulting from construction and operation of the project, would have a less than significant impact and would conform with applicable plans, policies, and regulations. Additionally, impacts from network upgrades at the existing Marketplace and Adelanto substations, and utility switchyard and loop-in transmission lines, which would be under LADWP jurisdiction, would be less than significant with the inclusion of recommended MMs (operational waste management plan).

Transmission Line Safety and Nuisance. Less Than Significant with Mitigation Incorporated. With implementation of staff's proposed COCs, potential hazards and impacts to receptors associated with transmission lines and related structures and facilities for the project would have a less than significant impact related to transmission line safety and nuisance and would conform with applicable plans, policies, and regulations.

The proposed gen-tie line would be maintained according to the standard procedures of the American National Standard Institute/Institute of Electrical and Electronic Engineers guidelines for line safety and field management. The construction and operation of the project's new collector feeders, gen-tie line, on-site substation, and switchyard would

not contribute to electromagnetic field (EMF) levels, corona, audible noise, or radio and television interference beyond acceptable standards. On-site worker or public exposure would be short-term and at levels expected for LADWP's lines of similar design and current-carrying capacity. Implementing grounding and other field-reducing measures in strict adherence to current utility standards and guidelines will further minimize the potential for nuisance shocks.

With staff's proposed COCs, the safety and nuisance impact from the construction and operation of the proposed substation, switchyard, collector feeders, and the gen-tie line would be less than significant. Additionally, impacts from the utility switchyard and downstream network upgrades would be reduced to less than significant since these components are subject to permitting by the Los Angeles Board of Water and Power Commissioners, which include compliance with LADWP and Federal Aviation Administration (FAA) regulations for structures 200 feet and above.

Transportation. *Less Than Significant with Mitigation Incorporated*. The project would have a less than significant impact related to transportation and with implementation of staff's proposed COCs, the project would conform with applicable plans, policies, and regulations. The COCs require: (1) the project cease all construction activities on Friday's at 1:00, with no construction on Fridays prior to a Federal Holiday, to avoid an impact to the County's Level of Service policy, (2) preparation and implementation of a Construction Management Plan to cover traffic controls, emergency access, and on-site speed limits, (3) compliance with applicable limitations on vehicle sizes, weights, driver licensing and truck routes, and (4) securing permits and licenses for transport of hazardous materials.

Visual Resources. *Significant and Unavoidable*. Project components would appear as a collection of geometric shapes and complex industrial forms that would exhibit considerable industrial character, which would contrast with the natural forms, lines, and textures of the existing desert landscape character. Travelers on I-15 and visitors to the surrounding desert recreational lands would have high viewer sensitivity to the substantial landscape changes that would occur to the project site and its surroundings. With the implementation of COCs and MMs, project impacts would be reduced but not to levels that would be less than significant. COCs would require the preparation of a: (1) construction coordination on scenic resources mitigation plan, (2) structural surface treatment, (3) vegetation management plan, (4) landscape screening Plan, (5) night lighting management plan, and (6) glint and glare mitigation and monitoring plan. Recommended MMs include (1) structural surface treatment, (2) vegetation management, and (3) night lighting management. Staff also concluded that the proposed project's degradation of the existing visual character or quality of the public views, and visibility of the proposed project would result in non-conformance with several federal and San Bernardino County visual resource management objectives, principles, or policies.

Water Resources. *Less Than Significant with Mitigation Incorporated*. Groundwater extracted from onsite wells would be the primary project water supply for both construction and operations. Although the local groundwater subbasin is unadjudicated and outside of water district jurisdiction, impact to project site aquifers would be mitigated by staff's proposed COCs and adherence to the San Bernardino County Desert Groundwater Management Ordinance (§ 33.06551). The applicant proposed to change the stormwater design to remove the previously proposed stormwater berms and associated drainage features. These revisions are incorporated as a staff proposed COC, which minimizes grading and ground disturbance by preserving existing drainage patterns and applying fluvial geomorphic stormwater design principles rather than engineered berms and channels. Impacts due to stormwater runoff would be mitigated by staff's proposed COCs both during construction and operation. Dredge and fill impacts to ephemeral streams would be mitigated by staff's proposed COCs and waste discharge requirements administrated by the LRWQCB per Clean Water Action Section 401. During project construction, sanitary wastewater needs would be addressed by portable toilets maintained by a local contractor. During project operation, the facility would be operated and monitored remotely, and no permanent sanitary facilities are planned for the project. Additionally, impacts from network upgrades at the existing Marketplace and Adelanto substations, and utility switchyard and loop-in transmission lines, under LADWP jurisdiction, would be less than significant with inclusion of staff's recommended mitigation measures, which includes measures to manage stormwater pollution prevention during operation.

1.4 Cumulative Scenario

See **Appendix A** of this document for a discussion on the staff's methodology of assessing cumulative impacts and a list of existing and reasonably foreseeable projects staff used to analyze cumulative impacts and a figure showing their location, where possible (see **Table A-1** and **Figure A-1** in **Appendix A**).

1.5 Alternatives to the Project

Staff evaluated three alternatives that were found to be potentially feasible and that could avoid or reduce some of the proposed project's potentially significant impacts:

- No Project Alternative
- Big Horn Sheep Buffer and Relocated BESS Alternative #1
- Big Horn Sheep Buffer and Relocated BESS Alternative #2

The Big Horn Sheep Buffer and Relocated BESS Alternative #2 was selected to avoid areas with known habitat for special status species. Only Big Horn Sheep Buffer and Relocated BESS Alternative #2 was determined by staff to avoid or substantially lessen potentially significant effects of the proposed project, while achieving the project's basic objectives. As indicated in **Table 8-1**, the smaller construction and operational footprint associated with Big Horn Sheep Buffer and Relocated BESS Alternative #2 would result

in less severe impacts than the proposed project for the following issue areas: Air Quality; Biological Resources; Climate Change and Greenhouse Gases; Cultural and Tribal Cultural Resources; Hazards, Hazardous Materials, and Wildfire; Public Health; Solid Waste Management; and Transportation. The Big Horn Sheep Buffer and Relocated BESS Alternative #2 would also be consistent with state and local plans, policies, and regulations. The Big Horn Sheep Buffer and Relocated BESS Alternative #2 was identified by staff as the CEQA Environmentally Superior Alternative because it would reduce the severity of many of the proposed project's impacts, while achieving the basic objectives of the project (see **Table 8-1**).

1.6 Environmental Justice

The following technical areas discuss project-related impacts on environmental justice (EJ) populations: Air Quality; Cultural and Tribal Cultural Resources; Hazards, Hazardous Materials/Waste and Wildfire; Noise and Vibration; Public Health; Solid Waste Management; Transportation; Visual Resources; and Water Resources. The project would not result in disproportionate impacts on the EJ populations represented in **Section 6**, **Environmental Justice**, **Figure 6-1** and **Table 6-2.**

1.7 Economic and Public Benefits

Public Resources Code section 25545.9(b) states there shall be a rebuttable presumption that the construction or operation of the facility will have an overall net positive economic benefit to the local government that would have had permitting authority over the site and related facility. In summary, SMSP would contribute positive economic, environmental, and electric reliability public benefits to San Bernardino County, including construction jobs, increased tax revenues, local spending in the community, contributions to renewable and zero-carbon electricity generation, and reliability improvements in the statewide grid. See **Section 7, Public Benefits** for additional information on the economic, environmental, and electric reliability benefits of the project.

1.8 Areas of Known Controversy

Areas of controversy/comment topics included: impacts to biological resources, including the desert bighorn sheep, desert tortoise, burrowing owl, Mojave fringe-toed lizard, and their habitats, air quality, visual resources, greenhouse gas emissions, BESS fires, and impacts on hydrological resources.

Comments were received from members of the public, regional, and local agencies and organizations.

1.9 Issues to Be Resolved

None.

Section 2

Introduction

2 Introduction

2.1 Energy Commission Jurisdiction and the Opt-In Certification Program

In 2022, Assembly Bill (AB) 205 established a new Opt-In Certification Program for eligible clean and renewable energy facilities to optionally seek certification through the California Energy Commission (CEC). Upon an applicant filing with the CEC, Public Resources Code sections 25545 and 25545.1 authorize the CEC to certify or approve the construction and operation of the following facilities:

- solar photovoltaic and terrestrial wind energy power plants of 50 megawatts (MW) or more
- energy storage facilities of 200 megawatt-hours (MWh) or more
- thermal power plants of 50 MW or more that do not use fossil or nuclear fuels
- the electric transmission lines from these generation and storage facilities to the first point of interconnection with the existing transmission grid
- facilities that manufacture or assemble clean energy or storage technologies or their components with a capital investment of at least $250 million
- hydrogen production facilities (not derived from fossil fuel feedstock) and associated onsite storage and processing facilities
- geothermal power plants or projects that comprise multiple geothermal power plants on a single site

AB 205 authorizes the CEC to accept applications for these facilities through June 30, 2029, and provides a streamlined process for their review and a decision by the CEC. The CEC is the "lead agency" under the California Environmental Quality Act (CEQA) and is required to prepare an environmental impact report (EIR) for any facility that elects to opt-in to the CEC's jurisdiction. With exceptions, including for the State Water Resources Control Board or applicable regional board, the issuance of a certificate by the CEC for an eligible facility is in lieu of any permit, certificate, or similar document required by any state, local, or regional agency, or federal agency to the extent permitted by federal law, and supersedes any applicable statute, ordinance, or regulation of any state, local, or regional agency, or federal agency to the extent permitted by federal law.

This Staff Assessment (SA) consists of a draft EIR following the requirements of CEQA (Pub. Resources Code, § 21000 et seq.) and the CEQA Guidelines (Cal. Code Regs., tit. 14, div. 6, ch. 3) and separate discussions regarding the following statutory requirements:

1. The extent to which the applicant has complied with the recommended minimum standards of efficiency adopted under Public Resources Code section 25402(d).

2. The conformity of the facility with public safety standards and the applicable air and water quality standards, and with other applicable local, regional, state, and federal standards, ordinances, or laws.
3. The potential for restoring the site as necessary to protect the environment if the commission denies approval of the application.
4. The public benefits from the project including, but not limited to, economic benefits, environmental benefits, and electricity reliability benefits.
5. An identification of whether the site is located at a prohibited area as identified in Public Resources Code sections 25526 and 25527 and any proposed findings relevant to that location.
6. The rebuttable presumption that the construction or operation of the facility will have an overall net positive economic benefit to the local government. Economic benefits may include, but are not limited to, employment growth, housing development, infrastructure and environmental improvements, assistance to public schools and education, assistance to public safety agencies and departments, property taxes, and sales and use tax revenues.
7. Any legally binding and enforceable agreements by the applicant with, or that benefit, a coalition of one or more community-based organizations, such as workforce development and training organizations, labor unions, social justice advocates, community foundations, local governmental entities, California Native American tribes, or other organizations that represent community interests, where there is mutual benefit to the parties to the agreement. Concurrent with the publication of the updated Staff Assessment, the executive director shall file a recommendation on whether the commission shall certify the environmental impact report and issue a certificate for construction and operation of the facility.
8. For expedited judicial review, whether the project satisfies the conditions in Chapter 6.5 (commencing with Section 21178) of Division 13, including Sections 21183 and 21183.6, of the Public Resources Code.

2.2 Purpose of the Staff Assessment

The purpose of this SA is to provide objective information regarding the project's significant effects on the environment, identify possible ways to minimize the significant effects, describe reasonable alternatives to the project, assess the project's consistency with applicable local, state, and federal plans, policies, and regulations in accordance with CEQA, and provide an evaluation of the extent to which the application complies with additional licensing requirements set forth in the Public Resources Code. This information will be considered by the CEC Commissioners in deciding whether to grant a certificate to build and operate the project. The SA is based on information from the applicant, site visits, independent staff research, consultation with other agencies, public comment, and relevant information received during any public meetings, all of which are available through the docket as of the date of the publication of this

document. Other state agencies retaining permit authority may also rely on information in this SA to inform their permitting or other approvals for this project.

The SA is circulated for agency and public review as follows: distribution through the CEQA State Clearinghouse to state agencies, direct mail to local, state and federal agencies, property owners and occupants adjacent to the project site and property owners within 1,000 feet of the project site and 500 feet of project linears, posted to the project's CEC docket, and distributed via email to those on the project's subscription list. The subscription list is an automated CEC system by which information about this proceeding is emailed to persons who have subscribed.

Following the publication of the SA, Public Resources Code, Chapter 6.2, Section 25545.7.6 implements a 60-day public review and comment period on the SA, as well as a requirement that a public meeting be held during this time. For projects staff is recommending approval, comments received during this period and any changes to the SA, will be incorporated into an Updated Staff Assessment and presented to the CEC at a public business meeting. If the project is approved, a Notice of Determination is filed with the State Clearinghouse.

2.3 Jurisdictional and Non-Jurisdictional Project Components

The Soda Mountain Solar Project (SMSP or project) proposes the construction and operation of a solar photovoltaic facility, battery energy storage system, substation, and generation-intertie line. These project components are within the CEC's certification (i.e., licensing) authority and are considered "jurisdictional" project components. Staff has analyzed these jurisdictional project components as required by CEQA. As necessary, staff has included Conditions of Certification (COCs) relevant to these components, to reduce significant effects on the environment to the extent feasible, as part of possible CEC certification.

Interconnection of the SMSP with the California Independent System Operator (California ISO) electrical grid would require the construction and operation of a new utility switchyard, two transmission loop lines, and six steel towers. As the applicant would be constructing these components, construction would be under the jurisdiction of the CEC. As the Los Angeles Department of Water and Power (LADWP) would purchase and operate the new utility switchyard following construction, LADWP requires the design of these components be consistent with LADWP design standards and specifications and Federal Energy Regulatory Commission's Good Utility Practice. The operation and maintenance of the new utility switchyard would be within the jurisdiction of the Los Angeles Board of Water and Power Commissioners, and thus are considered non-jurisdictional project components for operation and maintenance purposes.

The California ISO identified network system upgrades at the Marketplace and Adelanto substations as necessary to ensure a reliable connection between the SMSP and the electric grid. These upgrades would be made by LADWP and are not within the CEC's

licensing authority and are considered "non-jurisdictional." Since the non-jurisdictional components are a part of the whole of the action for CEQA, staff has analyzed the potential environmental impacts of these non-jurisdictional project components and recommended mitigation measures that can and should be adopted by the licensing authority, as necessary.

SMSP is proposed on land managed by the Bureau of Land Management, under the Department of Interior and therefore is subject to environmental review under the National Environmental Protection Act (NEPA). CEC staff have been coordinating with BLM during the development of this SA. Consultation is ongoing and will continue through the application process.

The Federal Land Policy and Management Act (FLPMA) (Public Law 94-579) sets forth the roles and responsibilities of the BLM. FLPMA enables the BLM to grant a right-of-way (ROW) on federal land for non-federal projects. A ROW grant is an authorization for a specific use (e.g., solar project) on certain parcels of public land for a specified time (e.g., life of the project). As part of this ROW authorization process, BLM must consider local plans for consistency to the extent practical, but FLPMA does not obligate BLM to conform to state or county zoning. FLPMA requires the BLM to coordinate with state and local governments (43 CFR Part 2800)**.**

2.4 Agency Coordination

CEC staff closely coordinates with other expert agencies to ensure the conditions those agencies would impose on the project if those agencies were issuing permits are incorporated into the CEC's certification.

To facilitate this coordination, staff provided notification of the receipt of the Opt-In application to the California Department of Fish and Wildlife, State Water Resources Control Board, Regional Water Quality Control Board, Department of Toxic Substances Control and other state, regional and local agencies (such as San Bernardino County Planning Department). Notification of the receipt of the Opt-In application was also provided to the California Public Utilities Commission and California Attorney General. Consistent with California Code of Regulations, Title 14, Section 15082 and Public Resources Code Chapter 6.2, Section 25545.7.2(a), on August 4, 2025, staff issued a Notice of Preparation of a Draft EIR, filing it with the Office of Land Use and Climate Innovation (formerly Office of Planning and Research) (State Clearinghouse), responsible and trustee agencies, and the county clerk.

SMSP is proposed on land managed by the Bureau of Land Management under the Department of Interior. CEC staff have been coordinating with BLM during the development of this SA. Consultation is ongoing and will continue through the application process.

The mailing list used to engage with stakeholder agencies can be found in **Appendix B**.

2.5 Consultation with Tribes

A search of the Native American Heritage Commission's (NAHC's) Sacred Lands File (SLF) was requested by the CEC on August 7, 2024. On August 21, 2024, the NAHC responded stating the SLF check was negative and provided a contact list of Native American tribes having cultural affiliation in the project vicinity and interested in consulting on development projects in the project area. Once the opt-in application was deemed complete, CEC staff sent letters to the California Native American tribes from the NAHC list on August 1, 2025, followed by e-mails on August 19, 2025, consistent with the Public Resources Code, Chapter 6.2, Section 25545.7.4. The letters invited the tribes to comment on the proposed project and offered to hold face-to-face consultation meetings if any were requested. On August 19, 2025, the Yuhaaviatam of San Manuel Nation (San Mauel Band of Mission Indians) e-mailed with their desire to consult on the proposed project. The Twenty-Nine Palms Band of Mission Indians e-mailed the CEC on August 19, 2025, acknowledging the receipt of the letter and information. On August 28, 2025, the Quechan Tribe of the Fort Yuma Reservation e-mailed the CEC deferring consultation to more local tribes to the project area. Consultation is ongoing and will continue throughout the application process.

More detail on CEC staff's consultation efforts with the California Native American tribes can be found in **Section 5.4, Cultural and Tribal Cultural Resources**.

2.6 Public Outreach and Notification

2.6.1 CEC's Office of the Public Advisor, Energy Equity, and Tribal Affairs (PAO+)

The CEC's public outreach program is primarily facilitated by the CEC's Office of the Advisor, Energy Equity, and Tribal Affairs (PAO+). The PAO+ outreach consisted of email outreach to churches, community and youth organizations, schools, and a senior center. This is an ongoing process, and efforts are discussed in greater detail in **Section 6, Environmental Justice**.

2.6.2 Newspaper Notice of Receipt of Opt-In Application

To initiate public awareness of the project, a summary of the project was published in a newspaper of general circulation in the county of the project. The summary was published in Spanish in El Chicano Newspaper on January 16, 2025, and English in the Sun (San Bernardino) on January 17, 2025. A copy of the proof of publication was filed to the project docket (TN 265978, TN 265982).

2.6.3 Notice of Preparation

As noted above, Consistent with California Code of Regulations, Title 14, Section 15082 and Public Resources Code Chapter 6.2, Section 25545.7.2(a), on August 1, 2025, staff mailed a Notice of Preparation (NOP) of a Draft EIR to the trustee agency, San Bernardino County Clerk, local, regional, and federal agencies, including those who

commented on the California Fish and Wildlife NOP from the previous environmental document. The NOP was posted to the project docket (TN 265234) and submitted to the Office of Land Use and Climate Innovation (formally Office of Planning and Research) (State Clearinghouse).

2.6.4 Information and Environmental Scoping Meeting

Consistent with Public Resources Code, Chapter 6.2 Section 25545.7.2, staff held an Information and Environmental Scoping Meeting on August 29, 2025, in Barstow, California and via remote access to solicit input on the application to identify the range of actions, alternatives, mitigation measures, and significant effects to be analyzed in depth in the Draft EIR (included as part of the SA). A copy of the meeting presentation (TN 266035) and meeting transcription (TN 266040) were filed to the project docket.

2.6.5 Notice of Availability of Draft EIR (included in SA)

As described above, staff distributed a Notice of Availability (NOA) of the SA (including Draft EIR) consistent with the CEQA Guidelines (California Code of Regulations, title 14, section 15087). The SA is being circulated for review and comment by state agencies via the California State Clearinghouse and via direct mail to federal, regional and local agencies (including the county clerk), as well as organizations and individuals who have requested notification. Consistent with CEQA Guidelines section 15087, the NOA was mailed to owners and occupants contiguous to the project site and linears. The NOA was also mailed to property owners within 1,000 feet of the project site and 500 feet of project linears, and to persons on the project subscription list. Staff also posted the NOA and the SA (that includes a Draft EIR) and associated application files and technical studies (with certain exceptions for confidential materials, e.g., known locations of sensitive cultural and/or biological resources) were posted to the project's docket for public review (https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03).

The relevant mailing lists staff used for outreach can be found in **Appendix B**.

2.6.6 Public Meeting for the Staff Assessment

CEC will host a public meeting on the Staff Assessment for the SMSP, pursuant to Public Resources Code section 25545.7.6. The purpose of the meeting is for CEC staff to present the Staff Assessment, which includes a Draft EIR, and receive comments on the assessment from interested government agencies, California Native American Tribes, the public, and the project applicant. This meeting will be noticed and conducted as close as practicable to the proposed site, consistent with Public Resources Code, Chapter 6.2, Section 25545.7.6(a).

2.7 Organization of this Staff Assessment

The SA is prepared to conform to the requirements of CEQA, the CEQA Guidelines (California Code of Regulations, title 14, section 15000 et seq.), the Warren-Alquist Act

(Public Resources Code, section 25000 et seq.), and CEC's siting regulations (California Code of Regulations, title 20, sections 1875-1881).

This SA is organized into 12 sections, as described below:

- Section 1 Executive Summary. This section provides an overview of the proposed project; the environmental impacts that would result from the proposed project; conditions of certification identified to reduce or eliminate these impacts; a list of cumulative projects (in **Appendix A**); project alternatives; economic and public benefits (in **Section 7, Public Benefits**); areas of known controversy; and issues to be resolved.
- Section 2 Introduction. This section describes the CEC's authority and function of the SA; the environmental review process; and the organization of the SA.
- Section 3 Project Description. This section summarizes the proposed project, including the location of the site and project boundaries, characteristics of the proposed project, objectives sought by the proposed project, and intended use of this environmental document.
- Section 4 Engineering Evaluation. This section 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 plans, policies, and regulations and any other special design requirements. Staff's engineering evaluation is broken down into the following topics:
    - Facility Design
    - Facility Reliability
    - Transmission System Engineering
    - Worker Safety and Fire Protection
- Section 5 Environmental Setting, Environmental Impacts and Mitigation. This section includes the environmental setting (existing conditions); regulatory background; approach to analysis; project-specific and cumulative impacts (**Appendix A**); and mitigation measures (referred to as Conditions of Certification), when appropriate to reduce potentially significant impacts to less than significant and ensure consistency with plans, policies, and regulations. Staff evaluates the potential environmental impacts that might reasonably be anticipated to result from construction and operation of the proposed project. Staff's analysis is broken down into the following environmental resource topics derived from CEQA Appendix G (Environmental Checklist):
    - Air Quality
    - Biological Resources
    - Climate Change and Greenhouse Gas Emissions

  - Cultural and Tribal Cultural Resources
  - Efficiency and Energy Resources
  - Geology, Paleontology, and Minerals
  - Hazards, Hazardous Materials/Waste, and Wildfire
  - Land Use, Agriculture, and Forestry
  - Noise and Vibration
  - Public Health
  - Socioeconomics
  - Solid Waste Management
  - Transmission Line Safety and Nuisance
  - Transportation
  - Visual Resources
  - Water Resources
- Section 6 Environmental Justice. This section includes an analysis of how the project would potentially impact an Environmental Justice population[1].
- Section 7 Public Benefits. This section includes a discussion of any public benefits from the project including, but not limited to, economic benefits, environmental benefits, and electricity reliability benefits.
- Section 8 Alternatives. This section includes a discussion of a reasonable range of alternatives to the proposed project, or to the location of the project, which could feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and an evaluation of the comparative merits of the alternatives. This section also includes an evaluation of the no project alternative.
- Section 9 Compliance Conditions and Compliance Monitoring Plan (Compliance Plan). The Compliance Plan contains the means for ensuring all aspects of construction, operation and closure comply with applicable plans, policies, and regulations and with conditions/mitigations adopted by the CEC.
- Section 10 Mandatory Opt-In Regulations. This section includes a discussion of the project's conformance with the mandatory requirements for an Opt-In project.
- Section 11 Override Findings and Recommendations. This section includes a discussion of the significant and unavoidable impacts of the project.

1 Within this analysis, an environmental justice population of concern is identified when the minority population of the potentially affected area (i.e., Census tract) is greater than 50 percent when the percentage of low-income population of the potentially affected area (i.e., block group or Census tract) is equal to or greater than the low-income population of the greater geography (i.e., the County).

- Section 12 Authors and Reviewers. This section includes a list of the authors and reviewers for this SA.

Section 3

Project Description

3 Project Description

Soda Mountain Solar, LLC (applicant), proposes to construct, operate, and maintain a utility-scale solar photovoltaic (PV) electrical generating and battery energy storage facility and associated infrastructure to generate and deliver renewable electricity to the statewide electricity transmission grid. The project is anticipated to operate for 40 years. This project is known as the Soda Mountain Solar Project (SMSP or project).

The project is proposed on approximately 2,670 acres of land administered by the U.S. Department of Interior, Bureau of Land Management (BLM), California Desert District, within the jurisdiction of the Barstow Field Office in San Bernardino County. The project would disturb approximately 2,059 acres overall.

The major project components include:

1. Up to 300 megawatts (MW) solar PV facility (solar facility)
2. Up to 300 MW/1,200 MW-hours (MWh) of battery energy storage system (BESS)
3. 140,000-square-foot high-voltage project substation (34.5 to 500 kilovolt [kV])
4. 500 kV generation-intertie line (gen-tie)
5. 234,300-square-foot utility switchyard
6. 500 kV transmission loop-in lines

The power produced by the project would be conveyed to the regional electrical grid through an interconnection with the existing 500 kV Marketplace-Adelanto transmission segment of the greater Mead-Adelanto 500 kV transmission line operated by the Los Angeles Department of Water and Power (LADWP). (CEC 2025t)

To interconnect the SMSP and the new utility switchyard to the California Independent System Operator (California ISO) managed electric grid, the applicant would construct two 500 kV loop-in transmission line segments and six new steel towers; these components, along with the utility switchyard, would be operated and maintained by LADWP, under the jurisdiction of the Los Angeles Board of Water and Power Commissioners.

The California ISO identified that LADWP would need to make upgrades to the protection settings at the Marketplace (Boulder City, Nevada) and Adelanto (Adelanto, California) substations to accommodate power generation from the SMSP. (RE 2025kkk)

The project proposes components that are within the CEC's jurisdiction and those that are outside of the CEC's jurisdiction. The jurisdictional project components include the construction and operation of the solar PV facility, BESS, project substation and generation intertie line (gen-tie) and construction of the utility switchyard and section of transmission loop in lines that would connect to the existing Mead-Adelanto

Transmission Line. The non-jurisdictional project components include the construction and operation of the protection setting upgrades to the Marketplace and Adelanto substations and operation of the utility switchyard and section of transmission loop in lines.

Refer to **Section 2, Introduction**, for more details about jurisdictional limits.

3.1 Project Title

Soda Mountain Solar Project

3.2 Lead Agency Name and Address

California Energy Commission
715 P Street, MS 40
Sacramento, CA 95814-5512

3.3 Lead Agency Contact Person and Number

Lisa Worrall, Senior Environmental Planner
Siting, Transmission and Environmental Protection Division
916-661-8367

3.4 Project Location

The project is proposed entirely on federally owned land managed by the BLM. The 2,670-acre project site is located approximately seven miles southwest of the community of Baker in unincorporated San Bernardino County, California (**Figure 3-1**), approximately 50 miles northeast of Barstow. The project site is in portions of Sections 1 and 11–14, Township 12 North, Range 7 East; Sections 25, Township 13 North, Range 7 East; Sections 6, 7, and 18, Township 12 North, Range 8 East; Sections 17 – 21, 29-32, Township 13 North, Range 8 East, San Bernardino Meridian, California.

The project is bounded directly to the east by the Mojave National Preserve (administered by the National Park Service) and BLM lands, including the Rasor Off-Highway Vehicle (OHV) Recreation Area at the southeast corner. Interstate 15 (I-15), the former Arrowhead Trail Highway, runs along the western boundary of the project site. The Rasor Road Services Shell Oil gas station is located off I-15 southwest of the project site, along the access road to the project site. A residence is next to the gas station, roughly 260 feet southwest of the proposed boundary (CEC 2025z). There are no other sensitive receptors within 1,500 feet of the project site. Approximately four storm drain culverts run under I-15 adjacent to the project site. Primary access to the project site would be from the Rasor Road northbound exit off I-15.

Figure 3-1 Project Site Vicinity



Source: RE 2025ii, Figure 2-1

3.5 Project Objectives

The project's primary goal is to contribute to the achievement of California's renewable energy goals and create a vital new point of interconnection for renewable energy in San Bernardino County to connect to California's electric transmission infrastructure. The objectives for the project include:

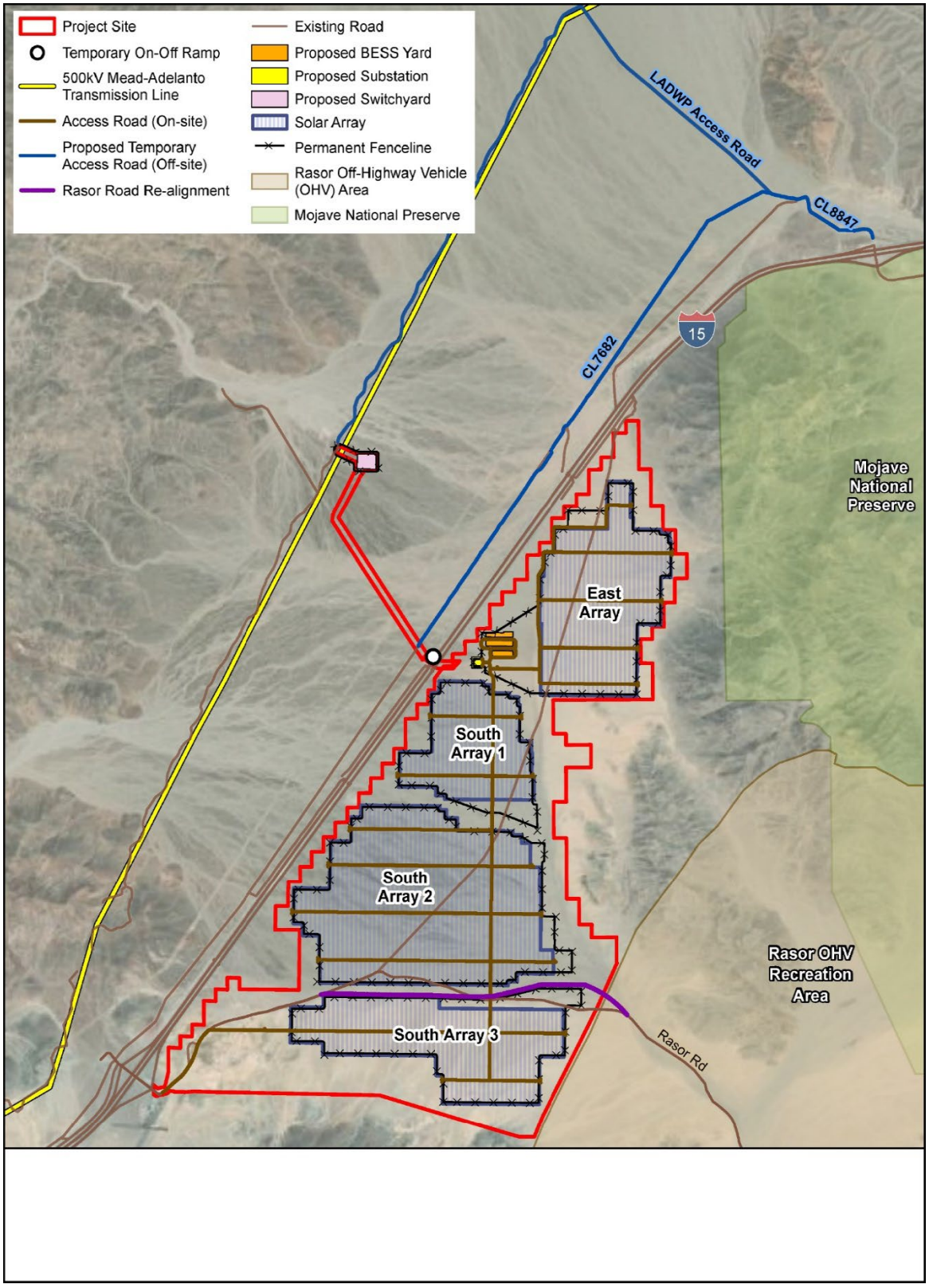
- Assist the State of California in achieving or exceeding its Renewables Portfolio Standard and greenhouse gas emissions reduction objectives by developing and constructing new California Renewables Portfolio Standard–qualified solar power generation facilities producing approximately 300 MW.
- Produce and transmit electricity at a competitive cost.
- Provide a new source of energy storage that assists the state in achieving its energy storage mandates.
- Use the existing unused transmission capacity that provides approximately 300 MW of capacity.
- Utilize existing energy infrastructure to the extent possible by locating solar power generation facilities near existing infrastructure, such as electrical transmission facilities.
- Site solar power generation facilities in areas of San Bernardino County that have the best solar resource to maximize energy production and the efficient use of land.
- Develop a solar power generation facility in San Bernardino County that would support the economy by investing in the local community, creating local construction jobs, and increasing tax and fee revenue to the County.

3.6 Facility Description and Design

The project proposes to construct, operate, and maintain a proposed 300-MW solar facility and BESS located on approximately 2,670 acres. The approximate disturbance acreage for the project would be 2,059 acres. **Figure 3-2** shows the project overview site plan. The project components are as follows:

- Solar PV facility- East Array and South Arrays 1, 2, and 3;
- Operation and maintenance (O&M) buildings and structures;
- Approximately 300 MW/1,200 MWh BESS across 18 acres;
- A project substation and utility switchyard for interconnection to the existing transmission system;

Figure 3-2 Project Site Overview



Source: RE 2025eeee

- Gen-tie line connecting project substation and utility switchyard; and,
- Transmission loop in line and steel towers to interconnect utility switchyard and existing 500 kV Mead-Adelanto transmission line.

The applicant proposed to change the project design to remove previously proposed stormwater berms and associated drainage features (applicant-proposed HYD-1 (RE 2025jjjj). These revisions are achieved through COC **WATER-9**, in **Section 5.16, Water Resources**, which minimizes grading and ground disturbance by preserving existing drainage patterns and applying fluvial geomorphic stormwater design principles rather than engineered berms and channels.

The project would operate 24 hours per day year-round and would generate electricity during daylight hours when the sun is shining. The project would generate and deliver solar-generated power to the regional electrical grid through an interconnection with the existing Mead-Adelanto 500 kV transmission line operated by LADWP and to the project's BESS. During final design, the configuration and number of components may vary as a result of micro-siting (precise selection of a specific location), but all components would occur within the project footprint analyzed within this document.

3.6.1 Solar PV Facility

3.6.1.1 Solar Panel Arrays

Solar cells, also called PV cells, convert sunlight directly into electricity (voltage), which is called the "PV effect." PV cells are located on panels; rows of solar panels form an array. The PV modules are uniformly dark in color, with a non-reflective/anti-reflective glass coating, and designed to be highly absorptive of all light that strikes their glass surfaces. Arrays are mounted onto single axis solar trackers that rotate throughout the day to increase the solar irradiance received by the solar panels. Each single axis tracker includes framing members to support the solar panels as well as bearings and a single motor with a wireless connection to a control panel responsible for moving the tracker. For the project, thousands of solar trackers would be interconnected to form a utility-scale PV system. The solar panel arrays would be organized into South Array 1, South Array 2, South Array 3, and East Array on the southeast side of I-15, as shown in **Figure 3-2**.

3.6.1.2 Support and Mounting Structures

The single-axis solar tracker would be supported by steel piles (e.g., cylindrical pipes, H-beams, helical ground screws, or similar), which would be driven into the soil using pile/vibratory/rotary driving technique. Driven pier foundations are a "concrete-free" foundation solution that would result in minimal site disturbance. Most pier foundations would be driven to approximate depths of 6 to 12 feet deep depending upon the required embedment depth. The piles would be spaced 10 to 15 feet apart. The array panels would be elevated at least one foot above the design flood elevation and approximately 6 to 12 feet tall, depending on site topography.

3.6.2 Electrical Connection System

The solar facility would be designed to be available to operate at its maximum possible output (based on meteorological conditions) at least 99 percent of the time. The solar facility is expected to have an annual and lifetime capacity factor of 20 to 40 percent.

Power capacity would be sized to ensure full capacity output up to 50 degrees Celsius and down to -20 degrees Celsius to withstand climactic extremes. The solar facility would provide approximately 1,000 gigawatt hours (GWh) of electricity per year. The solar facility would operate for approximately 4,000 hours per year (daylight hours). O&M procedures would be consistent with manufacturers and industry standard practices to maintain the useful life of the plant components.

Solar panels would be electrically connected using string wiring secured to the panel support system. String wiring terminates at PV array combiner boxes or load break disconnect boxes, which are lockable electrical boxes mounted on or near an array's support structure. Output wires from combiner boxes would be routed along an underground trench system approximately three to six feet deep and one to six feet wide, including trench and disturbed area, to the central inverter pads. Inverters are a key component of solar PV power-generating facilities because they convert the solar panel's direct current (DC) power generated by the solar panel into alternating current (AC) power and step up the voltage. The output voltage of the inverters would be stepped up to 600 to 1200 volts DC to 34.5 kV AC power and transmitted by underground collection lines to the project substation.

3.6.3 Project Substation

The 140,000-square-foot high-voltage substation would be located adjacent to East Array and South Array 1 on a raised gravel pad and would have a maximum height of 35 feet (see **Figure 3-2**). The substation would include the main generation step-up transformer, 500 kV switchgear (circuit breakers and switches), metering and instrumentation, protective relays housed in a control enclosure, capacitor banks, grounding grid, microwave communication towers, dead-end structures, and a chain-link fence. The substation equipment would be mounted on concrete foundations and steel structures (hot dip galvanized or weathering steel).

The substation is where all the underground 34.5 kV collection lines running from the arrays are combined and the voltage is then stepped up to 500 kV via the generation step up transformer for use with the transmission network. All interconnection equipment, including the control room, would be installed aboveground on concrete foundations and steel structures within the substation footprint. Transformers would utilize radiators with passive and active fans for airflow to dissipate heat in the substation transformers. A permanently gated, eight-foot-high chain link fence with three-strand barbed wire meeting National Electric Safety Code (NESC) requirements would be constructed around the substation.

Power to the substation control enclosure would be provided primarily by a station service transformer (roughly 50 kilovolt amps [kVA]) located within the substation yard. This transformer would be fed from the medium voltage bus within the substation yard. The control enclosure would be equipped with a backup battery and an energy management system capable of powering the control enclosure for 48 hours in the event of an outage. In the event of a prolonged outage, a secondary station service power connection would be provided via connection to the existing Chaves 12 kV circuit running parallel to the I-15, which is part of the existing Southern California Edison (SCE) Kramer 220/115 kV system. Power from the 12 kV circuit would be provided via an overhead distribution line.

3.6.4 Utility Switchyard

The utility switchyard would be set on an approximately 234,300-square-foot raised gravel pad and would have a maximum height of 100 feet. The switchyard would be located 0.8-mile northwest of I-15, adjacent to the existing LADWP Mead-Adelanto 500 kV transmission line right-of-way (ROW) (see **Figure 3-2**). The switchyard would include the high voltage bus structure, high-voltage circuit breakers, switches, instrumentation transformers, relay equipment, and a control enclosure. The switchyard equipment would be mounted on concrete foundations and steel structures (hot dip galvanized or weathering steel). A permanently gated, eight-foot-high chain link fence with three-strand barbed wire meeting NESC requirements would be constructed around the switchyard.

Power to the switchyard control enclosure would be provided primarily by a station service transformer (roughly 50 kVA) located within the switchyard. To meet reliability standards, there would be two station service transformers, primary and backup. The control enclosure would be equipped with a backup battery and an energy management system capable of powering the control enclosure for 48 hours in the event of an outage. In the event of a prolonged outage, a secondary power source would be provided via an underground connection to the existing Kramer 115 kV sub-transmission line owned by SCE, which runs parallel to I-15.

The foundation of the substation and switchyard would include both concrete pads and concrete piers. Foundation design considerations include the area-specific geotechnical characteristics, ice and wind loading, short circuit forces, and seismic forces, as required by industry best practices, Institute of Electrical and Electronics Engineers standards, and regional requirements. Foundation and structural design would take into consideration all seismic and flood considerations for the project-specific location. The utility switchyard and generation loop in line and associated towers (described in Section 3.6.5, below) would be designed consistent with Federal Energy Regulatory Commission's Good Utility Practice and LADWP standards and specifications.

3.6.5 Generation-Intertie Line

The approximately 200 foot wide, one-mile long 500 kV gen-tie line would run from the project substation, southeast of I-15, to the utility switchyard and then to the point of interconnection with the existing LADWP Mead-Adelanto transmission line (see **Figure 3-2**). The approximately 1-mile 500 kV gen-tie line would be designed in accordance with LADWP design standards, including required ROW width. The gen-tie would also use approximately 11 tubular steel pole support structures and approximately six lattice towers, all of which would be approximately 160 feet high. The final number of towers and pole support structures will be determined during final design, and will conform to LADWP design standards.

Figure 3-3 shows the interconnection between the gen-tie line to the utility switchyard and the two small transmission lines that would connect to the existing Mead-Adelanto Transmission Line (transmission loop in line).

A small segment of the gen-tie line, approximately 450 feet, would cross I-15. There are two options to cross I-15. One crossing segment of the gen-tie line runs underground in a bore. At either end of this underground section, there would be riser towers and transition to overhead tower structures. **Figure 3-4** shows the underground crossing of I-15. Alternatively, the other crossing segment of the gen-tie line may be placed overhead the I-15 rather than underground. **Figure 3-5** shows the overhead crossing of I-15.

Crossing via underground bore, the transmission line would change from overhead to an open cut trench (to be filled in) then through a bore under the freeway and back out through an open cut trench, then transitioning overhead.

The overhead power line would cross I-15, approximately 290-feet north of the existing Opah ditch at post mile marker R126.86. A total of seven transmission poles would be installed, one on the east side of the I-15 freeway and six on the west side of the freeway. Each pole is anticipated to disturb a 50-foot by 50-foot area. (RE 2025gg)

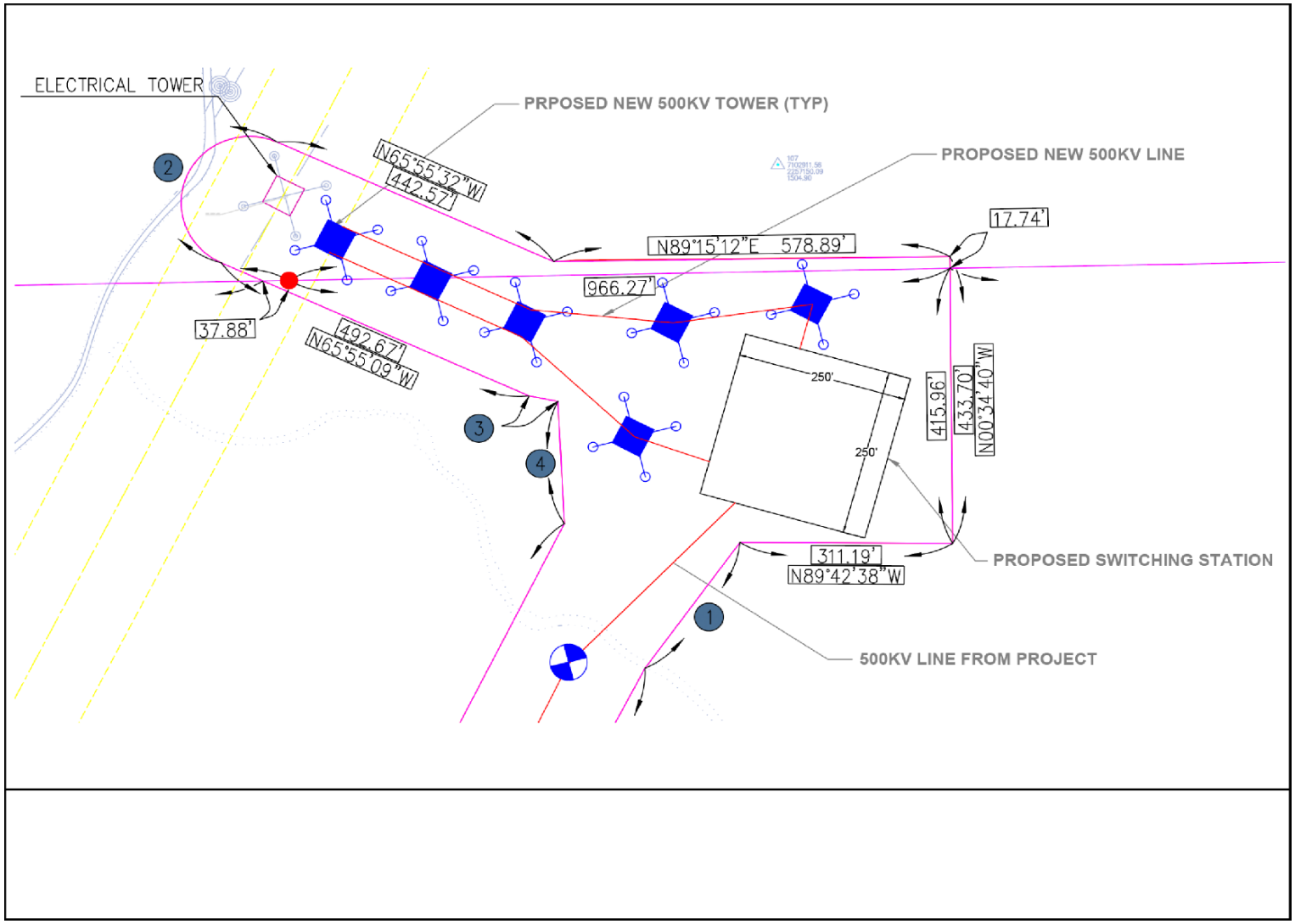
Both the overhead and underground facilities would be designed in accordance to LADWP standards. LADWP's standards align with CPUC General Order (GO) 95 and 128 to ensure safety, reliability, and consistency with statewide practices – which effectively incorporate the same technical rules of GO-95 and GO-128.

3.6.6 Transmission System

The project does not require the construction of any new or additional electrical transmission system components off-site. Existing infrastructure surrounding the site includes two high-voltage electric transmission lines, an electrical distribution line, wireless cellular telephone towers, two fiber-optic cables, and two fuel pipelines. The two high voltage electrical transmission lines to the west of I-15 are a 115-kV subtransmission line owned by SCE and the Mead-Adelanto 500 kV transmission line

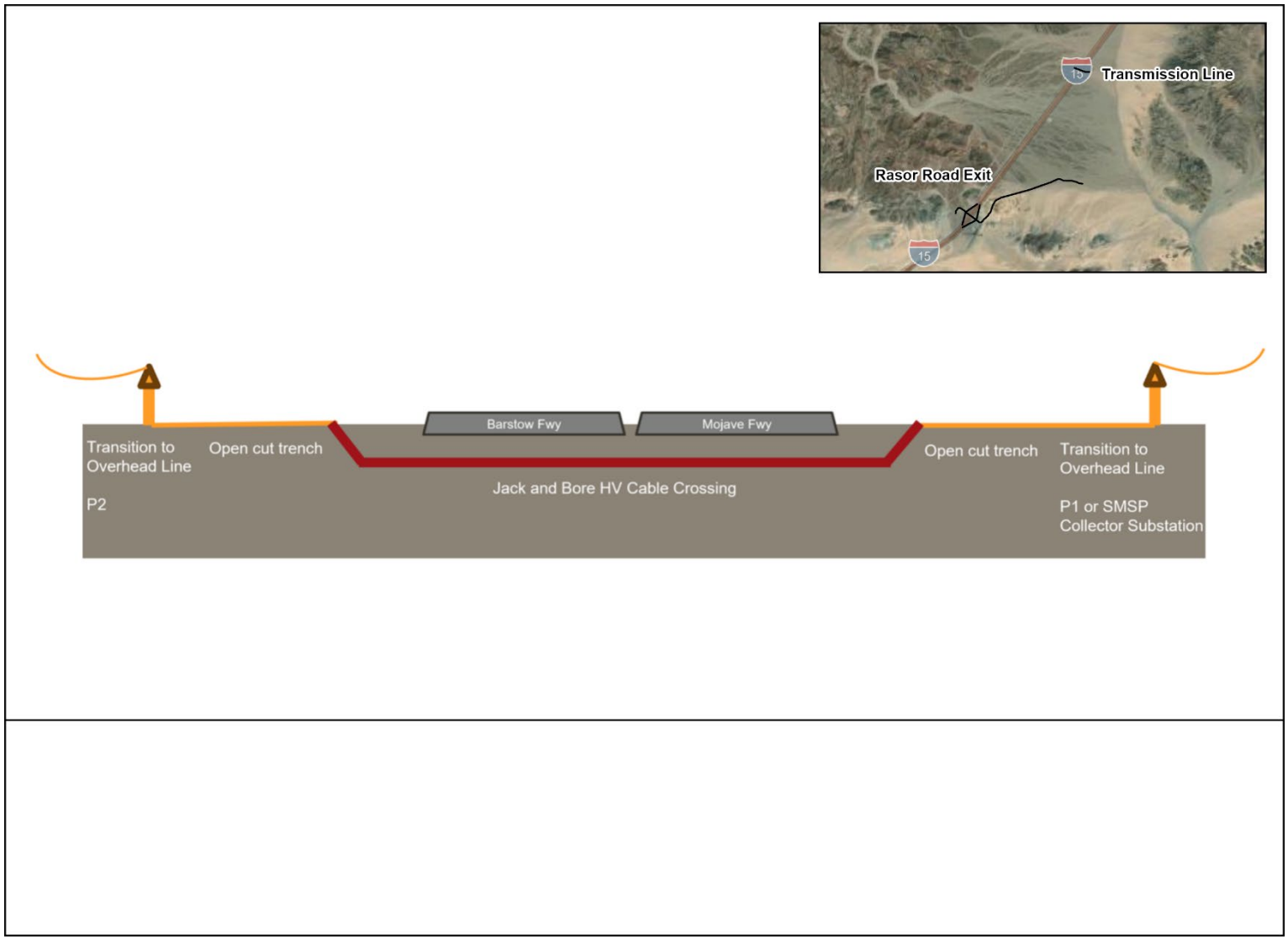
operated by LADWP. The project would interconnect into and bisect the LADWP's 500 kV Marketplace-Adelanto Transmission Line 1, a subsection of the greater Mead-Adelanto 500 kV transmission line, as the primary point of interconnection, which has ample unused capacity therefore eliminating the need for new transmission lines to be constructed off-site.

Figure 3-3 Interconnection Into and Out of Utility Switchyard



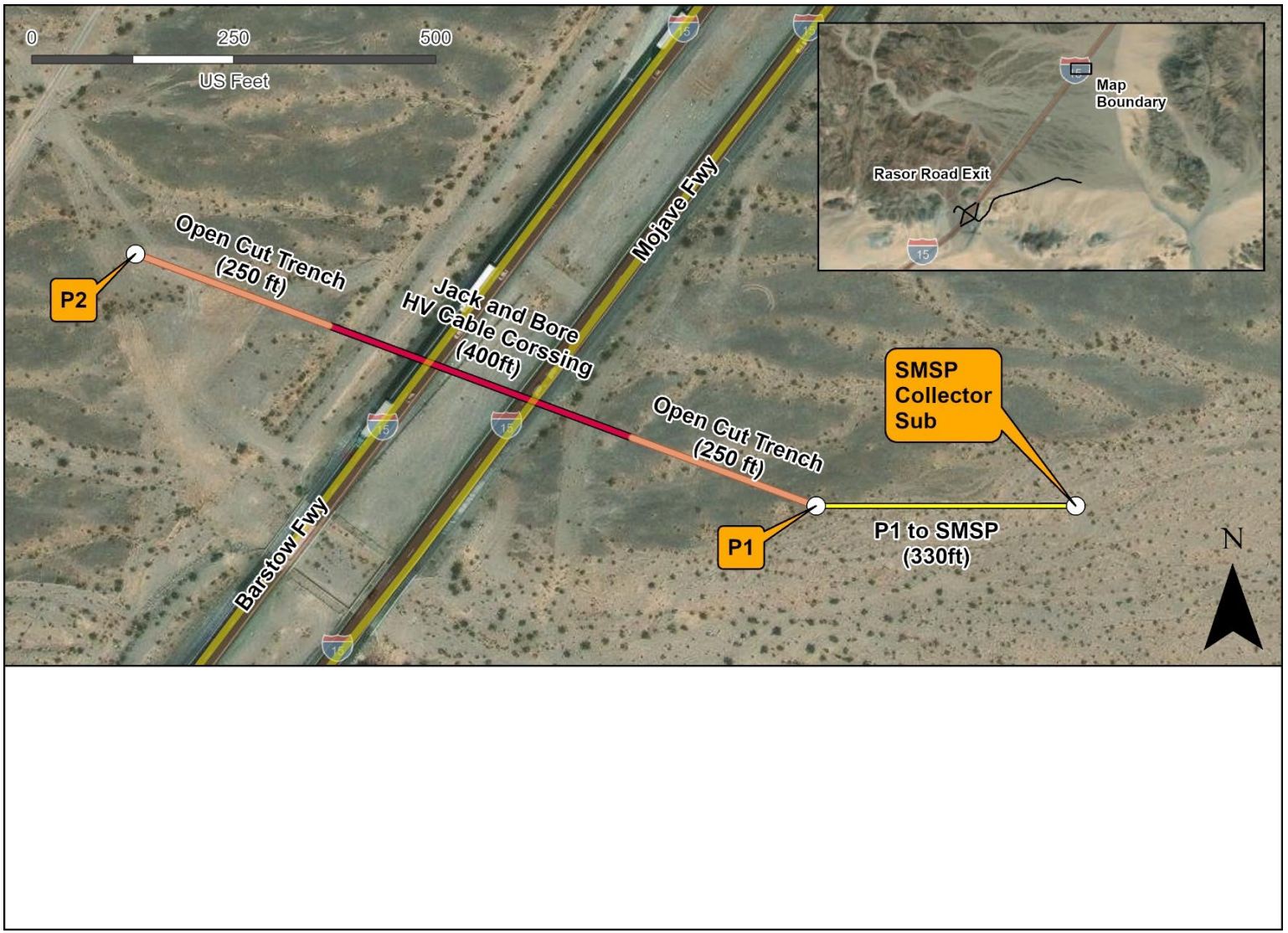
Source: RE 2024uuu

Figure 3-4 Underground Gen-Tie Crossing



Source: RE 2025hh

Figure 3-5 Overhead Gen-Tie Crossing



Source: RE 2025hh

3.6.7 Battery Energy Storage System

The BESS would charge, hold, and discharge energy from the PV facility into the electrical grid. The BESS would not charge from the electrical grid. The BESS is anticipated to include up to 300 MW/1200 MWh of energy for dispatch into the local electrical grid via the same point of interconnection as the solar arrays. The BESS would be located adjacent to the substation and East Array (see **Figure 3-2**). Eighteen acres of the project site would be utilized for the BESS at full buildout.

3.6.7.1 Batteries

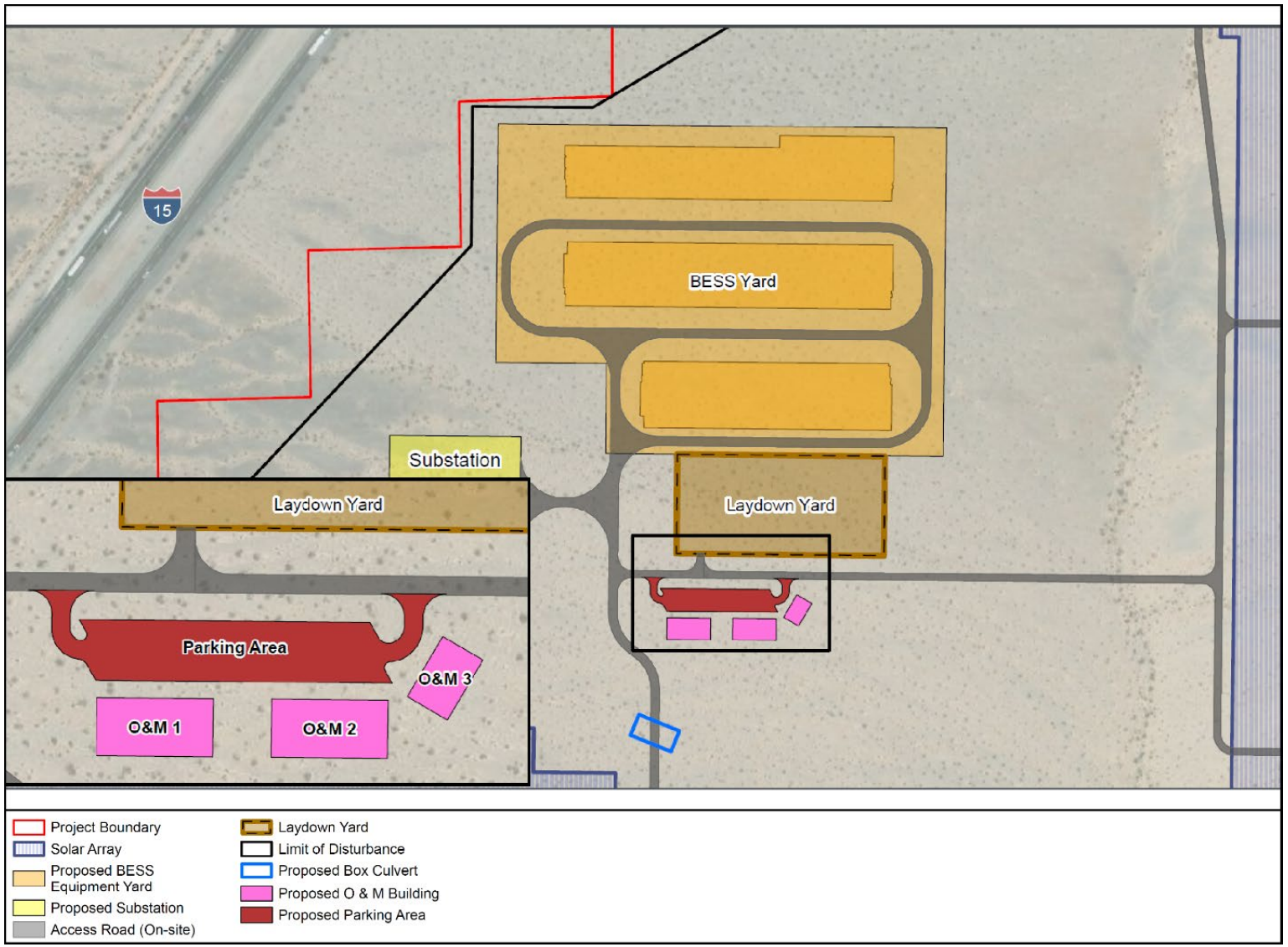
Individual lithium-ion or similar tier 1 technology units would form the core of the BESS and would be assembled in sealed battery modules (RE 2025pp). The battery modules would be installed in self-supporting racks electrically connected either in series or parallel to each other. The operating rack-level DC voltage currently ranges between 700 and 1,500 volts. The individual battery racks would be connected in series or a parallel configuration to deliver the BESS energy and power rating.

3.6.7.2 Battery Energy Storage System Enclosure and Controller

The BESS containers would house the batteries described above, as well as the BESS unit controllers. There would also be a BESS site energy management system controller, or BESS EMS, located in a pad mount enclosure within the BESS yard. The BESS EMS is a multilevel control system for the battery modules, power conversion system, medium-voltage system, and takes commands from the Plant Supervisory Control and Data Acquisition (SCADA) controller which regulates overall plan output. The controllers ensure that the BESS effectively mimics conventional turbine generators when responding to grid emergency conditions. The BESS enclosure would also house required heating, ventilation, and air conditioning (HVAC) and fire protection systems. The battery storage containers would be built using standard International Organization for Standardization shipping containers, and each would measure approximately 20 feet in length, 6 feet in width, and 8 feet in height, although other smaller form-factor structures exist that may be used. See **Figure 3-6** for a schematic of the layout of the substation, BESS, and O&M buildings. Units would be installed with minimum setback distances of 28 feet from roads within the BESS yard. Roads in the BESS yard would be 20’ in width (RE 2025pp).

The configuration of the safety system would be determined based on site-specific environmental factors and associated fire response strategy. The safety system would include a fire detection and suppression control system that would be triggered automatically when the system senses imminent fire danger. All battery packs come with an integrated thermal management system that actively cools and heats the inside components. The coolant would be circulated through the battery by radiators, pumps, and an in-line heater that could warm the coolant as part of the thermal system. The BESS would be equipped with a fire detection system that would include thermal imaging cameras, a hydrogen detection system, and a smoke detection system

Figure 3-6 Layout of Substation, BESS, and O&M



Source: RE 2025llll

In the event of fire detection, an alarm system would be sent to the fire department and the Plant SCADA through a direct dispatch from a direct fiberoptic or copper dry contact connection. Explosion protection would be provided by an internal sparker system and overpressure vents that automatically combust flammable gases released during thermal runaway events and direct pressure upwards and safely from enclosures. The safety system would operate in three phases: Pre-alarm, Stage 1, and Stage 2. If the safety system detects a potential issue, the Pre-alarm phase would be initiated and would shut down the HVAC units and fans to help contain the potential fire. The control system would then wait approximately five minutes to determine if the initiation of Stage 1, which would shut down the HVAC and fans indefinitely, is warranted. If reached, Stage 2 would then result in the fire panel discharging the suppression agent onto the fire. The safety system would either use a waterless evaporating fluid, a sustainable clean agent (not a hydrofluorocarbon clean agent), or an alternative suppression agent, such as an inert gas. (RE 2025pp)

3.6.8 Fire Protection

Fire protection would be provided to limit the risk of personnel injury, property loss, and possible disruption of the electricity generated by the project. Fire protection as it pertains to the project components are discussed below.

Solar Facility

Solar arrays and PV panels are fire-resistant, as they are constructed largely of steel, glass, aluminum, or components housed within steel enclosures. During construction, standard defensible space requirements would be maintained surrounding any welding or digging operations.

O&M Facilities

Fire safety and suppression measures, such as smoke detectors and extinguishers, would be installed and available at O&M facilities, in accordance with current California Fire Code (CFC).

Battery Energy Storage System

The BESS enclosures are outdoors and are not "walk-in" cabinets; therefore, fire suppression is not required by the CFC. The BESS megapacks would be designed according to National Fire Protection Association (NFPA) Section 855. A hazard mitigation analysis developed by the BESS manufacturer would be provided to the local authorities and would be designed to comply with California Fire Codes 1207.1.4.1 and 1207.1.4.2. The BESS yard would have thermal detection cameras installed externally on battery containers and would be strategically placed in optimal locations to detect fires. These cameras would be remotely monitored 24 hours a day. There would be up to three emergency 10,000-gallon water tanks for the project, based on final layout.

The BESS equipment selected for the project would be tested pursuant to UL 9540A standards, and the project would be designed and built pursuant to UL and NFPA standards.

The BESS equipment would be designed to minimize the risk of an over-pressure event and deflagration through the use of over-pressure vents and a sparker system. These safety features would be tested pursuant to UL 9540A standards to demonstrate their effectiveness in preventing deflagration in a large-scale fire.

3.6.9 Operation and Maintenance Area Facilities

3.6.9.1 Buildings

Figure 3-6 shows where the buildings are proposed, including the BESS and project substation. Three buildings related to operations, maintenance, and materials/equipment storage would be constructed as part of the project. One building would be 2,400 square feet, and the other two buildings would each be 4,950 square feet in area. All buildings would be painted BLM color scheme Sudan Brown. These buildings would be in the northwest portion of the site next to the BESS facilities. All of these facilities would be monitored by on-site O&M personnel and/or remotely.

The project would power the O&M buildings via a 480-V circuit from the BESS auxiliary power distribution system. This circuit would be fed from the collector substation (project substation) and transformed to 480 volts via an auxiliary transformer mounted at the BESS yard. Power would be distributed via 480-V switchgear at the BESS yard. Power distribution would be via underground cables. Backup power to the O&M facilities would be via a local microgrid. This microgrid would consist of solar PV panels mounted to the roof of the O&M buildings, a backup battery providing 24 hours of standby power, and an automatic transfer switch.

3.6.9.2 Parking Areas

A 13,200-square-foot parking area would be located adjacent to the buildings described above, in the southwest corner of the site. They would be composed of compacted soil covered with filter fabric and 4 to 12 inches of compacted Class II aggregate base. The parking areas are not expected to exceed approximately 0.33 acre, or 13,200 square feet. Parking would be provided for the anticipated employees during project operation, for visitors, and for other equipment anticipated to be on-site at any time.

3.6.10 Access Roads

Primary operational access to the project site would be provided via the existing Rasor Road, that runs from I-15 eastward to the Rasor OHV recreation area. The portion of Rasor Road on BLM land would serve as the entrance and primary access road within the site and is approximately 0.4-mile in length. The project would improve, maintain and slightly re-route in places this portion of Rasor Road, extending the width up to 26 feet wide and making minor improvements within both Caltrans and San Bernardino

County ROW to improve the road conditions so that heavy trucks can utilize the route. See **Figure 3-7** for the existing versus modified Rasor Road alignment.

Rasor Road would be permanently open to the public during both project construction and operation to allow public access to the Rasor OHV recreation area. Rasor Road would continue to serve as the main access point for the public into the Rasor OHV recreation area by traveling through the portion of Rasor Road on the project site that would be improved, maintained and aligned to avoid solar panels throughout the project site.

Rasor Road would be located between South Array 3 and East Array and would continue to allow public access to the Rasor OHV recreation area. The solar arrays would be fenced and gated to ensure no public access to the project facilities.

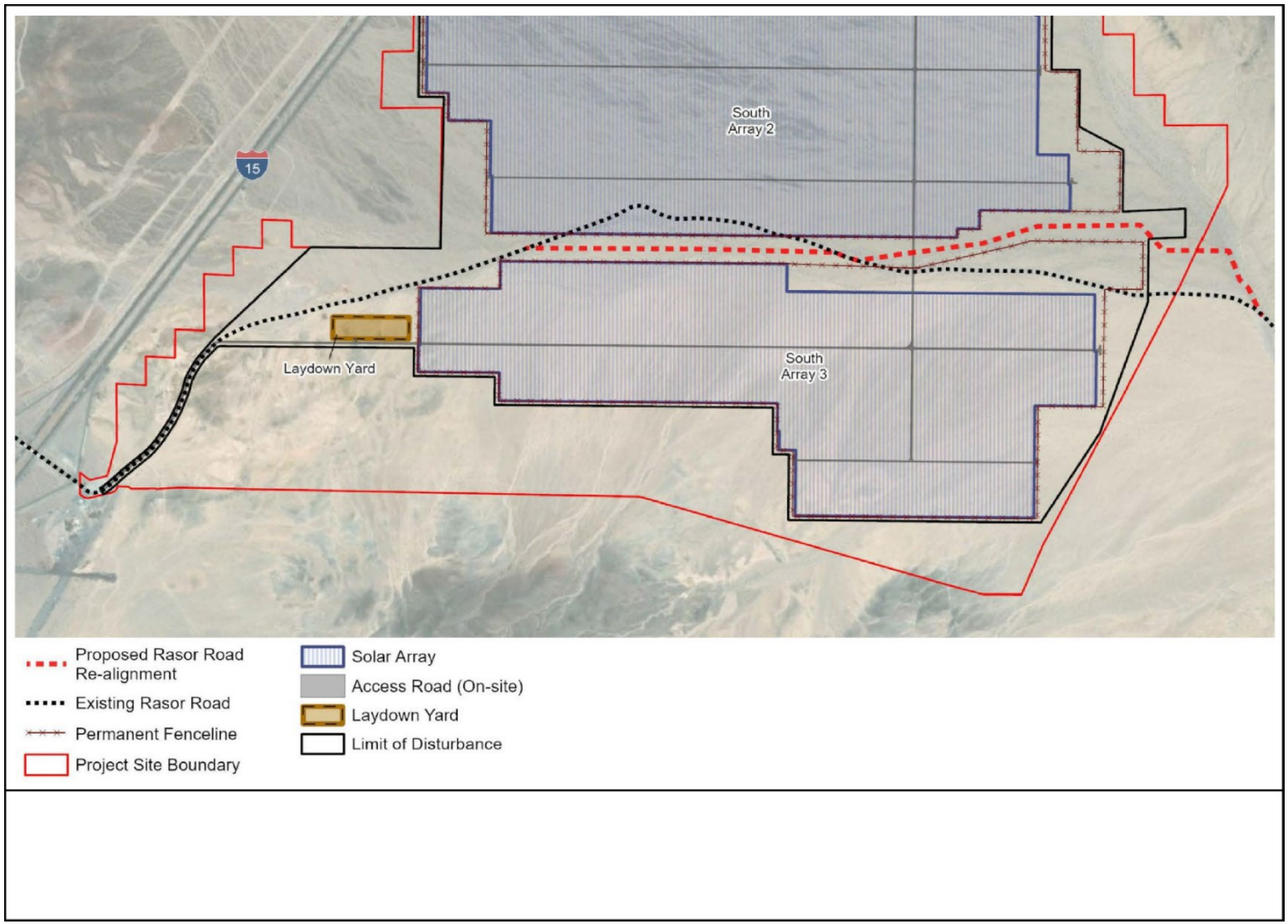
Currently, Arrowhead Trail splits off of Rasor Road and runs north-south. During project construction and operation, Arrowhead Trail would be closed permanently. The project would construct internal access road(s) which lead to the project substation and BESS yard and between the solar arrays. These internal access roads would be up to 26 feet wide and include a 50-foot turning radius at the project boundary.

All new on-site access roads would consist of compacted native material and would be graded as necessary but would generally follow the existing terrain covered with filter fabric and 4 to 12 inches of compacted Class II aggregate or amended with Class II aggregate only where native soils are not suitable for heavy traffic. Larger boulders that could impede vehicle access would be removed. These permanent access roads would be compacted to meet load requirements for vehicle traffic over the life of the project.

As an alternative to the travel route via Zzyzx Road for construction of the utility switchyard and gen-tie, the project may construct and use a new temporary exit off the southbound side of I-15 near the gen-tie corridor roughly 440-feet east of existing Opah ditch located at post mile marker R126.86 (see **Figure 3-8**). (RE 2025gg)

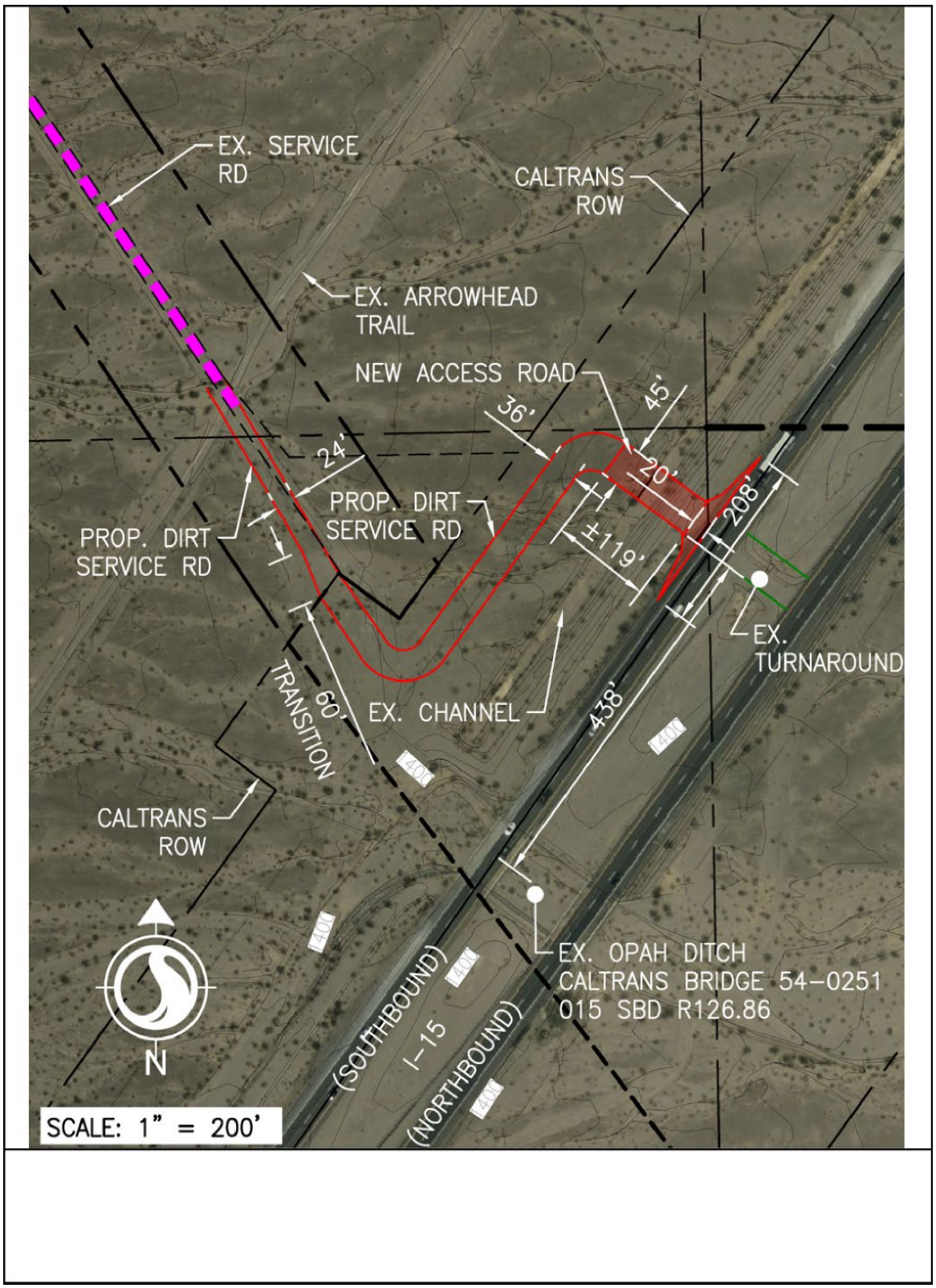
Operation access to the gen-tie line would be via the Zzyzx route. No improvements are proposed for these roadways during project construction or operation. Operation access by LADWP to the utility switchyard and transmission loop in lines would be via an existing LADWP access roadway that travels from the Zzyzx exit to the new switchyard area (see **Figure 3-2**).

Figure 3-7 Existing and Proposed Rasor Road Alignment



Source: RE 2025mmmm

Figure 3-8 Proposed Temporary Exit of Southbound I-15



Source: RE 2025gg

This access roadway is used currently by LADWP for any operations and maintenance needs along the Marketplace-Adelanto 500kV transmission line.

During operation, no construction or oversized vehicles would need access as the utility switchyard and gen-tie would be remotely operated. If access is needed, employees would use normal vehicles. (CEC 2025t)

3.6.11 Site Security and Fencing

All project components would be surrounded by warning signage, 8-foot-high chain-link perimeter security fencing, desert tortoise exclusionary fencing, and perimeter security cameras. Combined security and desert tortoise fencing would be installed surrounding each individual array field and extend to include the substation and BESS area. A permanently gated, eight-foot-high chain link fence with three-strand barbed wire meeting NESC requirements would be constructed around the substation and the switchyard. The line posts and terminal posts of the fence would be buried up to 3.5 feet deep, and the distance between posts would be approximately ten feet. All permanent tortoise exclusionary fencing would be constructed in accordance with Chapter 8, Desert Tortoise Exclusion Fence, of the USFWS's 2009 Desert Tortoise Field Manual.

3.6.12 Lighting

During construction, lighting would be strategically located for safety and security in the construction trailer staging area, parking area, and around site security facilities. Lighting would be located on temporary service poles. Power for the lights would come from the proposed distribution line or construction office trailer generator. Lighting is not planned for construction activities; however, if required, it would be limited to the locations and amounts needed to ensure safety. Lighting would be focused downward, shielded, and directed toward the interior of the site to minimize light exposure to areas outside the construction area.

During O&M, lighting would be provided at the Rasor Road site entrance, O&M buildings, substation, and utility switchyard. Some portable lighting also could be required for essential nighttime maintenance activities or troubleshooting in the event of an outage event. All lighting would be kept to the minimum required for safety and security; sensors, motion detectors, and switches would be used to keep lighting turned off when not required. All lights would be hooded and directed to minimize backscatter and off-site light. All lighting would be compliant with San Bernardino County Dark Skies Ordinance.

During site closure, safety and security lighting would be provided using a combination of the installed lighting system and portable lighting, if required. As with the other project phases, lighting would be focused downward, shielded, and directed so as to minimize light exposure to areas outside the work area.

3.6.13 Landscaping

The project would plant a variety of native and drought tolerant trees and shrubs along the western boundary of the project site. There would be approximately 30 acres of landscaped areas on-site, including up to five acres of irrigated landscaped areas. Irrigation would occur as needed.

The applicant would maintain existing native vegetation to the extent possible. However, project construction may require that existing desert scrub vegetation be removed from portions of the project area. Additional acreage would be cleared of vegetation to allow for installation of buildings, substation, access roads, fencing, and collector lines. Surface treatments, such as grading, disking, or mowing, could create potential habitat for non-native or invasive species that infiltrate the area. The applicant has prepared Pesticide Use Proposals (PUPs) and an Integrated Weed Management Plan (IWMP) to minimize impacts from pesticides and invasive weeds.

3.6.14 Drainage and Erosion Control

Grading of up to 2,059 acres and other types of ground treatment would be conducted outside of existing major drainage channels. Once construction is complete, the topography beneath the solar panels would be the same as the baseline condition except in areas where soil has been compacted or rocks and isolated surface undulations have been removed by grading. Native vegetation would be allowed to reestablish naturally and would be trimmed during operation as necessary.

Security fencing would not be used in the major drainage channels in between the array fields to minimize impacts to wildlife corridors and stormwater flow. If needed along larger drainages, breakaway fencing would consist of a driven post with detachable connections just above ground level, which allow the fencing to yield to the force of a storm event without damage to the embedded portion of the post. Following such an event, the fence would be reattached to the post. The entrance to each access road along the perimeter would include a security gate.

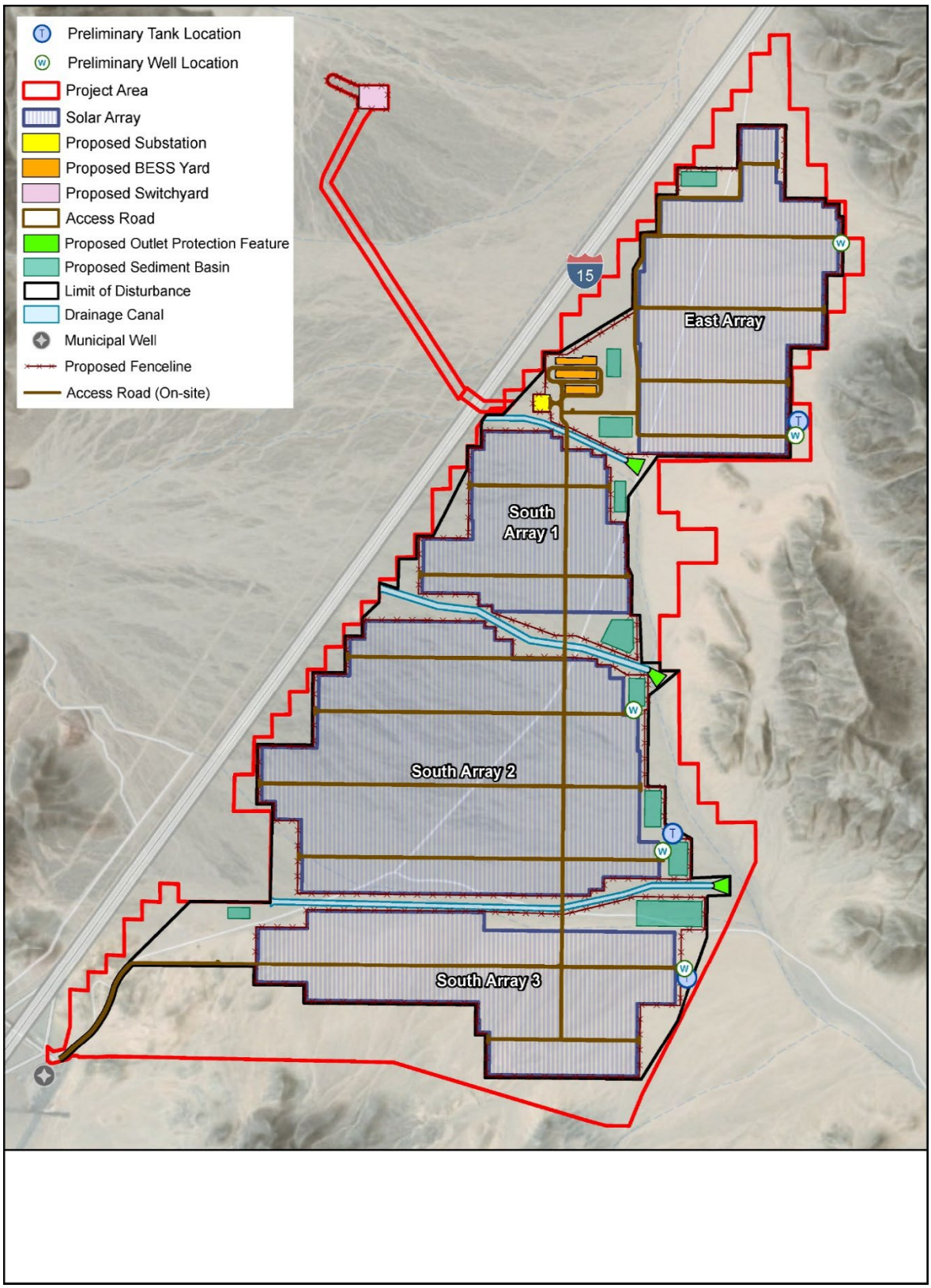
The design of the array fields would avoid placing solar panels within the stormwater flow corridors downstream of the existing culverts under I-15 so that flows from the culverts would continue to follow existing braided flow channels.

The drainage plan described in the application originally proposed included three drainage channels to be constructed between the array fields with each channel approximately three feet below grade and varying in width and length. Also, proposed were approximately ten temporary sediment basins of varying sizes and depths to be constructed adjacent to the drainage channels and throughout the site and removed at the conclusion of construction (see **Figure 3-9**).

During the preparation of this Staff Assessment, the applicant submitted a revised drainage plan that would remove the berms, drainage channels and box culverts and

temporary sediment basins that had previously been proposed (RE 2025jjjj). The low water crossings originally proposed to accommodate the access roads crossing shallow seasonal drainages would remain. Grading during construction would be minimized and offsite stormwater would be allowed to flow through the solar array areas in accordance with a Final Fluvial Geomorphic Stormwater Design Plan (FGSDP) prepared by the applicant. The FGSDP would incorporate fluvial geomorphic design principles to both preserve and create stable, self-sustaining stream channels and floodplains that maintain and/or mimic natural hydrologic and sediment transport processes. Stormwater originating from northwest of I-15, would flow through three arroyos between the solar array areas, although these ephemeral streams would not be modified. Riprap consisting of small diameter rock (e.g., 3-inch), would be used to stabilize at-grade crossings of the three arroyos. Compacted elevation pads anticipated for the BESS yards, project substation and utility switchyard would be protected by small rock-lined swales adjacent to the pads to capture and infiltrate increased runoff. Where needed, and as determined during the final design of the project, some solar panel pilings would be installed deeper to counter any potential localized scour. If needed, small rock may be used to prevent the localized scour. A scour analysis utilizing the results of a 2D hydraulic model would determine whether small rock would be needed at the solar panel pilings.

Figure 3-9 Proposed Stormwater Infrastructure



Source: RE 2025eeee

3.7 Activities

The following sections provide details about the timeline and process for construction of the project. Once construction is complete, the project would operate for approximately 40 years. Construction would begin in the second quarter of 2026, and initial operation would begin in the fourth quarter of 2027. Full-scale commercial operation is anticipated to begin by the second quarter of 2028.

3.7.1 Construction Schedule and Workforce

Construction of the project is anticipated to begin in the second quarter of 2026 and occur over an approximately 18-month period and consist of overlapping construction stages:

- Stage 1 would include mobilization, site preparation as required, grading as required, fencing, preparation of roads and laydown areas, and installation of measures in the Stormwater Pollution Prevention Plan (SWPPP), as well as erosion control features.
- Stage 2 would include installation of solar array structural components, including piles, racking systems, and foundations.
- Stage 3 would include installation and makeup of electrical equipment including trenching to install cables and installation of the solar and BESS inverters, solar panels, BESS, gen-tie, switchyard and ancillary equipment, and would also include trenching activities to install cables and other electrical equipment.
- Stage 4 would include inspections, testing, and commissioning.

The approximate duration of the stages is as follows:

- Stage 1 would be from months 1 to 8,
- Stage 2 would be from months 4 to 12,
- Stage 3 would occur during months 10 to 16, and
- Stage 4 would occur during months 15 to 18.

An average of 200 construction workers would operate daily on-site, with an anticipated 300 construction workers during peak construction activities.

The applicant proposes the work schedule to be from 6:00 a.m. to 6:00 p.m., Monday through Friday. However, to meet schedule demands or to reduce impacts, it may be necessary to work early mornings, evenings, or on weekends during certain construction phases. The work schedule may be modified throughout the year to account for changing weather conditions (e.g., starting the workday earlier in the summer months to avoid work during the hottest part of the day for health and safety reasons). If construction work takes place outside these typical hours, activities would comply with San Bernardino County standards for construction noise levels. For safety reasons, certain construction tasks, including final electrical terminations, must be

performed after dark when no energy is being produced. The project would use restricted nighttime task lighting during construction. Lighting would include only what is needed to provide a safe workplace, and lights would be focused downward, shielded, and directed toward the interior of the site to minimize light exposure outside the construction area.

3.7.2 Preconstruction Activities - Stage 1

Prior to construction, all contractors, subcontractors, and other on-site personnel would receive Worker Environmental Awareness Program (WEAP) training regarding the appropriate work practices.

Qualified biologists would conduct preconstruction surveys for sensitive species. Sensitive resource areas would be flagged so they would be avoided or appropriately managed during construction. Preconstruction field survey work would include identifying precise locations of the project site boundary and desert tortoise and site preparation security fencing. Construction staging areas would be established for storing materials, construction equipment, and vehicles. These features would be subsequently staked in the field. No paint or permanent discoloring agents would be applied to rocks or vegetation to indicate survey or construction limits. All off-road construction vehicle travel, fence installation, and staging area establishment would be surveyed and/or monitored by qualified biologists, archaeologists, and tribal monitors, as appropriate. The preconstruction field surveys would be conducted during daylight hours, and vary in length and timing, depending on the species found on-site. The proposed WEAP training would be required before a worker would be allowed to work on the site. These trainings would also occur on a continuous basis during construction. Onsite water wells would be drilled during Stage 1.

3.7.3 Site Preparation - Stage 1

Approximately 2,059 acres throughout the site would be disturbed. Grubbing and grading would be required at roads, laydown areas, BESS yard, substation yard, and switchyard to level rough or undulating areas, including around roads and laydown areas, as well as the BESS yard, substation yard, and utility switchyard. Grubbing and grading would also be required to prepare soils for concrete foundations for substation equipment, inverters, energy storage systems, and the operations and maintenance buildings. Grubbing would involve the removal of vegetation from the construction site, while grading would include earthwork to achieve a certain base or slope. Mowing, minimal grubbing, and grading may also be required in the array areas to prepare the site to receive pile foundations. There would be approximately 630,000 cubic yards of cut and 180,100 cubic yards of fill, thus requiring approximately 449,900 cubic yards of cut on-site. The 449,900 cubic yards of net cut would be distributed throughout the project disturbed area.

Per Mojave Desert Air Quality Management District Rule 403, as part of project construction, the applicant would develop a Dust Control Plan that describes all

applicable dust control measures to address construction-related dust. Further, a SWPPP or SWPPP-equivalent document required by the Lahontan Regional Water Quality Control Board (RWQCB) would be prepared by a qualified engineer or erosion control specialist and would be implemented before construction. The SWPPP would be designed to reduce potential impacts related to erosion and surface water quality during construction activities and throughout the life of the project. It would include project information and best management practices (BMPs). The BMPs would include dewatering procedures, stormwater runoff quality control measures, concrete waste management, stormwater detention, watering for dust control, and construction of perimeter silt fences, as needed.

3.7.4 Solar Array Assembly and Construction - Phase 2

Construction of the solar arrays would begin with the installation of array support posts, which would be driven into the soil using a pile/vibratory/rotary driving technique to a depth of approximately 6 to 12 feet. Single-axis solar tracking structures would be fastened to the support piles. Once the support structures are in place, solar panels would be attached to the support frame. The assembled groups of solar panels would be wired together into strings through connectors on the back of the modules. Assembled panel sections would then be connected to combiner boxes located throughout the arrays that would deliver power to the inverter. Output wires from combiner boxes would be routed along an underground trench system approximately three to six feet deep and one to six feet wide, to the central inverter skid. Central inverters would be mounted on concrete pads or driven piles. Central inverters would be brought in by tractor-trailers through the Rasor Road site entrance and delivered directly to the mounting pad sites where they would be placed by mobile crane.

3.7.5 Project Substation, Utility Switchyard, and Generation-Intertie Line Construction - Phase 3

Construction of the project substation, utility switchyard, gen-tie and interconnection to the existing Mead-Adelanto 500 kV transmission line would occur concurrently with the construction of the solar arrays. To construct the 500 kV transmission line connection from the project switchyard to the Mead-Adelanto line, approximately, one tower would be removed from the existing line, and multiple new tower structures would be constructed adjacent to the removed tower. The new towers would carry the 500 kV transmission line into and out of the new switchyard. The sequence of construction would be to install the new towers and equipment, string the new line, then request and outage to cut in the new line to the Mead-Adelanto line.

The project gen-tie line from the new utility switchyard to the project substation would be installed using concrete caisson foundations or driven poles. Upon installation of all poles, the line insulators and switches would be installed. Upon installation of all line equipment, the conductors would be strung along the poles.

The substation and switchyard would be graded and compacted to an approximately level grade and raised above the adjacent grade to prevent flooding. Upon completion of the raised pad, concrete foundations and underground cabling, and a grounding grid would be installed including a grounding grid as required by the project design and applicable standards. Upon completion of the underground work, steel structures would be installed to mount equipment. Upon completion of the structures, substation equipment would be installed including transformers, switches, breakers, and control enclosures. Upon completion of equipment installation wiring and terminations at all equipment will be performed. Upon completion of all wiring, testing of equipment would be performed.

The approximately one-mile 500-kV gen-tie line would be designed in accordance with Federal Energy Regulatory Commission's Good Utility Practice and LADWP standards and specifications including required ROW width. The gen-tie would also use approximately eleven tubular steel pole support structures and approximately six lattice towers, all of which would be approximately 160 feet high. More or less towers may be required to be constructed in compliance with LADWP design standards, during final engineering. A small segment of the gen-tie line, approximately 450 feet, would cross I-15. The gen-tie line would cross I-15 either overhead or in an underground bore, where on either end of this underground section there would be riser towers and transition to overhead tower structures, or alternatively, the gen-tie may cross I-15 overhead, rather than underground.

The underground crossing would be by a jack- and bore-installed tunnel with cables installed in ducts. The cables would be terminated at transition stations connecting to the overhead line at the respective ends. A hydraulic jacking system would drive a steel casing pipe through the soil from a launch pit to a receiving pit, guided by precise alignment techniques to maintain the required trajectory and grade. The process would begin with the excavation of pits on either side of the highway, followed by the installation of the steel casing, which would be advanced incrementally while simultaneously removing soil via an auger within the pipe.

A section of open trenching would carry the high voltage cables that would extend under the freeway. Open trenching would involve excavation using machinery such as backhoes or trenchers, depending on soil conditions and project scale. Typical corridor widths would range from three to six feet at the bottom to allow sufficient space for equipment access and safe working conditions, while trench depths would be generally between four and six feet to ensure adequate cable burial and protection from surface activities. The cables would typically laid be within protective conduits, such as PVC or HDPE pipes, to shield them from mechanical damage and environmental factors. For enhanced mechanical protection, especially in areas with heavy traffic or unstable soil, a concrete envelope may be cast around the conduits to provide additional structural integrity. Backfilling would be performed with native soil if it meets stability and compaction requirements; however, in cases where thermal performance is critical to prevent cable overheating, thermally stable materials like sand or specialized backfill

mixes are used to ensure efficient heat dissipation and long-term reliability of the cable system. (RE 2025hh)

3.7.6 Electrical Construction Activities - Phase 3

Buried electrical lines for DC array wiring and AC wiring between inverters and transformers would then be installed using trenching machines. The trenches would be approximately three to six feet deep and one to six feet wide. The trenched areas would be backfilled and compacted after the cables are laid into place. It is anticipated that the solar panels would require one washing during the construction phase prior to energizing and performance testing of the arrays to remove the dust that has accumulated on the panels during construction.

The medium-voltage collection cables would be trenched at depths up to four to eight feet using a trenching machine. The trenches would be approximately 12 to 36 inches wide. Multiple trenches may be placed adjacent to each other, depending on the number of collector circuits in a particular location. The cables would be placed within the trenches in layers (as necessary) followed by backfill and compaction operation. Alternatively, a single pass trenching and cable installation machine could be used to automate the cable placement and backfill process. The main trenching operations would be for installation of DC cables from the combiner boxes to the inverter skids and installation of AC collector circuits between inverter skids and the substation. The collector cable would be installed by circuit in conduits, with each circuit contained in a single six-inch-diameter conduit (typical) spaced approximately ten feet on center. The exact locations would be determined during detailed design.

3.7.7 Construction Equipment and Materials

Standard construction equipment would be used during construction, including earth-moving equipment (e.g., bulldozers, excavators, backhoes) and road-building equipment (e.g., compactors, scrapers, graders). Construction equipment would include air compressors, all-terrain passenger vehicles, backhoes, cranes, a drill rig, tractor-trailers, flat-bed trucks, telehandlers, pick-up trucks, pile drivers, trenchers, portable generators, and water trucks. Construction equipment and maintenance trucks would be maintained at all times to minimize leaks of motor oils, hydraulic fluids, and fuels. No extremely hazardous materials are currently anticipated to be produced, used, stored, or disposed of as a result of the project.

Most of the fuel required by construction and operation staff vehicles and engines would be procured at commercial gas stations in the local area, such as at the service station at Rasor Road or in Baker. A limited amount of #2 diesel and gasoline petroleum fuels (approximately 500 gallons each) would be stored in the staging areas in above-grade steel tanks with secondary containment.

Concrete would be required for building or structure footings and foundations and pads for inverters, transformers, water tank footings, and substation equipment. In areas

where driven support posts are not practical for the solar arrays, pre-drilling and installation of posts with sand slurry may be used.

3.7.8 Construction Vehicle Access and Traffic

A Construction Traffic Control Management Plan has been prepared for the project. All construction materials would be delivered by truck. Most truck traffic would occur on designated truck routes and major streets. Construction traffic would include periodic truck deliveries of materials and supplies, equipment, recyclables, trash, and other truck shipments, as well as construction worker commuting vehicles. Most construction equipment and vehicles would be brought to the site at the beginning of each construction phase during construction mobilization and remain on-site throughout the duration of the construction phase for which they were needed. Generally, the equipment and vehicles would not be driven on public roads while in use for the project. Equipment will be brought to the project site on trailers with permitted load as required by Caltrans.

The project is anticipated to generate a maximum of 600 daily vehicle trips from construction workers, 200 daily vehicle trips from heavy duty trucks and 34 daily vehicle trips from water trucks. The project would use a just-in-time delivery system with supplies and components delivered on a schedule to minimize on-site storage needs.

3.7.9 Construction Water Supply and Use

Project construction would take place over approximately 18 months. Water would be needed primarily for dust control and soil compaction during the first 90 days of grading activities, with small amounts used for sanitary and other purposes. The water for the project would be supplied from up to five newly constructed onsite groundwater wells from the Soda Mountain Subbasin of the Soda Lake Valley Groundwater Basin or, alternatively or in addition, from an existing private offsite groundwater well. If the offsite source is used, this water would be trucked in from this well and stored in three permanent water storage tanks to support project operations. The existing offsite Silver Lake Valley Groundwater Basin supply well (WCR No. 2020-016662) that would be utilized is located at 58502 Death Valley Road, Baker, California 92309, approximately 11 miles northeast of the project site. (RE 2025ddd, p. 8)

During Stage 1 and Stage 2 of construction, which includes the 90-day grading period, the project would require approximately 200,000 gallons per day (gpd), or approximately 336 acre-feet per year (af/yr). Water requirements in the second year of construction are expected to be less than 110 af/yr, or half of the requirement of the first year of construction.

Five temporary water tanks of 100,000 gallons would be brought on-site by truck to store water in anticipation of construction water needs. The tanks would be housed on trailers located along access roads or within areas that have been cleared for installation of project components. The tanks may be moved around the site as

construction progresses and would be used to fill on-site water trucks. The temporary water storage tanks would be removed after construction.

3.7.10 Construction Solid Waste and Hazardous Materials Management

Construction would generate solid waste. A full-time crew would be responsible for maintaining site cleanliness during construction, including collecting trash at the temporary construction facility and the various work fronts. All trash would be placed in containers with secure lids. All hazardous and non-hazardous waste would be stored in appropriate containers for off-site disposal. All waste generated during construction would be stored in wind-proof and wildlife-proof containers that periodically would be transported to an off-site disposal facility authorized to accept the waste. During construction, portable sanitary facilities would be located in the project area and maintained by a local contractor.

Hazardous materials that may be used and stored during construction and/or operations and maintenance could include gasoline and diesel fuel, paints, thinners, solvents, sealants, lubricants, hydraulic fluids, herbicides. Facility transformers would contain non-polychlorinated biphenyl (PCB)-rated dielectric fluid. Due to the non-hazardous nature of these transformer fluids, secondary containment is not required. Facility breakers may contain sulfur hexafluoride (SF6) gas insulating fluid depending on final design but would comply with California Air Resources Board regulations. The Waste Management Plan outlines the nonhazardous and hazardous waste streams associated with construction and operation of the project. The Waste Management Plan also identifies the waste disposal sites that may be feasibly used for disposal, including name, location, classification, daily and annual permitted capacity, daily or annual amounts of waste currently being accepted, estimated closure dates and remaining capacity and a description of any enforcement action taken by local or state agencies due to waste disposal activities.

Hazardous materials would be stored within secondary containment to control any potential leaks of oils, grease, fuels, and other hazardous materials stored at the project site. . If quantities exceed regulatory thresholds (1,320 gallons), a spill prevention control and countermeasure plan would be developed prior to project construction in accordance with applicable regulations and would include a facility diagram that would identify the location and contents of hazardous materials containers; potential equipment failures; containment and diversionary structures; facility drainage; personnel, training, and spill prevention procedures; and emergency contact information. Diversionary structures meeting the requirements of the spill prevention control and countermeasure plan would be provided for oil-containing equipment, including transformers, at the project site. Transformers would be inspected on a regular basis to detect and respond to any leakage.

All use, storage, transport, and disposal of hazardous materials associated with the project would be done in strict accordance with federal, state, and local regulations and guidelines. Employees would be trained in the appropriate protocol for notification and cleanup of hazardous materials. Additionally, the site would be supplied with adequate spill containment kits and personal protective equipment in case of a release. Construction equipment and maintenance trucks would be maintained at all times to minimize leaks of motor oils, hydraulic fluids, and fuels. No extremely hazardous materials would be produced, used, stored, or disposed of as a result of the project.

Most of the fuel required by construction and operation staff vehicles and engines would be procured at commercial gas stations in the local area, such as at the service station at Rasor Road or in Baker. A limited amount of #2 diesel and gasoline petroleum fuels (approximately 500 gallons each) may be stored in the staging areas in above grade steel tanks with secondary containment. In addition, every transformer in the substation would have concrete oil containment. In the case that a leak occurs, or a transformer fails, oil containment would be made to capture and store oil from transformers. The purpose of containment would be to keep transformer oil out of the ground. Material Safety Data Sheets for the hazardous materials that are expected to be used and/or stored on-site would be retained at the on-site office.

3.8 Operation and Maintenance

The project would begin operation in 2027 and operate 7 days a week, 365 days a year, with an approximately 40-year anticipated lifespan. Operational needs at the site include monitoring and optimizing the power generated by the solar arrays and interconnection with the transmission lines, operating the SCADA system, troubleshooting the collector lines and repairing damaged cables, connections, or equipment, performing preventative maintenance per manufacturer recommendations, and conducting panel-washing activities periodically through the year. Additional maintenance would be required to maintain the administrative buildings, fencing and signage, roadways, and other ancillary facilities at the site. The project would hire local workforce as available to perform operations and maintenance.

The applicant would operate and maintain all of the project components, except for the new utility switchyard and two segments of transmission loop in line with six supporting towers, which would be operated and maintained by LADWP. (RE 2025kkk)

3.8.1 Operation and Maintenance Workforce

The project substation would be uncrewed during operation; however, a workforce of approximately two to four personnel would visit the substation on an as needed basis for maintenance, equipment operation, and/or security. The project would be remotely controlled, eliminating the need for permanent on-site employees. Final staffing levels and configuration would be based on the final site configuration and early operating and maintenance experience. The facility would not be accessible to the public, and access would be infrequent and limited to authorized personnel.

3.8.2 Automated Facility Control and Monitoring System

The project would be operated and monitored by means of a SCADA system located in the control building. Sensors located at each inverter, BESS, project weather station, project switches, and breakers would report operational parameters. Data access and the project PV and BESS systems would be controlled, either on-site or remotely, through a high-security system. The non-conductive fiber-optic communications cable would be co-located with the low-voltage DC and AC wiring. Personnel communication would use two-way radio/receptor stations, which would require a Federal Communications Commission license.

3.8.3 Operational Water Supply and Use

Project operation would require water for potable use, dust control, panel washing, and fire protection. The water for the project would be supplied from up to five newly constructed onsite groundwater wells or, alternatively or in addition, from an existing private offsite groundwater well. If the offsite source is used, this water would be trucked in from this well and stored in three permanent water storage tanks to support project operations, including for non-potable uses, emergency fire suppression, and solar panel washing. Water would be distributed throughout the site as needed using water trucks. (RE 2025ddd, pg. 8)

Water would be used to clean the PV panels; dust and dirt build-up reduces the amount of incoming solar radiation striking the active PV layer within the panel. To reduce this effect, panel washing would be conducted three times per year over a three-week period during operations, and additionally as necessitated. The water would drain by gravity to panel-washing trucks for use. Panel washing would require approximately 2.8 af (912,384 gallons) of water per year. In total, an estimated 5.6 af/yr of water would be used for panel washing, dust control and suppression during operation.

Three 10,000-gallon water tanks would be located throughout the site near the O&M building, BESS, and adjacent to the solar arrays. The water tanks would provide storage of water used for fire suppression. The tank would not require a regular supply of water because the water would be withdrawn only in the event of a fire. The tank would be monitored periodically and refilled as needed to replace evaporative losses. For fire suppression water supply, the project would conform to County requirements, which incorporate National Fire Protection Association (NFPA) Standards 1142 and 13 by reference and provide minimum requirements for fire suppression water supply where no public water supply is available (Standard 1142) and sprinkler systems (Standard 13).

During project operations, the project would be monitored remotely with periodic visits for maintenance. Therefore, no sanitary facilities are planned for the project.

3.8.4 Operations Solid Waste and Hazardous Materials Management

During operations and maintenance, some PV panels would require replacement due to breakage or other damage, to take advantage of new technologies, or to address degradation of electrical capacity. Removed PV panels would be recycled or disposed of in accordance with applicable local, state, and federal standards and regulations.

Hazardous materials that may be used and stored during operations and maintenance could include gasoline and diesel fuel, paints, thinners, solvents, sealants, lubricants, hydraulic fluids, and herbicides. The Waste Management Plan outlines the nonhazardous and hazardous waste streams associated with operation of the project and identifies the waste disposal sites that may be feasibly used for disposal.

Most of the fuel required by operation staff vehicles and engines would be procured at commercial gas stations in the local area. A limited amount of #2 diesel and gasoline petroleum fuels may be stored in the staging areas in above grade steel tanks with secondary containment. In addition, every transformer in the substation would have concrete oil containment to capture and store oil from transformers if a leak occurs or transformer fails.

See "3.7.10 Construction Solid Waste and Hazardous Materials Management" for more details of solid waste and hazardous materials management for project operation.

3.9 Decommissioning and Site Reclamation

When the project reaches the end of its useful life, structures and equipment would be removed for reuse or sold as scrap, and the land surface would be reclaimed. A Final Closure Plan and Cost Estimate would be prepared for the project by the project owner.

To ensure 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 would be required to coordinate with the CEC and BLM to plan and prepare for the eventual closure. A Final Closure Plan and Cost Estimate will be prepared as required by COC **COM-15** (Facility Closure Plan), in accordance with the California Environmental Quality Act (CEQA) and all applicable plans, policies, and regulations. A Final Closure Plan and Cost Estimate would be reviewed and approved by the CEC in coordination with the BLM before decommissioning activities begin.

The project owner is also responsible for notifying the CEC compliance project manager in the event of a temporary closure as required by COC **COM-14** (Non-Operation and Repair/Restoration Plans). Furthermore, if temporary closure is due to an unplanned incident, temporary repairs and/or corrective actions may be undertaken in accordance with COC **COM-14**. See **Section 9, Compliance Conditions and Compliance Monitoring Plan** for more information related to specific requirements for facility decommissioning and temporary closures.

Upon decommissioning, aboveground structures would be dismantled and removed from the site. Where required by the BLM, concrete pads or foundations would be demolished, and rubble would be removed to an off-site disposal facility authorized to accept the waste. Belowground facilities may be disconnected at the surface and left in place in conformance with guidance and approval from the BLM. New project access roads and corridors would be closed. Rasor Road and the OHV access would remain open, as would Zzyzx Road (a portion of which would be used for construction and operation of the utility switchyard and construction and operation of the gen-tie line).

Decommissioning of the substation and switchyard would involve deconstruction of structures. Salvaged materials would be recycled to the extent possible. Material that cannot be recycled would be transported for disposal in authorized landfills. Underground cabling and conduit may be left in place. The substation and office/storage areas, if applicable, would be graded to approximate the natural contour.

The project owner will prepare and implement a final closure and reclamation plan addressing removal of structures and site restoration in conformance with BLM requirements at the time of decommissioning. Construction hours and site cleanliness practices would be approximately the same during decommissioning as during construction.

3.10 Downstream Network Upgrades

The project would interconnect at the 500 kV level due to the size of the project. No offsite transmission upgrades are required due to downstream impacts. The only items that are required in terms of upgrades are related to protection settings at the Marketplace and Adelanto substations, which include the installation of line tuners, wave traps, microwave telecom links, relay protection equipment, and metering and controls equipment (RE 2024uuu, pg. 3, RE 2025kkk). LADWP would make these upgrades which are outside of the CEC's jurisdiction. Because the proposed downstream upgrades would occur entirely within existing facilities and would not involve any ground disturbance, the upgrades are not expected to result in any significant environmental impacts.

Figure 3-10 shows the location of Marketplace and Adelanto substations with respect to the SMSP. **Figure 3-11** shows the Marketplace Substation and **Figure 3-12** shows the Adelanto Substation.

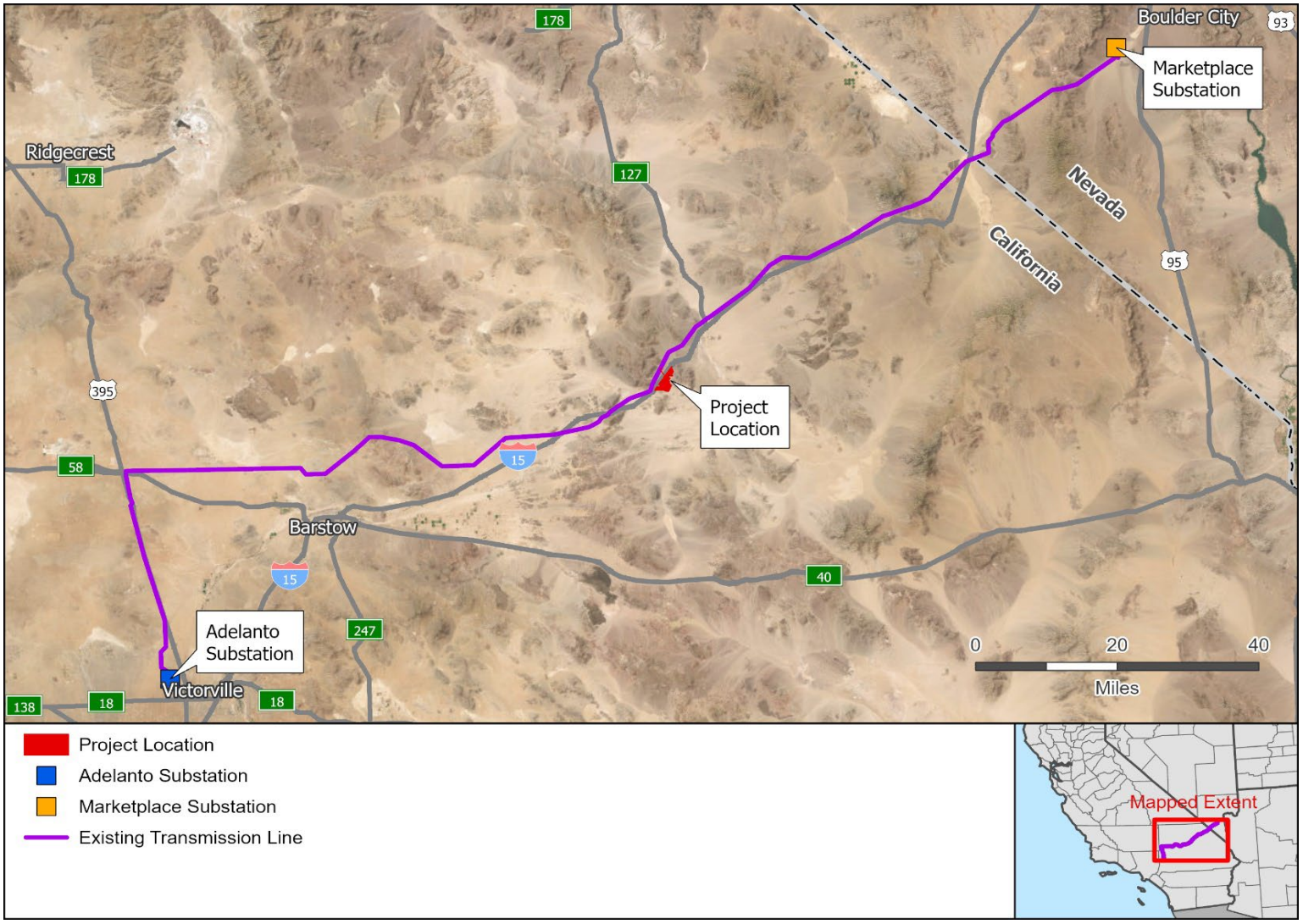
3.11 Intended Uses of This Environmental Document

This environmental document supports the CEC's decision on whether to certify the construction and operation of the project. Under Public Resources Code section 25545.1, the CEC has the exclusive jurisdiction to consider and certify this project and all related permits or licenses, with narrow exceptions, are subsumed into the CEC certification.

The CEC anticipates the Los Angeles Board of Water and Power Commissioners would use this environmental document when issuing any permits or licenses associated with the new utility switchyard, transmission loop in line and towers, and downstream switchyard upgrades. The proposed onsite groundwater wells would comply with requirements of the San Bernardino County's Desert Groundwater Management Ordinance (§ 33.06551). The CEC does not anticipate any other state or local jurisdictions would use this environmental document to issue any permits or licenses.

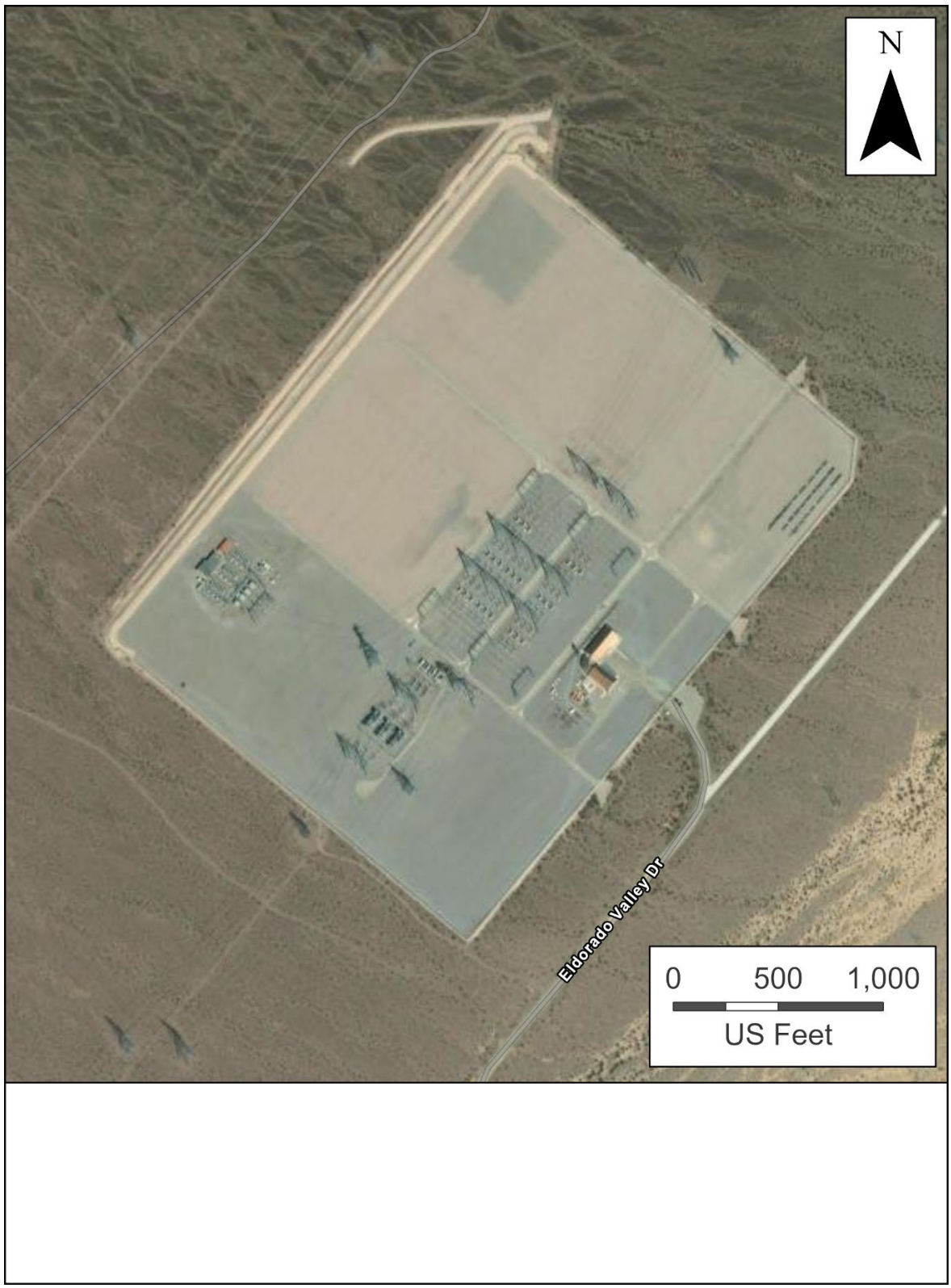
In developing this environmental analysis staff consulted with various other state, regional, and local agencies including the CPUC, California Department of Fish and Wildlife, Lahontan Regional Water Quality Control Board, Mohave Air Quality Management District, San Bernardino County Fire Protection District, and San Bernardino County. Staff also consulted with Bureau of Land Management and U.S. Fish and Wildlife. This project will also be subject to compliance with the National Environmental Protection Act.

Figure 3-10 Location of Marketplace and Adelanto Substations



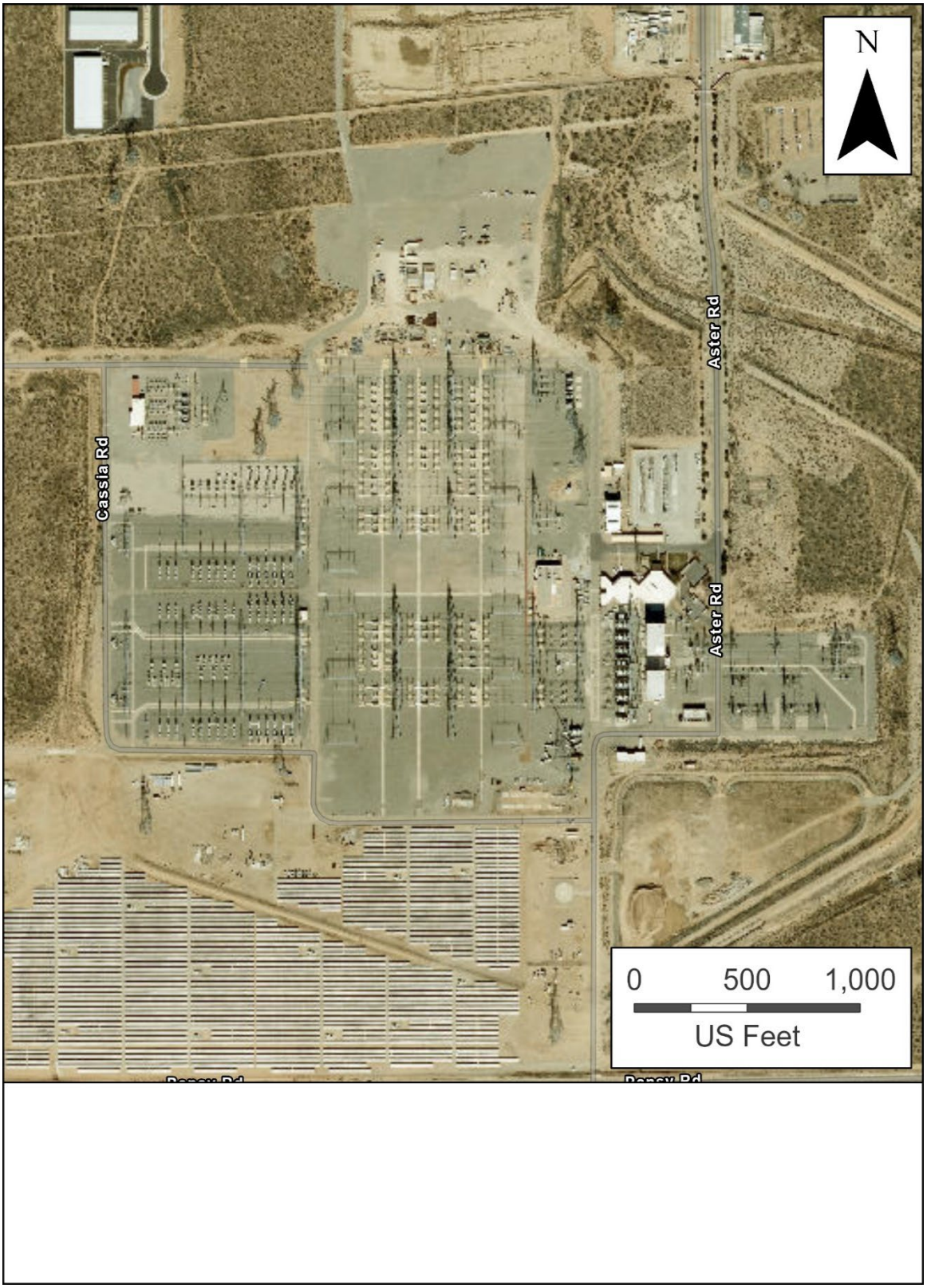
Source: California Energy Commission Electric Transmission Lines and Substations data

Figure 3-11 Marketplace Substation



Source: Maxar (Vivid Advanced), March 15, 2025

Figure 3-12 Adelanto Substation



Source: County of San Bernardino (1ft Ortho Imagery), February 12, 2024

3.12 References

CEC 2025t – California Energy Commission (TN 266468). Report of Conversation - Second Request for Information Following Determination of a Complete Application. Docketed October 10, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

CEC 2025x – California Energy Commission (TN 267947). ROC Re: Communication About Utility Switchyard and Interconnection with Existing Mead-Adelanto Transmission Line. Docketed December 16, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

CEC 2025z – California Energy Commission (TN 267975). Report of Conversation with Manu Singh - Discussion of existing residents living adjacent to and near the project site, dated December 19, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2024uuu – Resolution Environmental (TN 259708). Appendix A1 Engineering Generation Facility Description, Design and Operation - October 2024 - Revision 1, dated October 25, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025ddd – Resolution Environmental (TN 265183). Onsite Water Supply - Revised July 31 2025, dated July 31, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025gg – Resolution Environmental (TN 264907). Caltrans Encroachment Permit Application and BLM Traffic Control Plan, dated July 18, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025hh– Resolution Environmental (TN 264909). Additional Transmission Engineering Information, dated July 18, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025ii – Resolution Environmental (TN 264913). Updated Project Description and Responses to REV 1 DR BIO-2 and REV 1 DR ES-1, dated July 18, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025mm – Resolution Environmental (TN 264931). 3-21 Public Health - July 2025 Revision, dated July 21, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025pp – Resolution Environmental (TN 264954). Appendix Q Worker Safety - July 2025 Update, dated July 21, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025kkk – Resolution Environmental (TN 265739). Response to CEC's Request for Information dated July 31 2025, dated August 21, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025eeee – Resolution Environmental (TN 266918). Updated Figures. Docketed October 29, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025jjjj – Resolution Environmental (TN 267972). MM HYD-1, dated December 18, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025llll – Resolution Environmental (TN 267999). Final Data Responses, dated December 19, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

SBCFPD 2025a – San Bernardino County Fire Protection District (TN 267875). San Bernardino County Fire Protection District Communications, dated December 10, 2025. Accessed online at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=261255&DocumentContentId=97622

Section 4

Engineering Evaluation

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 plans, policies, and regulations 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 plans, policies, and regulations and any other special design requirements. These conditions allow both the California Energy Commission (CEC) compliance project manager (CPM) and the applicant to adopt a compliance monitoring program that will verify compliance with these plans, policies, and regulations.

4.1 Facility Design

4.1.1 Setting

Existing Conditions

The proposed Soda Mountain Solar Project (SMSP or project) and its linear facilities would be built on undeveloped federally owned land in San Bernardino County. The project would be located on approximately 2,670 acres (RE 2025ii, Section 2.1 and 2.3). This analysis assesses design of the jurisdictional project components, except for the new utility switchyard and segment of 500 kilovolt (kV) transmission line that would loop in and out of the switchyard. The design of the utility switchyard and segments of transmission line for looping would be assessed by the Los Angeles Board of Water and Power Commissioners. See **Section 2, Introduction**, for a description of the jurisdictional project components.

Regulatory

Federal

Title 29 Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health standards. Title 29 of the CFR standard comprehensively addresses safety and health standards for general industry.

State

California Building Standards Code 2022 (or the latest edition in effect) (also known as Title 24, California Code of Regulations). The California Building Standards Code applies to the planning, design, operation, construction, use, and occupancy of power plants, energy storage systems, and their ancillary facilities.

Local

San Bernadino County Countywide Plan – County Policy Plan

Hazards Element. The Natural Environmental Hazards section in the Hazards Element is intended to minimize risk of injury, loss of life, property damage, and economic and social disruption caused by natural environmental hazards and adaptation to potential changes in climate. (San Bernardino 2022).

General

The following are applicable general standards for the design of the jurisdictional project components:

- Air Moving and Conditioning Association (AMCA) Standards
- American Concrete Institute (ACI) Codes

- American Institute of Steel Construction (AISC) Codes
- American National Standards Institute (ANSI) Codes
- American Society of Civil Engineers (ASCE) Codes
- American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Standards
- American Society of Mechanical Engineers (ASME) Codes
- American Society of Testing and Materials (ASTM) Codes
- American Welding Society (AWS) Codes
- Concrete Reinforcing Steel Institute (CRSI) Codes
- National Association of Corrosion Engineers (NACE) Standards
- National Electric Safety Code (NESC) Standards
- National Fire Protection Association (NFPA) Standards
- Steel Deck Institute (SDI) – Design Manual for Floor Decks and Roof Decks
- UL Solutions Standards (formerly Underwriters Laboratories)

4.1.2 Impacts

Facility design encompasses the civil, structural, mechanical, and electrical engineering design of the project jurisdictional components. The purpose of this facility design analysis is to:

- verify that the plans, policies, and regulations applicable to the engineering design and construction of the project have been identified;
- verify that the project and ancillary facilities have been described in sufficient detail upon review and approval of the California Energy Commission's (CEC) Delegate Chief Building Official (DCBO) including proposed design criteria and analysis methods;
- provide reasonable assurance that the project can be designed and constructed in accordance with all applicable engineering plans, policies, and regulations, and in a manner that assures public health and safety through the DCBO's review and approval process;
- determine whether special design features should be considered during final design to deal with conditions unique to the site which could affect public health and safety through the DCBO's oversight and approval process; and describe the design review and construction inspection process and establish conditions of certification (COCs) that would be used to monitor and ensure consistency with the engineering plans, policies, and regulations and any special design requirements.

4.1.3 DCBO Process

When the CEC authorizes a project owner to proceed with detailed design and construction, the CEC selects a qualified third-party firm to act on its behalf as a DCBO. In this capacity, the selected DCBO performs its design review, plan check, and construction inspection duties in accordance with the California Building Standards Code (CBSC) and the Commission Final Decision for the facility. The DCBO selection process involves a request for qualification, including a statement of qualification from each engineering firm that applies for the CEC's solicitation, an interview process, and scoring criteria. The selected DCBO must be well qualified, with extensive experience in design review, plan check, inspection, and construction oversight of various types of power plants, energy storage systems and related facilities.

Before construction begins, the DCBO and its contractors/consultants, project owner, and construction contractor would hold a kickoff meeting to review the project scope and engineering plans, policies, and regulations. During this meeting, the DCBO would outline their expectations, ensuring the project owner is fully informed of the CBSC and other engineering requirements necessary for successful construction, including the San Bernardino County General Plan's Hazards Element and other relevant agencies' engineering requirements, as well as the COCs.

Throughout the construction and commissioning phases, the CEC Compliance Project Manager (CPM) would monitor the DCBO's activities to ensure they fulfill their responsibilities diligently. The project would only be permitted to begin operational activities once the DCBO, in collaboration with the CPM, issues the certificate of occupancy/completion. The responsibility for design of power plants and/or energy storage systems is retained by the responsible engineer(s). The duty of the DCBO is to review the engineering and construction submittals to determine that construction and industry plans, policies, and regulations are met. The documents approved by DCBO would be used to confirm, through field inspection, that the field conditions reflect the design documentation. Any departures from approved design conditions would be reflected in the final or "as-built" construction documents, which the DCBO archives in accordance with COC **GEN-8** requirements.

The CPM would confirm and approve that the DCBO would review engineering and construction submittals, meet conditions outlined in the Facility Design COCs, retain qualified inspectors to perform special inspection services, and generally inspect all major structures, systems, and equipment to ensure that industry standards (plans, policies, and regulations) and special project conditions (Facility Design COCs) are met. The CPM would arrange with the DCBO that an independent audit be performed in order to adequately sample that the foregoing requirements are met.

4.1.4 Project Consistency with Applicable Plans, Policies, and Regulations

Table 4.1-1 below details staff's determination of consistency with applicable local, state and federal plans, policies, and regulations, including any proposed COCs, where applicable, to ensure the jurisdictional components of the project would comply with plans, policies, and regulations. As shown in this table, staff concludes that with implementation of specific COCs, the proposed jurisdictional components of the project would be consistent with all applicable plans, policies, and regulations. The subsection below, "4.1.6 Proposed Conditions of Certification," contains the full text of the referenced conditions of certification.

The jurisdictional components of the project would also follow the COCs **TSE-1** and **TSE-4** through **TSE-6** listed in **Section 4.3, Transmission System Engineering**. **TSE-1** requires that the project owner furnishes the CPM and DCBO with a transmission facility design submittals schedule, a Master Drawing List, a Master Specifications List, and a Major Equipment and Structure List. COCs **TSE-4** and -**5** ensure that the project owner would begin construction on the switchyard, outlet line, termination, and other transmission facility components upon approval by the DCBO and that these components would be consistent with applicable plans, policies, and regulations as specified in **Section 4.3, Transmission System Engineering**, **Table 4.3-1**. COC **TSE-6** requires inspections of the transmission facilities during and after construction.

TABLE 4.1-1 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS

Applicable Plans, Policies, and Regulations	Consistency and Basis For Determination
Federal	
Title 29 Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health standards.	**Yes.** With implementation of COCs **GEN-1** through **GEN-8**, **CIVIL-1** through **CIVIL-4**, **STRUC-1** through **STRUC-4**, **MECH-1**, **MECH-2**, and **ELEC-1**
State	
California Building Standards Code 2022 (or the latest edition in effect) (also known as Title 24, California Code of Regulations)	**Yes.** With implementation of COCs **GEN-1** through **GEN-8**, **CIVIL-1** through **CIVIL-4**, **STRUC-1** through **STRUC-4**, **MECH-1**, **MECH-2**, and **ELEC-1**
Local	
San Bernadino County Countywide Plan – Policy Plan	**Yes.** With implementation of COCs **CIVIL-1** and **CIVIL-4**, and **STRUC-1** through **STRUC-4**
General	

TABLE 4.1-1 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS

Applicable Plans, Policies, and Regulations	Consistency and Basis For Determination
Air Moving and Conditioning Association (AMCA) Standards American Concrete Institute (ACI) Codes American Institute of Steel Construction (AISC) Codes American National Standards Institute (ANSI) Codes American Society of Civil Engineers (ASCE) Codes American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Standards American Society of Mechanical Engineers (ASME) Codes American Society of Testing and Materials (ASTM) Codes American Welding Society (AWS) Codes Concrete Reinforcing Steel Institute (CRSI) Codes National Association of Corrosion Engineers (NACE) Standards National Electric Safety Code (NESC) Standards National Fire Protection Association (NFPA) Standards Steel Deck Institute (SDI) – Design Manual for Floor Decks and Roof Decks UL Solutions Standards	**Yes.** With implementation of COCs **CIVIL-1** through **CIVIL-4**, **STRUC-1** through **STRUC-4**, **MECH-1**, **MECH-2**, and **ELEC-1**

4.1.5 Conclusions and Recommendations

The CEC staff concludes that the design and construction of the jurisdictional components of the project would be consistent with the applicable plans, policies, and regulations, with the proposed COCs **TSE-1** and **TSE-4** through **TSE-6** (see **Section 4.3, Transmission System and Engineering**) and the following proposed COCs for facility design listed under "4.1.6 Proposed Conditions of Certification".

This would be accomplished through design review, plan check, and field inspections that would be performed by the DCBO. The CEC staff would oversee the DCBO's work to ensure satisfactory performance.

4.1.6 Proposed Conditions of Certification

The following proposed COCs include measures to ensure the jurisdictional project components' consistency with applicable engineering plans, policies, and regulations.

GEN-1 The project owner shall design, construct, and inspect the project in accordance with the 2022 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 plans, policies, and standards in effect at the time initial design plans are submitted to the Delegate Chief Building Official (DCBO) 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 DCBO when the successor to the 2022 CBSC is in effect, the 2022 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 (CofO), the project owner shall submit to the Compliance Project Manager (CPM) a statement of verification, signed by the responsible engineer(s), attesting that all designs, construction, installation, and inspection requirements of the applicable plans, policies, and regulations and the California Energy Commission's (CEC's) decision have been met in the area of Facility Design. The project owner shall provide the CPM a copy of the CofO within 30 days of receipt from the DCBO.

Once the CofO 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 DCBO approval for compliance with the above codes. The CPM will then determine if the DCBO needs to approve the work.

GEN-2 Before submitting the initial engineering designs for DCBO review, the project owner shall furnish the CPM and the DCBO 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 energy storage and/or 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 plans, policies, and regulations. The schedule

shall contain the date of each submittal to the DCBO. To facilitate audits by the CEC staff, the project owner shall provide specific packages to the CPM upon request.

Verification: At least 60 days (or a project owner and DCBO mutually agreed upon alternative time frame) prior to the start of rough grading, the project owner shall submit to the DCBO and to the CPM the schedule, and the master drawings and master specifications list of documents to be submitted to the DCBO, 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, systems, 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 (MCR).

GEN-3 The project owner shall make payments to the DCBO for design review, plan checks, construction inspections, and other applicable DCBO activities, based upon a reasonable fee schedule to be negotiated between the project owner and the DCBO. If the CEC delegates the DCBO function to a third party or local agency, the project owner, at the CEC's direction, shall make payments directly to the DCBO based upon a fee schedule negotiated between the CEC, the project owner, and the DCBO. These fees may be consistent with the fees listed in the 2022 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 DCBO.

Verification: The project owner shall make the required payments to the DCBO in accordance with the agreement between the project owner and the DCBO. If the CEC delegates the DCBO function to a third party or local agency, the project owner, at the CEC's direction, shall make payments directly to the DCBO based upon a fee schedule negotiated between the CEC, the project owner, and the DCBO. The project owner shall send a copy of the DCBO's receipt of payment to the CPM in the next MCR 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, or a construction project manager with experience in constructing renewable energy projects as the resident engineer (RE) in charge of the project.

If the construction project manager's role is limited to tasks such as overseeing construction activities, ensuring safety compliance, or managing project logistics without engaging in the design or engineering decision-making processes, licensure may not be necessary. Otherwise, licensure shall be required.

The RE shall:

1. Monitor progress of construction work requiring DCBO design review and inspection to ensure compliance with plans, policies, and regulations;
2. Ensure that construction of all facilities subject to DCBO design review and inspection conforms in every material respect to applicable plans, policies, and regulations, 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 DCBO 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 DCBO 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 RE (or their delegate) must be located at the project site or be available at the project site within a reasonable 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 or construction project manager to the DCBO for review and approval. The project owner shall notify the CPM of the DCBO's approval of the new engineer.

Verification: At least 30 days (or a project owner and DCBO mutually agreed upon alternative time frame) prior to the start of rough grading, the project owner shall submit to the DCBO for review and approval, the resume and qualifications registration number of the RE and any other delegated engineers or construction project manager assigned to the project. The project owner shall notify the CPM of the DCBO'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 name, qualifications, and registration number of the newly assigned engineer or construction project manager to the DCBO for review and approval. The project owner shall notify the

CPM of the DCBO'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 project 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, project 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 DCBO 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 DCBO for review and approval. The project owner shall notify the CPM of the DCBO's approval of the new engineer.

1. The civil engineer shall:
    a. 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;
    b. 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 DCBO. These include, but may not be limited to 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

c. 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.

2. The soils engineer, geotechnical engineer, or civil engineer experienced and knowledgeable in the practice of soils engineering, shall:
   a. Review all the engineering geology reports;
   b. 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; and
   c. 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.

1. The engineering geologist shall:
   a. Review all the engineering geology reports and prepare a final soils grading report.
2. The design engineer shall:
   a. Be directly responsible for the design of the proposed structures and equipment supports;
   b. Provide consultation to the RE during design and construction of the project;
   c. Monitor construction progress to ensure compliance with engineering plans, policies, and regulations;
   d. Evaluate and recommend necessary changes in design; and
   e. Prepare and sign all major building plans, specifications, and calculations.
3. The mechanical engineer shall be responsible for, and sign and stamp a statement with, each mechanical submittal to the DCBO, stating that the proposed final design plans, specifications, and calculations conform to all of the mechanical engineering design requirements set forth in the CEC's decision.
4. The electrical engineer shall:
   a. Be responsible for the electrical design of the project; and

b. Sign and stamp electrical design drawings, plans, specifications, and calculations.

Verification: At least 30 days (or a project owner and DCBO mutually agreed upon alternative time frame) prior to the start of rough grading, the project owner shall submit to the DCBO 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 a project owner and DCBO mutually agreed upon alternative time frame) prior to the start of construction, the project owner shall submit to the DCBO 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 DCBO's approvals of the responsible engineers within five days of the approval.

If any one of the designated responsible engineers is subsequently reassigned or replaced, the project owner has five days in which to submit the name, qualifications, and registration number of the newly assigned engineer to the DCBO for review and approval. The project owner shall notify the CPM of the DCBO'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 2022 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 DCBO, 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 DCBO and RE. All discrepancies shall be brought to the immediate attention of the RE for correction, then, if uncorrected, to the DCBO and the CPM for corrective action; and

4. Submit a final signed report to the RE, DCBO, 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 a project owner and DCBO mutually agreed upon alternative time frame) prior to the start of an activity requiring special inspection, the project owner shall submit to the DCBO 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 DCBO's approval of the qualifications of all special inspectors in the next MCR.

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 DCBO for approval. The project owner shall notify the CPM of the DCBO'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 DCBO design review and approval, the project owner shall document the discrepancy and recommend required corrective actions. The discrepancy documentation shall be submitted to the DCBO for review and approval. The discrepancy documentation shall reference this condition of certification and, if appropriate, applicable sections of the CBC and/or other plans, policies, and regulations. Minor discrepancies such as typos or minor in-field adjustments that do not significantly change design or construction would not need approval.

Verification: The project owner shall transmit a copy of the DCBO's approval of any corrective action taken to resolve a discrepancy to the CPM in the next MCR. 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 DCBO's approval.

GEN-8 The project owner shall obtain the DCBO's final approval of all completed work that has undergone DCBO design review and approval. The project owner shall request the DCBO to inspect the completed structure and review the submitted documents. The project owner shall notify the CPM after obtaining the DCBO'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 DCBO for retention by the CPM.

Verification: Within 15 days of the completion of any work, the project owner shall submit to the DCBO, with a copy to the CPM in the next MCR, (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 DCBO 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" files (the latest version of Adobe .pdf available), with restricted (password-protected) printing privileges.

CIVIL-1 The project owner shall submit to the DCBO 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 2022 CBC.

Verification: At least 15 days (or a project owner and DCBO mutually agreed upon alternative time frame) prior to the start of site grading the project owner shall submit the documents described above to the DCBO for design review and approval. In the next MCR following the DCBO's approval, the project owner shall submit a written statement certifying that the documents have been approved by the DCBO.

CIVIL-2 The resident engineer or delegate 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 DCBO based on these new conditions. The project owner shall obtain approval from the DCBO 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 DCBO's approval to resume earthwork and

construction in the affected areas, the project owner shall provide to the CPM a copy of the DCBO's approval.

CIVIL-3 The project owner shall perform inspections in accordance with the 2022 CBC. All site-grading operations, for which a grading permit is required, shall be subject to inspection by the DCBO.

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 DCBO, and the CPM. The project owner shall prepare a written report, with copies to the DCBO 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 DCBO 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 DCBO and the CPM. A list of NCRs for the reporting month shall also be included in the following MCR.

CIVIL-4 After completion of finished grading and erosion and sedimentation control and drainage work, the project owner shall obtain the DCBO'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 their area of responsibility was done in accordance with the final approved plans.

Verification: Within 30 days (or a project owner and DCBO mutually agreed upon alternative time frame) of the completion of the erosion and sediment control mitigation and drainage work, the project owner shall submit to the DCBO, 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 DCBO's approval to the CPM in the next MCR.

STRUC-1 Prior to the start of any increment of construction, the project owner shall submit plans, calculations, and other supporting documentation to the DCBO for design review and acceptance for all project structures, systems, and equipment identified in the DCBO-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 DCBO has approved the lateral force procedures to be employed in designing that structure or component. The project owner shall:

1. Obtain approval from the DCBO of lateral force procedures proposed for project structures;
2. Obtain approval from the DCBO 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 DCBO 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 DCBO the responsible design engineer's signed statement that the final design plans conform to applicable plans, policies, and regulations.

Verification: At least 30 days (or a project owner and DCBO mutually agreed upon alternative time frame) prior to the start of any increment of construction of any structure or component listed in the DCBO-approved master drawing and master specifications list, the project owner shall submit to the DCBO 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 MCR, a copy of a statement from the DCBO that the proposed structural plans, specifications, and calculations have been approved and comply with the requirements set forth in applicable engineering plans, policies, and regulations.

STRUC-2 The project owner shall submit to the DCBO the required number of sets of the following documents related to work that has undergone DCBO 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 2022 CBC.

Verification: If a discrepancy is discovered in any of the above documents, the project owner shall, within five days, prepare and submit an NCR describing the nature of the discrepancies and the proposed corrective action to the DCBO, 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 DCBO and the CPM.

The project owner shall transmit a copy of the DCBO'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 DCBO's approval.

STRUC-3 The project owner shall submit to the DCBO design changes to the final plans required by the 2022 CBC, including the revised drawings, specifications, calculations, and a complete description of, and supporting rationale for, the proposed changes, and shall give to the DCBO prior notice of the intended filing.

Verification: On a schedule suitable to the DCBO, the project owner shall notify the DCBO 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 DCBO, with a copy of the transmittal letter to the CPM. The project owner shall notify the CPM, via the MCR, when the DCBO has approved the revised plans.

STRUC-4 Tanks and vessels containing quantities of toxic or hazardous materials exceeding amounts specified in the 2022 CBC shall, at a minimum, be designed to comply with the requirements of that chapter.

Verification: At least 30 days (or a project owner and DCBO mutually agreed upon alternative 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 DCBO 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 DCBO approvals of plan checks to the CPM in the MCR following receipt of such approvals. The project owner shall also transmit a copy of the DCBO's inspection approvals to the CPM in the MCR following completion of any inspection.

MECH-1 The project owner shall submit, for DCBO design review and approval, the proposed final design, specifications, and calculations for the project's mechanical-related components listed in the DCBO-approved master drawing and master specifications list. The submittal shall also include the applicable Quality Assurance/Quality Control procedures. Upon completion of construction of any such component, the project owner shall request the DCBO's inspection approval of that construction.

The responsible mechanical engineer shall stamp and sign all plans, drawings, and calculations for the project's major mechanical-related components, subject to DCBO design review and approval, and submit a signed statement to the DCBO when the proposed components have been designed, fabricated, and installed in accordance with all of the applicable plans, policies, and regualtions, which may include, but are not limited to:

1. NACE SP187 (Design for Corrosion Control of Reinforcing Steel in Concrete);
2. NFPA 70B (Practices for Electrical Equipment Maintenance—to reduce hazard to life safety);
3. OSHA 1910.119 Process Safety Management of Highly Hazardous Chemicals, Toxins and Reactive;
4. Title 24, California Code of Regulations, Part 2 (California Building Code);
5. Title 24, California Code of Regulations, Part 5 (California Plumbing Code);
6. Title 24, California Code of Regulations, Part 6 (California Energy Code, for building energy conservation systems and temperature control and ventilation systems); and
7. UL Standard 9540 (Standard for Safety for Energy Storage Systems and Equipment).

The DCBO may deputize inspectors to carry out the functions of the CEC's code enforcement mandate.

Verification: At least 30 days (or a project owner and DCBO mutually agreed upon alternative time frame) prior to the start of any increment of major mechanical-related components' construction listed in the DCBO-approved master drawing and master specifications list, the project owner shall submit to the DCBO 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 plans, policies, and

regulations, and shall send the CPM a copy of the transmittal letter in the next MCR.

The project owner shall transmit to the CPM, in the MCR following completion of any inspection, a copy of the transmittal letter conveying the DCBO's inspection approvals.

MECH-2 The project owner shall submit to the DCBO for design review and approval the design plans, specifications, calculations, and quality control procedures for any permanent 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 permanent 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 DCBO'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 DCBO that the proposed final design plans, specifications and calculations conform with the applicable plans, policies, and regulations.

Verification: At least 30 days (or a project owner and DCBO mutually agreed upon alternative time frame) prior to the start of construction of any permanent HVAC or refrigeration system, the project owner shall submit to the DCBO 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 (V) or higher (see a representative list, below) the project owner shall submit, for DCBO 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 DCBO inspect the installation to ensure compliance with the requirements of applicable plans, policies, and regulations.

1. Final design plans shall include:
    a. one-line diagram for the 34.5 kilovolts (kV) and 480 V systems;

b. system grounding drawings;
c. lightning protection system; and
d. hazard area classification plan.

2. Final calculations must establish:
   a. short-circuit ratings of facility equipment;
   b. ampacity of feeder cables;
   c. voltage drop in feeder cables;
   d. system grounding requirements;
   e. coordination study calculations for fuses, circuit breakers and protective relay settings for the 34.5 kV, 110 V, and 480 V systems;
   f. system grounding requirements;
   g. lighting energy calculations; and
   h. 110-Volt system design calculations and submittals showing feeder sizing, transformer and panel load confirmation, fixture schedules and layout plans.

3. The following activities shall be reported to the CPM in the MCR:
   a. Receipt or delay of major electrical equipment;
   b. Testing or energizing of major electrical equipment; and
   c. A signed statement by the registered electrical engineer certifying that the proposed final design plans and specifications conform to requirements set forth in the CEC decision.

Verification: At least 30 days (or a project owner and DCBO mutually agreed upon alternative time frame) prior to the start of each increment of electrical construction, the project owner shall submit to the DCBO 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 plans, policies, and regulations and shall send the CPM a copy of the transmittal letter in the next MCR.

4.1.7 References

San Bernardino 2022 – San Bernardino County Countywide Plan – Policy Plan, dated September 2022, Accessed on: May 16, 2025. Accessed online at: https://lus.sbcounty.gov/planning-home/general-plan/

RE 2025ii – Resolution Environmental (TN 264913). Updated Project Description and Responses to REV 1 DR BIO-2 and REV 1 DR ES-1, dated July 18, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

4.2 Facility Reliability

4.2.1 Setting

Existing Conditions

The proposed Soda Mountain Solar Project (SMSP or project) is a 300 megawatt (MW) solar photovoltaic (PV) project with an up to 1,200 MW-hour battery energy storage system (BESS) that would be built on undeveloped federally owned land managed by the Bureau of Land Management in San Bernardino County (RE 2024uuu, Section 1.1.4; RE 2024uuu, Section 1.3; RE 2025ccc, Section 3.11.3.4). This analysis evaluates the proposed project to determine if the power-generating and energy-storage facilities, specifically, the solar PV and BESS, would be built in accordance with typical industry norms for reliable operation.

Regulatory

Public Resources Code section 25520 requires that applications for certification contain facility reliability information and Public Resources Code section 25523(h) requires the written decision to contain a discussion on the electricity reliability benefits of the project. These two sections are made applicable to the evaluation of the SMSP through Public Resources Code sections 25545.2 and 25545.8. This analysis addresses section 25520 regarding the facility's reliability, and **Section 4.3, Transmission System Engineering** addresses section 25523(h) regarding the project's impacts on, and benefits to the reliability of the electricity network the project would serve.

4.2.2 Impacts

Power plant and energy storage systems must be able to operate for extended periods without shutting down for maintenance or repairs and must achieve an availability factor similar to the existing power plant and energy storage facilities in the California electricity grid system. To achieve this, this reliability analysis of the project's power plant (electrical generating) and energy storage systems, encompasses the following benchmarks:

- equipment availability;
- facility maintainability and maintenance program; and
- facility 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.

Equipment Availability

Equipment availability would be ensured based on several factors, including but not limited to component availability from the manufacturer, and site conditions, prior to

procurement, construction, and operation. In addition, the project must provide adequate maintenance and repair of the equipment and systems during operations. An operation and maintenance protocol would be implemented in accordance with the maintenance requirements prescribed by the solar PV and BESS manufacturers.

Emergency Backup Power

The project would rely on the solar plant, BESS, or local 12 kilovolt circuit as backup during outages to support critical loads (RE 2024zzz).

Facility Maintainability and Maintenance Program

Equipment manufacturers provide maintenance recommendations for their products, and facility owners develop their facility's maintenance program based on those recommendations (RE 2024uuu, Section 1.3). Such a program encompasses both preventive and predictive maintenance techniques. The project would develop its maintenance program in the same way. Moreover, the project would implement a Supervisory Control and Data Acquisition (SCADA) management system, which monitors facility operation and provides communications and control of critical components (RE 2025ii, Section 2.6). This system would ensure the project's operational efficiency and reliability.

Facility Reliability in Relation to Natural Hazards

Natural forces can threaten the reliable operation of a facility. Seismic shaking (earthquakes) could present credible threats to the project's reliable operation.

Seismic Shaking

Seismic events affect many regions in California, including the project site. The American Society of Civil Engineers' Hazard Tool identifies the project area as being in the seismic design category D. This category corresponds to buildings and structures in areas that would experience severe and destructive ground shaking. The project site is approximately two miles east of the Holocene-active Red Pass Lake fault. Significant Holocene-active fault zones located farther from the site, such as the Garlock and the San Andreas fault zones, could also produce high-magnitude earthquakes that subject the project to seismic hazards (CDOC 2015, USGS 2017). See **Section 5.6, Geology, Paleontology, and Minerals** for more information, and evaluation of potential impacts related to faults and seismic hazards.

The project would be designed and constructed to meet the latest applicable engineering codes. Compliance with the latest seismic design requirements represents an upgrade in 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 the older existing power plants and energy storage in similar seismically active or potentially active regions that are connected to California's electricity grid system.

The California Energy Commission (CEC) staff proposes conditions of certification (COCs) to ensure the project complies with these requirements; see COC **GEO-1** (geotechnical investigations and geohazards report and their recommendations) in **Section 5.6, Geology, Paleontology, and Minerals** and **Section 4.1, Facility Design** COCs **GEN-1** (final on-site inspection of project construction), **GEN-5** (requiring registered engineers to oversee design and construction of the project), and **STRUC-1** through **STRUC-4** (requiring submittals to the CEC's delegate chief building official [DCBO] for approval). These COCs include standard engineering design requirements for mitigation of strong seismic shaking, liquefaction, and potential excessive settlement due to dynamic compaction. The CEC staff concludes these COCs adequately mitigate potentially significant impacts to the project's functional reliability due to seismic shaking.

Landslides and Seiches

Landslides would not be expected to affect the project site. The topography of the project site and its surroundings is relatively flat (RE 2024ooo, Section 3.7.3.3). See **Section 5.6, Geology, Paleontology, and Minerals** for further discussion. The project site is not located near a body of water and would not be affected by seiches (RE 2025q, Section 3.10.3.4). Therefore, landslides and seiches would not have a significant impact on the reliability of the project.

Floodplains

Floodplains would not be expected to affect the project site. The SMSP is not located within a Federal Emergency Management Agency (FEMA)-designated 100-year floodplain area and is classified as Zone D by FEMA, indicating possible but undetermined flood hazards. Consequently, the risk of flooding at the project site is considered low, and construction and operation would not be subject to significant flood-related hazards (RE 2025q, Section 3.10.2.4).

While the project site has a low risk of flooding, it would be designed and built to provide adequate levels of flood resistance by complying with proposed COCs **CIVIL-1** through **CIVIL-4** (requiring civil engineering submittals to the CEC's DCBO for review and approval) in **Section 4.1, Facility Design**.

Therefore, there are no concerns regarding the project's functional reliability due to flooding.

Subsidence

Subsidence would not be expected to affect the project site. The project site is located in an area where land subsidence has not been recorded. Moreover, no wells are located immediately adjacent to the project site. Therefore, the risk of land subsidence during construction and operation would be less than significant.

While the project site has a low risk of subsidence, it would be designed and built to provide adequate levels of subsidence resistance by complying with Interferometric

Synthetic Aperture Radar (In-SAR) monitoring of land subsidence by DWR. In-SAR would act as a check on groundwater overdraft by all applicable water users in the region. Also, the project would comply with San Bernardino County's Multi-Jurisdictional Hazard Mitigation Plan for subsidence (San Bernardino 2022). See **Sections 5.6, Geology, Paleontology, and Minerals** and **5.16, Water Resources** for further discussion.

Therefore, there are no concerns regarding the project's functional reliability due to subsidence.

Comparison with Existing Facilities

The equivalent availability factor (availability factor) of a power plant or energy storage system is the amount of time the facility is able to produce electricity over a certain period, divided by the amount of time in the period in which the generation resource is available. The capacity factor is the percentage of time a power generation facility operates at maximum output over a given period.

Solar PV

Solar PV typically has an availability factor of 99 percent (RE 2024uuu, Section 1.3). The project's expected annual and lifetime capacity factor for the solar facilities would be approximately 20 to 40 percent (RE 2024uuu, Section 1.3).

This availability factor is higher than most other existing power plant facilities. According to the North American Electric Reliability Corporation, the average availability factor for all fossil-fueled, hydroelectric, pump storage, geothermal, and nuclear-fueled power plants in North America in 2023 was approximately 83 percent (NERC 2023). Moreover, the National Renewable Energy Laboratory's (NREL) 2021 Annual Technology Baseline assumes near-continuous availability for utility-scale solar PV systems in the United States (NREL 2021).

This capacity factor is lower than traditional baseload combined-cycle power plant facilities, which average approximately 59 percent, but higher than peak-demand natural gas turbine power plant facilities, which average approximately 12 percent (EIA 2025). In comparison, the NREL 2021 Annual Technology Baseline estimates utility-scale solar PV capacity factors in the United States ranging from 19 percent to 31 percent, corresponding to regions with the lowest and highest solar resources, respectively (NREL 2021).

BESS

BESS typically has an availability factor of 98 percent (RE 2024uuu, Section 1.3). The project's expected annual and lifetime capacity factor for the BESS facilities would be approximately 20 percent (RE 2024uuu, Section 1.3).

This capacity factor is lower than traditional baseload combined-cycle power plant facilities, which average approximately 59 percent, but higher than peak-demand

natural gas turbine power plant facilities, which average approximately 12 percent (EIA 2025). In comparison, the NREL 2021 Annual Technology Baseline estimates a capacity factor of approximately 17 percent for utility-scale four-hour battery energy storage systems, based on the assumption of one full charge-discharge cycle per day (NREL 2021).

4.2.3 Project Consistency with Applicable Plans, Policies and Regulations

No federal, state, or local plans, policies, and regulations related to facility reliability apply to the jurisdictional components of the project.

4.2.4 Conclusions and Recommendations

Staff concludes that with the incorporation of COCs **CIVIL-1** through **CIVIL-4**, **GEN-1**, **GEN-5**, **STRUC-1** through **STRUC-4**, (see **Section 4.1 Facility Design**) and **GEO-1** (see **Section 5.6, Geology, Paleontology, and Minerals**). The power generating and energy storage facilities (solar PV and BESS) would be built to operate in a manner consistent with industry norms for reliable operation and would be expected to demonstrate a high availability factor although a lower capacity factor compared to some other facilities within the state. No additional conditions of certification are proposed for power plant reliability.

4.2.5 Proposed Conditions of Certification

There are no additional proposed conditions of certification for the power-generating and energy-storage facilities for facility reliability.

4.2.6 References

EIA 2025 – U.S. Energy Information Administration (EIA). Electric Power Monthly. Table 6.07.A. Capacity Factors for Utility Scale Generators Primarily Using Fossil Fuels. Accessed on January 2025. Available online at: https://www.eia.gov/electricity/monthly/epm_table_grapher.php?t=epmt_6_07_a

NERC 2023 – North American Electric Reliability Corporation (NERC). Generating Unit Statistical Brochures. Accessed on April 28, 2025. Available online at: https://www.nerc.com/pa/RAPA/gads/Pages/Reports.aspx

NREL 2021 – National Renewable Energy Laboratory (NREL). Annual Technology Baseline Utility-Scale PV-Plus-Battery. Accessed on August 8, 2025. Available online at: https://atb.nrel.gov/electricity/2021/utility-scale_pv-plus-battery

RE 2024ooo – Resolution Environmental (TN 259702). Section 37 Geology and Soils - October 2024 - Revision 1, dated October 25, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2024uuu – Resolution Environmental (TN 259708). Appendix A1 Engineering Generation Facility Description, Design and Operation - October 2024 - Revision 1, dated October 25, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2024zzz – Resolution Environmental (TN 259876). CEC Data Request Response Set #1, dated November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025ccc – Resolution Environmental (TN 265182). 3-11 Land Use and Planning - July 31 2025 Revision, dated July 31, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025ii – Resolution Environmental (TN 264913). Updated Project Description and Responses to REV 1 DR BIO-2 and REV 1 DR ES-1, dated July 18, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025q – Resolution Environmental (TN 261601). Section 310 Hydrology and Water Quality, dated February 7, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

San Bernardino 2022 – County of San Bernardino Multi-Jurisdictional Hazard Mitigation Plan. Accessed on October 20, 2025. Available online at: https://www.sbcounty.gov/uploads/SBCFire/documents/EmergencyServices/Hazard-Mitigation-Plan-202212.pdf

4.3 Transmission System Engineering

4.3.1 Setting

The Soda Mountain Solar, LLC (the applicant), has proposed the construction, operation, and maintenance of a utility-scale solar photovoltaic (PV) electric generating and storage facility. (SMSP or project). The project facilities analyzed in this section include the 300 megawatts (MW) solar PV, 300 MW battery energy storage system (BESS), 500 kilovolt (kV) project substation, and 500 kV generation inter-tie line (gen-tie).

A 500 kV utility switchyard would be constructed and interconnect the project via two sections of transmission line looping in and out of the Los Angeles Department of Water and Power (LADWP) Marketplace-Adelanto existing transmission lines.

The solar PV, BESS, project substation, and gen-tie line would be constructed, owned and operated by the applicant. The utility switchyard and segment of transmission loop in lines would be constructed by the applicant then owned and operated by LADWP. This section does not include the analysis of the design of utility switchyard or looping in of the transmission line to the existing Mead-Adelanto transmission line section as they are under the jurisdiction of the Los Angeles Board of Water and Power Commissioners.

The project site boundary encompasses approximately 2,670 acres in the project area and is in the southwest of the community of Baker in unincorporated San Bernardino County, California.

Existing Conditions

The infrastructure surrounding the site includes two high-voltage electric transmission lines, a distribution line, two fiber-optic cables, and two fuel pipelines. Of these, the two high-voltage electrical transmission lines are situated to the west of I-15. One is a 115 kilovolt (kV) sub-transmission line owned by Southern California Edison, and the other is the Mead-Adelanto 500-kV transmission line operated by the Los Angeles Department of Water and Power (LADWP).

Regulatory

Federal/Regional

FERC. LADWP operates in accordance with the Federal Energy Regulatory Commission (FERC) Good Utility Practice guidelines while also adhering to its own LADWP-specific standards and specifications. This dual framework ensures compliance with federal reliability and safety requirements, alongside detailed local codes governing construction, service connections, and equipment design.

NERC. The North American Electric Reliability Council's (NERC) Reliability Standards for North America's bulk electric transmission systems provide national policies, standards, principles, and guides to assure the adequacy and security of the electric transmission system. NERC is the North American Electric Reliability Organization (ERO), subject to the oversight of the Federal Energy Regulatory Commission (FERC). The NERC reliability standards specify system performance levels for both normal and contingency conditions. Regarding power flow and stability simulations, while these standards are similar to those of the North American Electric Reliability Corporation (NERC) and the Western Electricity Coordinating Council (WECC) planning standards, certain aspects of the NERC/WECC standards are either more stringent or more specific than the NERC standards for transmission system contingency performance. The NERC's planning standards apply to interconnected system operations and individual service areas (NERC 2024 and ongoing).

NERC/WECC Planning Standards. The WECC Planning Standards are integrated with the NERC Reliability Standards to provide the system performance standards used to assess the reliability of the interconnected system. The priority of the standards is the uninterrupted continuity of service, and the second priority is the preservation of interconnected operations. Analysis of the WECC system is based, to a large degree, on Section I. A of the standards, *NERC and WECC Planning Standards with Table I and WECC Disturbance-Performance Table* and on Section I.D, *NERC and WECC Standards for Voltage Support and Reactive Power.* These standards require that the results of power flow and stability simulations verify defined performance levels, including allowable variations in thermal loading, voltage, and frequency, as well as the loss of load that could occur on systems during various disturbances.

State

None.

General

The National Electric Safety Code, 2023. NESC, is a United States standard for the safe installation, operation, and maintenance of electric power and communication utility systems, including power substations, power and communication overhead lines, and power and communication underground lines.

Los Angeles Department of Water and Power (LADWP) follows Federal Energy Regulatory Commission's Good Utility Practice and LADWP standards and specifications.

Cumulative

The transmission system engineering analysis focuses on whether a proposed project meets the required codes and standards. The transmission grid must always comply with reliability standards, whether one or multiple projects are interconnected. The California Independent System Operator and utility generator interconnection process

identifies potential cumulative impacts on the transmission network. In cases where a significant number of proposed generation projects could impact a particular portion of the transmission grid, the interconnecting utility could study the cluster of projects to identify the most efficient means of interconnecting all of them.

4.3.2 Impacts

This analysis evaluates whether the proposed project's interconnection conforms to all plans, policies, and regulations required for safe and reliable electric power transmission. For the interconnection of the project to the grid, the interconnecting utility and grid operator, LADWP, is responsible for ensuring the grid's reliability. To ensure grid reliability, LADWP assessed the transmission system impacts of the proposed project and identified necessary mitigation measures to ensure system conformance with utility reliability criteria, NERC planning standards, WECC reliability criteria, and the LADWP criteria for potential impacts on their system. The LADWP interconnection area report determined the project would have impacts on the transmission grid. CEC staff relies on LADWP studies to assess the project's effect on the transmission grid and identify whether downstream or indirect project impacts would require additional equipment or strategies to bring the transmission network into compliance with applicable reliability standards.

The study reports analyzed the grid, both with and without the proposed project, under conditions specified in the planning standards and reliability criteria. The standards and criteria define the assumptions used in the study and establish the thresholds that determine grid reliability. The studies must analyze the project's impact for the proposed first year of operation, which is thus based upon a forecast of loads, generation, and transmission. An interconnection queue establishes generation and transmission forecasts. The studies focused on thermal overloads, voltage deviations, system stability (including excessive oscillations in generators and transmission systems, voltage collapse, load loss, or cascading outages), and short-circuit duties.

The studies showed that the project's interconnection could cause the grid to be out of compliance with reliability standards. The study identified downstream network upgrades to protection settings at the Marketplace and Adelanto Substations to bring the grid into compliance with reliability standards. Protection setting upgrades would include the installation of line tuners, wave traps, microwave telecom links, relay protection equipment, and metering and controls equipment (RE 2024uuu, pg. 3, RE 2025kkk). LADWP would make these upgrades which are outside of the CEC's jurisdiction. See **Section 2, Introduction** and **Section 3, Project Description** for more details. See **Figures 3-8** through **3-10** for the location of the substations with respect to the SMSP and an aerial of each substation.

Project Components

The project's primary purpose is to develop, construct, and operate a renewable generating facility that can provide grid reliability.

The utility switchyard would interconnect the project to the LADWP grid by looping in and out with the existing Mead-Adelanto 500 kV transmission line section of the greater Marketplace-Adelanto 500 kV transmission line, operated by LADWP.

Solar PV – The project consists of four arrays with a combined output of 300 MW. The arrays would be arranged in strings, with a height of 10 feet at full tilt or slightly higher due to topography. The single-axis tracking system would be oriented along the north-to-south axis, with panels facing east in the early morning and facing west in the late afternoon. The structures supporting the PV panels would consist of steel piles mounted approximately 18 feet apart. The solar facility would be constructed in sub-arrays of installed rows of panels ranging in size from 4 to 7 MW. Each sub-array would include a direct current (DC) to alternating current (AC) inverter and a medium voltage equipment area. Each inverter-transformer station would contain an inverter, a transformer, a battery enclosure, and a switchboard. Panels would be electrically connected into panel strings using wiring secured to the panel racking system. Underground cables would be installed to transmit the DC electricity from the panels via combiner boxes, utilizing a trunk bus system throughout the PV arrays, to inverters that convert the DC electricity to AC. The output voltage of the inverters would be stepped up to the required collection system voltage at the medium voltage pad mount transformers located near the inverter. The 34.5 kV level collection cables would be buried underground in a trench about four feet deep, with segments installed overhead on wood poles to connect all the solar facilities development areas to the onsite project substation. Directly embedded wood poles would be used where the collection system crosses a road or pipelines overhead.

BESS - The project would include a BESS capable of storing up to 300 MW of electricity for 4 hours (1,200 MWh), requiring approximately 18 acres of land. As shown in the **Section 3, Project Description**, **Figure 3-2**, the BESS would be located near the project substation to facilitate interconnection and metering. The BESS would also feature a battery management system to regulate the charging and discharging of the batteries.

Project substation - All collector feeder circuit voltages step up from 34.5kV to 500kV by the main transformer (34.55/500 kV, 222 MVA) of the project's substation. The substation comprises power and auxiliary transformers, 500 kV breakers, bus bars, low-voltage switchgear, disconnect switches, capacitor banks, a grounding grid, microwave towers, dead-end structures, a chain-link fence, and other protective devices. All project substation structures are grounded. A communication system would also be installed within the same footprint. The communication system comprises fiber optic communication cabling for the Supervisory Control and Data Acquisition (SCADA), which provides communication capabilities between substations, switchyards, and O&M facilities.

Utility switchyard - The proposed utility switchyard includes two bays, three circuit breakers, six disconnect switches, (the continuous rating of the new breakers and disconnect switches should be 4000 Amp at the 500 kV nominal voltage), series

capacitor banks, grounding grids, protection devices, bus support structures, Direct Transfer Trip (DTT) receivers, a chain link fence around the switchyard, etc. The switchyard would be designed and constructed with a Breaker-and-a-half (BAAH) configuration. The Adelanto-Marketplace 500 kV transmission line would loop in and out of the switchyard to interconnect the project into the LADWP grid. The tallest structure at the switchyard would be the dead-end structures, which would be up to 175 feet above ground level and terminate the 500 kV gen-tie and utility 500 kV loop-in and outlines. All the switchyard structures are grounded, as described in the LADWP study.

The applicant would construct, own, operate, and maintain the newly built 500 kV project substation and generator tie line. The switchyard would be constructed by the applicant and transferred to LADWP for operation and maintenance purposes. (Figure 5, LADWP SIS, project description section 2.0)

Gen-tie-line - The 500kV gen-tie line is built with a segment of cables buried underground and would connect the project's substation with the project switchyard. The buried line segment would traverse through the existing culverts under the I-15 in a duct bank. All the gen-tie line structures are grounded, as shown in the one-line diagram of the SIS. The gen-tie line would facilitate interconnecting the project's substation with the new LADWP switchyard.

4.3.2.1 Methodology and Thresholds of Significance

For study purposes, the project was studied under the Q6 LADWP study (Q6 Study) to determine its impact on the LADWP-controlled grid. Q6 is the most aggressive scenario in Los Angeles' 100 percent clean energy goals, modeling a highly electrified, fully renewable power system. The study identified the effects of the transmission system caused by the project. It determined the mitigation measures needed to ensure system conformance with utility reliability criteria, NERC planning standards, WECC reliability criteria, and the LADWP reliability criteria for potential impacts to their system. The interconnection of the project may impact the utility system and cause it to be out of compliance with regulatory reliability requirements; mitigation can vary from adjusting the generator's operation to installing new transmission lines.

What follows, extracted from the Q6 Study, outlines the methodology used and identifies thresholds by which the LADWP determines whether the proposed project impacts the grid's reliability and, if so, whether transmission upgrades are required. The study aims to determine the financial responsibility for transmission upgrades necessary to mitigate reliability impacts. The California Energy Commission and the California Public Utility Commission would be the CEQA lead agencies for these transmission impacts, and as such, would identify environmental impacts and any required mitigation.

The Q6 Study power flow cases were developed from the WECC base case and Participating Transmission Owner PTO's transmission expansion base case series representing summer peak and spring off-peak load conditions. The Q6 Study was

based on a 2023 load forecast. The LADWP 500 kV Interconnection Area assessment base case was developed from the master base case by dispatching all proposed 500 kV resources in the South 500 kV Interconnection Area to 80% of their Net qualifying capacity. The power flow cases included all LADWP-approved transmission projects, earlier queued Serial Group, and generation projects with associated Network Upgrades and Special Protection Systems/Remedial Action Schemes. The energy storage facilities were modeled to dispatch at their 4-hour maximum discharging capacity. If necessary, LADWP may develop operating procedures later before the project's commercial operation date to curtail the output of the Q6 project during planned or forced outages. Detailed study assumptions are described in the SIS.

The SIS study included a Power Flow study, a Transient Stability study, a Post-Transient (Reactive Margin) Stability study, and a Short Circuit study. The study modeled projects in the LADWP queue, specifically in the Q6 window, with the SMSP project having a total net output of 300 MW. The Power Flow study assessed the project's impact on the thermal loading of the transmission lines and equipment. The Transient Stability study and the Post-Transient Voltages Stability study were conducted to determine whether all projects would create any instability in the system following certain selected outages. The Short Circuit study included the LADWP 500 kV Interconnection Area projects, with all the transmission upgrade projects. The Short Circuit study aims to determine if the interconnection could overstress the existing substation components.

The thermal and voltage performance of the system was evaluated for base cases under normal (P0), single-element outages (P1 and P2), and selected multiple-element outages (P3-P7). Thermal loadings were reported when a model's transmission component was loaded above 95 percent of its continuous MVA rating (P0) and above 95 percent of its emergency rating (P1-P7). Generally, concerns are raised when an element is loaded above 100 percent of its normal or emergency rating; however, 95 percent was chosen to identify circuits at the edge of an overload. Moreover, such circuits need to be closely monitored and can be placed as potential candidates for future upgrades.

Transmission voltage violations for normal (P0) conditions were reported when per-unit voltages were less than 0.95 or greater than 1.05. Following single or multiple outages, transmission voltage violations were reported when per-unit voltages were less than 0.90 or greater than 1.1. Voltage deviations were recorded whenever these deviations were greater than 8 percent for P1 load buses and 10% for all others.

Bus flow analysis was performed to determine if any thermal overloads exist on any equipment inside a substation that is not already monitored in the reliability thermal loading analysis. Substation equipment is considered thermally overloaded if the power flow loading exceeds 100% of the equipment's current rating.

4.3.2.2 Direct and Indirect Impacts

Reliability Assessment Results

All Q6 asynchronous projects were modeled with reactive capabilities to meet the requirements (0.95 lead/lag dynamic at the high side of the station transformer). A reliability thermal analysis was performed on power flow cases, including all energy-only and full-capacity projects dispatched to maximum values. Congestion management is relied upon for mitigation where applicable.

Steady-State Thermal Overloads: LADWP study identified the impact and system reliability requirements of the project as part of an Energy Resource interconnection study. Based on the energy studies, the study results show that there were no thermal violations under P0-P7 conditions for the 3210 MW PDCI and Castaic generation output, as well as the High VIC-LA path flow West of River case (sensitivity case), as described in the SIS. The study results indicate that the Q6 solar and battery storage project is not expected to cause any thermal load violations due to interconnection. (Appendix B plot files of the SIS)

Bus Flow analysis: Bus voltage plots, in conjunction with the relative rotor angle plots, provide a means of detecting out-of-step conditions. The bus voltage plots help assess the magnitude and duration of post-disturbance voltage dips and peak-to-peak voltage oscillations. Bus voltage plots also give an indication of system damping and the level to which voltages are expected to recover in steady-state conditions. Substation equipment is considered thermally overloaded if the power flow loading is greater than or equal to 100% of the equipment's current rating. The projects have no impact on the loading of buses and switching devices.

Steady State Voltage: The power flow study revealed that some Q6 projects may experience high or low voltages and/or voltage deviations. The interconnection customers must manage their project's plant voltages within equipment tolerances. The study results indicate that the Q6 solar and battery storage project is not expected to cause any voltage violations due to interconnection.

Reactive Power Deficiency analysis was performed under various scenarios to determine whether the project could meet 0.95 PF at the Point of Interconnect (POI). If the project did not have sufficient reactive power, additional shunt capacitors were installed to meet the requirement. The study indicated that two of the four scenarios analyzed were not able to meet the +0.95 PF requirements with the project's proposed MVAr capabilities. It should be noted that high voltages were observed at the Photovoltaic (PV) and BESS and collector buses of those scenarios.

Transient and Post-Transient Analysis: Disturbance simulations were performed for a 20-second study period for selected categories P2, P4, and P7 (loss of multiple elements) outages. A complete list of outages evaluated for this project is presented in Appendix C of the SIS report. Transient stability analysis shows positive damping and

meets WECC disturbance criteria for all studied contingencies in all scenarios. Post-transient voltage deviation results are shown in Tables 7 and 8. No network upgrades are proposed due to the Q6 LADWP interconnection projects.

Short Circuit Duty Analysis: Short Circuit studies were conducted to determine the degree to which the addition of all the projects in Q6 Interconnection area, including the SMP project, and all necessary transmission upgrades increases fault duties at LADWP's substations, adjacent utility substations, and other 230 kV and 500 kV busses within the study area. The study results show that the project contributes as a source of available fault current but does not result in any existing circuit breakers exceeding their short-circuit interruption capability.

Mitigation measures

The following mitigation measures have been proposed due to increased fault duty and reactive VAR deficiencies at the LADWP facilities.

The study assumes that the interconnection customer is only requesting an evaluation of the requirements to interconnect to the LADWP system. No other assumptions, such as delivering energy out of or into LADWP's balancing authority area, were studied. Additionally, the study does not guarantee that there is available transmission capacity for any specific path.

The study, based on the provided models and the assumption of maximum steady-state generation at the Q6 projects, has identified a critical need for additional reactive support. If the inverters do not provide reactive support at night, the Q6 project will face a significant reactive power deficiency. It is therefore vital that the applicant constructs the project with the necessary additional reactive VAR capabilities.

In addition, the SIS results show that the Q6 project contributes fault current duty that exceeds McCullough and Eldorado 230kV circuit breakers short-circuit interrupting capability. However, the fault current at McCullough and Eldorado 230kV will be investigated by the Joint facility owners to validate the cause and mitigation option due to changes and modeling practices. It's important to note that the Q6 project is not responsible for mitigating the fault current at McCullough 230kV, as this falls under the review of the Joint facility owners.

The minimum system additions required to accommodate the Q6 project include a new 500 kV switching station with two 500 kV bays equipped with three circuit breakers, six disconnect switches, and other switchyard equipment.

4.3.2.3 Cumulative Impacts

The cluster study modeled 300 MW of SMSP power output to the LADWP transmission network and identified the cumulative transmission impacts on the LADWP system.

4.3.3 Project Consistency with Applicable Plans, Policies, and Regulations

Table 4.3-1 contains the CEC staff's determination of consistency with applicable general, local, state, and federal/regional plans, policies, and regulations, including any proposed Conditions of Certification (COC) to ensure the project would comply with plans, policies, and regulations. As shown in this table, the staff concludes that with specific COCs, the proposed project would be consistent with all applicable plans, policies, and regulations. The subsection at the end of this section, "Staff Proposed Conditions of Certification," contains the full text of the referenced COC.

LADWP is not bound by CPUC General Orders because it is a municipal utility. LADWP's own standards align with GO-95 and GO-128 to ensure safety, reliability, and consistency with statewide practices—which effectively incorporate the same technical rules as GO-95 and GO-128.

TABLE 4.3-1 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS

Applicable Plans, Policies, and Regulations	Consistency and Basis For Determination
Federal/Regional	
Federal Energy Regulatory Commission (FERC) /North American Electric Reliability Council (NERC)	**Yes.** The proposed interconnection facilities would comply with Federal/Regional regulations. Condition of Certification (COC) **TSE-5** would require the submittal of any updates to the Large Generator Interconnection Agreement (LGIA) at least 30 days before the construction of transmission facilities.
NERC/WECC Planning Standards: The Western Electricity Coordinating Council (WECC) Planning Standards	**Yes.** The proposed interconnection facilities would comply with Federal/Regional regulations. COC **TSE-5** would require the submittal of any updates to the LGIA at least 30 days before the construction of transmission facilities.
State	
None. See General below.	
General	
National Electric Safety Code 2023 (NESC)	**Yes.** The proposed overhead collector lines, underground collector lines, and generator tie lines would comply with the National Electrical Safety Code (NESC). Compliance with COC **TSE-4** requires that power plant switchyards, outlet lines, and terminations comply with the NESC.
Local	
LADWP Regulation and standard	**Yes.** The proposed overhead generator tie-line would comply with PG&E Regulation for Clearance Requirements for Power Line Corridors. Compliance with COCs **TSE-5** and **TSE-6** requires overhead conductor compliance with LADWP Regulation.

4.3.4 Electricity Reliability Benefits

Public Resources Code section 25520 requires that applications for certification contain facility reliability information and Public Resources Code section 25523(h) requires the written decision to contain a discussion on the electricity reliability benefits of the project. These two sections are made applicable to the evaluation of the SMSP through Public Resources Code sections 25545.2 and 25545.8. **Section 4.3, Transmission System Engineering** addresses section 25523(h) regarding the project's impacts on, and benefits to the reliability of the electricity network the project would serve. **Section 4.2, Facility Reliability** addresses section 25520 regarding the facility's reliability.

Consistent with Public Resources Section 25523(h), the following provides a description of the system reliability benefits of the project.

The SMSP is designed to deliver both clean energy and stronger reliability to California's electricity network. With up to 300 MW of solar generation paired with 300 MW of battery storage for 4 hours, or 1,200 MWh, the project ensures that power is available not only when the sun is shining but also during evening peaks when demand is highest. By storing excess daytime energy and releasing it later, the project helps stabilize supply and reduce strain on the grid.

Its connection to the Mead–Adelanto 500-kilovolt transmission line, operated by LADWP, makes the project strategic. This line is one of Southern California's critical transmission corridors that link the region to Nevada and the broader Southwest. By injecting renewable energy directly into this backbone, the SMSP can reduce reliance on distant imports, ease congestion risks, and strengthen the overall resilience of the system.

The battery storage component can further enhance reliability by providing fast-response reserves that support voltage stability and frequency regulation. This capability is vital for preventing outages and smoothing fluctuations in supply, especially as California integrates more renewable resources.

By combining large-scale generation from solar with energy storage at a strategic interconnection point, it would help ensure that Southern Californians benefit from a steady flow of clean electricity.

4.3.5 Conclusions and Recommendations

As discussed above, implementing the proposed COCs would reliably and safely interconnect the project to the transmission grid. CEC staff recommends adopting the COCs, as detailed in subsection "4.3.6 Proposed Conditions of Certification" below.

4.3.6 Proposed Conditions of Certification

The proposed COCs include measures to comply to applicable plans, policies, and regulations and ensure that the SMP would be reliably and safely interconnected to the LADWP transmission grid.

TSE-1 The project owner shall furnish the Compliance Project Manager (CPM) and the CEC's Delegate Chief Building Official (DCBO) with a transmission facility design submittals schedule, a Master Drawing List, a Master Specifications List, and a Major Equipment and Structure List. The schedule shall contain a description and a list of proposed submittal packages for design, calculations, and specifications of major structures and equipment. To facilitate audits by CEC staff, the project owner shall provide designated packages to the CPM when requested. Additionally, the project's switchyard and loop-in and out lines construction would be monitored throughout the construction phase by Los Angeles Department of Water and Power's LADWP. Therefore, the project owner should share all necessary construction permits plans for the construction of the switchyard and in- and out-of-loop lines with LADWP.

Verification: Before the start of construction, the project owner shall submit the schedule, a Master Drawing List, and a Master Specifications List to the DCBO and to the CPM. The schedule shall contain a description and list of proposed submittal packages for design, calculations, and specifications for major structures and equipment (see a list of major equipment in **Table 1**: Major Equipment List below). Additions and deletions shall be made to the table only with CPM and DCBO approval. The project owner shall provide schedule updates in the Monthly Compliance Report.

Table 1: Major Equipment List
Breakers
Step-up transformer
Switchyard
Busses
Surge arrestors
Disconnects
Take-off facilities
Electrical control building
Switchyard control building
Transmission pole/tower
Grounding system

TSE-2 Before the start of construction, the project owner shall assign to the project an electrical engineer and at least one of the following:

a. a civil engineer.

b. a geotechnical engineer or a civil engineer experienced and knowledgeable in soil engineering.

c. a design engineer who is either a structural engineer or a civil engineer and fully competent and proficient in the design of power plant structures and equipment supports; or

d. a mechanical engineer (Business and Professions Code Sections 6704 et seq. require state registration to practice as a civil or structural engineer in California).

The tasks performed by civil, geotechnical, mechanical, electrical, or design engineers may be divided between two or more engineers, as long as each engineer is responsible for a particular project segment, such as proposed earthwork, civil structures, power plant structures, or equipment support. Each segment of the project shall have at most one responsible engineer. The transmission line may be the responsibility of a separate California-registered electrical engineer. The civil, geotechnical, or civil and design engineer, assigned as required by COC **GEN-5**, may be responsible for the design and review of the TSE facilities.

For review and approval, the project owner shall submit to the DCBO the names, qualifications, and registration numbers of all engineers assigned to the project. Suppose any one of the designated engineers is subsequently reassigned or replaced. In that case, the project owner shall submit the newly assigned engineer's name, qualifications, and registration number to the DCBO for review and approval. The project owner shall notify the CPM of the DCBO's approval of the new engineer. This engineer shall be authorized to halt earthwork and require changes if site conditions are unsafe or do not conform with the predicted conditions used as the basis for the design of earthwork or foundations.

The electrical engineer shall:

1. be responsible for the electrical design of the power plant switchyard, outlet, and termination facilities and
2. sign and stamp electrical design drawings, plans, specifications, and calculations.

Verification: Before the start of rough grading, the project owner shall submit the names, qualifications, and registration numbers of all the responsible engineers assigned to the project to the DCBO for review and approval. The project owner shall notify the CPM of the DCBO's approvals of the engineers within five days of the approval.

Suppose the designated responsible engineer is subsequently reassigned or replaced. In that case, the project owner has five days to submit the newly

assigned engineer's name, qualifications, and registration number to the DCBO for review and approval. The project owner shall notify the CPM of the DCBO's approval of the new engineer within five days of the approval.

TSE-3 If any design and construction discrepancy is discovered in any engineering work that has undergone DCBO design review and approval, the project owner shall document the discrepancy and recommend corrective action. The discrepancy documentation shall be submitted to the DCBO for review and approval, which refers to this condition of certification.

Verification: The project owner shall submit a copy of the DCBO's approval or disapproval of any corrective action taken to resolve a discrepancy to the CPM within 15 days of receipt. If disapproved, the project owner shall advise the CPM, within five days of the reason for the disapproval, along with the revised corrective action required to obtain the DCBO's approval.

TSE-4 For the power plant onsite substation, outlet line, and termination, the project owner shall begin construction once the DCBO has approved plans for that increment of construction. 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 DCBO inspect the installation to ensure compliance with the requirements of applicable plans policies, and regulations. 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: Before the start of each increment of construction, the project owner shall submit to the DCBO 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 plans, policies, and regulations, and send the CPM a copy of the transmittal letter in the next monthly compliance report.

TSE-5 The project owner shall ensure that the proposed transmission facilities' design, construction, and operation conform to all applicable plans, policies, and regulations and the following requirements. The project owner shall submit the required copies of the design drawings and calculations determined by the DCBO. Once approved, the project owner shall inform the CPM and DCBO of any anticipated changes to the design and shall submit a detailed description of the

proposed change and complete engineering, environmental, and economic rationale for the shift to the CPM and DCBO for review and approval.

a. The power plant outlet line shall meet or exceed the electrical, mechanical, civil, and structural requirements of 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, National Electric Code (NEC) and related industry standards.

b. Breakers and buses 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 project's total output.

e. Termination facilities shall comply with applicable LADWP interconnection standards.

f. The project owner shall provide to the CPM:

   i. The Special Protection System sequencing and timing, if applicable,

   ii. A letter stating that the mitigation measures or projects selected by the transmission owners for each reliability criteria violation, for which the project is responsible, are acceptable if applicable,

   iii. Any updates to the executed LGIA signed by the LADWP and the project owner.

Verification: Before the start of construction or the start of modification of transmission facilities, the project owner shall submit to the DCBO for approval:

a. Design drawings, specifications, and calculations conforming with 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*, 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 DCBO shall contain the design criteria, a discussion of the calculation method(s), a sample calculation based on "worst case conditions"[1] and a statement signed and sealed by the registered engineer in responsible charge, or other acceptable alternative verification, that the transmission element(s) will conform with CPUC General Order 95 or National Electric Safety Code (NESC); Title 8 of the California Code and Regulations (Title 8);

Articles 35, 36 and 37 of the *High Voltage Electric Safety Orders*, PG&E 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 COC **TSE-5**, a) through f).

d. The Generator Special Facilities Agreement shall be provided concurrently to the CPM and DCBO. The project owner shall identify and justify the substitution of equipment and substation for DCBO and CPM approval.

e. Any changes or updates to the executed LGIA signed by the LADWP and the project owner.

f. Before the construction of any project modification requiring approval of the LADWP, provide the interconnection approval to the CPM. Interconnectional approval for modification of existing facilities can be in the form of an approved Material Modification or approval of the proposed changes to the project and the existing interconnection facilities. Within 15 days after the cessation of construction, the project owner shall provide a statement to the CPM from the registered engineer in charge (signed and sealed) that the switchyard and transmission facilities conform to the above-listed requirements.

TSE-6 The project owner shall inspect the transmission facilities during and after construction. Any subsequent CPM and DCBO-approved changes to it to ensure conformance with NESC, Title 8, CCR, Articles 35, 36, and 37 of the "High Voltage Electric Safety Orders," applicable interconnection standards, NEC, and related industry standards. In the event of non-conformance, the project owner shall notify the CPM and DCBO in writing within ten days of discovering the non-conformance and describe the corrective actions to be taken.

Verification: Within 60 days after the first synchronization of the project, the project owner shall transmit to the CPM and DCBO:

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 charge. A statement attesting to conformance with 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 transmission facilities' mechanical, structural, and civil portion 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 outlined in the "Compliance Monitoring Plan."

4.3.7 References

NERC (North American Electric Reliability Council) 2024 Reliability Standards for the Bulk Electric Systems of North America, Updated January 1, 2024, and ongoing.

RE 2024uuu – Resolution Environmental (TN 259708). Appendix A1 Engineering Generation Facility Description, Design and Operation - October 2024 - Revision 1, dated October 25, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025ii – Resolution Environmental (TN 264913). Updated Project Description and Responses to REV 1 DR BIO-2 and REV 1 DR ES-1, dated July 18, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025kkk – Resolution Environmental (TN 265739). Response to CEC's Request for Information dated July 31 2025, dated August 21, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

The WECC (Western Electricity Coordinating Council) Regional Reliability Standards were updated on December 10, 2014, and are ongoing.

4.3.8 Definition of Terms

ACSR	Aluminum conductor steel-reinforced
Ampacity	Current-carrying capacity, expressed in amperes, of a conductor at specified ambient conditions, where 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
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 that ensures dispatched generation and transmission loading (imports) will not violate criteria.
Double Contingency	Also known as an emergency or N-2 condition, an N-2 contingency occurs when a forced outage of two system elements occurs—usually (but not exclusively) caused by one event. Examples of an N-2 contingency include the loss of two transmission circuits on a single tower line or the 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.
Kcmil or KCM	Thousand circular mils. A unit of the conductor's cross-sectional area; when divided by 1,273, the area in square inches is obtained.

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 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 generation units must feed into the system
Megavolt Ampere (MVA)	A unit of apparent power equals the product of the line voltage in kilovolts, current in amperes, the square root of 3, divided by 1,000
Megawatt (MW)	A unit of power equivalent to 1,341 horsepower
N-0 Condition	See Normal Operation/Normal Overload, below
Normal Operation/ Normal Overload (N-0)	When all customers receive the power, they are entitled to it without interruption and at a steady voltage, and no element of the transmission system is loaded beyond its continuous rating
N-1 Condition	See Single Contingency, below
N-2 Condition	See Double Contingency, above
Outlet	Transmission facilities (circuit, transformer, circuit breaker, etc.) linking generation facilities with the main grid
Power Flow Analysis	A power flow analysis is a forward-looking computer simulation of all generation and transmission system facilities that identify 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 generation units must feed into the system. An adequate supply of reactive power is required to maintain system voltage levels.
Remedial Action Scheme	A remedial action scheme is an automatic control provision that, as one example, will trip a selected generating unit when a circuit overloads
Single Contingency	Also known as an emergency or N-1 condition occurs when one major transmission element (circuit, transformer, circuit breaker, etc.) or one generator is out of service
Special Protection Scheme/System	Detects a transmission outage (either a single or credible multiple contingencies) 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 used as an outlet for one or more electric generators.
Thermal Rating	See ampacity.
TSE	Transmission System Engineering

4.4 Worker Safety and Fire Protection

4.4.1 Setting

This section discusses the existing conditions and regulatory background associated with the construction and operation of the project with respect to worker safety and fire protection.

Existing Conditions

The 2,670-acre project site is in unincorporated San Bernardino County southeast of Interstate 15 (I-15). Primary site access would be provided via the existing Rasor Road, which runs from I-15 eastward to the Rasor OHV recreation area.

Existing conditions onsite consist of rural desert land that is almost entirely undeveloped. Climate in the project area is characterized as mediterranean with hot and arid summers with little to no cloud coverage, and cool winters with partly cloudy conditions.

The project site would be served by the San Bernardino County Fire Protection District (SBCFPD). The project would be served first by the nearest SBCFPD station (Station 53) located in the community of Baker (~11 miles northeast of the project site at 72734 Baker Boulevard). There would be an approximate 20-minute response time under ideal conditions when not already committed. The next closest station that would provide fire protection services is the Helendale Station 4 which is approximately 80 miles southwest of the project site and would have an approximate 2-hour response time (SBCFPD, 2025).

Regulatory

Worker safety and fire protection are regulated through plans, policies, regulations, and standards, at the federal, state, and local levels.

Federal

Occupational Safety and Health Act (OSHA). The Department of Labor, Occupational Safety and Health Administration (OSHA) has adopted regulations (Title 29, Code of Federal Regulations, Section 1910.95) designed to protect workers. Employers are required to monitor worker exposure to listed hazardous substances and notify workers of exposure. The regulations specify requirements for employee training, availability of safety equipment, accident-prevention programs, and hazardous substance exposure warnings. These sections contain requirements to protect worker health and safety in the general industry and construction industry.

These regulations also address requirements to protect workers in emergency situations. They are designed primarily to protect worker health but also contain

requirements that affect general workplace safety. The administering agencies for the above authority are Federal and State OSHA and the California Occupational Safety and Health Administration (Cal OSHA), respectively. As required by 29 Code of Federal Regulation (CFR) 1910, an employer must have an Emergency Action Plan whenever an OSHA standard in Part 1910 requires one. The Emergency Action Plan must be in writing, kept in the workplace, and available to employees for review, unless there are 10 or fewer employees. The Emergency Action Plan must contain procedures for reporting, procedures for emergency evacuation, procedures for employees who remain for critical plant operations, procedures to account for employees following evacuation, procedures if rescue and medical duties are required, and identified persons who can provide more information to employees.

National Institute of Occupational Safety and Health (NIOSH). NIOSH was established by the Occupational Safety and Health Act of 1970. NIOSH studies worker health and safety and develops safe work practices, testing protocols, and makes recommendations to OSHA to continually improve workplace practices.

State

California Occupational Safety and Health Administration. Cal OSHA is the primary agency responsible for worker safety related to the handling and use of chemicals in the workplace. Cal OSHA standards are generally more stringent than federal regulations. Employers are required to monitor worker exposure to listed hazardous substances and notify workers of exposure (Title 8, California Code of Regulations (CCR), §§ 337 to 340). The regulations specify requirements for employee training, availability of safety equipment, accident-prevention programs, and hazardous substance exposure warnings. It also includes the Construction Safety Orders (Title 8, CCR, §§ 1500 to 1962) and the General Industry Safety Orders (Title 8, CCR, §§ 3200 to 6184). General Industry Safety Orders include but are not limited to heat illness prevention (indoors and outdoors) and protection from wildfire smoke.

National Fire Protection Association (NFPA). The NFPA 855 Standard for the Installation of Stationary Energy Storage Systems (Second Edition – 2023) provides mandatory requirements for, and explanations of, the safety strategies and features of energy storage systems (such as the project battery energy storage system (BESS)). Applying to all energy storage technologies, the standard includes chapters for specific technology classes. While NFPA 855 is a standard and not a code, its provisions are enforced by NFPA 1, Fire Code, in which Chapter 52 provides an outline of requirements along with references to specific sections in NFPA 855. NFPA 855 (Second Edition - 2023) will also be incorporated into the California Fire Code (CFC) effective January 1, 2026.

NFPA 850 requires the development of a Fire Protection Design Basis Document that identifies relevant hazards such as the presence of fuels, lubricating oils, flammable liquids, and electrical equipment.

The California Fire Code (CFC). California Health and Safety Code Sections 13145 and 13146 requires every city, county, or city and county fire department or district providing fire protection services to enforce building standards adopted by the State Fire Marshal and other regulations of the State Fire Marshal. The CFC was amended in July 2024 to add regulations (Chapter 12 Energy Systems) governing BESS placement and operations in California. Recent updates to the CFC, effective January 1, 2026, incorporate NFPA 855 (Second Edition – 2023) and its requirements for battery safety, fire protection, and installation.

The California Electrical Code. The California Electrical Code outlines regulations for electrical installations, incorporating the National Electrical Code with California-specific amendments to ensure safety and compliance. The California Electrical Code is based on NFPA 70 with amendments and additions. California Electrical Code, Title 24, Part 3. Requirements for electrical safety, which include the Uniform Electrical Code, Title 24, Part 3, govern electrical installations, including wiring, equipment, grounding, bonding, and overcurrent protection, with the goal of protecting people and property from electrical hazards.

California Public Utilities Code (CPUC or Commission) 761.3 Section (g). Senate Bill (SB) 38 (Laird 2023) added safety requirements for battery storage projects. It requires every battery energy storage facility in California to have an emergency response and emergency action plan that covers the premises of the facility and is consistent with emergency action plans in Title 8, CCR. The owner or operator of the facility must coordinate with local emergency management agencies, unified program agencies, and local first responders to develop the plan and must submit the plan to the county and, if applicable, the city where the facility is located.

California Public Utilities Commission's General Order (GO) 167-C. This order establishes standards to enhance safety of Battery Energy Storage Facilities and orders that facilities are effectively maintained and operated to ensure safe and reliable service.

California Health and Safety Code, Sections 25500-25541. The California Health and Safety Code, Sections 25500 through 25541 requires local governments to regulate local business storage of hazardous materials in excess of certain quantities. The law also requires that entities storing hazardous materials be prepared to respond to releases. Those using and storing hazardous materials are required to submit a hazardous material business plan (HMBP) to their local Certified Unified Program Agency (CUPA) and to report releases to their CUPA and the State Office of Emergency Services.

Local

San Bernardino County General Plan. The San Bernardino Countywide Plan Policy Plan (SBC, 2020) serves as the County's General Plan and provides direction and

outlines policies intended to mitigate death, injuries, and environmental and economic damage. The General Plan policies applicable to worker safety and fire protection are:

- **Policy PP-3.1** Fire and emergency medical services: We maintain a sufficient number and distribution of fire stations, up-to-date equipment, and fully-trained staff to respond effectively to emergencies.
- **Policy PP-3.2** Fire District: We support the expansion of the Fire District to serve additional incorporated jurisdictions, and the use of special funding and financing mechanisms to augment Fire District revenues to improve service and coverage.
- **Policy PP-3.3** Search and rescue: We maintain up-to-date equipment and fully-trained staff to provide urban search and rescue and swift water rescue emergency response.
- **Policy PP-3.4** Fire prevention services: We proactively mitigate or reduce the negative effects of fire, hazardous materials release, and structural collapse by implementing the California Fire Code, adopted with County amendments.
- **Policy PP-3.5** Firefighting water supply and facilities: We coordinate with water providers to maintain adequate water supply, pressure, and facilities to protect people and property from urban fires and wildfires.
- **Policy PP-3.6** Concurrent protection services: We require that fire department facilities, equipment, and staffing required to serve new development are operating prior to, or in conjunction with new development.
- **Policy PP-3.7** Fire safe design: We require new development in the Fire Safety Overlay to comply with additional site design, building, and access standards to provide enhanced resistance to fire hazards.

San Bernardino County Fire Protection District Fire Protection Standards. In accordance with the CFC, the SBCFPD incorporated the Fire Apparatus Access Roads standard (Section No. 503.1 through 503.3) and Fire Personnel Key Boxes (Knox Box) standard (Section No. 506) into its operational standards. Under these standards, all required building plans must be submitted to the SBCFPD for review and approval of access roads and points and Knox Box mounting location, position, and operating standards prior to installation.

Hazardous Materials Business Plan (HMBP). To satisfy the California Health and Safety Code, Section 25500, et seq., and the related regulations of 19 CCR 2620 et seq., a HMBP would be required by the San Bernardino County Department of Environmental Health every year to the California Environmental Reporting System (CERS). The HMBP Program is administered throughout San Bernardino County and its incorporated cities and is used to protect public health, the environment and groundwater from risks or adverse effects associated with the improper storage and handling of hazardous materials. The SBCFPD Hazardous Materials Section is the designated CUPA for the County. The CUPA programs help prevent costly releases and spills that could endanger the community and damage the environment.

General

Los Angeles Department of Water and Power (LADWP) follows Federal Energy Regulatory Commission's Good Utility Practice and LADWP standards and specifications.

Cumulative Setting

Staff reviewed the potential for the construction and operation of the project combined with the existing baseline and expected new development in the project vicinity to result in impacts on the fire and emergency service capabilities of the SBCFPD (**Appendix A, Table A-1**). Of those projects, staff identified 8 major projects additional to the project that could cause a cumulative impact to the SBCFPD.

These projects are:

- Brightline West - Las Vegas to Victor Valley
- Ivanpah Control Transmission Line Project
- I-15 Mojave Wildlife Crossings Restoration Project R129.75 (Soda Mountain)
- Love's Travel Stop and Manufactured Home Park Project
- I-15 Mojave Wildlife Crossings Restoration Project R116.70 (Cave Mountain)
- Eldorado Pisgah Lugo TLRR Project
- I-15 Mojave Wildlife Crossings Restoration Project R168.05 (Clark Mountain)
- City of Barstow General Plan Update & Barstow International Gateway (BIG) Specific Plan

4.4.2 Impacts

Workers at the proposed facility would 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 analysis is to assess whether the worker safety and fire protection measures proposed by the applicant are adequate to:

- be consistent with applicable safety plans, policies, and regulations;
- protect the workers during construction, commissioning, and operation of the facility;
- protect against fire; and
- provide adequate emergency response procedures.

Worker Safety

Industrial environments are potentially dangerous during construction, commissioning, operation, and decommissioning of facilities. Workers at the proposed project would be exposed to loud noises, moving equipment, trenching/excavation accidents, electrical hazards, battery fires, and herbicides during and after applications. The workers could experience falls, trips, burns, lacerations, being struck by objects, and numerous other potential injuries. Well-defined policies and procedures, training, and hazard recognition and control at the facility are important to minimize such hazards and protect workers. Consistency with applicable plans, policies, and regulations would help ensure workers would be adequately protected from health and safety hazards.

A Construction Health and Safety Program (Condition of Certification [COC] **WORKER SAFETY-1**) and an Operations and Maintenance Health and Safety Program (COC **WORKER SAFETY-2**) would be prepared by the applicant to minimize worker hazards during construction and operation. California Energy Commission (CEC) staff uses the phrase "Health and Safety Program" to refer to the measures that would be taken to ensure consistency with the applicable plans, policies, and regulations during the construction and operational phases of the project.

Construction Health and Safety Program

The project encompasses construction and operation of photovoltaic (PV) panels, a BESS, a high-voltage substation, a gen-tie line, a utility switchyard, and 500 kV transmission loop-in lines. Workers would be exposed to hazards including physical, chemical, biological and general construction hazards.

Construction Safety Orders applicable to project construction discussed above are promulgated by Cal OSHA and are published at CCR, title 8, sections 1502, et seq. The Health and Safety Program would include the following major programs:

- Construction Injury and Illness Prevention Program (CCR, tit. 8, § 1509)
- Construction Heat Illness Prevention Plan (CCR, tit. 8, § 3395)
- Construction Fire Prevention Plan (CCR, tit. 8, § 1920)
- Personal Protective Equipment Program (CCR, tit. 8, § 1514 to 1522)
- Construction Emergency Action Plan (CCR, tit. 8, § 3220)

Additional programs under Construction Safety Programs (CCR, tit. 8, §§ 3200 to 6184), Electrical Safety Orders (CCR, tit. 8, §§ 2299 to 2974) include various safety and health programs.

The application adequately outlined the Construction Health and Safety Program for the project. However, outlining the appropriate elements of the plan does not ensure compliance with the program. Therefore, staff proposes COC **WORKER SAFETY-1,** which would require the project owner to identify and provide the required elements

and detailed plans of the Construction Health and Safety Program to the Compliance Project Manager (CPM) for approval and to the SBCFPD for review and comment prior to the start of construction of the project.

Operations and Maintenance Health and Safety Program

Prior to the start of commissioning and operations, the Operations and Maintenance Health and Safety Program would be prepared. This operational safety program would include the following major programs and plans:

- Injury and Illness Prevention Program (CCR, tit. 8, § 3203)
- Fire Protection and Prevention Program (CCR, tit. 8, § 3221)
- Fire Protection System Impairment Program (2020 National Fire Protection Association (NFPA) 850 Section 17.4.2 & Chapter 9 CFC Sections 901.7, 901.7.1-901.7.6)
- Personal Protective Equipment Program (CCR, tit. 8, §§ 3401 to 3411)
- Emergency Action Plan (CCR, tit. 8, § 3220)

The HMBP and Spill Prevention Control and Countermeasure (SPCC) Plan are required through COC **HAZ-1** in **Section 5.7, Hazards, Hazardous Materials/Waste, and Wildfire**. In addition, the requirements under General Industry Safety Orders (CCR, tit. 8, §§ 3200 to 6184) and Electrical Safety Orders (CCR, tit. 8, §§ 2299 to 2974) would be applicable to this project. In addition, the use of herbicides (if proposed) to control vegetation growth near the solar panels and/or BESS would require adherence to 8 CCR § 5155 and other relevant sections regarding worker exposure to toxic substances.

The application also adequately outlined the Operations and Maintenance Health and Safety Program for the project. However, outlining the appropriate elements of the plan does not ensure compliance with the program. Therefore, staff proposes COC **WORKER SAFETY-2** which would make it a requirement to identify and provide elements and detailed plans of the Operation and Maintenance Health and Safety Program to the CPM for approval and to the SBCFPD for review and comment prior to the start of commissioning of the project.

The measures in these plans would be derived from applicable sections of state and federal law. Both health and safety programs would comprise more specific programs and would require the major items detailed in the following paragraphs.

Injury and Illness Prevention Program. The Injury and Illness Prevention Program (IIPP) is a key worker safety and health program that identifies the person(s) with authority and responsibility for implementing the program, ensures that employees utilize safe and healthy work practices, identifies and evaluates workplace hazards and corrects them, and implements an employee training program. The IIPP shall also include a Construction Heat Illness Prevention Plan in accordance with Title 8 CCR, § 3395.

Staff proposes that the applicant submit a final IIPP to the CPM for review and approval to satisfy proposed COC **WORKER SAFETY-1** and COC **WORKER SAFETY-2**.

Fire Prevention Plan. California Code of Regulations requires an Operations Fire Prevention Plan (CCR, tit. 8, § 3221). This regulation applies to all fire prevention plans required in the State of California and the requirements are detailed below:

(a) Scope and Application. This section applies to all fire prevention plans. The fire prevention plan shall be in writing, except as provided in the last sentence of subsection (d)(2) of this section.

(b) Elements. The following elements, at a minimum, shall be included in the fire prevention plan:

  (1) Potential fire hazards and their proper handling and storage procedures, potential ignition sources (such as welding, smoking and others) and their control procedures, and the type of fire protection equipment or systems which can control a fire involving them;

  (2) Names or regular job titles of those responsible for maintenance of equipment and systems installed to prevent or control ignitions or fires; and

  (3) Names or regular job titles of those responsible for the control of accumulation of flammable or combustible waste materials.

(c) Housekeeping. The employer shall control accumulations of flammable and combustible waste materials and residues so that they do not contribute to a fire emergency. The housekeeping procedures shall be included in the written fire prevention plan.

(d) Training:

  (1) The employer shall apprise employees of the fire hazards of the materials and processes to which they are exposed.

  (2) The employer shall review with each employee upon initial assignment those parts of the fire prevention plan which the employee must know to protect the employee in the event of an emergency. The written plan shall be kept in the workplace and made available for employee review. For those employers with 10 or fewer employees, the plan may be communicated orally to employees and the employer need not maintain a written plan.

(e) Maintenance. The employer shall regularly and properly maintain, according to established procedures, equipment and systems installed in the workplace to prevent accidental ignition of combustible materials.

Staff proposes that the applicant submit a final Fire Prevention Plan to the CPM for review and approval and to the SBCFPD for review and comment to satisfy proposed COC **WORKER SAFETY-1** and COC **WORKER SAFETY-2**.

Fire Protection System Impairment Program. NFPA 850 and the most current CFC 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.

A 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 SBCFPD for review and comment, to satisfy proposed COC **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 (CCR, tit. 8, §§ 3380 to 3400).

All safety equipment must meet 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, among other requirements, the use and maintenance of protective clothing, when to use the protective equipment, 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.

CEC staff proposes that the applicant submit a final PPE Program to the CPM for review and approval to satisfy proposed COC **WORKER SAFETY-1** and COC **WORKER SAFETY-2**.

Emergency Action Plan. California regulations require an Emergency Action Plan (CCR, tit. 8, § 3220).

An Emergency Action Plan must be designed 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 project operations before they evacuate;
- provide procedures to account for all employees and visitors after emergency evacuation of the project 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; and
- determine and establish training and instruction requirements and programs.

CEC staff proposes that the applicant submit a final Emergency Action Plan to the CPM for review and approval and to the SBCFPD for review and comment to satisfy proposed COC **WORKER SAFETY-1** and COC **WORKER SAFETY-2**.

Hazardous Materials Business Plan. The California Hazardous Materials Release Response Plan and Inventory Law requires businesses that store or use hazardous materials to prepare an HMBP and submit it to the CUPA. An HMBP includes details of a facility and business conducted at the site, an inventory of hazardous materials that are handled and stored on-site, an emergency response plan, and a safety and emergency response training program for new employees with an annual refresher course. Workers and first responders to any fire, rescue, or EMS emergency are thus aware of what hazardous materials are on the site and what precautions to take to avoid exposure. CEC staff proposes that the applicant implement the HMBP through COC **HAZ-1** in **Section 5.7, Hazards, Hazardous Materials/Waste, and Wildfire**.

Spill Prevention, Control and Countermeasure Plan (SPCC Plan). The aboveground petroleum storage act (ASPA) program requires tank facilities storing greater than 1,320 gallons of petroleum (crude oil, motor oil, diesel fuel, gasoline) to develop and implement the SPCC Plan requirements. A tank facility is any tank or tanks that are aboveground, including connected piping, that contain petroleum, has secondary containment, and it is used to hold petroleum products. The CUPA regulates businesses within its district. Workers and first responders to any fire, rescue, or EMS emergency are thus aware of what petroleum products are on the site and what precautions to take to avoid exposure due to the flammability, explosivity, and toxicity of these products. A SPPC Plan would limit the size of a spill and thus decrease risk to workers. CEC staff proposes that the applicant implement the SPCC Plan through COC **HAZ-1** in **Section 5.7, Hazards, Hazardous Materials/Waste, and Wildfire**.

Additional plans, policies, and regulations 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 Health and Safety Program".

Health & Safety Program Monitoring

Protecting construction workers from hazards is among the greatest challenges in occupational safety and health. These hazards increase in complexity in the multi-employer worksites typical of large, complex, industrial-type projects such as the construction of solar PV panels over an extremely large area and the placement and wiring of a large BESS. Safety concerns are further raised by the presence of solar PV panels that become electrified upon exposure to sunlight and BESS that arrive with 30 percent or greater state of charge. The standard industry practice of hiring a Construction Safety Supervisor is used to ensure a safe environment for personnel. This industry standard practice has reduced and/or eliminated hazards evident in the audits staff conducted of projects under construction. The federal 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 health and safety performance;
- to assist them in striving for the elimination of the four hazards (falls, electrical, caught-in or-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, to meet the intent of the OSHA standard to provide for a safe workplace during construction, CEC staff proposes COC **WORKER SAFETY-3**, which would require the project owner to designate and provide a site Construction Safety Supervisor (CSS).

Accidents, fires, and worker deaths are known to have occurred 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 CEC compliance staff in safety audits conducted at several projects under construction. Commonly documented findings 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.

To reduce and/or eliminate these hazards, it is necessary for the CEC 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 COC **WORKER SAFETY-4**. A Safety Monitor, hired by the project owner, yet reporting to the Delegate Chief Building Official (DCBO) and CPM, would serve as an "extra set of eyes" to ensure that safety procedures and practices are fully implemented at all projects certified by the CEC.

Health Hazards

Valley Fever

Coccidioidomycosis or "Valley Fever" (VF) is caused by inhaling the spores of the fungus Coccidioides immitis, which are released from the soil during soil disturbance (e.g., during construction activities) or wind erosion. Since 2019, VF infections in San Bernardino County are on the rise, with infection rates ranging from approximately 6 to 11 per 100,000 people (CDPH 2025). A high-risk county has VF infections greater than or equal to 20 per 100,000 people, and thus San Bernardino County is considered to have moderate risk. The disease usually affects the lungs and can have potentially severe consequences, especially in at-risk individuals. Construction workers are often the most exposed population due to ground disturbing activities like trenching or excavating at construction sites. Treatment usually includes rest and antifungal medications. No effective vaccine currently exists for VF.

Applicable regulations with regard to VF protection and exposure can be found in the CCR, title 8, sections:

- Section 342 (Reporting Work-Connected Fatalities and Serious Injuries)
- Section 3203 (Injury and Illness Prevention)
- Section 5141 (Control of Harmful Exposures)
- Section 5144 (Respiratory Protection)
- Section 14300 (Employer Records-Log 300)

California Labor Code section 6709 To further minimize potential exposure of workers and the public to VF during soil excavation and grading, extensive wetting of the soil prior to and during construction activities should be employed and dust masks should be worn at certain times during these activities. Proposed COC **WORKER SAFETY-9** would require the project owner to develop and implement a VF Prevention and Response Plan that includes, among other requirements, that the dust control measures found in proposed COC **AQ-SC3**, in **Section 5.1, Air Quality**, be supplemented with additional requirements, and that any worker who could be exposed to dust from soil disturbances is trained before that work begins and annually thereafter.

Fire Protection

During construction and operation of the project, there is the potential for both small fires and major structural fires. Electrical sparks and shorts, combustion of hydraulic fluid, mineral oil, insulating fluid, or flammable liquids and fuels, explosions, and over-heated equipment, could cause small fires or larger ones at the BESS location. The specific fire hazards for each project component are discussed in more detail below.

O&M Facilities

Fire detection and suppression elements for the Operations & Maintenance (O&M) buildings for operations, maintenance, and storage would be consistent with the applicable provisions of the CFC. According to the project applicant, O&M buildings would be a maximum of 4,950 square feet and would thus not require sprinkler systems per the CFC. These buildings would be equipped with portable fire extinguishers.

Fires and explosions of flammable welding gases or liquids are rare. Consistency with applicable plans, policies, and regulations would be adequate to ensure protection from fire hazards related to the individual structures. The project owner plans to undertake fire prevention practices during construction and operations and prepare a project-specific Fire Prevention Plan. Access to the site for fire and other emergency vehicles shall be available at two separate locations via site personnel or locked gates. Emergency departments such as the SBCFPD, the San Bernardino County Sheriff, and the California Highway Patrol shall be given access to the locked gates via keys or any other means as described in both the construction and operations fire prevention plans described in COCs **WORKER SAFETY-1** and **WORKER SAFETY-2**.

Solar PV Facility

Solar arrays and PV panels are fire resistant because they are constructed largely of steel, glass, aluminum, or components housed within steel enclosures and are generally not vulnerable to ignition from wildland fires. The project site is not populated and is largely flat with no nearby forested areas. Land use in the immediate vicinity is primarily undeveloped desert land, and the nearby Soda Mountain has sparse vegetation for fuel loading (see **Section 5.7, Hazards, Hazardous Materials/Waste, and Wildfire** for more discussion).

During construction and operation, a fire hazard also exists when the inverters are energized due to potentially faulty equipment. Safety procedures and training would be implemented according to the guidelines of both the Construction Fire Protection and Prevention Program and the Operations Fire Protection and Prevention Program, both of which would be reviewed and commented on by SBCFPD and reviewed and approved by the CPM. Proposed COCs **WORKER SAFETY-1** and **WORKER SAFETY-2** would make the above measures a requirement.

BESS Facility

Energy Storage Technology Overview

The power generation industry is progressing to alternative energy resources such as photovoltaic power, wind power, and BESS, among other energy storage methods. BESS can provide fast and steady response, adaptability, controllability, and geographical independence. Battery technologies for energy storage have varying chemistries and energy densities which include lead-acid, lithium-ion, nickel-cadmium, nickel-metal hydride, sodium-sulfur and vanadium-redox. Lithium-ion batteries have one of the highest energy densities and are the primary battery chemistry used by manufacturers such as Tesla, LG, and CATL.

Lithium-ion batteries are the predominant chemistry used in utility scale BESS (defined as larger than 50 MW) and are anticipated to remain so for the next decade. Data shows that in the United States by the end of 2022 about 9 GW of energy storage had been added to the U.S. grid since 2010 (DOE National Renewable Energy Laboratory 2023). Of the new storage capacity, more than 90% has a duration of 4 hours or less, and in the last few years, lithium-ion batteries have provided about 99% of new capacity (DOE National Renewable Energy Laboratory 2023). This demonstrates that for grid-scale BESS, lithium-ion batteries are the nearly exclusive stationary energy storage technology currently being deployed.

There are several types of lithium-ion chemistries but there are two types that are used extensively in BESS. The first one is lithium nickel manganese cobalt (NMC) and the second is lithium iron phosphate (LFP). Initially, the industry relied on the lithium NMC batteries for utility scale BESS. However, the industry has been shifting to the LFP batteries due to safety concerns and cost competitiveness. Lithium NMC batteries

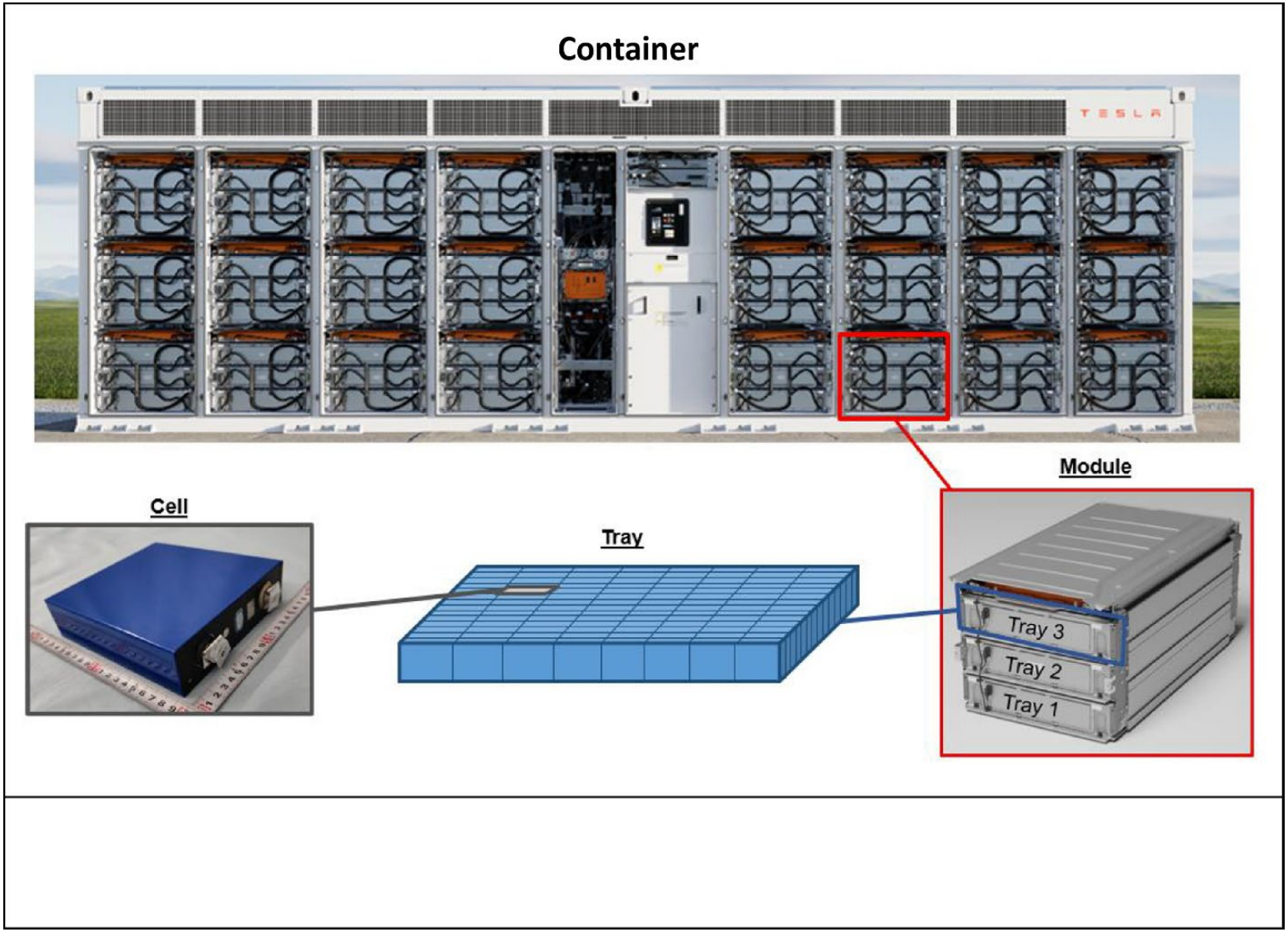
typically have higher energy density and smaller size units compared to LFP batteries, which means they can store more energy in a smaller package. Yet they also are not as thermally stable as LFP batteries thus leading to a greater risk of thermal runaway and battery fires.

LFP batteries appear to have greater safety and thermal stability due to their LiFePO4 chemical structure than NMC batteries (Brand, M., 2013; Evlithium 2025; Tran, M-K, 2021). They are less prone to thermal runaway and combustion, provide a significantly longer cycle life, considered more environmentally friendly due to their relatively non-toxic constituents, and readily available raw materials.

Project BESS

The project has proposed the use of the Tesla Mega Pack 2 XL (MP2XL) batteries for energy storage. These units are large containers similar in size to large ocean shipping containers and contain modules and battery cells. They are approximately 28.9 ft in length, 5.4 ft deep, 9.2 ft in height, and can weigh up to 84,000 pounds. The cells are the energy-producing units and contain a metal (lithium iron phosphate) as the cathode, graphite as the anode, and an electrolyte (typically a solution of a lithium salt, like lithium hexafluorophosphate (LiPF6) dissolved in an organic solvent). Cells are placed in trays and there are three trays per module. Many modules make up a unit (see **Figure 4.4-1**).

Figure 4.4-1 Tesla MP2XL Cells and Battery Modules



Source: RCI 2024

Potential BESS Safety Hazards

The CEC staff's evaluation of the safety of lithium-ion batteries determined that large lithium-ion BESS installations may pose potential hazards. Because they store large amounts of energy, one of the principal hazards associated with a lithium-ion BESS is fire, which could occur if a charged battery cell was somehow damaged, for example by being opened, punctured, or crushed. A fire could also be caused if a battery cell is short-circuited, overheated, or experiences thermal runaway.

Thermal runaway is a process in which the lithium-ion cell enters an uncontrollable, self-heating state and can emit toxic gases such as hydrogen chloride, hydrogen fluoride, hydrogen cyanide, and benzene along with flammable/explosive gases including hydrogen, methane, propane, ethylene, carbon monoxide, and others. These flammable gases could potentially lead to an explosion within the BESS container. Due to the potential for fire and explosion, staff concludes that the project's BESS would present a significant risk that should be mitigated.

Like most metal batteries, hydrogen and other flammable gas evolution occurs in lithium-ion batteries due to a parasitic reaction at the anode but the amount varies (even aqueous flow batteries emit small negligible amounts of hydrogen (~ 6 microliters per minute)). Some BESS enclosures feature a chimney effect convection cooling design that will automatically dissipate the small amount of hydrogen that could be outgassed. In addition, stacked enclosures can be fitted with a forced-air ventilation system if the natural convection air flow is insufficient for venting purposes. However, given the extreme range of hydrogen flammability, generation of hydrogen remains a safety issue, for any lithium-ion batteries, including the one proposed by the applicant for this project.

Confirmation of potential hazards posed by BESS installations has been provided through field experience. A notable event that led to a shift in the industry in terms of hazard mitigation at BESS installations occurred on April 19, 2019, at a BESS unit in Surprise, Arizona (a suburb northwest of Phoenix). The facility experienced a thermal runaway event, and the BESS was equipped with a suppression system but was not equipped with deflagration venting or explosion prevention systems. The failure report issued by Arizona Public Services (McMicken 2020) indicated that the suspected fire was an:

> "extensive cascading thermal runaway event initiated by an internal failure within one battery cell of the BESS. The BESS's internal fire suppression discharged a clean agent preventing the fire from spreading to surrounding battery racks. However, the compromised batteries emitted a mixture of combustible gases, which accumulated in the BESS enclosure. The fire department responded and took no immediate action due to a lack of information concerning the system and the event. When a HAZMAT team attempted to enter the BESS area to survey the scale of the event, an explosion occurred, seriously injuring four firefighters."

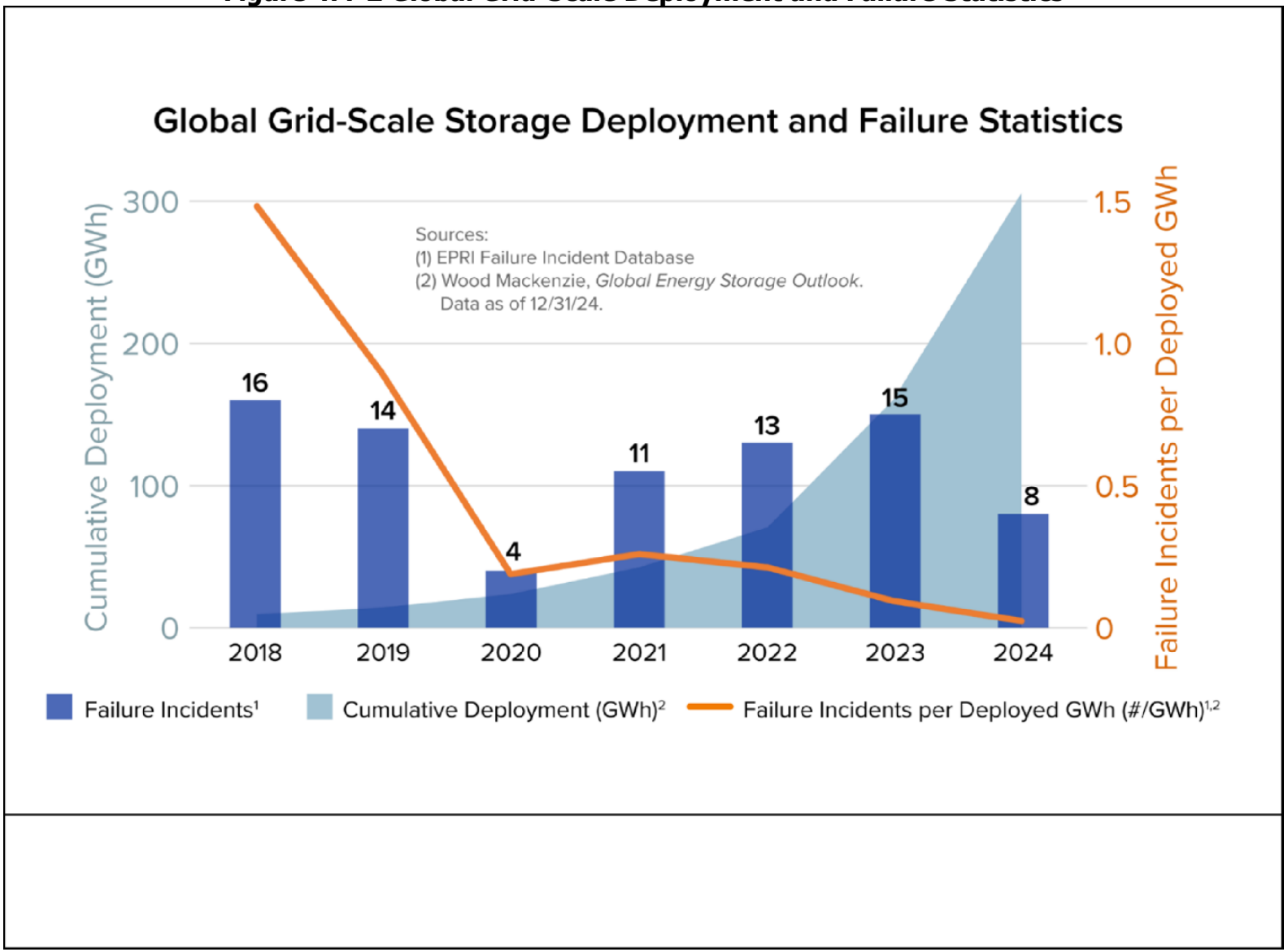
This event catalyzed further review and evaluation of the risks and hazards to workers, first responders, and the public posed by Li-ion grid-sized batteries. This failure spurred additional guidelines, recommendations, and additions to fire codes and industry standards including one important industry practice: placing the modules inside a container with no entrance possible rather than a building, which is the case for this project. While the Surprise, Arizona failure identified a battery cell internal failure, a comprehensive review of BESS incidents worldwide indicates that battery cell failures have not been the primary contributing cause to BESS failures.

Real-world use of these battery systems identifies the following failure modes (EPRI 2024a, 2024b):

- Design Failures: Flaws in the system's planned architecture, layout, or function that can arise from fundamental product flaws or a lack of safeguards.
- Manufacturing Defects: Flaws introduced during the production process, such as foreign materials in cells or incorrect physical tolerances.
- Integration, Assembly & Construction Issues: Errors during installation, component incompatibility, inadequate commissioning, or poor quality control, which can include faulty wiring, HVAC, and any internal fire suppression systems.
- Operational & Environmental Factors: Abusive operation (like overcharging, rapid charging/discharging), physical damage from impacts, or exposure to extreme environmental conditions.

The overall utility-scale BESS failure rate has sharply decreased while the global installed capacity has dramatically increased (see **Figure 4.4-2**). BESS failure incident data and transparency is limited because there is no publicly disclosed data that links failure incidents by cause of failure. Industry reticence to disclose failures and the prevalence of non-disclosure agreements hamper public release of such information. Electric Power Research Institute's (EPRI) 2024 White Paper recognizes the lack of data and has attempted to address the failure mode analysis gap by drawing from their own failure incident database consisting of 81 incidents between 2018 and 2024. Failures typically occur early in the project's lifecycle, but this could be due to the lack of older systems that exist at this point. Nevertheless, according to the research at least 72 percent of failure incidents, where the system's age is known, occur during construction, commissioning, or within the initial two years of operation. The most recent data from EPRI shows that the failure rate dropped by 98 percent from 2018 to 2024 as lessons learned from early failures have been incorporated into the latest designs and best practices (EPRI, 2024a).

Figure 4.4-2 Global Grid-Scale Deployment and Failure Statistics



Source: EPRI, 2024a

EPRI's analysis challenges the widespread assumption that the lithium-ion battery cell is the primary cause of failure. All phases across the BESS lifecycle contribute to failure incidents. Integration, assembly, and construction contribute the most to failure incidents (EPRI 2024a; EPRI 2024b), with the majority of cases involving controls (46 percent) and balance of system (BOS) components (43 percent) (EPRI 2024a; Kaliaperumal 2021; Menye 2025). These BOS components encompass DC and AC wiring, heating, ventilation and air conditioning (HVAC) subsystems, and safety features like fire suppression systems. Investigations into these incidents uncovered that many failures occurred when the state of charge (SOC) was greater than 90 percent. Design flaws, such as not considering all operating conditions, have also caused problems.

Controls related to the battery management system (BMS), HVAC, and other systems plus BOS components account for most failed components (89 percent). Only 11 percent of failure incidents were directly caused by the battery cells themselves (EPRI 2024a). However, many incidents labeled as "controls" failures stemmed from operational challenges tied to managing battery cell SOC, voltage, and current issues rooted in cell limitations. These were categorized as controls failures instead of cell/module issues because they could have been avoided by enforcing stricter operational limits.

EPRI's recommendations include enhanced site-specific hazard assessments, improved battery monitoring and analytics, better workforce training, and stricter quality controls during manufacturing and installation. EPRI's analysis shows that all stages of the product lifecycle play a critical role in BESS safety and require thorough engineering and testing. Greater industry transparency on failure incidents is vital for future causes of failure analysis, ongoing safety research, and the safe operation of future developments.

As indicated by EPRI, it can be hard to ascertain the exact cause of BESS fires because root cause analyses are not always shared with the regulator or fire department as they can be considered proprietary by battery manufacturers. Sharing this valuable information would help to educate stakeholders on what happened and what could be done to improve BESS safety. To help ensure that this information is disclosed if a BESS incident were to occur, staff proposes COC **WORKER SAFETY-7** which would ensure that any root cause analysis is provided to the CEC and local fire department for review and comment.

BESS Incidents in California

Staff has attempted to learn and review incident reports for the more recent BESS safety incidents since 2022 in California. Several of these are discussed in detail below:

1. PG&E; Elkhorn Battery Energy Storage Facility, September 20, 2022
2. Terra-Gen; Valley Center Energy Storage Center, September 18, 2023

3. Convergent; Orange County Energy Storage 2, July 17, 2024
4. REV Renewables; Gateway Energy Storage Facility, May 15, 2024
5. SDG&E; Northeast Operations Center, Escondido, September 5, 2024
6. Vistra; Battery Energy Storage Facility, January 16, 2025
7. Arevon; California Flats Solar Project, August 30, 2025

2022 Elkhorn BESS Incident

CEC staff inspected the site of the Tesla Megapack fire that occurred on September 20, 2022, at the Elkhorn Battery Energy Storage Facility near Moss Landing, CA, where one out of a total of 256 Megapacks caught fire. The North County Fire Protection District (NCFPD) responded to the incident and proceeded to let the fire burn itself out per Tesla's emergency action plan for first responders. The fire department used onsite fire water monitors (water cannons) to cool adjacent modules to prevent them from overheating. The NCFPD also had access to a Command-and-Control (CNC) center outside of the BESS facility. The CNC gave firefighters access to the BESS telemetry that was relayed to Tesla along with feeds to the thermal infrared cameras that were placed around the site. This information allowed the incident commander to see what BESS enclosure was on fire based on the BESS telemetry and confirmed with the infrared cameras. It also allowed the incident commander to create an action plan to safely battle the fire and to monitor the situation in real time. Staff learned that during project commissioning, the project owner had provided training opportunities to the NCFPD for practicing how to deal with a fire at the facility.

2023 Valley Center Terra-Gen BESS Fire

The outdoor LG container battery storage unit in Valley Center northern San Diego County (140 MW/560 MWh) had its first BESS unit fire on April 5, 2022. It appears that some of these units contained a sensor system that experienced a fault which triggered the water-based protection systems and caused the fire. Faulty sprinkler systems have also been described as the cause of several other notable fires at large-scale battery storage projects. Another fire occurred on the evening of September 18, 2023 (Energy Storage News 2023). The Fire and Sheriff's departments were dispatched, roads were closed and out of an abundance of caution an evacuation order for the surrounding 0.25 mile was issued. Additionally, a shelter in place was issued for the 0.5 mile surrounding the site. Fire officials said the fire was put out in about 45 minutes and extinguished by the site's internal fire prevention system (San Diego Union-Tribune 2024). The evacuation and shelter in place orders were lifted after 4 hours. The facility's design kept the incident contained and San Diego County Hazardous Materials team monitored the air and water around the site during the incident and found no hazardous conditions. Although an official root cause report is not available, fire department officials thought the fire was likely caused by thermal runaway within a single lithium-ion battery.

2024 Orange County BESS Incident

On July 17, 2024, there was an incident at the Convergent Energy Storage Facility in Santa Ana, California which is composed of outdoor, containerized Li-Ion BESS. The fire resulted in extensive damage to one container and exposure damage to additional nearby containers. The industrial area was temporarily evacuated for approximately one hour due to concerns about toxic smoke emissions (Orange County Register, 2024). At the time of the incident the cause of the fire was undetermined according to Orange County Fire Authority (OCFA) incident reporting.

2024 Otay Mesa BESS Incident

On May 15, 2024, there was an incident at the 240-MW Gateway Energy Storage Facility (GESF) in Otay Mesa, California which is composed of five buildings that house the BESS. There was a thermal runaway event in one battery rack in building three (in the middle of the five-building unit row) which caused a fire at the GESF. GESF is a battery-in-a-building project, which staff has found to be rare with only four located in the state, with fire barriers, a chemical suppression system, and a pre-action fire protection system. The chemical fire suppression activated but did not put out the fire. The pre-action system then activated allowing the flow of water to help contain the fire. The fire department appears to have made the decision to keep the pre-action sprinkler water flowing to keep the temperature down and to help protect the integrity of the roof to avoid collapsing. Additionally, the firefighters had to cut into the building to allow more water to be sprayed into it to help control the fire. The fire burned itself out by May 22, 2024. Staff visited the site on May 29, 2024, and found that structural integrity of the building was being assessed due to the incident. Staff's conclusion is that the BESS "failed safely." Equipment worked as planned, the fire department knew what it had to do, and there were no injuries to onsite staff, the firefighters, or the public. However, this incident illustrates the challenges of placing grid scale BESS into dedicated buildings when an incident occurs.

2024 Escondido BESS Fire

On September 5, 2024, a fire erupted at San Diego Gas & Electric's (SDG&E) 30 MW/120 MWh BESS facility in Escondido, California. The fire was confined to a single containerized unit out of the 24 on-site and lasted approximately 13 hours before burning out. The blaze broke out in one of the battery storage containers and quickly escalated. According to reports, the fire was first detected by the facility's monitoring systems, triggering an immediate response from SDG&E personnel and local emergency services. The internal unit's fire suppression system activated, but was unable to extinguish the fire due to the intense heat generated by the thermal runaway event. Firefighters arrived on the scene and implemented specialized containment strategies to prevent the fire from spreading to adjacent containers. The event was limited to one of 24 battery storage containers. There were no reported injuries (Energy Storage News, 2024). Along with the San Diego County Hazardous Materials Division, the San Diego County Health Department and the City of Escondido, SDG&E actively monitored air

quality at the site of the fire and in the evacuation area throughout the incident. Sampling locations and screening levels were identified under the guidance of the County and City Incident Coordinator, who have reviewed all results along with SDG&E and determined that the air quality did not pose a health risk for those on site or in the evacuation area (SDG&E 2024). Investigations into the root cause of the fire have not yet been released to the public, but preliminary reports suggest a possible electrical fault or manufacturing defect within one of the battery cells.

2025 Moss Landing BESS Incident

Another fire occurred on January 16, 2025, at the 300 MW Moss Landing Battery Energy Storage Facility (MLBESF) owned by Vistra Energy. This facility houses one of the world's largest indoor BESSs. Unlike the GESF though, the building was not purpose-built but rather was placed inside a repurposed turbine hall formerly used by the Moss Landing Power Plant. The fire spread from one rack to others and eventually engulfed most of the building. The blaze prompted the evacuation of approximately 1,200 to 1,700 residents from nearby communities and released plumes of black smoke, raising safety concerns. The cause of the incident is currently under investigation. This incident also demonstrates the challenges of placing grid scale BESS inside buildings.

2025 Arenal California Flats Solar Project

On August 30, 2025, a fire broke out at the California Flats Solar Project, located southeast of Parkfield in the far southeast corner of Monterey County, a sparsely populated area very close to the borders with Fresno, Kings, and San Louis Obispo Counties. The facility consists of 130 MW of solar photovoltaic generation with a 240 MWh BESS composed of 85 Tesla Megapack units. Cal Fire Station #41 in nearby Parkfield was the first to respond. Although CEC staff have not yet received the full incidence report, this much is known. The incident began in the late morning involving two Megapack battery containers and was originally reported as a vegetation or brush fire. Out of an abundance of caution, the Monterey County Sheriff's Office quickly issued an evacuation order for a two-mile radius, affecting five rural residences in the surrounding area. That order was lifted 3 hours later. Tesla's Field Response Team was dispatched to the site to evaluate the situation. After conducting a safety assessment, they determined that the fire had stabilized and posed no further danger to the public. Fire crews continued to monitor the scene through the night, using a containment approach that allowed the burning battery units to extinguish themselves under controlled conditions. No injuries or off-site damages were reported (KSBY, 2025).

Staff's review of BESS incident history demonstrates that siting a BESS facility outdoors in containers and not inside of a building minimizes the damage caused by thermal runaway fires and reduces the threat of fire propagation. BESS outdoor container fires are typically limited to a single container and can last anywhere from under an hour to 13 hours or more. Proper training for first responders with the appropriate fire water supply infrastructure and monitoring infrastructure can be critical for safely limiting fire

damage and controlling the fire. There have been no deaths from a BESS fire at a utility scale facility in California or the United States (American Clean Power, 2023).

Transportation Safety Issues

In addition to the fire and explosion risks discussed above, there is also the possibility of fire during the transport of the Li-ion containers. The MP2XL batteries would be purchased from TESLA and shipped to the site. There have been several recent transportation accidents on highways involving Li-ion batteries falling off flatbed trucks resulting in fires and highway closures including two in California in 2024. On Friday July 26, 2024, an overturned semi-truck transporting lithium batteries caught fire, shutting down I-15 near Baker in San Bernardino County for 40 hours. The incident was cleared at approximately 3 a.m. on Sunday, July 28, and traffic was reopened on I-15 (Caltrans 2024). Another incident and fire occurred September 26, 2024 in San Pedro, CA, when a semi-truck carrying six large lithium-ion batteries overturned, sparking a fire and hazardous materials concerns while also forcing a closure of the 47 Freeway and the Vincent Thomas Bridge, causing major traffic backups in the area (ABC News 2024). Los Angeles Fire crews stated that attempting to put the fire out with water was not advisable due to the large amounts of water needed and the possible contamination from water run-off. There were no immediate reports of injuries, evacuations or widespread hazardous warnings.

Staff has reviewed this matter and found that the Pipeline and Hazardous Materials Safety Administration (PHMSA) issued a final rule that became effective on January 20, 2023, that required all Li-ion batteries transported by air to have a state of charge (SOC) of 30% or less. This regulation was issued to enhance the safety of transporting li-ion batteries in aircraft. The SOC limit has been shown to halt or minimize the propagation of thermal runaway within a package, decrease heat release values, and the SOC affects the flammability limits in an apparent parabolic matter, where the widest flammability limits are at or near 100% (PHMSA 2018). Therefore, reducing the SOC during transportation reduces the severity of the thermal runaway, slows or eliminates propagation of the thermal runaway, and reduces the volume of flammable gases vented during thermal runaway. Unfortunately, there is not a similar rule for ground transportation. Though some Li-ion batteries could be shipped via ground transport with a SOC of 30%, there is no guarantee that this would occur. Therefore, staff proposes COC **WORKER SAFETY-7** which would require the project owner to ensure that any Li-ion batteries shipped to the project site would not have an SOC above 30 percent.

Methodology

Construction and Operations

Staff uses a variety of recent industrial standards (UL Solutions and NFPA) CPUC GO 167-C, and the latest edition of the CFC to guide its evaluation of BESS projects that seek a license to construct and operate. These codes and industrial standards include:

- California Fire Code, Chapter 12, contains fire safety requirements for stationary Lithium-ion battery energy storage systems;
- CPUC General Order (GO) 167-C Enforcement of Maintenance and Operation Standards for Electric Generating Facilities and Energy Storage Systems;
- NFPA 855: Standard for the Installation of Stationary Energy Storage Systems (Second Edition – 2023);
- UL 9540 (2023): Standard for Safety for Energy Storage Systems and Equipment; and
- ANSI/CAN/UL 9540A (2025), the Standard Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems.

California Fire Code (CFC)

The CFC was amended in August 2024, to include section 1207 et seq pertaining the BESS facilities. Some of the many safety provisions include requiring the following:

- Large-scale fire testing
- A commissioning plan
- Ongoing Inspection and Testing
- Toxic gas exhaust systems
- A hazard mitigation analysis
- A decommissioning plan

The BESS would comply with the current CFC, which governs the code requirements to minimize the risk of fire and life safety hazards specific to BESS used for load shedding, load sharing and other grid services (CFC, ch. 12 § 1206).

CPUC GO 167-C

In the most recent March 13, 2025 iteration of General Order 167 (GO 167-C), the CPUC affirmed its jurisdiction over the "maintenance and operation of electric generating facilities and power plants so as to maintain and protect the public health and safety of California residents and businesses, to ensure that electric generating facilities are effectively and appropriately maintained and efficiently operated, and to ensure electrical service reliability and adequacy." (CPUC 2025) GO 167-C adds new safety standards for the maintenance and operation BESS installations including:

- BESS owners must develop emergency response and emergency action plans, as required by SB 38.
- Technical updates to the standards to improve safety reliability, and effectiveness of operation and maintenance activities, such as establishing technical logbook standards for battery storage systems and expanding requirements for emergency plans that relate to all electric generating facilities.

Staff believes that this order will enhance the safety and reliability of the proposed BESS facility and the project owner is required to implement the revisions to CPUC GO 167-C.

NFPA 855

NFPA 855 is the Standard for the Installation of Stationary Energy Storage Systems. The project owner has stated that the BESS would be built to comply with NFPA 855. Staff concurs that NFPA 855 is an excellent standard that would improve the safety of the BESS. NFPA 855 (Second Edition - 2023) will be incorporated into the CFC effective January 1, 2026 requiring project compliance. However, NFPA 855 (Third Edition – 2026) was just released on September 11, 2025, and will not be referenced as a standard in Chapter 80 of the California Building Standards Code and will not be enforceable. Staff has determined that due to the rapidly changing nature of the BESS industry it would be advisable to use the latest NFPA 855 standard since it now incorporates the latest safety practices. Therefore, staff proposes COC **WORKER SAFETY-6** which would ensure that the latest version of NFPA 855 is treated as an enforceable code that the project owner would be required to follow for the construction, commissioning, and operation of the BESS.

UL 9540

UL 9540 lists requirements for BESSs supporting the local-area electric power systems or the electrical utility power grid. UL 9540 is the primary safety standard that certifies a BESS as an integrated whole, ensuring that all components (i.e., battery modules, power conversion system, battery management system, and thermal controls) operate safely together. Rather than testing parts in isolation, UL 9540 evaluates how these subsystems interact, covering electrical, mechanical, control, and fire safety performance. It verifies proper coordination between the BMS and inverter, system-level fault protection, safe shutdown behavior, and containment of thermal events (with UL 9540A used to assess fire propagation). In short, UL 9540 ensures that the entire assembled BESS functions safely and reliably as one integrated system. The project would be required to comply with UL 9540 as it is required by the CFC.

UL 9540A

UL 9540A is the American and Canadian national standard for addressing thermal runaway propagation for energy storage systems, which provides the standard test methodology for determining fire and explosion hazards presented by a given BESS design when undergoing an overheating failure, such as thermal runaway. As mentioned above, staff relies on the UL 9540A standard testing protocol and report to assess the possibility of a thermal runaway reaction for BESS projects. This test method was developed by UL Solutions (formerly Underwriters Labs), a company that researches safety and development of standards addressing the risk from fires and electric shocks (UL Solutions 2025). OSHA and Cal OSHA both require that almost all electrical devices and cables in workplaces meet the relevant UL standards. Test results on these types of batteries have demonstrated that under thermal runaway conditions,

emissions can include flammable/explosive gases including hydrogen, methane, propane, and ethylene.

The project has proposed the use of the Tesla MP2XL. The MP2XL underwent cell testing in a laboratory where the cell was forced by an external heating method to go into thermal runaway. While in thermal runaway, it was found to emit flammable gases which were captured and analyzed. Having failed the test by going into the heat-induced thermal runaway, the test protocol required a second UL 9540A testing of a module. The MP2XL underwent module testing where again flammable gases were emitted and thermal runaway was not contained by the module design which then required UL 9540A unit level testing.

The unit level testing was not conducted on the MP2XL because it was conducted on the Tesla Mega Pack 2 (MP2). Tesla, the manufacturer, and the project owner contend that the two systems are similar enough that the test results can be considered similar. The chemistry (Lithium Iron Phosphate or LiFePO4), the cell composition, and the module compositions are the same between the MP2 and the MP2XL. Additionally, the only difference between the two BESS containers is that the MP2 has 19 racks of batteries while the MP2XL has 24 racks making the MP2XL longer than the MP2 to accommodate the extra 5 racks. Since the UL9540A test can't define an exact source of ignition, staff makes the reasonable assumption that the ignition source could exist in many different locations in a battery unit; in fact, it has already happened in real-life situations. However, since the only difference between the MP2 and the MP2XL is that a few more racks exist in the MP2XL, the test results of the MP2 are sufficient to predict and be a proxy for the hazard risk of the MP2XL. Therefore, based on the results of the unit testing of the MP2, the MP2XL also has a risk of thermal runaway.

The UL9540A unit level fire testing of the MP2 demonstrated that an internal failure event causing thermal runaway will not propagate thermal runaway throughout the battery module. To meet this performance criteria, the unit must contain a battery failure without producing external flames, excessive heat on adjacent modules, or high temperatures on nearby exposures. The unit cannot create any explosion hazards such as deflagrations or projectiles and heat flux along the accessible egress path must remain below 1.3 kW/m². Because the MP2 met the UL9540A performance criteria described above for outdoor, ground-mounted BESS the UL9540A installation-level testing was not required.

Project BESS Fire Prevention Design

In reviewing UL9540A testing, staff has learned that on average cell venting begins at 174° C (345° F) and thermal runaway begins at 239° C (462° F). The time it takes a cell to go from stable to unstable after an initiation to off-gassing is long enough (15 minutes up to several hours) for the BMS to give a warning to a remote operator or Tesla so as to allow the shut-down and to electrically isolate the misbehaving cell, thus potentially averting either a thermal runaway or propagation of that cell to a neighboring cell, module, or unit. The MP2XL has a cooling system which can be

activated to cool the outside of a cell, module, or unit. This time-delay allows the remote monitoring of temperature sensors in the BMS and thus can activate emergency responses before off-gassing or thermal runaway occurs.

The Tesla MP2XL has several passive fire prevention features that make this battery different from the earlier Tesla battery units that have exploded or caught fire and burned in the past. Internal "sparkers" that detect flammable gases and initiate a "sparker" to burn the very small amounts of flammable gases (including hydrogen) present thus avoiding a build-up of flammable gases. However, even if there were a buildup of flammable gases, the BESS container has explosion release vents (deflagration panels) that would open on the roof of each module to direct an over-pressure or flame upwards instead of to the side, thus avoiding impacts on adjoining modules that could escalate or propagate thermal runaway. The container also has a battery thermal management system that cools the modules via a cooling system that cools the outside of the cell and modules that is activated by the BMS.

Up to three 10,000-gallon water tanks for emergency use would be installed on the project site. The size, final number, and location of water tanks for emergency use would be determined in accordance with CFC and be reviewed and approved by the CPM. The BESS enclosures are outdoors and are not "walk-in" cabinets; therefore, fire suppression is not required by the CFC. Water could be used for cooling adjacent units at the discretion of the first responders and incident commander, however, firefighters are advised to use water for cooling and not extinguishing an LFP BESS fire as adding water can combine with toxic gases, most notably hydrogen fluoride, creating hydrofluoric acid (Massachusetts Department of Public Health, 2025).

The project owner intends to implement fire prevention/mitigation through the use of thermal infrared external detectors at various locations of the BESS facility and include three 10,000 gallon water tanks on the project site for fire suppression conforming to County requirements, which incorporate NFPA Standards 1142 and 13 by reference and provide minimum requirements for fire suppression water supply where no public water supply is available (Standard 1142) and sprinkler systems (Standard 13).

Staff concurs that these measures would help to mitigate the fire risk posed by the BESS. However, staff has determined based on the above discussion that there are other measures that would help to mitigate the fire risk posed by the BESS. As the 2022 Elkhorn PG&E incident demonstrated, it is essential to have training provided by the project owner to the first responders to establish roles and responsibilities ahead of time. It is also advantageous to have a Command and Control (CNC) outside of the BESS facility so that an incident commander can safely assess the situation and determine a course of action to combat a fire. To ensure that these mitigations are adopted, staff proposes COC **WORKER SAFETY-7** that would require administrative and engineering controls to prevent or respond to a fire from the BESS.

Risk Assessment

The MP2XL has been in use for approximately 2.5 years. Based on staff's review of BESS incident history, there have been no confirmed thermal runaways leading to a fire, explosion, or evolution of gases at BESS facilities using the MP2XL technology. Additionally, the project is in a remote location. Therefore, staff determined that a qualitative approach is applicable to establishing the chances of an event occurring (in this case, a BESS thermal runaway leading to a fire).

The project location is remote and not nearby sensitive receptors (see **Figure 4.4-3**).

Figure 4.4-3 Distance of BESS from Nearest Sensitive Receptors



Source: CEC, 2025

Residential receptors exist next to the Rasor Road Shell Oil gas station located off I-15 roughly 260 feet southwest of the project site boundary, however, this receptor is approximately 3 miles from the proposed BESS location. The next closest sensitive receptor is in Baker, roughly 8 miles northwest of the proposed BESS location. However, the project site is adjacent to I-15 and a potential BESS fire could result in emissions dispersed towards the highway and could also lead to countywide vulnerabilities due to the drawdown of firefighting resources (Emergency Response and Cumulative Impacts related to firefighting demand are discussed below).

Section 5.10, Public Health, addresses potential health risk impacts to sensitive receptors, including individuals traveling in vehicles on I-15. If I-15 was not closed and a BESS fire occurred at the future facility, occupants of vehicles would only experience a potential pollutant plume for a short duration due to high vehicle speeds. Quantifying the potential impacts of a BESS fire on highway users would require speculation of a number of factors, such as meteorological conditions, receptor locations, and exposure duration. Considering the infrequent, irregular, and unplanned nature of such events and the short exposure duration, the potential for any adverse impact to the public traveling on the highway would be a very low probability event. In addition, first responders and the incident commander would use their discretion on when to close the highway.

There exists a need for energy sources and storage in locations of the state not previously used, known or considered. Given that energy production or storage has always posed some small non-zero risk to the community and the environment, it is important to note that in comparison to gas-fired power plants, the use of BESS (to store and redeploy electricity) has much less risk and lower impacts to both workers (some of which have died at gas-fired power plants due to fire, explosions, and high operating pressures) and the nearby offsite public. Compared to gas-fired power plants, the BESS has negligible operating air quality emissions.

The most recent data shows for all BESS types, the risk of thermal runaway is small, but not zero, and this small risk is heavily influenced by older (pre-2025) technology. To date in the United States, only equipment has been damaged and no confirmed reports of injuries or deaths from BESS fires in the general public (but several fire fighters have been injured). In other countries, there have been facility personnel injured or killed. The project has designed the BESS facility outdoors in containers and not inside of a building, which minimizes the damage caused by thermal runaway fires and reduces the threat of fire propagation. The project has also been designed with a fire detection system including thermal imaging cameras, a hydrogen detection system, and a smoke detection system. The risk of fire is low and if an event were to occur over the project lifetime, it would most likely be limited to a single container based on recent BESS incident history in California. Furthermore, the Tesla MP2XL has several fire prevention features outlined previously (sparkers, deflagration panels, and battery thermal management system) and meets rigorous standards such as NFPA 855 and UL9540A testing. Staff proposes COC **WORKER SAFETY-7** that would require additional

administrative and engineering controls to prevent or respond to a fire from the BESS that are based on staff's review of similar projects and feedback from the SBCFPD.

Based on the discussion above and with the proposed COCs **WORKER SAFETY-1** through **WORKER SAFETY-10**, staff concludes that the risks associated with a potential fire incident during construction and operation of the BESS is low and impacts would be less than significant.

Fire, Rescue, and Emergency Medical Services Response

Regarding emergency response from local fire departments, staff has discussed fire management with several fire departments around the state. Staff has also reviewed independent studies, guidelines from battery manufacturers, and real-time fire department practice. Staff has concluded that the ability of first responders to have a supply of water may be necessary to stop propagation of a fire to other units. Availability of fire-fighting water is also essential should the rescue of a worker or first responder be needed. Proposed BESS facilities in rural areas without a municipal water supply to deliver water via water mains, such as the BESS for this project, would require water tanks of sufficient number and capacity, determined by site-specific conditions and consultation with the local fire department.

In the past, staff conducted a statewide survey to determine the frequency of emergency medical services (EMS) response and offsite fire-fighter response for CEC projects in California. The purpose of the analysis was to determine what impact, if any, new CEC projects could have on local emergency services. Staff concludes that incidents at CEC projects that require fire, rescue, or EMS response are in the most part infrequent and represent an insignificant impact on the local fire departments, except for those instances where a rural fire department has a staff of mostly volunteer fire fighters or where the local fire department has less than the standard response times due to the lack of resources such as fire fighters, equipment, and stations for the area covered, as is the case for SBCFPD.

Staff reviewed the information provided by the applicant to determine if the available SBCFPD 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 would rely on both on-site fire protection systems and local fire protection services. The on-site fire protection systems provide 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 SBCFPD under all conditions. Information provided by the SBCFPD demonstrates that the project area of the County lacks the resources to respond to fire, rescue, and medical services emergencies to the existing towns and energy facilities in an appropriate time.

The project site lies in one of the most resource-deficient areas of the County, already challenged by long response times, high call demand, and lack of nearby specialized units such as Hazardous Materials and Technical Rescue companies. Station 53 in Baker

is the only staffed County Fire station positioned to respond directly to the project. This station alone covers over 4,000 square miles with a single paramedic engine (staffed with four firefighters) and a cross-staffed 3,500-gallon water tender. In addition, one paramedic ambulance is assigned daily; however, ambulance staff are non-safety personnel and are not firefighter qualified (SBCFPD, 2025).

Under ideal conditions Station 53 could respond to a fire at the project site within 20 minutes assuming it is available and not already committed. It is important to note that Station 53 routinely responds to critical emergencies upwards of 1-2 hours away from the town of Baker. Station 53 is understaffed and has the infrastructure to add 3 more personnel and staff one additional resource in Baker. If Station 53 is unavailable, the next closest firefighting resources would travel from the Helendale Station 4, which is approximately 2 hours away. The County Fire Station 52 in Harvard, located 30 miles south of the project site, was closed in 2008 and would provide critical second-line coverage if reopened (SBCFPD, 2025). The fire response resource deficiencies in the project area further addressed in the cumulative impacts discussion below.

Staff has also determined that the potential for both work-related and non-work-related heart attacks exists at CEC licensed projects. In fact, staff's research on the frequency of EMS response to CEC projects shows that many of the responses for cardiac emergencies involved non-work-related incidents, including those involving visitors. Staff finds that the quickest medical intervention for cardiac emergencies can only be achieved with the use of an on-site automatic external defibrillator (AED). Therefore, staff concludes that it is appropriate for the project owner to maintain an AED on site in order to treat cardiac emergencies resulting from industrial accidents or other non-work-related causes. Staff proposes COC **WORKER SAFETY-5**, which would require that this portable AED be located on site, all 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.

Downstream Network Upgrades (Non-Jurisdictional)

Project interconnection with the California Independent System Operator (California ISO) electrical grid would require the construction and operation of a new utility switchyard, two transmission loop lines, and six steel towers. The applicant would be constructing these components for the Los Angeles Department of Water and Power (LADWP) who would purchase and operate the new utility switchyard following construction. The operation and maintenance of the new utility switchyard would be within LADWP's jurisdiction.

The California ISO identified network system upgrades at the Marketplace and Adelanto substations as necessary to ensure a reliable connection between the project and the electric grid. These upgrades would be made by LADWP and are not within the CEC's licensing authority and are also considered "non-jurisdictional." Major utilities such as LADWP have extensive experience with the types of workplace activities involved with

the proposed upgrades. They also are experienced with regulations applicable to worker protection and have extensive worker safety plans and procedures to protect their employees from workplace hazards. Furthermore, standard occupational safety and health programs and fire protection measures would be followed, such as LADWP standards and specifications. Based upon the sparse vegetation for fuel loading in the project area and LADWP's extensive experience with such upgrades, staff concludes that the proposed upgrades would not require significant levels of service from the local fire department and would not result in significant impacts on local fire protection services in the project area, and staff does not propose mitigation for the construction or operation and maintenance of these downstream network upgrades.

Cumulative Impacts

Staff discussed the 8 major projects listed above in the cumulative settings and the potential for a cumulatively considerable impact to the SBCFPD. Staff has concluded based upon staff's experience and analysis of the issues that both a direct significant impact and a cumulative considerable impact would be posed by the operation of the project and therefore proposes that the SBCFPD and the project owner enter into negotiations to provide mitigation as required in proposed COC **WORKER SAFETY-10**.

Staff bases this determination regarding mitigation on the following facts:

- The project site lies in one of the most resource-deficient areas of the County, already challenged by long response times, high call demand, and lack of nearby specialized units such as Hazardous Materials and Technical Rescue companies (SBCFPD, 2025).
- Station 53 is the only staffed station in the region, averaging 20-minute response times when available and responding from their quarters in Baker. HazMat and Rescue teams require 90–120 minutes of travel. A single complex incident could exceed Station 53's capabilities almost immediately (SBCFPD, 2025).
- Major incidents could pull resources from Victor Valley, Fontana, Lake Arrowhead, and San Bernardino, creating countywide vulnerabilities. A historic example of this was the July 24, 2024 BESS Fire near Afton Canyon Road, which caused a two-day I-15 shutdown, drawing resources from across the County. Secondary emergencies arose from gridlock in extreme heat. Economic losses were estimated at $121.6 million over two days. This demonstrates the cascading risks of energy infrastructure failures in this corridor (SBCFPD, 2025).

4.4.3 Project Consistency with Applicable Plans, Policies and Regulations

Table 4.4-1 contains staff's determination of consistency with applicable plans, policies and regulations, including any proposed Conditions of Certification. As shown in this table, staff concludes that with implementation of specific conditions of certification, the project would be consistent with all applicable plans, policies and regulations. The

subsection at the end of this section, "Staff Proposed Conditions of Certification," contains the full text of the referenced conditions of certification.

TABLE 4.4-1 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES AND REGULATIONS

Applicable Plan, Policy, and Regulation	Consistency and Basis For Determination
Federal	
Title 29 Code of Federal Regulations section 651 et seq (Occupational Safety and Health Act of 1970)	**Yes. WORKER SAFETY-1** and **WORKER SAFETY-2** require that the project owner develop and implement occupational health and safety programs to prevent worker injuries during construction, commissioning, and operations. **WORKER SAFETY-3** and **WORKER SAFETY-4** requires the project owner to implement an additional layer of worker safety during construction.
Title 29 CFR sections 1910.1 to 1910.1500 (Occupational Safety and Health Administration Safety and Health Regulations)	**Yes. WORKER SAFETY-1** and **WORKER SAFETY-2** require that the project owner develop and implement occupational health and safety programs to prevent worker injuries during construction, commissioning, and operations. **WORKER SAFETY-3** and **WORKER SAFETY-4** requires the project owner to implement an additional layer of worker safety during construction. **WORKER SAFETY-5** and **WORKER SAFETY-6** requires the project owner to implement an additional layer of worker safety during construction, commissioning, and operations.
State	
California Code of Regulations, Title 8, all applicable sections (Cal OSHA regulations) including CCR: Subchapter 4: Construction Safety Orders. tit. 8, §§ 1920 – 1928 Fire Detection and Prevention; Subchapter 5: Low and High Voltage Electrical Safety Orders; and specifically tit. 8, §§ Subchapter 7: General Industry Safety Orders; and specifically tit. 8, §§: 3203 – Injury and Illness Prevention Program; 3314 Control of Hazardous Energy Lockout/Tagout; 3395 & 3396 Heat Illness Prevention Programs; 5141.1 Protection from Wildfire Smoke 5184 Storage Battery Systems; 5185 6150-6154 Fire Protection Subchapter 5: Low and High Voltage Electrical Safety Orders; and specifically tit. 8, §§ Subchapter 7: General Industry Safety Orders; and specifically tit. 8, §§:	**Yes.** Staff's assessment below recognizes and lists many of the most important Cal OSHA worker safety and health programs, and **WORKER SAFETY-1**, **WORKER SAFETY-2**, **WORKER SAFETY-3, WORKER SAFETY-4**, **WORKER SAFETY-5**, **WORKER SAFETY-6, WORKER SAFETY-7, WORKER SAFETY-8**, **WORKER SAFETY-9**, and **WORKER SAFETY-10** impose specific conditions to ensure compliance with Title 8, as well as Health & Safety Codes for Fire Protection as shown in **WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-6, WORKER SAFETY-7,** and **WORKER SAFETY-10.**

TABLE 4.4-1 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES AND REGULATIONS

Applicable Plan, Policy, and Regulation	Consistency and Basis For Determination
3203 – Injury and Illness Prevention Program; 3314 Control of Hazardous Energy Lockout/Tagout; 3395 & 3396 Heat Illness Prevention Programs; 5141.1 Protection from Wildfire Smoke 5184 Storage Battery Systems; 5185 6150-6154 Fire Protection	
California Code, Health and Safety Code - HSC § 13146.2 (a) Every city, county, or city and county fire department or district providing fire protection services required by Sections 13145 and 13146 to enforce building standards adopted by the State Fire Marshal and other regulations of the State Fire Marshal shall, annually, inspect all structures subject to subdivision (b) of Section 17921, except dwellings, for compliance with building standards and other regulations of the State Fire Marshal. California Fire Code Chapter 12 Chapter 12 governs the placement and fire prevention of battery energy storage systems. California Public Utilities Code 761.3 section (g) "SB 38" added safety requirements of battery storage projects. It requires every battery energy storage facility in California to have an emergency response and emergency action plan that cover the premises of the facility, consistent with emergency action plans in CCR, Title 8. The owner or operator of the facility must coordinate with local emergency management agencies, unified program agencies, and local first responders to develop the plan and must submit the plan to the county and, if applicable, the city where the facility is located. CPUC GO 167-C establishes standards for electric generating facilities to ensure that they are effectively maintained and operated to ensure safe and reliable service. The project applicant is required to comply with CPUC GO 167-C, which would guarantee project consistency with the regulation.	**Yes.** Staff's assessment recognizes the need for additional fire protection for the solar field and BESS and worker EMS response as shown in **WORKER SAFETY-6, WORKER SAFETY-7, WORKER SAFETY-8** and **WORKER SAFETY-10.**
Local	
San Bernardino County Fire Protection District, Ordinance No. FPD 23-01. Contains the San Bernardino County Fire Protection District Fire Code, which adopts by reference the CFC, with requirements pertaining to fire safety.	**Yes.** The project is subject to the requirements of the CFC. COC **WORKER SAFETY-2** requires a Fire Protection System Impairment Program following the prescriptive measures in the CFC.
General	

TABLE 4.4-1 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES AND REGULATIONS	
Applicable Plan, Policy, and Regulation	**Consistency and Basis For Determination**
National Fire Protection Association (NFPA) 855	**Yes**. COC **WORKER SAFETY-6** requires adherence to NFPA 855 industry standards.

4.4.4 Conclusions and Recommendations

As discussed above, with the implementation of COC **HAZ-1** (**Section 5.7, Hazards, Hazardous Materials, and Wildfire**) and **WORKER SAFETY-1** through **WORKER SAFETY-10**, the project would have a less than significant impact related to worker safety and fire protection, and would be consistent with applicable plans, policies, and regulations. Staff recommends adopting the conditions of certification as detailed in subsection "4.4.5 Proposed Conditions of Certification" below. There are no recommended mitigation measures for the non-jurisdictional project components for worker safety and fire protection.

4.4.5 Proposed Conditions of Certification

The following proposed conditions of certification include measures to ensure consistency with applicable plans, policies, and regulations. Staff makes these recommendations to supplement, expand, and clarify the applicant's proposed mitigation measures.

WORKER SAFETY-1 The project owner shall submit to the CPM a copy of the Project Construction Health and Safety Program containing the following:

- a Construction Injury and Illness Prevention Program;
- a Construction Heat Illness Prevention Plan;
- a Construction Fire Prevention Plan that includes methods of access for emergency responders through locked gates.
- a Construction Personal Protective Equipment Program; and
- a Construction Emergency Action Plan that fulfills the requirements of California Public Utilities Code 761.3 section (g);

The Personal Protective Equipment Program, the Injury and Illness Prevention Program, and Construction Heat Illness Prevention Plan 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 Construction Fire Prevention Plan shall be submitted to the SBCFPD for review and comment prior to submittal to the CPM for review and approval.

Verification: At least 90 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 Health and Safety Program. The project owner shall provide to the CPM a copy

of letters from the SBCFPD detailing resolved 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 Health and Safety Program containing the following items:

1. An Operation Injury and Illness Prevention Plan.
2. An Operations Emergency Action Plan that that fulfills the requirements of California Public Utilities Code 761.3 section (g).
3. A Fire Prevention Plan (Cal. Code Regs., tit. 8, § 3221) that includes methods of access for emergency responders through locked gates.
4. A Fire Protection System Impairment Program.
5. A Personal Protective Equipment Program (Cal. Code Regs.,, tit.8, §§ 3401-3411).

The Operation Injury and Illness Prevention Plan, 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 SBCFPD for review and comment.

Verification: At least 30 days prior to the start of commissioning, the project owner shall submit to the CPM for review and approval a copy of the Project Operations and Maintenance Health and Safety Program. The project owner shall provide a copy to the CPM of letters from the SBCFPD detailing the resolved comments on the Operations Fire Prevention Plan, Fire Protection System Impairment Program, and Emergency Action Plan to the CPM for review and approval.

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 solar PV and BESS construction and relevant worker safety-related plans, policies, and regulations. The CSS shall be capable of identifying workplace hazards relating to the construction activities; and has authority to take appropriate action to ensure 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 solar PV and industrial battery energy storage system 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 COC **WORKER SAFETY-1** and **WORKER SAFETY-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 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 (MCR) 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 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 would be responsible for verifying that the CSS, as required in COC **WORKER SAFETY-3**, implements all appropriate Cal OSHA and CEC 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 AED is located on site during construction, commissioning, 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 functional. During construction and

commissioning the following persons shall be trained in its use and shall be on site whenever the workers that they supervise are on site: the Construction Project Manager or delegate, the CSS or delegate, and all shift foremen. During operations, all project 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 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 adhere to all applicable provisions of the latest version of National Fire Protection Association (NFPA) 855: Standard for the Installation of Stationary Energy Storage Systems, as the minimum level of safety for the BESS. The project owner shall interpret and adhere to all applicable NFPA 855 recommended provisions and actions stating "should" as "shall", except when referring to fire departments. In any situations where both NFPA 855 and the state or local plans, policies, and regulations have application, the more restrictive shall apply.

Verification: The project owner shall ensure that the project adheres to all applicable provisions of NFPA 855. At least 90 days prior to the start of construction of the BESS, the project owner shall provide all system specifications and design drawings to the SBCFPD for review and comment, to the CPM for review and approval, and to the DCBO for plan check approval and construction inspection.

WORKER SAFETY-7 The project owner shall do the following at the BESS facility:

a. Require that lithium-ion batteries be shipped from the factory to the project site at a maximum of 30 percent State of Charge (SOC);

b. Provide that fire lanes exist down the length and width of the BESS units wide enough to allow for fire engine access;

c. Design internal access roads to be 20-foot minimum width per SBCFPD Ordinance and Standards;

d. Design perimeter access roads to be 26-foot minimum width per SBCFPD Ordinance and Standards;

e. Limit dead-end roadways to a maximum of 1,000 feet per SBCFPD Ordinance and Standards;

f. Compact onsite roadways to a minimum of 85 percent per SBCFPD Ordinance and Standards;

g. Design box culverts and low-water crossings to meet county roadways requirements;

h. Provide emergency access on all four sides of the BESS yard including Knox Box access for SBCFPD and adequate load-rated crossing per SBCFPD requirements and provide a secondary emergency access to the overall project site;

i. Install remote fire or heat sensors at sufficient locations to cover the entire BESS facility (e.g., thermal infrared);

j. Equip each BESS unit with a fire detection system including thermal imaging cameras, a hydrogen detection system, and a smoke detection system;

k. Install closed-circuit television (CCTV) cameras with Pan, Tilt, Zoom (PTZ), and low-light capability that cover the entire area of the BESS and which would have their own separate power supply, and which complies with NERC CIP-011-1;

l. Establish a Command and Control Protocol in accordance with the Emergency Response Plan for staff to perform emergency duties and responsibilities during the detection, initiation, and escalation of a BESS fire;

m. Establish a Command and Control Center located at a safe distance from the BESS facility that includes monitors for BMS telemetry, remote fire or heat sensors, fire alarm monitoring and allows for first responders to contact the project owner immediately;

n. Establish remote telemetry and CCTV viewing in a Command and Control Center located at a safe distance from the BESS facility for an Incident Commander to use, and which complies with NERC CIP-011-1;

o. Prepare and submit a Root Cause analysis of any incident at the BESS facility (including but not limited to fire, malfunction, leak, or thermal runaway of any cell, module, or unit) to the CPM;

p. Consult with the SBCFPD in preparing the fire protection system specifications and drawings to ensure an adequate water supply (compliance with NFPA 1142 rural supply standards) for the fire suppression systems for the BESS facility as well as for occupied buildings; and

q. If the project owner decides to revise the choice of BESS manufacturer installed, all of the above requirements shall remain in effect for the new selection. The project owner shall provide any required new information required above plus the specific UL9540 certification and UL9540A third party test results for the new BESS manufacturer to the CPM for review and approval.

Verification: At least 60 days prior to the start of BESS construction, the project owner shall provide all the information required above (with the exception of o.) to the SBCFPD for review and comment, to the CPM for review and approval, and to the DCBO for plan check approval and construction inspection.

Within 10 days of an incident at the BESS facility (including but not limited to fire, malfunction, leak, or thermal runaway of any cell, module, or unit) the project owner shall notify the CPM that a Root Cause Analysis (RCA) is being prepared. The project owner shall work with the CPM to determine a submission date for the completed RCA. The RCA shall be submitted to the SBCFPD for review and comment, and to the CPM for review and approval.

In the event the project owner selects a new BESS manufacturer, the project owner shall provide any new information as soon as practicable but no later than 120 days before the start of BESS construction to the CPM for review and approval and to the DCBO for plan check approval and construction inspections.

WORKER SAFETY-8 The project owner shall provide training for the SBCFPD and establish and provide an annual joint training program with the SBCFPD that includes table-top exercises for a BESS fire or any other scenario agreed upon between the SBCFPD and project owner.

Verification: At least 30 days prior to the start of commissioning, the project owner shall provide a copy of the written fire department training program to the SBCFPD for review and comment and to the CPM for review and approval. Additionally, the project owner shall schedule the first joint training program with the SBCFPD and provide the date in writing to the CPM.

Thereafter, the project owner shall include a signed letter in the Annual Compliance Report stating when the annual training took place, the training location, the scenario practiced and confirmation that SBCFPD participated.

WORKER SAFETY-9 The project owner shall develop and implement a worker VF Prevention and Response Plan that includes an enhanced dust control methods containing the requirements described in COC **AQ-SC3** and additionally requires:

a. Site worker use of dust masks (NIOSH N-95 or better) whenever visible dust is present.

b. Should enhanced dust control methods fail to control dust (COC **AQ-SC3**), the project owner or designate shall direct a temporary shutdown of the activity causing the emissions. The activity shall not restart until the project owner or designate 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.

c. Specific training on VF to all employees before work begins and annually by that date thereafter.

d. Medical referral protocol.

e. Reporting of medically diagnosed cases to the California Department of Public Health, Cal OSHA, and the CPM.

Verification: At least 60 days prior to the commencement of site mobilization, the VF Prevention and Response Plan shall be provided to the CPM for review and approval.

WORKER SAFETY-10 The project owner shall:

a. Reach one or more agreements with the SBCFPD, either directly between the parties or using a mediator, regarding one-time initial funding and ongoing annual funding to provide mitigation for SBCFPD's emergency response services related to direct and cumulative project-related impacts; or

b. If no agreement can be reached under (a), then the project owner and SBCFPD shall enter into final and binding arbitration. The arbitration shall be held in accordance with California law and the terms of **WORKER SAFETY-10**, and any challenge related to arbitration or the enforceability of arbitration, will not suspend, delay, or excuse payment obligations by the project owner. The project owner shall pay the cost of arbitration. The arbitrator shall be selected by mutual agreement of the parties and submitted to the CPM for review and approval. If the parties are unable to mutually agree to an arbitrator, the CPM shall select one. The arbitrator shall also consider the following in reaching a decision:

   1. Weigh the needs of SBCFPD's emergency response to the project related to fire, rescue, EMS, and hazardous materials spills and the related costs on the fire department resources caused by direct impacts of the project;

   2. Weigh the cumulative impact of the project on the fire department resources including but not limited to the drawdown of SBCFPD resources on existing communities and the impacts on those communities;

   3. Determine the amount of one-time initial funding for any capital improvements and the amount of annual funding with an increase for inflation.

c. Develop a schedule, in coordination with the SBCFPD, that provides a timeline for reaching agreement or completing arbitration prior to the anticipated date of site mobilization, subject to sub-paragraph (e) below. The schedule must include a timeframe for: (i) negotiating one or more agreements on funding directly between the parties or using a mediator, or (ii) commencing and finalizing arbitration. In all dealings regarding this condition, the CEC expects the project owner and the SBCFPD to work in good faith and provide timely, substantive responses to all communications from the other party, mediator, or arbiter. In no event may the agreement or arbitration delay the project's site mobilization, construction, or operation.

d. The agreement(s) or arbiter's decisions may separately address funding to SBCFPD related to services for direct and cumulative impacts caused during construction and caused during operation, but any agreement or arbiter's decision regarding funding during construction shall be completed no later

than 45 days prior to site mobilization, any agreement or arbiter's decision regarding funding during operation shall be completed no later than 45 days prior to operation, and there must be continual funding until the solar property tax exclusion sunsets and there is no solar property tax exclusion applicable to the project.

Verification:

a. No more than 30 days after certification, the project owner shall provide to the CPM for review and approval the schedule for reaching agreement on funding prior to site mobilization.

b. At least 30 days prior to the start of site mobilization, or as soon as practicable thereafter, the project owner shall provide to the CPM for review and approval either:

   1. A copy of the agreement with the SBCFPD or

   2. A copy of the arbiter's decision.

c. If the agreement or arbiter's decision submitted 30 days prior to site mobilization is limited to funding during construction, then, provided the property tax exclusion still applies, the project owner must provide to the CPM for review and approval an agreement or arbiter's decision to cover the remaining period of the project at least 30 days prior to the completion of construction.

d. Upon approval of the agreement or arbiter's decision by the CPM, the project owner shall commence payment of the initial funding and annual funding. If the agreement or arbiter's decision is provided later than 30 days prior to the start of site mobilization, funding will be made retroactive to cover from the start date of site mobilization.

4.4.6 Recommended Mitigation Measures

No mitigation measures are required for the construction and operation of the non-jurisdictional components under the oversight of the Los Angeles Board of Water and Power Commissioners.

4.4.7 References

ABC News 2024. "*Semi-truck carrying lithium-ion batteries overturns, sparks fire in San Pedro.*" September 27. Available online at: https://abc7.com/post/semi-truck-carrying-lithium-ion-batteries-overturns-sparks-fire-san-pedro/15360889/

American Clean Power, 2023. "*Claims vs. Facts: Energy Storage Safety*". December. Available online at: https://cleanpower.org/wp-content/uploads/gateway/2023/12/ACP_Energy-Storage-Leading-on-Safety_FactSheet.pdf

Brand, M., et al, 2013. "*Electrical safety of commercial Li-ion cells based on NMC and NCA technology compared to LFP technology*." World Electric Vehicle Journal Vol. 6 - ISSN 2032-6653.

CAL OSHA 2024 – California Occupational Safety and Administration. 2024. "Protection from Valley Fever." Available online at: https://www.dir.ca.gov/dosh/valley-fever-home.html

CDPH 2025 – California Department of Public Health 2025. "Valley Fever in California Year-end Data Dashboard" Accessed in September 2025. Available online at: https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/ValleyFever Dashboard.aspx

Caltrans 2024. Caltrans Statement on San Bernardino County I-15 Fire. Published July 28. Available online at: https://dot.ca.gov/news-releases/news-release-2024-027

CPUC 2025 – California Public Utilities Commission DRAFT RESOLUTION ESRB-13 – Adopts General Order (GO) 167-C, Enforcement of Maintenance and Operation Standards for Electric Generating Facilities and Energy Storage Systems. Dated January 27, 2025. Available online at: https://www.cpuc.ca.gov/news-and-updates/all-news/cpuc-issues-proposal-to-enhance-safety-of-battery-energy-storage-facilities

DOE National Renewable Energy Laboratory 2023. Denholm, Paul, Wesley Cole, and Nate Blair. *Moving Beyond 4-Hour Li-Ion Batteries: Challenges and Opportunities for Long(er)-Duration Energy Storage*. Section 2.0. Golden, CO: National Renewable Energy Laboratory. NREL/TP-6A40-85878.

Energy Storage News 2024. "*Fire at battery storage facility in California triggers evacuation order*." September 6. Available online at: https://www.energy-storage.news/fire-at-battery-storage-facility-in-california-triggers-evacuation-order/

Energy Storage News 2023. "*Terra-Gen to investigate cause of Valley Center California BESS fire with 'incident over'*." September 19. Available online at: https://www.energy-storage.news/terra-gen-to-investigate-cause-of-valley-center-battery-storage-fire-with-incident-over/

EPRI 2024a – Electric Power Research Institute (EPRI). "Insights from EPRI's Battery Energy Storage Systems (BESS) Failure Incident Database: Analysis of Failure Root Cause." White Paper. Dated May 10, 2024. Available online at: https:// www.epri.com/research/products/000000003002030360?8729b241_page=7

EPRI 2024b. "*An EPRI Perspective: Lithium Ion Battery Energy Storage Fire Safety Measures*." September. Available online at: www.epri.com

EPRI 2025. BESS Failure Incident Database - EPRI Storage Wiki. Available online at:https://storagewiki.epri.com/index.php/BESS_Failure_Incident_D

Evlithium 2025. *LFP vs NMC Batteries: Who's The Real Winner?* Available online at: https://www.evlithium.com/Blog/lfp-vs-nmc-batteries-comparison.html

Jensen Hughes, Inc. 2024. "*White Paper: Advancing Li-Ion Bess Safety: Comprehensive Testing And Meta-Analysis For Optimized Hazard Mitigation."* Available at: https://www.jensenhughes.com/

KSBY 2025. "*UPDATE: Authorities release new details on solar farm fire in Monterey Co*." August 31. Available online at: https://www.ksby.com/news/california-news/solar-farm-fire-prompts-evacuations-in-monterey-co-traffic-control-on-hwy-41

Kaliaperumal, M. et al. 2021. "*Cause and Mitigation of Lithium-Ion Battery Failure—A Review.*" Materials 14, 5676. Available online at: https://doi.org/10.3390/ma14195676

Massachusetts Department of Public Health, & Massachusetts Department of Fire Services. 2025. *Toxicology of the lithium-ion battery fire*. Available online at: https://www.mass.gov/doc/toxicology-of-the-lithium-ion-battery-

McMicken 2020 – "Battery Energy Storage System Event, Technical Analysis and Recommendations, Arizona Public Service." Prepared by DNV GL. Dated July 18, 2020. Available online at: https://www.aps.com/en/About/Our-Company/Newsroom/Articles/Equipment-failure-at-McMicken-Battery-Facility

Menye, Joselyn Stephane et al., 2025. *"Lithium Battery Degradation and Failure Mechanisms: A State-of-the-Art Review.*" Energies,18, 342. Available online at: https://doi.org/10.3390/en18020342

National Safety Council 2025. NSC Injury Facts, Odds of Dying. Available online at: https://injuryfacts.nsc.org/all-injuries/preventable-death-overview/odds-of-dying/

Orange County Register, 2024. "*Fire at Santa Ana energy storage facility prompts temporary evacuations in industrial area*". July 17. Available online at: https://www.ocregister.com/2024/07/17/fire-at-energy-storage-facility-prompts-evacuations-in-industrial-area-of-santa-ana/

PHMSA 2018 – Pipeline and Hazardous Materials Safety Administration, United States Department of Transportation. Lithium Battery Packaging Evaluation – FAA Reauthorization Act of 2018. Available online at: https://www.phmsa.dot.gov/standards-rulemaking/hazmat/lithium-battery-packaging-evaluation-faa-reauthorization-act-2018

RCI 2024 – Rincon Consultants, Inc. (TN 258490). CEC Data Request Response Set 5. Dated August 14, 2024. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=23-OPT-02

San Diego Union-Tribune, 2024. "*Government Tech: After Fires, Calif. County to Set Battery Storage Standards*". July 18. Available online at: https://www.govtech.com/products/after-fires-calif-county-to-set-battery-storage-standards

SBC 2020 – San Bernardino County. San Bernardino Countywide Plan, County Policy Plan. Dated October 2020.

SBCFPD 2025 – San Bernardino County Fire Protection District. (TN 266469). Comments from San Bernardino County Fire Protection District. Dated October 3, 2025.

SDG&E 2024. Update on Escondido Battery Storage Incident September 6, 2024 - 11:33 am *Updated as of Sept. 7, 12:30 p.m.* Available online at: https://www.sdgetoday.com/news/update-escondido-battery-storage-incident

Tran, M-K, et al, 2021. "*Comparative Study of Equivalent Circuit Models Performance in Four Common Lithium-Ion Batteries: LFP, NMC, LMO, NCA*." Batteries, 7 (3), 51. Available online at: https://doi.org/10.3390/batteries7030051

UL Solutions 2023 – UL Solutions. Fire Risk Assessment. Accessed in August 2023. Available online at: https://www.ul.com/services/portfolios/fire-safety

Section 5

Environmental Impact Assessment

Under the California Environmental Quality Act (CEQA), the environmental setting of a project is generally the physical environmental conditions in the vicinity of the project as they exist at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced (CEQA Guidelines, § 15125(a)(1)). The environmental setting described in an EIR by the lead agency will normally constitute the baseline physical conditions by which the lead agency determines whether an impact is significant (CEQA Guidelines, § 15125(a)).

5.1 Air Quality

The Soda Mountain Solar Project (SMSP or project) would be in an unincorporated area of San Bernardino County within the Mojave Desert Air Basin (MDAB). The project site consists of rural desert lands managed primarily by the Bureau of Land Management (BLM) and is adjacent to the Mojave National Preserve. The project footprint is located near Interstate-15, with the Rasor Road service station to the southwest.

This section analyzes the jurisdictional and non-jurisdictional project components. The jurisdictional project components include the construction and operation of the solar photovoltaic (PV) facility, battery energy storage system (BESS), project substation and generation intertie line (gen-tie) and construction of the utility switchyard and section of transmission loop in lines that would connect to the existing Mead-Adelanto Transmission Line. The non-jurisdictional project components include the construction and operation of the protection setting upgrades to the Marketplace and Adelanto substations and operation of the utility switchyard and section of transmission loop in lines.

To interconnect the SMSP with the California Independent System Operator (California ISO)-managed electric grid, the applicant would construct two 500-kilovolt (kV) loop-in transmission line segments and six new steel towers. Upon completion, these facilities, together with the new utility switchyard, would be operated and maintained by the Los Angeles Department of Water and Power (LADWP). Operation of these components falls under the jurisdiction of the Los Angeles Board of Water and Power Commissioners.

The Air Quality section describes the environmental setting and regulatory background and discusses impacts specific to ambient air quality associated with the construction, and operation and maintenance of the proposed project.

The air quality analysis focuses on criteria air pollutants, for which there are established ambient air quality standards for public health protection. Toxic air contaminants are addressed separately in **Section 5.10, Public Health**.

5.1.1 Environmental Setting

Existing Conditions

Criteria Air Pollutants

The U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) have established ambient air quality standards (AAQS) for several pollutants based on their adverse health effects. The U.S. EPA has set national ambient air quality standards (NAAQS) for ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), particulate matter of 10 micrometers or less in diameter (PM10), particulate matter of 2.5 micrometers and smaller in diameter (PM2.5), sulfur dioxide (SO_2), and lead (Pb). Primary standards were set to protect public health; secondary standards were set to

protect public welfare against visibility impairment, damage to animals, crops, vegetation, and buildings. Sources of nitrogen oxides (NOx) and volatile organic compounds (VOC) or reactive organic gases (ROG) are also regulated as these pollutants are precursors to ozone formation through photochemical reactions in the ambient air. In addition, CARB has established California ambient air quality standards (CAAQS) for these pollutants, as well as for sulfates (SO_4), visibility reducing particles, hydrogen sulfide (H_2S), and vinyl chloride. CAAQS are generally stricter than NAAQS.

The ambient air quality standards currently in effect in California and nationally are shown in **Table 5.1-1**.

TABLE 5.1-1 NATIONAL AND CALIFORNIA AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards [a]	National Standards [b] (Primary)	National Standards [b] (Secondary)
Ozone (O_3)	1 hour	0.09 ppm (180 µg/m^3)	—	Same as Primary Standard
	8 hours	0.070 ppm (137 µg/m^3)	0.070 ppm (137 µg/m^3)	
PM10	24 hours	50 µg/m^3	150 µg/m^3	Same as Primary Standard
	Annual Mean	20 µg/m^3	—	
PM2.5	24 hours	—	35 µg/m^3	Same as Primary Standard
	Annual Mean	12 µg/m^3	9.0 µg/m^3 [c]	15 µg/m^3
CO	1 hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	—
	8 hours	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	—
Nitrogen Dioxide (NO_2)	1 hour	0.18 ppm (339 µg/m^3)	100 ppb (188 µg/m^3) [d]	—
	Annual Mean	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)	Same as Primary Standard
Sulfur Dioxide (SO_2)	1 hour	0.25 ppm (655 µg/m^3)	75 ppb (196 µg/m^3)	—
	3 hours	—	—	0.5 ppm (1,300 µg/m^3)
	24 hours	0.04 ppm (105 µg/m^3)	0.14 ppm (for certain areas) [e]	
	Annual Mean		0.030 ppm (for certain areas) [e]	
Lead	30-day average	1.5 µg/m^3	—	—
	Calendar quarter	—	1.5 µg/m^3	Same as Primary Standard
	Rolling 3-month average	—	0.15 µg/m^3	Same as Primary Standard

Sources: CARB 2025b, U.S. EPA 2025a
Notes: ppm = parts per million; ppb = parts per billion; µg/m³ = micrograms per cubic meter; – = no standard.

a California standards for O_3, CO (except 8-hour Lake Tahoe), SO_2 (1 and 24 hour), NO_2, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded.
b National standards (other than O_3, PM, NO_2 [see note d below], and those based on annual arithmetic mean) are not to be exceeded more than once a year. The 8-hour O_3 standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. The 24-hour PM10 standard of 150 µg/m^3 is not to be exceeded more than once per year on average over a 3-year period. The 24-hour PM2.5 standard is attained when the 3-year average of 98th percentile concentration is less than or equal to 35 µg/m^3.
c On March 6, 2024, the U.S. EPA published a final rule to strengthen the annual PM2.5 NAAQS from 12.0 µg/m^3 to 9.0 µg/m^3 (U.S. EPA 2024a). See detailed discussion in the text.
d To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb.
e On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The previous SO_2 standards (24-hour and annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which an implementation plan providing for attainment of the current (2010) standard has not been submitted and approved and which is designated nonattainment under the previous SO_2 standards or is not meeting the requirements of a SIP call under the previous SO_2 standards (40 CFR 50.4(3)). A SIP call is a U.S. EPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the required NAAQS.

On March 6, 2024, the U.S. EPA published a final rule to lower the primary annual PM2.5 NAAQS from 12.0 µg/m^3 to 9.0 µg/m^3 (U.S. EPA 2024a). The final revisions to the primary annual PM2.5 NAAQS trigger a process under which States (and Tribes, if they choose) make recommendations to the Administrator regarding designations, identifying areas of the country that either meet or do not meet the new or revised PM NAAQS. Those areas that do not meet the revised PM NAAQS will need to develop plans that demonstrate how they will meet the standards. Until the U.S. EPA designates an area with respect to the proposed revised PM2.5 NAAQS, the New Source Review (NSR) provisions applicable under an area's designation for the 1997, 2006, and 2012 PM2.5 NAAQS would continue to apply (U.S. EPA 2024a). States and Tribal Authorities will submit initial recommendations of areas that do not attain this standard (i.e., nonattainment areas) to U.S. EPA by February 2025, and U.S. EPA is expected to finalize area designations by February 2026. In addition, according to the U.S. EPA implementation guide for the revised annual PM2.5 NAAQS, as of May 6, 2024, all applicants for permits to construct a new major source or major modification of an existing stationary source need to conduct an air quality analysis that considers the revised PM2.5 NAAQS. Because this project's permit application was deemed complete on July 31, 2025, which is after the effective date of the final rule, staff's air quality analysis considers the revised PM2.5 NAAQS.

The air quality standards, shown in **Table 5.1-1**, are designed and established to be health protective. Air pollution can cause known health problems, especially for children, the elderly, and people with heart or lung problems. Healthy adults may experience symptoms during periods of intense exercise. Pollutants can also cause

damage to vegetation, animals, and property. This analysis relies on the ambient air quality standards as health-based thresholds to help define what is considered a substantial pollutant concentration for the criteria air pollutants.

Attainment Status

U.S. EPA and CARB determine the air quality attainment status of designated areas by comparing ambient air quality measurements from state and local ambient air monitoring stations with the NAAQS and CAAQS. These designations are determined on a pollutant-by-pollutant basis. Consistent with federal requirements, an unclassifiable or unclassified designation is treated as an attainment designation. The project region in the Mojave Desert Air Quality Management District (MDAQMD) is designated as a nonattainment area for the federal and state O_3, nonattainment for federal and state PM10, and nonattainment for state PM2.5 standards. Therefore, as shown in **Table 5.1-2**, the region is considered an "attainment/unclassified" area for all other pollutants (U.S. EPA 2025b).

TABLE 5.1-2 FEDERAL AND STATE AMBIENT AIR QUALITY ATTAINMENT STATUS

Pollutant	Federal	State
O_3	Nonattainment	Nonattainment
NO_2	Unclassified/Attainment	Attainment
CO	Attainment	Attainment
SO_2	Unclassified/Attainment	Attainment
PM10	Nonattainment	Nonattainment
PM2.5	Unclassified/Attainment	Nonattainment

Source: U.S. EPA 2025b, MDAQMD 2025

Existing Ambient Air Quality

Existing levels of ambient air quality and historical trends and projections in the vicinity of the project site have been documented and measured at six air quality monitoring stations throughout the MDAQMD area. **Table 5.1-3** presents the air quality monitoring data from 2021 to 2023, the most recent years for which data are available. Data in this table that are marked in **bold** indicate that the most-stringent current standard was exceeded during that period.

The data are from the closest and most representative ambient air monitoring stations:

- O_3, PM10, and NO_2 from the 301 E. Mountain View, Barstow monitoring station (about 50 miles southwest of the project boundary),
- PM2.5 from the 2051 Ward, Ridgecrest monitoring station (about 92 miles northwest of the project boundary), and
- CO and SO_2 from 14360 Arrow Blvd., Fontana (about 104 miles southwest of the project boundary).

TABLE 5.1-3 AMBIENT AIR QUALITY MONITORING DATA

Pollutant	Averaging Time	2021	2022	2023
O_3 (ppm)	1-hour	**0.099**	**0.095**	0.085
	8-hour	**0.087**	**0.084**	**0.077**
PM10 (µg/m^3)	24-hour	**372.0**	**225.0**	**318.0**
	Annual	**29.78**	**30.5**	**27.99**
PM2.5 (µg/m^3)	24-hour (98th percentile)	**47.10**	10.80	11.02
	Annual	8.30	4.02	4.52
NO_2 (ppb)	1-hour (maximum)	62.4	59.8	60.3
	1-hour (98th percentile)	50.8	53.2	53.9
	Annual	14.64	14.57	13.40
CO (ppm)	1-hour	1.90	1.60	1.50
	8-hour	1.40	1.00	1.00
SO_2 (ppb)	1-hour (maximum)	5.00	2.70	3.30
	1-hour (98th percentile)	1.47	1.70	1.17

Sources: U.S. EPA 2025c, CARB 2025a

Health Effects of Criteria Pollutants

Below are descriptions of the health effects of criteria pollutants that are a concern in the regional study area. The California Health and Safety Code Section 39606 requires CARB to adopt ambient air quality standards at levels that adequately protect the health of the public, including infants and children, with an adequate margin of safety. Ambient air quality standards define clean air (CARB 2025b).

Ozone. Ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and that can cause substantial damage to vegetation and other materials. Ozone is not emitted directly into the atmosphere but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and NOx, including NO_2. Significant ozone production generally requires ozone precursors (ROG and NOx) to be present in a stable atmosphere with strong sunlight.

Ozone can cause the muscles in the airways to constrict, trapping air in the alveoli, potentially leading to wheezing and shortness of breath. Ozone can make it more difficult to breathe deeply and vigorously; cause shortness of breath and pain when taking a deep breath; cause coughing and sore or scratchy throat; inflame and damage the airways; aggravate lung diseases such as asthma, emphysema, and chronic bronchitis; increase the frequency of asthma attacks; make the lungs more susceptible to infection; continue to damage the lungs even when the symptoms have disappeared; and cause chronic obstructive pulmonary disease. Long-term exposure to ozone is linked to aggravation of asthma and may be one of many causes of asthma development. Long-term exposures to higher concentrations of ozone may also be linked to permanent lung damage, such as abnormal lung development in children. The inhalation of ozone causes inflammation and irritation of the tissues lining human airways, causing and worsening a variety of symptoms, and exposure to ozone can reduce the volume of air that the lungs breathe in and cause shortness of breath.

People most at risk for adverse health effects from breathing air containing ozone include people with asthma, children, older adults, and people who are active outdoors, especially outdoor workers. Children are at greatest risk from exposure to ozone because their lungs are still developing and they are more likely to be active outdoors when ozone levels are high, which increases their exposure. Studies show that children are no more or less likely to suffer harmful effects than adults; however, children and teens may be more susceptible to ozone and other pollutants because they spend nearly twice as much time outdoors and engaged in vigorous activities compared to adults. Children breathe more rapidly than adults and inhale more pollution per pound of their body weight than adults and are less likely than adults to notice their own symptoms and avoid harmful exposures.

Particulate Matter. PM10 and PM2.5 represent size fractions of particulate matter that can be inhaled into air passages and the lungs and can cause adverse health effects. Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain absorbed gases (e.g., chlorides or ammonium) that may be injurious to health. The health effects of particulate matter may include cardiovascular effects, such as cardiac arrhythmias and heart attacks, and respiratory effects, such as asthma attacks and bronchitis. Particulates can also reduce visibility.

Nitrogen Dioxide. Breathing air with a high concentration of NO_2 can irritate airways in the human respiratory system. Such exposures over short periods (as represented by the 1-hour standards) can aggravate respiratory diseases, particularly asthma, leading to respiratory symptoms (such as coughing, wheezing or difficulty breathing), hospital admissions and visits to emergency rooms. Longer exposures to elevated concentrations of NO_2 (as represented by the annual standards) may contribute to the development of asthma and potentially increase susceptibility to respiratory infections. People with asthma, as well as children and the elderly are generally at greater risk for the health effects of NO_2. Emissions of NOx, which includes NO_2 and NO, react with other chemicals in the air and sunlight to form both particulate matter and ozone.

Carbon Monoxide. CO is a pollutant that is a product of incomplete combustion and is mostly associated with motor vehicle traffic. High CO concentrations develop primarily during winter when periods of light winds combine with the formation of ground level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia.

Sulfur Dioxide. SO_2 is produced through the combustion of sulfur or sulfur-containing fuels such as coal. SO_2 is also a precursor to the formation of atmospheric sulfate and particulate matter (PM10 and PM2.5) and contributes to potential atmospheric sulfuric acid formation that could precipitate downwind as acid rain.

Lead. Lead has a range of adverse neurotoxin health effects and was predominately released into the atmosphere primarily via the combustion of leaded gasoline. The phase-out of leaded gasoline has resulted in decreasing levels of atmospheric lead.

Sensitive Receptors

Certain population groups are considered more sensitive to air pollution than others. Sensitive population groups include children, the elderly, the acutely ill, and the chronically ill, especially those with cardiorespiratory diseases. Sensitive receptor locations include residences, schools, parks and playgrounds, daycare centers, senior care facilities, and hospitals. Land uses located near the project site include a mix of agricultural and residential land uses. The nearest residence is next to the Rasor Road Services Shell Oil gas station, about 260 feet southwest of the project boundary. This residence is used to accommodate workers (RE 2025mm). In addition, there are around six to eight people living near the gas station on the same property. Transient campers come during certain times of the year and camp out on a few different properties located about 4.5 to 5 miles down the Rasor Road (CEC 2025z). The nearest schools, Baker Elementary, Middle, and High Schools, are located more than 6.5 miles northeast in the community of Baker. No other sensitive receptors are located within 1,500 feet of the project boundary (RE 2025mm). There are no other sensitive receptors within 1,500 feet of the project site and actual construction occurs more than 3,500 feet from this standalone residence.

Federal

Federal Clean Air Act. The federal Clean Air Act (CAA) (42 U.S.C., § 7401 et seq.) establishes the statutory framework for regulation of air quality in the United States. Under the CAA, the U.S. EPA oversees the implementation of federal programs for permitting new and modified stationary sources, controlling toxic air contaminants, and reducing emissions from motor vehicles and other mobile sources.

Title I (Air Pollution Prevention and Control) of CAA requires establishment of NAAQS, air quality designations, and plan requirements for nonattainment areas. States are required to submit a State Implementation Plan (SIP) to the U.S. EPA for areas in nonattainment with NAAQS. The SIP must demonstrate how state and local regulatory agencies will institute rules, regulations, and other programs to attain NAAQS. Once approved by the U.S. EPA and published in the Federal Register, the local air district rules contained in the SIP become federally enforceable. State law makes CARB the lead agency for all purposes related to the components that are included in the California SIP. For all local air districts in California, the SIP relies on the same core set of control strategies, including emission standards for cars and heavy trucks, fuel regulations and limits on emissions from consumer products (CARB 2025c).

Title 40 Code of Federal Regulations Subchapter C –Air Programs. Title 40 of the Code of Federal Regulations (CFR) Part 51, Requirements for Preparation, Adoption, and Submittal of Implementation Plans, establishes the requirements for Nonattainment New Source Review (NSR). The NSR program requires new and modified stationary

sources to obtain air permits and requires Best Available Control Technology (BACT) and emissions offsets.

California Desert Conservation Area Plan. The California Desert Conservation Area (CDCA) Plan requires that all areas within the CDCA, regardless of multiple-use class, be managed to protect their air quality and visibility in accordance with Class II objectives of Part C of the CAA Amendments, unless otherwise designated another class by the State of California as a result of recommendations developed by any Bureau of Land Management (BLM) air quality management plan.

State

Generally, state law designates local air districts as having primary responsibility for the control of air pollution from all sources other than mobile sources while the control of vehicular air sources is the responsibility of CARB. (Health and Saf. Code, §39002) CARB is also responsible for the state's overall air quality management, including, among other things, establishing CAAQS for criteria pollutants, identifying toxic air contaminants of statewide concern, and adopting measures to reduce the emissions of those toxics through airborne toxic control measures (ATCM), and regulating emissions of greenhouse gas emissions.

California Health and Safety Code

Section 40910 to 40930. These sections require air district permitting of stationary sources to be consistent with CARB approved Clean Air Plans.

Section 41700. This section states that "no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property."

California Clean Air Act. The California Clean Air Act (CCAA) was adopted by the California Air Resources Board (CARB) in 1988. The CCAA requires that all air districts in the state endeavor to achieve and maintain California Ambient Air Quality Standards (CAAQS) for by the earliest practical date. **Table 5.1-1** above shows the CAAQS currently in effect for each of the criteria pollutants, as well as the other pollutants recognized by the state. As shown in **Table 5.1-1**, the CAAQS are generally more stringent than the corresponding federal standards.

The CCAA specifies that districts focus particular attention on reducing the emissions from transportation and area-wide emission sources, and the CCAA provides districts with authority to regulate indirect sources. The CARB and local air districts are responsible for achieving CAAQS, which are to be achieved through district-level Air Quality Management Plans (AQMPs) that would be incorporated into the SIP. In California, the U.S. EPA has delegated authority to prepare SIPs to CARB, which in turn,

has delegated that authority to individual air districts. Each district plan is required to either 1) achieve a 5% annual reduction, averaged over consecutive 3-year periods, in districtwide emissions of each nonattainment pollutant or its precursors, or 2) provide for implementation of all feasible measures to reduce emissions. Any planning effort for air quality attainment would thus need to consider both state and federal planning requirements.

California has also adopted a host of other regulations that reduce criteria pollutant emissions, including the following:

- Title 20 California Code of Regulations (CCR): Appliance Energy Efficiency Standards
- Title 24, Part 6, CCR: Building Energy Efficiency Standards
- Title 24, Part 11, CCR: Green Building Standards Code

California Code of Regulations. U.S. EPA/CARB Off-Road Mobile Sources Emission Reduction Program. The California Clean Air Act mandates that CARB achieve the maximum degree of emission reductions from all off-road mobile sources to attain the state ambient air quality standards. Off-road mobile sources include construction equipment. The earliest (Tier 1) standards for large compression-ignition engines used in off-road mobile sources became effective in California in 1996. Since then, the Tier 3 standards for large compression-ignition engines used in off-road mobile sources went into effect in California for most engine classes in 2006, and Tier 4 or Tier 4 Interim (4i) standards apply to all off-road diesel engines model year 2012 or newer. The tiered engine exhaust standards and standards for fleets that are already in-use provide comprehensive regulation and control to reduce NOx and toxic diesel particulate matter (DPM) emissions from equipment throughout the State.

CARB In-Use Off-Road Diesel Fueled Fleets Regulation. The regulations for in-use off-road diesel equipment are designed to reduce NOx and DPM. Depending on the size of the fleet of equipment, the owner would need to ensure that the average emissions performance of the fleet meets certain state-wide standards (13 California Code of Regulations, Chapter 10, Section 2449.1). In lieu of improving the emissions performance of the fleet, electric systems can be installed to replace diesel equipment in the fleet average calculations. Presently, all equipment owners are subject to a five-minute idling restriction in the rule (13 California Code of Regulations, Chapter 10, Section 2449).

Local

Mojave Desert Air Quality Management District. The MDAQMD is the local agency responsible for improving and maintaining air quality in the MDAB. The following MDAQMD rules and regulations are applicable to the project:

- **Rule 201, Permit to Construct.** Requires written authorization prior to building or altering any equipment that may emit air contaminants.

- **Rule 203, Permit to Operate.** Requires written authorization to operate any equipment that may emit or control air contaminants.
- **Rule 204, Permit Conditions.** Allows the Air Pollution Control Officer to impose permit conditions to assure compliance with all regulations.
- **Rule 401, Visible Emissions.** Limits visible emissions from sources within the District.
- **Rule 402, Nuisance.** Prohibits the discharge of air contaminants that 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.
- **Rule 403, Fugitive Dust Control.** Requires measures to reduce PM10 entrainment from anthropogenic Fugitive Dust sources within the District.
- **Rule 1113, Architectural Coatings.** Limits volatile organic compound (VOC) content in architectural coatings.

MDAQMD also adopted California Environmental Quality Act (CEQA) and Federal Conformity Guidelines in 2020, which provide guidance on determining significance of air quality impacts and mitigation requirements for development projects (MDAQMD 2020).

Currently, the NAAQS and CAAQS are exceeded in most parts of MDAB. In regard to the NAAQS, the project region within MDAB is in nonattainment for O_3 (8-hour) and PM10. For the CAAQS, the project region within MDAB is in nonattainment for O_3 (1-hour and 8-hour), PM10, and PM2.5. In response, MDAQMD has adopted a series of AQMPs to meet the state and federal ambient air quality standards. AQMPs are updated regularly in order to more effectively reduce emissions, accommodate growth, and minimize any negative fiscal impacts of air pollution control on the economy.

MDAQMD has adopted a variety of attainment plans for a variety of nonattainment pollutants. The latest plans include the following:

- 1995 Mojave Desert Planning Area PM10 Attainment Plan
- 2004 Southeast Desert Modified Air Quality Maintenance Area Ozone Plan
- 2007 Western Mojave Desert Ozone Attainment Plan
- February 2008 Ozone Early Progress Plans
- 2014 Updates to the 1997 8-Hour Ozone Standard SIPs
- 2015 8-Hour Ozone Reasonable Achievable Control Technology SIP Analysis: MDAQMD
- 2016 Hour Ozone SIP
- 2022 8-hour Ozone SIP

To achieve and maintain ambient air quality standards, MDAQMD has adopted various rules and regulations for the control of airborne pollutants. Those rules applicable to this project include, but are not limited to, MDAQMD Rule 403 Fugitive Dust Control. The purpose of this rule is to reduce the amount of PM10 entrained in the ambient air as a result of emissions generated from construction and other earthmoving activities by requiring actions to prevent, reduce, or mitigate PM10 emissions. In addition, the project is required to adopt best available control measures to minimize emissions from surface-disturbing activities to comply with MDAQMD Rule 403.

San Bernardino Countywide Plan. The San Bernardino County Policy Plan includes long-term goals and policies that will guide County decisions, investments, and improvements toward achieving the countywide vision. It serves as the County's General Plan for the unincorporated areas, which is mandated by state law (San Bernardino County 2020). Policies relevant to this analysis include:

- **Goal NR-1, Air Quality.** Air quality that promotes health and wellness of residents in San Bernardino County through improvements in locally-generated emissions.
- **Policy NR-1.3.** We collaborate with air quality management districts and other local agencies to monitor and reduce major pollutants affecting the county at the emission source.
- **Policy NR-1.6.** We coordinate with air quality management districts on requirements for dust control plans, revegetation, and soil compaction to prevent fugitive dust emissions.

San Bernardino County Code. San Bernardino County Code Section 83.01.040 Air Quality establishes diesel exhaust emissions control measures applicable to discretionary land use projects (San Bernardino County 2025), including:

(A) Off-road vehicles/equipment shall not be left idling on site for periods in excess of five minutes (with some exceptions).

(B) Use reformulated ultra low-sulfur diesel fuel in equipment and use equipment certified by the U.S. Environmental Protection Agency (EPA) or that pre-dates EPA regulations.

(C) Maintain engines in good working order to reduce emissions.

(D) Signs shall be posted requiring vehicle drivers to turn off engines when parked.

(E) Any requirements or standards subsequently adopted by the South Coast Air Quality Management District, the Mojave Desert Air Quality Management District or the California Air Resources Board.

(F) Provide temporary traffic control during all phases of construction.

(G) On-site electrical power connections shall be provided for electric construction tools to eliminate the need for diesel-powered electric generators, where feasible.

(H) Maintain construction equipment engines in good working order to reduce emissions. The developer shall have each contractor certify that all construction equipment is properly serviced and maintained in good operating condition.

(I) Contractors shall use ultra low sulfur diesel fuel for stationary construction equipment as required by Air Quality Management District (AQMD) Rules 431.1 and 431.2 to reduce the release of undesirable emissions.

(J) Substitute electric and gasoline-powered equipment for diesel-powered equipment, where feasible.

Southern California Association of Governments. The Southern California Association of Governments (SCAG) is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial Counties, and addresses regional issues relating to transportation, the economy, community development, and the environment. SCAG coordinates with various air quality and transportation stakeholders in southern California to ensure compliance with the federal and state air quality requirements, including applicable federal, state, and air district laws and regulations. As the federally designated Metropolitan Planning Organization for the six county southern California region, SCAG is required by law to ensure that transportation activities conform to, and are supportive of, the goals of regional and state air quality plans to attain the NAAQS. In addition, SCAG is a co-producer, with the South Coast Air Quality Management District (SCAQMD), of the transportation strategy and transportation control measure sections of the 2016 AQMP. The development of the 2016 AQMP relies on population and transportation growth projections contained in SCAG's 2016 through 2040 Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS).

On September 3, 2020, SCAG's Regional Council adopted an updated RTP/SCS known as the 2020–2045 RTP/SCS or Connect SoCal. As with the 2016–2020 RTP/SCS, the purpose of the 2020–2045 RTP/SCS is to meet the mobility needs of the six-county SCAG region over the subject planning period through a roadmap identifying sensible ways to expand transportation options, improve air quality, and bolster southern California's long-term economic viability. On October 30, 2020, CARB accepted SCAG's determination that the SCS met the applicable state GHG emissions targets. The goals and policies of the 2020–2045 RTP/SCS are similar to, and consistent with, those of the 2016–2040 RTP/SCS. In addition, CARB's new target requiring a 19% reduction in per-capita GHG emissions has been included in the 2020–2045 RTP/SCS, to fulfill SB 375 compliance with respect to meeting the state's GHG emission reduction goals.

Cumulative

The proposed SMSP would be located in San Bernardino County within the MDAB. The criteria air pollutants of greatest concern are ozone and PM10. Past, present, and future development projects contribute to the region's adverse air quality conditions on a cumulative basis. The nonattainment status of the region and the MDAB can be attributed to the region's development history and the region's natural topography of

mountain ranges interspersed with long broad valleys that often contain dry lakes. Past, present, and future development projects contribute to the region's adverse air quality conditions on a cumulative basis.

For cumulative air quality assessment, staff generally considers a six-mile radius appropriate because, based on staff's modeling experience, beyond six miles there is no statistically significant overlap of nonreactive pollutant concentrations between stationary emission sources. According to **Appendix A, Table A-1**, the existing, approved, pending and proposed projects of potential sources of toxic air contaminants within six miles of the solar field include:

- Brightline West - Las Vegas to Victor Valley (0.05 mile)
- Ivanpah Control Transmission Line Project (0.62 mile)
- I-15 Mojave Wildlife Crossings Restoration Project (1.15 mile)

The applicant also identified another facility, the California State University Desert Studies Center (Facility ID: 3238), from the CARB Emission Inventory Development and Reporting System (CEIDARS). However, the air quality impacts were not reported in CEIDARS (RE 2025mm).

Past, present, and reasonably foreseeable probable future air quality impacts could be attributable to each of the cumulative projects, especially those that involve construction activities or operation and maintenance (O&M) activities with substantial sources of air pollutants.

5.1.2 Environmental Impacts

AIR QUALITY Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:	**Significant and Unavoidable Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a. Conflict with or obstruct implementation of the applicable air quality plan?	☐	☒	☐	☐
b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☒	☐	☐
c. Expose sensitive receptors to substantial pollutant concentrations?	☐	☒	☐	☐
d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix G, Air Quality

5.1.2.1 Methodology and Thresholds of Significance

In addition to the above environmental checklist, staff used the following methodology and thresholds of significance to evaluate the project.

Methodology

The applicant estimated air pollutant emissions for construction and operation activities using California Emissions Estimator Model (CalEEMod). The analysis was based on project specifics and default values in the latest version of CalEEMod (2022.1.1.30). Construction emissions estimations were associated with the emissions of the operation of off-road equipment, haul-truck trips, on-road worker vehicle trips, vehicle travel on paved and unpaved surfaces, and fugitive dust from material handling activities.

Construction duration is assumed to be approximately 18 months, occurring from March 2026 through the end of August 2027. The project's anticipated construction schedule which conservatively assumes that equipment would be operating 10 hours per day, 5 days per week for the duration of the construction phase (RE 2025gggg).

Thresholds of Significance

MDAQMD provides guidance to CEQA lead agencies through the *CEQA and Federal Conformity Guidelines* (MDAQMD 2020). The MDAQMD recommends the use of quantitative thresholds to determine the significance of temporary construction-related pollutant emissions and long-term operational-related pollutant emissions. These significance thresholds for annual and daily emissions are shown in **Table 5.1-4**. Compliance with a threshold of significance means the effect normally will be determined to be less than significant. However, in light of the existing PM and ozone non-attainment status for the project site area, staff considers the ozone precursors (NOx and VOC) and PM emissions to be potentially CEQA significant.

TABLE 5.1-4 MDAQMD AIR QUALITY SIGNIFICANCE THRESHOLDS

Pollutant	Annual Threshold (Short Tons)	Daily Threshold (Pounds)
Carbon Dioxide Equivalent (CO_2e)	100,000	548,000
NOx	25	137
VOCs	25	137
PM10	15	82
PM2.5	12	65
SOx	25	137
CO	100	548
H_2S	10	54
Pb	0.6	3

Source: MDAQMD 2020

Staff also evaluates the project's potential to expose sensitive receptors to substantial pollutant concentrations under CEQA environmental checklist criterion "c." Staff addresses the ambient air quality impacts of criteria pollutants, which have health-based standards in this Air Quality section and the impacts of toxic air contaminants in **Section 5.10, Public Health**.

The analysis includes an ambient air quality impact modeling of the project emissions. The AAQS, shown in **Table 5.1-1**, are health protective values, so staff uses these health-based regulatory standards to help define what is considered a substantial pollutant concentration for criteria pollutants. Staff's analysis determines whether the project would be likely to exceed any AAQS or contribute substantially to an existing or projected air quality violation, and, if necessary, proposes mitigation to reduce or eliminate these pollutant exceedances or substantial contributions.

Significance criteria also include Significant Impact Levels (SILs) for the particulate matter portions of the analysis. Regulatory agencies have traditionally applied SILs as a de minimis value, which represents the off-site concentration predicted to result from a source's emissions that does not warrant additional analysis or mitigation. If a source's modeled impacts at any off-site location do not exceed relevant SILs, the source owner would typically not need to assess multi-source or cumulative air quality to determine whether or not that source's emissions would cause or contribute to a violation of the relevant NAAQS or CAAQS. In the project area, data in **Table 5.1-3** show that the background levels of PM10 and PM2.5 already exceeded the most-stringent standards in the baseline conditions. Staff compares the project's contribution to local criteria pollutant concentrations to SILs to determine whether the project's emissions would contribute significantly to those regional exceedances.

To determine if the project could contribute substantially to the existing PM exceedances, this analysis relies on the U.S. EPA regulations defining PM10 SILs for federal nonattainment areas (40 CFR 51.165(b)(2)) for 24-hour impacts (5 $\mu g/m^3$) and for annual impacts (1 $\mu g/m^3$). The same U.S. EPA regulation (40 CFR 51.165(b)(2)) also establishes a PM2.5 SIL value for 24-hour impacts (1.2 $\mu g/m^3$). And with the establishment of the 2024 annual PM2.5 NAAQS, the U.S. EPA issued a recommendation to set the PM2.5 SIL value for annual impacts at 0.13 $\mu g/m^3$ (effective May 6, 2024 [U.S. EPA 2024b]). For this analysis, staff uses these U.S. EPA SILs to determine project impact significance of PM concentrations.

5.1.2.2 Direct and Indirect Impacts

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations.

a. Would the project conflict with or obstruct implementation of the applicable air quality plan?

This section considers the project's consistency with the applicable air quality management plan. This is a qualitative determination that considers the combined effects of project construction and operation.

Construction and operation of the project would result in emissions of criteria pollutants including ozone precursors (such as ROG and NOx) and PM. The region's SIP comprises the MDAQMD air quality plans: 2022 8-Hour Ozone SIP, 2016 8-Hour Ozone SIP, 2015 8-Hour Ozone Reasonable Available Control Technology SIP, 2014 Updates to the 1997 8-Hour Ozone SIP, February 2008 Ozone Early Progress Plan, 2004 Southeast Desert Modified Air Quality Maintenance Area Ozone Plan, and 1995 Mojave Desert Planning Area PM10 Attainment Plan. The MDAQMD is in attainment for CO, SO_2, and Pb, and there are no attainment plans for those pollutants.

MDAQMD has the responsibility to develop the applicable air quality management plans and regulations to achieve the air quality standards consistent with the plans. Additionally, MDAQMD has the authority to adopt and enforce rules and regulations to achieve and maintain the state and federal ambient air quality standards, as necessary to implement the air quality management plans.

To determine if a project would conflict with or obstruct implementation of the applicable air quality plan, lead agencies must demonstrate that a given project would not directly obstruct implementation of an applicable air quality plan and that the project would be consistent with the assumptions upon which the air quality plan is based. Each air quality management plan includes emission inventory, population, and employment growth forecasts that are relied upon for projecting how attainment is achieved. The thresholds of significance, adopted by MDAQMD (MDAQMD 2020), which has established significance thresholds to determine compliance with the goals of attainment plans in the region. As such, emissions below MDAQMD daily and annual significance emissions thresholds would not conflict with or obstruct implementation of the applicable air quality plans. Staff has used the thresholds of significance to determine whether or not the project would conflict with or obstruct implementation of the applicable air quality plan.

Construction

Less Than Significant with Mitigation Incorporated. Based on the analysis below, with implementation of the COCs, construction of the project would not conflict with or obstruct implementation of the applicable air quality plan.

Jurisdictional Project Components

Construction of these facilities would result in an increase in short-term employment compared to existing conditions. Construction activities and the associated jobs would not conflict with the long-term employment projections because the construction workforce for the project would be temporary in nature. Construction activities would be required to comply with COCs **AQ-SC1** through **AQ-SC5**, which include appropriate and best available emissions control measures. Project construction would be consistent

with San Bernardino Countywide Plan goal and policies (Goal NR-1, Policy NR-1.3, and Policy NR-1.6) and San Bernardino County Code.

With the implementation of COCs **AQ-SC1** through **AQ-SC5**, all construction activities would occur in compliance with applicable federal, state, and local requirements, including those that are relied upon for attainment planning. The employment associated with the project would be consistent with the planning forecasts. Compliance with air permitting requirements, and other applicable requirements, ensures that proposed project emissions are included within the emission inventory forecasts that are relied upon for attainment planning. Construction activities for these project components would not conflict with or obstruct implementation of the applicable air quality plan, as the project emissions would remain below the MDAQMD significance thresholds shown in **Table 5.1-5.**

Non-Jurisdictional Project Components

Construction activities for the network upgrades at existing Marketplace and Adelanto substations would be temporary in nature and are unlikely to have a cumulative impact on the ambient air quality of the Mojave region. Short-term construction emissions would dissipate as a function of distance from the construction site and comply with applicable regulations. Moreover, construction of the network upgrades is not expected to involve sources of emissions that may lead to significant impacts or impacts of emissions other than those pollutants identified elsewhere in this analysis.

Operation

Less Than Significant with Mitigation Incorporated. Based on the analysis below, with the implementation of COCs **AQ-SC6** and **AQ-SC7**, operation of the project would not conflict with or obstruct implementation of the applicable air quality plan.

Jurisdictional Project Components

Emissions during operation of the project were modeled in CalEEMod for the first full year of operation to be 2028. It is assumed that for regular maintenance, equipment operation, and security that there will be daily trips for up to 40 workers during each week which correlates to 80 one-way worker trips per weekday. This estimation isn't anticipated for every week, but rather weeks that require maintenance work. Modeling also chose medium heavy-duty trucks and heavy-duty trucks to represent the worker vehicles and the truck transporting the water, and trip purpose was designated as 100% primary trips (RE 2025gggg).

Operational activities would not exceed MDAQMD daily and annual thresholds of significance as seen in **Table 5.1-6.** However, in light of the existing PM and ozone non-attainment status for the project site area, staff considers the operational NOx, VOC, and PM emissions to be potentially CEQA significant. Therefore, staff proposes COCs **AQ-SC6** and **AQ-SC7** to reduce the impacts from the operations of the proposed project. With the implementation of the COCs, operation of this project would not

conflict with implementation of existing air quality plans. For these reasons, this project element would be consistent with the California SIP and MDAQMD attainment Plans.

Non-Jurisdictional Project Components

Operations and maintenance (O&M) activities associated with the non-jurisdictional components would be minimal. These components include the utility switchyard, transmission loop and towers, and downstream network upgrades at the existing Marketplace and Adelanto substations. Operation and maintenance of these facilities would be performed remotely by LADWP, resulting in only small emissions from occasional vehicle trips to and from these components after construction is completed. The remote operation of these components would not generate significant emissions. Operation of these non-jurisdictional components is not expected to conflict with or obstruct implementation of the applicable air quality plans.

b. Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

This section quantifies the project's criteria pollutant emissions rates and focuses on whether project-related emissions of nonattainment criteria pollutants would exceed any of the applicable local air district significance thresholds.

Construction

Less Than Significant with Mitigation Incorporated. Based on the analysis below, with the implementation of the COCs **AQ-SC1** to **AQ-SC5**, construction of the project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.

Jurisdictional Project Components

Construction emissions associated with the project would include emissions associated with the operation of off-road equipment, haul-truck trips, on-road worker vehicle trips, vehicle travel on paved and unpaved surfaces, and fugitive dust from material handling activities. The estimated construction emissions have been grouped into four stages in CalEEMod based on the types of equipment and workload: 1) site preparation and grading (including mobilization, site preparation, grading, fencing, preparation of roads and laydown areas, and installation of measures in the Stormwater Pollution Prevention Plan (SWPPP) as well as erosion control features); 2) structural construction (including the installation of solar array structural components including piles, racking systems, and foundations); 3) solar array installation (including installation of solar and BESS inverters, solar panels, battery storage systems, and ancillary equipment, and would also include trenching activities to install cables and other electrical equipment); and 4) inspections, testing, and commissioning. The project is within a 2,670-acre area with a

parking area and several buildings. The following CalEEMod land uses were used to represent the project:

- Industrial – user defined for the 2,670 acres
- 0.33-acre parking lot
- 5,000-square-foot general light industry building to represent the operation and maintenance building
- 140,000-square-foot general heavy industry to represent the substation area
- 2,400-square-foot unrefrigerated warehouse – no rail to represent the maintenance facility
- 5,000-square-foot unrefrigerated warehouse – no rail to represent the warehouse facility

Construction duration is assumed to be approximately 18 months, occurring from March 2026 through the end of August 2027. This construction anticipated schedule is detailed below:

- Stage 1: March 1, 2026 – October 31, 2026 (~175 Working Days)
- Stage 2: June 1, 2026 – February 28, 2027 (~195 Working Days)
- Stage3[1]: December 1, 2026 – June 30, 2027 (~152 Working Days)
- Stage 4: June 1, 2027 – August 31, 2027 (~66 working days)
- Paving: June 17, 2026 – June 30, 2026 (~10 working days)
- Architectural Coating: July 1, 2026 – July 14, 2026 (~10 working days)

The applicant has made the assumption of a maximum of 600 one-way worker trips for all phases at any time and no one-way vendor trips for any phase at any time 234 one-way on-site haul-truck trips for all phases at any time 3 miles of on-site truck travel for each phase (RE 2025gggg). **Table 5.1-5** shows the peak daily and annual emissions anticipated during the construction period. For comparison purposes, **Table 5.1-5** also shows the significance thresholds from **Table 5.1-4**.

TABLE 5.1-5 MAXIMUM EMISSIONS CONSTRUCTION WITHOUT MITIGATION

Construction Activity	ROG	NOx	CO	PM10	PM2.5	SO_2
Pounds Per Day (lbs/day)						
2026 Peak Daily Emission	16.1	129.2	190.8	31.1	11.8	0.37
2027 Peak Daily Emission	12.5	106.6	140.6	23.2	7.5	0.33
MDAQMD Thresholds of Significance	137	137	548	82	65	137

1 Due to the overlap of the 4 Stages, Stage 2 and Stage 3 were broken down into 'Stage 2' and 'Stage 2- Phase 2', 'Stage 3' and 'Stage 3- Phase 2', and 'Stage 4' and 'Stage 4- Phase 2'. in the CalEEMod to ensure that works and haul truck trips are not double counted. The equipment in these phases are identical.

TABLE 5.1-5 MAXIMUM EMISSIONS CONSTRUCTION WITHOUT MITIGATION						
Construction Activity	**ROG**	**NOx**	**CO**	**PM10**	**PM2.5**	**SO_2**
Pounds Per Day (lbs/day)						
Threshold Exceeded?	No	No	No	No	No	No
Short Tons Per Year (tpy)						
2026 Annual Emissions	1.32	11.46	15.45	3.10	1.12	0.03
2027 Annual Emissions	0.53	4.62	7.17	1.77	0.49	0.02
MDAQMD Thresholds of Significance	25	25	100	15	12	25
Threshold Exceeded?	No	No	No	No	No	No
General Conformity De Minimis Threshold	25	25	N/A	70	70	N/A
Threshold Exceeded?	No	No	No	No	No	No

Source: RE 2025gggg

Table 5.1-5 shows that the peak daily and annual emissions during construction would not exceed the MDAQMD significance thresholds or General Conformity De Minimis Threshold. However, in light of the existing PM and ozone non-attainment status for the project site area, staff considers the construction NOx, VOC, and PM emissions to be potentially CEQA significant and the project is required to comply with MDAQMD Rule 403, Fugitive Dust Control. Therefore, staff is recommending that the off-road equipment and fugitive dust emissions be mitigated to the extent feasible.

To mitigate the impacts due to construction of the facility, the applicant has proposed to use the mitigation measures in APM Air-1 through APM Air-9 (RE 2025mm). Staff recommends the implementation of mitigation measures contained in Conditions of Certification **AQ-SC1** to **AQ-SC5**, which incorporate the applicant's proposed measures (APM Air-1 through APM Air-9) and measures recommended by staff to reduce the impacts from the construction of the proposed project. Specific recommendations from staff include a more aggressive dust control requirement to use polymer based, or equivalent, soil stabilizers on the site's unpaved roads and inactive disturbed surfaces during construction.

To reduce these emissions, staff identifies proposed COC **AQ-SC1** to **AQ-SC5** to sufficiently reduce NOx and PM2.5 from equipment and to also substantially reduce PM10, including fugitive dust. Staff's proposed conditions of certification are effective and comprehensive "best practices" for avoiding air quality impacts during construction.

COC **AQ-SC1** would require an on-site construction mitigation manager who would be responsible for the implementation and compliance of the overall construction mitigation program. The documentation of the ongoing implementation and compliance with the construction mitigation program would be provided in the monthly compliance report that is required in staff's recommended COC **AQ-SC2**.

COC **AQ-SC3** formalizes the construction fugitive dust control requirements. These requirements include paving or stabilizing with soil binders the main access roads

through the facility and delivery areas before construction begins on that part of the site. Dust suppressants would be durable non-toxic soil stabilizers, and many other activity-specific control measures would be applied to reduce fugitive dust and to ensure activities do not create visible dust emissions during construction.

COC **AQ-SC4** would monitor activities for potential visible dust emissions and require responding to situations when the control measures required by COC **AQ-SC3** are not working effectively to limit the transport of fugitive dust plumes from construction areas.

COC **AQ-SC5** would mitigate diesel engine emissions of NOx and particulate matter (PM10 and PM2.5) by mandating use of diesel-fueled construction equipment that complies with Tier 4 Final emission standards for off-road engines.

Staff believes that the implementation of proposed specific mitigation measures during construction of the project as identified in the conditions of certification would eliminate the potential to cause the short-term CEQA impacts of PM and ozone to a level of less than significant.

Non-Jurisdictional Project Components

Construction activities to upgrade the protection settings at existing Marketplace and Adelanto substations would not involve groundwork and thus would be temporary in nature and are unlikely to result in significant air quality emissions. Short-term construction emissions would dissipate as a function of distance from the construction site and comply with applicable MDAQMD Rule 403, Fugitive Dust Control. Moreover, construction of the network upgrades is not expected to involve sources of emissions that may lead to significant impacts or impacts of emissions other than those pollutants identified elsewhere in this analysis.

Operation

Less Than Significant with Mitigation Incorporated. Based on the analysis below, with the implementation of the COCs, operation of the project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.

Jurisdictional Project Components

Project operations are limited to panel washing and maintenance, which are conservatively assumed to be up to 80 one-way employee vehicle trips per weekday. Project operations would generate emissions from mobile sources, water use, and maintenance. The estimated emissions from operation of the project are summarized in **Table 5.1-6**.

TABLE 5.1-6 UNMITIGATED OPERATIONAL EMISSIONS						
Construction Activity	**ROG**	**NOx**	**CO**	**PM10**	**PM2.5**	**SO_2**
Pounds Per Day (lbs/day)						
Mobile	0.19	5.24	2.49	2.91	0.82	0.09
Area	1.08	0.06	6.62	0.01	0.01	<0.005
Energy	0	0	0	0	0	0
Stationary	0	0	0	0	0	0
Total	1.28	5.29	9.12	2.93	0.83	0.09
MDAQMD Thresholds of Significance	137	137	448	82	64	137
Threshold Exceeded?	No	No	No	No	No	No
Short Tons Per Year (tpy)						
Mobile	0.02	0.73	0.32	0.38	0.11	0.01
Area	0.10	0.005	0.59	0.001	<0.005	<0.005
Energy	0	0	0	0	0	0
Stationary	0	0	0	0	0	0
Total	0.12	0.74	0.92	0.38	0.11	0.01
MDAQMD Thresholds of Significance	25	25	100	15	12	25
Threshold Exceeded?	No	No	No	No	No	No
General Conformity De Minimis Threshold	25	25	N/A	70	70	N/A
Threshold Exceeded?	No	No	No	No	No	No

Source: RE 2025gggg

As shown in **Table 5.1-6**, estimated operational emissions for all pollutants would be well below the MDAQMD significance thresholds and the General Conformity De Minimis Threshold. However, in light of the existing PM and ozone non-attainment status for the project site area, staff considers the operational NOx, VOC, and PM emissions to be potentially CEQA significant and the project is required to comply with MDAQMD Rule 403, Fugitive Dust Control. Additionally, to address the project's contribution to the potentially ongoing nonattainment of the PM and ozone standards, staff recommends that the off-road equipment and fugitive dust emissions during operation be mitigated to the extent feasible.

Staff recommends the implementation of mitigation measures contained in Conditions of Certification **AQ-SC6** and **AQ-SC7**, which incorporate the applicant's proposed measures and measures recommended by staff to reduce the impacts from the operations of the proposed project.

To reduce these emissions, staff identifies proposed COC **AQ-SC6** and **AQ-SC7** to sufficiently reduce NOx and PM2.5 from equipment and to also substantially reduce PM10, including fugitive dust. Staff's proposed conditions of certification are effective and comprehensive "best practices" for avoiding air quality impacts during operations.

Staff concludes that the applicant's proposed mitigation measures, that mirror staff's current mitigation requirements for other large solar projects, would adequately mitigate the proposed project's mobile equipment and fugitive dust emissions. Therefore, staff recommends the operating mitigation measures as proposed by the applicant in APMs to meet current staff recommendations, in staff recommended Conditions of Certification **AQ-SC6** and **AQ-SC7**.

Non-Jurisdictional Project Components

Operations and maintenance (O&M) activities associated with the non-jurisdictional components would be minimal. Non-jurisdictional components with regards to project operation consist of the utility switchyard, transmission loop, and network upgrades at existing Marketplace and Adelanto substations. Operation and maintenance of these facilities would be performed remotely by LADWP, resulting in only small emissions from occasional vehicle trips to and from these components after construction is completed. The remote operation of these components would not generate significant emissions. Emissions from the operation of non-jurisdictional project components would be negligible and not contribute to a cumulative net increase of ozone, PM2.5 or PM10, the criteria pollutants that are nonattainment in the MDAQMD.

c. Would the project expose sensitive receptors to substantial pollutant concentrations?

This section describes the effect of proposed project emissions on the ambient air pollutant concentrations and identifies sensitive receptors potentially impacted by project construction and operations.

Staff considers any new AAQS exceedance or a substantial contribution to any existing AAQS exceedance caused by the project's emissions to be substantial evidence of potentially significant impacts that would require the evaluation of potential mitigation measures.

Staff's concern for this case focuses on NO_2, CO, SO_2, PM10, and PM2.5 in the MDAQMD region due to the Mojave Desert's unique air quality challenges, including its persistent non-attainment status for particulate matter and ozone, which are influenced by these pollutants. **Section 5.10, Public Health** discusses the results of toxic air contaminants for both construction and operation.

Construction

Less Than Significant with Mitigation Incorporated. Based on the analysis below, and with the incorporation of the conditions of certification described below, construction of the project would not expose sensitive receptors to substantial pollutant concentrations.

Jurisdictional Project Components

The project has included construction emission estimates based on an approximately 18-month construction period. The construction phases for the project include the following:

Phase 1: Site Preparation and Grading

Phase 2: Structural Construction

Phase 3: Solar Array Installation

Phase 4: Inspections, Testing, and Commissioning

Ambient air quality impacts from the construction emissions of criteria pollutants, including NO_2, CO, SO_2, PM10, and PM2.5, have been evaluated based on emissions provided under criterion "b" of the CEQA environmental checklist above.

The applicant provided an air dispersion modeling analysis for NO_2, CO, SO_2, PM10, and PM2.5 impacts during construction (RE 2025gggg). The applicant conducted the air dispersion modeling using the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD [Version 18081]). The applicant obtained AERMOD-ready meteorological data from the Barstow-Daggett Airport Meteorological Station (KDAG), which was pre-processed by the California Air Resources Board with AERMET version 19191. The meteorological data is from Barstow-Daggett Airport years 2015 through 2020, which meets the U.S. EPA requirement of five years of representative meteorological data. The meteorological station is approximately 38-miles southwest from the nearest point of the project site and is representative of the conditions at the project site (RE 2025gggg).

Table 5.1-7 shows the results of dispersion modeling conducted by applicant to reflect the emissions quantified in this impact analysis under criterion "b." The project impact column shows the worst-case impacts of the project from modeling. The background column shows the highest concentrations from the prior three years (2021-2023), from **Table 5.1-3**. The total impact column shows the sum of the existing background condition plus the maximum modeled impact predicted by the modeling analysis. The AAQS column shows the applicable AAQS.

Table 5.1-7 shows that the NO_2, CO, and SO_2 impacts during project construction would be below the NAAQS and CAAQS for all averaging periods.

For PM10 and PM2.5 impacts analysis, **Table 5.1-3** shows that the background levels of PM10 and PM2.5 exceeded the most-stringent standards in the baseline conditions. Therefore, staff compares the project's contribution to local criteria pollutant concentrations to SILs to determine whether the project's emissions would contribute significantly to those exceedances. **Table 5.1-7** shows that the project's contribution to local PM concentrations would be much lower than the SILs of 5 $\mu g/m^3$ for 24-hour PM10 impacts, 1 $\mu g/m^3$ for annual PM10 impacts, 1.2 $\mu g/m^3$ for 24-hour PM2.5 impacts, and 0.13 $\mu g/m^3$ for annual PM2.5 impacts respectively. In addition, the impacts would

be further reduced with the implementation of the required construction fugitive-dust and exhaust-control measures (**AQ-SC1** through **AQ-SC5**).

TABLE 5.1-7 SUMMARY OF AAQA RESULTS FOR CONSTRUCTION

Pollutant	Averaging Period	Background (µg/m³)	Project Impact (µg/m³)	Total Impact (µg/m³)	AAQS (µg/m³)	Exceedance
NO_2	1-hour - NAAQS	117.4	11.7	129.1	188	No
	1-hour - CAAQS	117.4	11.7	129.1	339	No
	Annual - NAAQS	27.5	0.04	27.5	100	No
	Annual - CAAQS	27.5	0.04	27.5	57	No
CO	1-hour - NAAQS	2,179	17	2,196	40,000	No
	1-hour - CAAQS	2,179	17	2,196	23,000	No
	8-hour - NAAQS	1,605	0.03	1,605	10,000	No
	8-hour - CAAQS	1,605	0.03	1,605	10,000	No
SO_2	1-hour - NAAQS	13.1	2.0 e-3	13.1	196	No
	1-hour - CAAQS	13.1	1.0 e-4	13.1	655	No
PM10	24-hour - NAAQS	**372**	0.17	**372**	150	**Yes**
	24-hour - CAAQS	**372**	0.17	**372**	50	**Yes**
	Annual - CAAQS	**31**	7.0 e-3	**31**	20	**Yes**
PM2.5	24-hour - NAAQS	**47**	0.07	**47**	35	**Yes**
	Annual - NAAQS	8.3	3.0 e-3	8.3	9	No
	Annual - CAAQS	8.3	3.0 e-3	8.3	12	No

Sources: RE 2025gggg, with CEC staff analysis.

It should be noted that the AAQA discussed above focuses on emissions at the project site, where concentrations of pollutants directly impact local receptors. Offsite vehicle/truck emissions would only pass by any single sensitive receptor along the routes for a momentary duration where emissions would disperse rapidly and over large areas. This makes them harder and speculative to quantify and less likely to cause concentrated exposure in a single location. In addition, vehicles have to meet on-road emission standards with compliance being verified through SMOG testing. Offsite trips will occur on existing roadways within the MDAQMD, which already incorporates mobile

source emissions into its ambient air quality attainment planning. Because the vehicle emissions are spread out geographically and are typically mixed with general traffic pollution, they are treated as part of the baseline conditions rather than as a project-specific impact.

Therefore, the project construction activities would not expose sensitive receptors to substantial concentrations of any criteria air pollutants (i.e., NO_2, CO, SO_2, PM10, and PM2.5).

Non-Jurisdictional Project Components

Construction activities for the network upgrades at existing Marketplace and Adelanto substations would be temporary in nature and are unlikely to result in long-term adverse effects on air quality. Impacts from construction activities of the downstream network upgrades would be temporary in nature and dissipate as a function of distance. Moreover, construction of the downstream network upgrades is not expected to involve sources of emissions that may lead to emissions other than those pollutants identified elsewhere in this analysis.

Operation

Less Than Significant with Mitigation Incorporated. Based on the analysis below, with the implementation of the COCs, operation of the project would not expose sensitive receptors to substantial pollutant concentrations and impacts would be less than significant.

Jurisdictional Project Components

The project would be remotely operated, resulting in minimal on-site activity. Project operation would not include any stationary equipment that could generate substantial pollutant emissions. Operational emissions would primarily result from limited off-site vehicle trips associated with worker commutes, material deliveries, site security, and general facility upkeep for the proposed solar facility; additional minor emissions would occur from routine solar panel washing, consumer product use, and landscaping activities. These activities would be infrequent, short in duration, and dispersed across the project area such that they would not expose sensitive receptors to substantial pollutant concentrations. The air quality impacts of project operation would be less than significant when considered alone or in combination with other regional sources. Project impacts would be further reduced with the implementation of COCs **AQ-SC6** and **AQ-SC7**. Therefore, the project's operational impacts would be less than significant with mitigation incorporated.

BESS Thermal Runaway and Fire Impacts

Section 4.4, Worker Safety and Fire Protection provides a detailed discussion regarding potential BESS safety hazards and concludes that the risk of BESS thermal runaway is small and is heavily influenced by older (pre-2025) technology. The overall utility-scale BESS failure rate has sharply decreased while the global installed capacity

has dramatically increased. The most recent data from EPRI shows that the failure rate dropped by 98 percent from 2018 to 2024 as lessons learned from early failures have been incorporated into the latest designs and best practices. See more detailed discussion in **Section 4.4, Worker Safety and Fire Protection**.

Section 5.10, Public Health provides a detailed discussion regarding potential air quality and public health impacts during a BESS thermal runaway and fire event. Based on the review of the monitoring data for past BESS incidents, applicant's modeling analysis for this project, and the infrequent, irregular, and unplanned nature of the BESS thermal runaway/fire events, staff concludes that potential BESS thermal runaway/fire events would not expose sensitive receptors to substantial pollutant concentrations. In addition, staff recommended COCs in **Section 4.4, Worker Safety and Fire Protection** and **Section 5.7**, **Hazards, Hazardous Materials, and Wildfire** would further reduce any impacts to public health. COC **WORKER SAFETY-6** would ensure that the proposed BESS would comply with the latest versions of National Fire Protection Association (NFPA) 855 for BESS safety. COC **WORKER SAFETY-7** would require administrative and engineering controls to prevent or respond to a fire from the BESS. COC **WORKER SAFETY-8** and COC **WORKER SAFETY-10** would ensure additional fire protection and worker EMS response. COC **HAZ-9** would also require real-time measurements of air quality to provide timely feedback to any workers or people potentially affected. The adoption of these COCs would further reduce the risk and impacts of any BESS thermal runway/fire events. See more detailed discussion in **Section 5.10, Public Health**.

Non-Jurisdictional Project Components

Operations and maintenance (O&M) activities associated with the non-jurisdictional components would be minimal. These components include the utility switchyard, transmission loop and towers, and downstream network upgrades at the existing Marketplace and Adelanto substations. Operation and maintenance of these facilities would be performed remotely by LADWP, resulting in only small emissions from occasional vehicle trips to and from these components after construction is completed. Therefore, the operation of non-jurisdictional project components would not expose sensitive receptors to substantial pollutant concentrations.

d. Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

This section considers impacts that may arise from emissions other than criteria air pollutants, such as emissions that may lead to odors. Toxic air contaminants are addressed separately in **Section 5.10, Public Health**.

Construction

Less Than Significant Impact. Based on the analysis below, construction of the project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

Jurisdictional Project Components

Construction activities could temporarily result in emissions that lead to odors. For example, diesel exhaust and VOCs would be emitted from diesel engines used for project construction. However, there will be a limited number of diesel engines used during project construction and the construction duration will not exceed 18 months, meaning there will not be a large volume or extended period where a substantial number of people are being exposed to emissions with obnoxious odors.

Fugitive dust emissions can create a nuisance and adverse effects. To ensure that fugitive dust emissions would not occur at levels that could adversely affect a substantial number of people, the project would implement fugitive dust control measures as specified in COC **AQ-SC3** and **AQ-SC4** and comply with MDAQMD Rule 403, Fugitive Dust Control. The project would be consistent with Policy NR-1.3 in the San Bernardino County Policy Plan, which encourages the local air quality management districts and other local agencies to monitor and reduce major pollutants affecting the county at the emission source. The project would also be subject to prohibitions on creating nuisances in the California Health & Safety Code. Therefore, the construction of these project components would not result in other emissions, such as odors or dust, that could adversely affect a substantial number of people.

Non-Jurisdictional Project Components

Non-jurisdictional components with regards to project construction consist of the Network upgrades at existing Marketplace and Adelanto substation. Construction activities associated with the non-jurisdictional components would be minimal and therefore emit negligible emissions, if any. Therefore, there would not be a substantial number of people being exposed to emissions with obnoxious odors.

Operation

Less Than Significant Impact. Operation of the project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

Jurisdictional Project Components

The project would be remotely operated, resulting in minimal on-site activity. Operation of the project would not include any stationary equipment that would be sources of air quality emissions. Operational emissions would result from off-site vehicle trips for worker commutes, material deliveries, site security, and facility upkeep associated with the proposed solar facility; additional minor emissions would result from routine solar panel washing, consumer product use, and landscaping activities. Any on-road, diesel-powered vehicles associated with maintenance or material deliveries would operate for short durations and would not remain at any one location for extended periods such that they would expose sensitive receptors to excessive DPM emissions. As such, nuisance impacts would not be likely to occur during operation or maintenance

activities. The project would not result in odors or other emissions that could adversely affect a substantial number of people.

Non-Jurisdictional Project Components

Operations and maintenance (O&M) activities associated with the non-jurisdictional components would be minimal. Non-jurisdictional components with regards to project operation consist of the utility switchyard, transmission loop, and network upgrades at existing Marketplace and Adelanto substations. The remote operation of these components would not emit any emissions with obnoxious odors. Therefore, the operation of non-jurisdictional project components would not expose a substantial number of people to emissions with an obnoxious odor.

5.1.2.3 Cumulative Impacts

Based on the analysis below, the project would not result in a cumulatively considerable net increase of any criteria air pollutant, and the project's potential to contribute to the cumulative impact of criteria pollutant concentrations would be less than significant with mitigation incorporated.

Construction and Operation

Less Than Significant with Mitigation Incorporated. Based on the analysis below, with the incorporation of COCs described below, project construction would not contribute to cumulatively considerable impacts to air quality impacts would be less than significant.

Jurisdictional Project Components

The conclusion for cumulative impacts to criteria air pollutant concentrations relies on the quantified emissions and the modeled concentrations presented above. Each of the projects in the cumulative project scenario could result in some level of contribution to the region's adverse air quality conditions, although the individual contribution of each project would be minimized if each project is consistent with air quality management planning efforts and in compliance with applicable local air district rules and regulations, as described with the regulatory setting.

Under environmental checklist criterion "b," staff concludes that the project's criteria pollutant emissions would not occur at rates that could be cumulatively significant. The project's emissions of criteria pollutants and precursors would not exceed any threshold of significance. With the implementation of COCs **AQ-SC1** through **AQ-SC7**, the project construction and operation would not result in a cumulatively significant impact.

Under environmental checklist criterion "c," staff presents the results of the staff's independent air quality impact analysis for all criteria pollutants during construction and operation. The total air quality impacts include background concentrations as a means of capturing the effects of existing sources in the cumulative conditions.

The local cumulative PM10 and PM2.5 concentrations that occur above the most-stringent standards are dominated by the combined effects of existing, background stationary and mobile sources. Because the overall cumulative impact to PM10 and PM2.5 exceed the standards, the proposed project would contribute to a significant cumulative impact. However, based on the proposed project's individual impact being below the thresholds of the PM10 and PM2.5 SILs for all sensitive receptor locations, the project's incremental contribution to the cumulative impact would not be cumulatively considerable.

Non-Jurisdictional Project Components

Under environmental checklist criterion "b," staff concludes that the criteria pollutant emissions from construction of the network upgrades at existing Marketplace and Adelanto substations would not occur at rates that could be cumulatively significant. Under environmental checklist criterion "c," staff concludes that construction of the network upgrades at existing Marketplace and Adelanto substations would not expose sensitive receptors to substantial pollutant concentrations.

5.1.3 Project Consistency with Applicable Plans, Policies, and Regulations

Table 5.1-8 includes staff's determination of consistency with applicable local, state and federal plans, policies, and regulations, including any proposed Conditions of Certification, where applicable, to ensure the jurisdictional components of the project would be consistent with plans, policies, and regulations. As shown in this table, staff concludes that with implementation of specific conditions of certification, the proposed project would be consistent with all applicable plans, policies, and regulations. The subsection below, "Proposed Conditions of Certification," contains the full text of the referenced conditions of certification.

TABLE 5.1-8 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS

Applicable Plans, Policies, and Regulations	Consistency and Basis For Determination
Federal	
Clean Air Act	
40 Code of Federal Regulations (CFR) Part 51, Nonattainment NSR Program	**Yes.** New source review requirements are implemented through MDAQMD rules and regulations. Conditions of Certification **AQ-SC1** through **AQ-SC7** would ensure the project is consistent with MDAQMD rules and regulations.
State	
California Health and Safety Code	
Section 41700	**Yes.** Applies to all of the proposed project's emitting activities and sources. To avoid the potential for injury, detriment, nuisance, or annoyance this analysis includes Conditions of Certification **AQ-SC3, AQ-SC4**, and **AQ-SC7** for minimizing visible dust during construction and operation.

TABLE 5.1-8 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS

Applicable Plans, Policies, and Regulations	Consistency and Basis For Determination
U.S. EPA/CARB Off-Road Mobile Sources Emission Reduction Program	**Yes**. Mandates that CARB achieve the maximum degree of emission reductions from all off-road mobile sources to attain the state ambient air quality standards. Off-road mobile sources include construction equipment. Conditions of Certification **AQ-SC5** and **AQ-SC6** would ensure construction and operation equipment meets the latest tier.
CARB In-Use Off-Road Diesel Fueled Fleets Regulation	**Yes**. The regulations for in-use off-road diesel equipment are designed to reduce NOx and DPM. Conditions of Certification **AQ-SC5** and **AQ-SC6** would ensure construction and operation equipment meets state-wide standards.
Local	
Mojave Desert Air Quality Management District	
Rule 201, Permit to Construct Rule 203, Permit to Operate Rule 204, Permit Conditions	**Yes.** CEC's Opt-In certification is in lieu of any district permits.
Rule 401, Visible Emissions	**Yes.** Applies to project construction as construction uses off road diesel engines and diesel construction equipment.
Rule 402, Nuisance	**Yes.** This rule prohibits the discharge of air contaminants or other materials in quantities that may 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 person or the public.
Rule 403, Fugitive Dust Control	**Yes.** Applies to project construction and emissions as they are both expected to have PM10 and PM2.5 emissions related to each types of project activities. Conditions of Certification **AQ-SC3**, **AQ-SC4,** and **AQ-SC7** would ensure the project is consistent with the MDAQMD rule.
Rule 1113, Architectural Coatings	**Yes.** Applies to VOC emissions related to project construction.
Southern California Association of Governments	**Yes.** Applies to project construction as construction related vehicle trips to and from the project site will result in criteria pollutant emissions that can potentially impact the NAAQS.
San Bernardino Countywide Plan	
Goal NR-1, Air Quality	**Yes.** Project construction and operation will result in emissions of criteria pollutants that can directly affect the local air quality. Conditions of Certification **AQ-SC1** through **AQ-SC7** would ensure the project is consistent with the goal.
Policy NR-1.3.	**Yes.** Project construction and operation will result in emissions of criteria pollutants. Conditions of Certification **AQ-SC1** through **AQ-SC7** would ensure the project is consistent with the policy.

TABLE 5.1-8 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS	
Applicable Plans, Policies, and Regulations	**Consistency and Basis For Determination**
Policy NR-1.6.	**Yes.** Applies to project construction and operation, which may result in fugitive dust emissions. Conditions of Certification **AQ-SC3, AQ-SC4**, and **AQ-SC7** would ensure the project is consistent with the policy.
San Bernardino County Code	
Section 83.01.040 Air Quality	**Yes.** Applies to project construction and operation, which will utilize off road diesel engines and diesel equipment. Conditions of Certification **AQ-SC5** and **AQ-SC6** would ensure the project is consistent with the county code.

5.1.4 Conclusions and Recommendations

It should be noted that staff's analysis of the project's impacts is based on the project design before the consideration of the applicant's proposed change in stormwater design (applicant-proposed HYD-1 (RE 2025jjjj), incorporated as COC **WATER-9**, in **Section 5.16, Water Resources**). The revised project design removes the previously proposed stormwater berms and associated drainage features. Construction of these components would have required additional grading, soil disturbance, and operation of heavy construction equipment, which are primary sources of exhaust emissions and fugitive dust. Removal of the components therefore would reduce construction-related air pollutant emissions compared to the project configuration analyzed in this analysis. These reductions are achieved through implementation of COC **WATER-9**, which minimizes grading and ground disturbance by preserving existing drainage patterns and applying fluvial geomorphic stormwater design principles rather than engineered berms and channels. Accordingly, the air quality analysis presented in this section represents a conservative assessment of potential impacts.

As discussed above, with implementation of conditions of certification, the project would have a less than significant impact related to air quality and would be consistent with applicable plans, policies, and regulations. Staff recommends adopting the conditions of certification as detailed in subsection "5.1.5 Proposed Conditions of Certification" below. The conditions below are enforceable as part of the CEC's certificate for the portions of the project constituting the site and related facilities. There are no recommended mitigation measures for the non-jurisdictional project components for air quality.

5.1.5 Proposed Conditions of Certification

AQ-SC1 Air Quality Construction Mitigation Manager (AQCMM). The project owner shall designate and retain an on-site AQCMM who shall be responsible for directing and documenting compliance with Conditions of Certification **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 30 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.

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

Verification: At least 30 days prior to the start of any ground disturbance, the project owner shall submit the AQCMP to the CPM for approval. The AQCMP shall include effectiveness and environmental data for the proposed soil stabilizer. The CPM will notify the project owner of any necessary modifications to the plan within 15 days from the date of receipt.

AQ-SC3 Construction Fugitive Dust Control. The AQCMM shall submit documentation to the CPM in each Monthly Compliance Report that demonstrates compliance with the AQCMP mitigation measures for the purposes of minimizing fugitive dust emission creation from construction activities and preventing all fugitive dust plumes that would not comply with the performance standards identified in **AQ-SC4** from leaving the project site. Any deviation from the AQCMP mitigation measures shall require prior CPM notification and approval and shall require demonstration that such deviation will not result in a new or increased significant environmental impact.

Report monthly on the following fugitive dust mitigation measures that shall be included in the AQCMP required by **AQ-SC2**:

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

b. All unpaved construction roads and unpaved operation and maintenance site roads, as they are being constructed, shall be stabilized with a non-toxic soil stabilizer or soil weighting agent that can be determined to be as efficient as or more efficient for fugitive dust control than CARB approved soil stabilizers,

and that shall not increase any other environmental impacts, including loss of vegetation to areas beyond where the soil stabilizers are being applied for dust control. All other disturbed areas in the project and linear construction sites shall be watered as frequently as necessary during grading; and after active construction activities shall be stabilized with a non-toxic soil stabilizer or soil weighting agent, or alternative approved soil stabilizing methods, in order to comply with the dust mitigation objectives of COC **AQ-SC4**. The frequency of watering can be reduced or eliminated during periods of precipitation.

c. No vehicle shall exceed 15 miles per hour on unpaved areas within the construction site, with the exception that vehicles may travel up to 25 miles per hour on stabilized unpaved roads as long as such speeds do not create visible dust emissions.

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

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

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

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

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

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

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

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

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

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

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

o. Regular street sweeping/cleaning of paved surfaces shall be implemented.

p. Corrugated steel panels shall be installed at all site exits.

q. The applicant shall cleanup project-related visible bulk materials transport (trackout) or spills on publicly maintained paved surfaces within 24 hours.

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

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

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

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

AQ-SC4 Dust Plume Response Requirement. The AQCMM or an AQCMM Delegate shall monitor all construction activities for visible dust plumes. Observations of visible dust plumes that have the potential to be transported (A) off the project site and within 400 feet upwind of any regularly occupied structures not owned by the project owner or (B) 200 feet beyond the centerline of the construction of linear facilities indicate that existing mitigation measures are not resulting in effective mitigation. The AQCMP shall include a section detailing the additional mitigation measures described in the verification below and how they will be implemented to meet these fugitive dust control performance standards.

The AQCMM or Delegate shall implement the following procedures for additional mitigation measures in the event that visible dust plumes as defined above are observed:

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

- Step 2: The AQCMM or Delegate shall direct implementation of additional methods of dust suppression if Step 1, specified above, fails to result in adequate mitigation within 30 minutes of the original determination.
- Step 3: The AQCMM or Delegate shall direct a temporary shutdown of the activity causing the emissions if Step 2, specified above, fails to result in effective mitigation within one hour of the original determination. The AQCMM or Delegate shall discontinue non-essential earth-moving activities under high wind conditions when wind speeds exceed 25 miles per hour and those activities result in visible dust plumes. All grading activities shall be suspended when wind speeds are greater than 30 miles per hour. 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 project owner may appeal to the CPM any directive from the AQCMM or Delegate to shut down an activity, if the shutdown shall go into effect within one hour of the original determination, unless overruled by the CPM before that time.

Verification: The AQCMM shall provide the CPM a Monthly Compliance Report to include:

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

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

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

AQ-SC5 Diesel-Fueled Engine Control. The AQCMM shall submit to the CPM, in the Monthly Compliance Report, a construction mitigation report that demonstrates compliance with the AQCMP mitigation measures for purposes of controlling diesel construction-related emissions. Any deviation from the AQCMP mitigation measures shall require prior and CPM notification and approval and shall require demonstration that such deviation will not result in a new or increased significant environmental impact.

The following off-road diesel construction equipment mitigation measures shall be included in the Air Quality Construction Mitigation Plan (AQCMP) required by **AQ-SC2**:

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 25 hp or higher shall meet, at a minimum, the Tier 4 Final California Emission Standards for Off-Road Compression-Ignition Engines, as specified in California Code of Regulations,

Title 13, section 2423(b)(1), unless a good faith effort to the satisfaction of the CPM that is certified by the on-site AQCMM demonstrates that such engine is not available for a particular item of equipment. In the event that a Tier 4 Final engine is not available for any off-road equipment larger than 25 hp, a Tier 4 Interim or Tier 3 engine shall be used or that equipment shall be 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; or
2. The construction equipment is intended to be on site for 10 days or less; or
3. The CPM may grant relief from this requirement if the AQCMM can demonstrate a good faith effort to comply with this requirement and that compliance is not practical.

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

1. The use of the retrofit control device is excessively reducing the normal availability of the construction equipment due to increased down time for maintenance, and/or reduced power output due to an excessive increase in back pressure.
2. The retrofit control device is causing or is reasonably expected to cause engine damage.
3. The retrofit control device is causing or is reasonably expected to cause a substantial risk to workers or the public.
4. Any other seriously detrimental cause which has the approval of the CPM prior to implementation of the termination.

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

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

f. Construction equipment will employ zero-emission or hybrid powertrains and electric motors when feasible.

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

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

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

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

AQ-SC6 The project owner, when obtaining dedicated on-road or off-road vehicles for mirror washing activities and other facility maintenance activities, shall only obtain vehicles that meet California on-road vehicle emission standards or appropriate U.S. EPA/California off-road engine emission standards for the latest model year available when obtained. All equipment and trucks used in the operation and maintenance of the facility shall be properly maintained and the engines tuned to the engine manufacturer's specifications.

Verification: At least 30 days prior to the start commercial operation, the project owner shall submit to the CPM a copy of the plan that identifies the size and type of the on-site vehicle and equipment fleet and the vehicle and equipment purchase orders and contracts and/or purchase schedule. The plan shall be updated every other year and submitted in the Annual Compliance Report.

AQ-SC7 The project owner shall provide a site Operations Dust Control Plan, including all applicable fugitive dust control measures identified in **AQ-SC3** that would be applicable to minimizing fugitive dust emission creation from operation and maintenance activities and preventing all fugitive dust plumes that would not comply with the performance standards identified in **AQ-SC4** from leaving the project site; that:

A. describes the active operations and wind erosion control techniques such as windbreaks and chemical dust suppressants, including their ongoing maintenance procedures, that shall be used on areas that could be disturbed by vehicles or wind anywhere within the project boundaries; and

B. identifies the location of signs throughout the facility that will limit traveling on unpaved portion of roadways to solar equipment maintenance vehicles

only. In addition, vehicle speed shall be limited to no more than 15 miles per hour on these unpaved roadways, with the exception that vehicles may travel up to 25 miles per hour on stabilized unpaved roads as long as such speeds do not create visible dust emissions.

The site operations fugitive dust control plan shall include the use of durable non-toxic soil stabilizers on all regularly used unpaved roads and disturbed off-road areas, or alternative methods for stabilizing disturbed off-road areas, within the project boundaries, and shall include the inspection and maintenance procedures that will be undertaken to ensure that the unpaved roads remain stabilized. The soil stabilizer used shall be a non-toxic soil stabilizer or soil weighting agent that can be determined to be as efficient as or more efficient for fugitive dust control than CARB approved soil stabilizers, and that shall not increase any other environmental impacts including loss of vegetation to areas beyond where the soil stabilizers are being applied for dust control.

The performance and application of the fugitive dust controls shall also be measured against and meet the performance requirements of condition **AQ-SC3**. The measures and performance requirements of **AQ-SC4** shall also be included in the operations dust control plan.

Verification: At least 30 days prior to start of commercial operation, the project owner shall submit to the CPM for review and approval a copy of the site Operations Dust Control Plan that identifies the dust and erosion control procedures, including effectiveness and environmental data for the proposed soil stabilizer, that will be used during operation of the project and that identifies all locations of the speed limit signs. Within 60 days after commercial operation, the project owner shall provide to the CPM a report identifying the locations of all speed limit signs, and a copy of the project employee and contractor training manual that clearly identifies that project employees and contractors are required to comply with the dust and erosion control procedures and on-site speed limits

5.1.6 Recommended Mitigation Measures

No mitigation measures for non-jurisdictional project components are recommended for Air Quality.

5.1.7 References

CARB 2025a – California Air Resources Board (CARB). California Air Quality Data Statistics (iADAM). Accessed on December 19, 2024. Available online at: https://www.arb.ca.gov/adam/topfour/topfour1.php

CARB 2025b – California Air Resources Board (CARB). California Ambient Air Quality Standards. Accessed on December 04, 2025. Available online at: https://ww2.arb.ca.gov/resources/california-ambient-air-quality-standards

CARB 2025c – California Air Resources Board (CARB). California State Implementation Plans. Accessed on November 10, 2025. Available online at: California Air Resources Board (CARB). California State Implementation Plans. Accessed on December 04, 2025. Available online at: https://ww2.arb.ca.gov/our-work/programs/california-state-implementation-plans/about

CEC 2025z – California Energy Commission (TN 267975). Report of Conversation with Manu Singh - Discussion of existing residents living adjacent to and near the project site, dated December 19, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

MDAQMD 2020 – Mojave Desert Air Quality Management District (MDAQMD). California Environmental Quality Act (CEQA) And Federal Conformity Guidelines. Accessed on: September 25, 2025. Accessed online at: https://www.mdaqmd.ca.gov/home/showpublisheddocument/8510/638126583450270000

MDAQMD 2025 – Mojave Desert Air Quality Management District (MDAQMD). Mojave Desert AQMD Attainment Status. Accessed on: September 25, 2025. Accessed online at: https://www.mdaqmd.ca.gov/home/showdocument/1267#print

San Bernardino County 2020 – San Bernardino Countywide Plan. Accessed on: September 26, 2025. Accessed online at: https://countywideplan.sbcounty.gov/policy-plan/natural-resources/

San Bernardino County 2025 – California Code of Ordinances. Accessed on: September 26, 2025. Accessed online at: https://codelibrary.amlegal.com/codes/sanbernardino/latest/sanberncty_ca/0-0-0-169099#JD_83.01.040

RE 2025mm – Resolution Environmental (TN 264931). 3-21 Public Health - July 2025 Revision, dated July 21, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025gggg – Resolution Environmental (TN 266920). Response to SDR AQ-1. Docketed October 29, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025jjjj – Resolution Environmental (TN 267972). MM HYD-1, dated December 18, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

U.S. EPA 2024a – United States Environmental Protection Agency (U.S. EPA). Reconsideration of the National Ambient Air Quality Standards for Particulate Matter, dated March 6, 2024. Accessed on December 04, 2025. Available online at: https://www.federalregister.gov/documents/2024/03/06/2024-02637/reconsideration-of-the-national-ambient-air-quality-standards-for-particulate-matter

U.S. EPA 2024b – United States Environmental Protection Agency (U.S. EPA). Supplement to the Guidance on Significant Impact Levels for Ozone and Fine

Particles in the Prevention of Significant Deterioration Permitting Program, dated April 30, 2024. Accessed on December 04, 2025. Accessed online at: https://www.epa.gov/system/files/documents/2024-04/supplement-to-the-guidance-on-significant-impact-levels-for-ozone-and-fine-particles-in-the-psd-permitting-program-4-30-2024.pdf

U.S. EPA 2025a – United States Environmental Protection Agency (U.S. EPA). NAAQS Table. Accessed on December 04, 2025. Available online at: https://www.epa.gov/criteria-air-pollutants/naaqs-table

U.S. EPA 2025b – United States Environmental Protection Agency (U.S. EPA). Green Book. California Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants. Accessed on: December 04, 2025. Available at: https://www3.epa.gov/airquality/greenbook/anayo_ca.html

U.S. EPA 2025c – United States Environmental Protection Agency (U.S. EPA). Air Data: Air Quality Data Collected at Outdoor Monitors Across the US. Accessed on December 04, 2025. Available online at: https://www.epa.gov/outdoor-air-quality-data

5.2 Biological Resources

This section analyzes the jurisdictional and non-jurisdictional project components. The jurisdictional project components include the construction and operation of the solar photovoltaic (PV) facility, battery energy storage system (BESS), project substation and generation intertie line (gen-tie) and construction of the utility switchyard and section of transmission loop in lines that would connect to the existing Mead-Adelanto Transmission Line. The non-jurisdictional project components include the construction and operation of the protection setting upgrades to the Marketplace and Adelanto substations and operation of the utility switchyard and section of transmission loop in lines.

5.2.1 Environmental Setting

Existing Conditions

This section describes the environmental setting and baseline conditions for biological resources associated with the project. These conditions constitute the environmental baseline for purposes of analysis under the California Environmental Quality Act (CEQA), consistent with CEQA Guidelines section 15125(a), and reflect the existing physical environmental conditions at the time of the application submittal.

Vegetation communities within the approximately 2,670-acre solar facility site, 35.75-acre gen-tie alignment, and 45.9-acre proposed and existing access road buffer (herein collectively defined as the project area) are described to characterize botanical resources and wildlife habitat values. In addition, this section identifies and describes the habitat types that may support special-status plant and wildlife species.

Regional Setting

The project is located within the Mojave Desert, a distinct arid region spanning southeastern California, southern Nevada, southwestern Utah, and northwestern Arizona. The Mojave Desert is bordered by the Great Basin Desert to the north, the Sonoran Desert to the south and southeast, and the Sierra Nevada and Transverse Ranges to the west. Covering approximately 47,000 square miles, the Mojave Desert is defined by its elevation gradients, geological complexity, and characteristic desert vegetation (Drenovsky et al. 2014).

The climate of the Mojave Desert is characterized by hot summers, with average daily highs exceeding 100 degrees Fahrenheit (°F), and low annual precipitation averaging around 5 inches (Randall et al. 2010). Temperature fluctuations are significant, with daily ranges reaching 40°F and winter lows often near or below freezing. Precipitation is highly variable, with annual totals fluctuating by up to 80 percent and occasional high-volume storm events. Summer monsoons can deliver more rainfall in a single event than the average annual total for a given location. High winds are also common, with

sustained velocities exceeding 50 miles per hour (mph) in some areas and gusts reaching up to 100 mph on rare occasions (RE 2025s).

Topographically, the Mojave Desert features a wide range of elevations, from below sea level in Death Valley to over 11,000 feet (3,353 meters) above mean sea level in the Spring Mountains, creating diverse ecological niches and microclimates (Drenovsky et al. 2014). The desert floor is marked by extreme aridity, intense solar radiation, and sparse vegetation, and includes broad alluvial plains, dry lakebeds (playas), desert pavements, and sand dunes. These lower elevation landscapes are shaped primarily by wind and episodic water flow. In contrast, higher elevation mountain ranges are the result of a complex geological history involving tectonic uplift, crustal extension, and volcanic activity. These ranges exhibit classic Basin and Range topography, with steep, rugged uplifts separated by broad, flat basins, and function as ecological islands within the broader desert matrix (Drenovsky et al. 2014).

Vegetation on the desert floor is dominated by creosote bush (*Larrea tridentata*) scrub, interspersed with white bursage (*Ambrosia dumosa*), saltbush (*Atriplex* spp.), and various cacti such as cholla (*Cylindropuntia* spp.) and barrel cactus (*Ferocactus* spp.). These species are adapted to extreme drought conditions through specialized traits such as deep root systems, water storage tissues, and reduced leaf surfaces. As elevation increases, vegetation transitions in response to cooler temperatures, increased moisture, and changes in soil composition. Mid-elevation zones support Joshua tree (*Yucca brevifolia*) woodlands and blackbrush (*Coleogyne ramosissima*) communities, while higher elevations host pinyon-juniper woodlands, montane chaparral, oak woodlands, and mixed conifer forests (Randall et al. 2010). These elevational gradients foster high biodiversity and support numerous endemic species.

Although water is scarce, it plays a critical role in shaping both the topography and ecology of the Mojave Desert. Episodic rainfall, often delivered through intense thunderstorms, drives erosional processes that form deep canyons, arroyos, and alluvial fans (Drenovsky et al. 2014). These features channel runoff from surrounding mountains, redistributing sediments and influencing landform development. Ecologically, water availability governs the distribution and productivity of plant and animal communities. Springs, seeps, and ephemeral streams create localized riparian zones that support vegetation such as willow (*Salix* spp.), mesquite (*Prosopis* spp.), and cottonwoods (*Populus* spp.) (Parker et al. 2020, Sada and Thomas 2025). These moist microhabitats serve as biodiversity hotspots, attracting a wide range of wildlife in an otherwise harsh and arid environment.

Local Setting

The Soda Mountains form a rugged horseshoe-shaped range that rises sharply from the surrounding desert and marks the terminus of the Mojave River. Elevations in this range exceed 3,600 feet with steep rocky slopes, multicolored canyon walls, and deeply incised washes shaped by episodic water flow and long-term tectonic activity. The

terrain is typical of Basin and Range topography, featuring uplifted terrain separated by broad alluvial valleys.

The approximately 2,670-acre project and 35.75-acre gen-tie alignment is situated within one of these alluvial valleys that divides the northern and southern portions of the Soda Mountains. Elevations within the project area fall between approximately 1,200 and 1,600 feet above mean sea level. The project area is located entirely on federally-owned lands managed by the U.S. Bureau of Land Management (BLM) and occurs approximately 50 miles northeast of the city of Barstow and roughly 7 miles southwest of the community of Baker in unincorporated San Bernardino County, California. It is bounded directly to the east by the Mojave National Preserve (managed by the National Park Service) and the Rasor Off-Highway Vehicle (OHV) Recreation Area (managed by the BLM). Although these public lands are outside of the project area and CEC jurisdiction, their proximity influences and informs habitat connectivity considerations assessed within this document. Interstate 15 (I-15) is located along the western boundary of the project area. Rasor Road, an unimproved BLM public access road, runs from the southwest corner of the project area and forks to the north and east-southeast within the project area. One section of the road continues from west to east through the project area to the Rasor Road OHV Area, and the other fork runs north through the project area. Primary access to the project area occurs from a northbound exit off I-15 and then along BLM-administered roads, including CL7682, CL8845, and CL8847.

Six storm drain culverts cross under I-15 immediately to the west of the project area. These features serve as critical wildlife passageways, allowing animals to safely move between fragmented habitats on either side of I-15. Two high-voltage electrical transmission lines are west of I-15. They include a 115-kilovolt (kV) sub-transmission line owned by Southern California Edison and a 500-kV transmission line owned by the Los Angeles Department of Water and Power (LADWP).

Vegetation Communities

Generally, the project area is composed of rural desert land and is almost entirely undeveloped. The dominant vegetation communities that occur in the project area reflect those commonly found throughout the central Mojave Desert and consist primarily of intermittent native shrubs.

a. Vegetation Mapping

The applicant utilized existing vegetation and habitat maps to develop a preliminary map of vegetation communities for the project area, including the gen-tie alignment and proposed access roads (RE 2025s, RE 2025jjj). This included utilizing the vegetation layer developed for the Desert Renewable Energy Conservation Plan (DRECP) to identify vegetation types within 10 miles of the project area. The preliminary maps were refined during the focused rare plant surveys (see below) performed in April and May 2023 and field surveys along the access roads conducted in August 2025.

For the purposes of this analysis, staff used the latest vegetation maps provided by the applicant (RE 2025s, RE 2025kkk). Staff recognizes that there are limitations and challenges when mapping large areas using aerial imagery. Mapping vegetation communities over a large area and over an extended period of time has inherent limitations. Vegetation communities overlap in most characteristics and, over time, will shift from one community type to another. Natural and anthropogenic processes, such as flooding, sediment transport via wind, and OHV use may result in type conversion of habitats over a progressive period of time as habitats begin to recover. In addition, all vegetation maps and descriptions are subject to imprecisions resulting from several factors, including:

- Vegetation types tend to blend into each other on the landscape, without distinct boundaries between them. Even distinct boundaries can become less defined after years of post-disturbance succession (i.e., the process by which vegetation communities change over time). As a result, mapped boundaries represent best professional judgement but usually should not be interpreted as precise delineations between vegetation types.
- Natural vegetation generally occurs in recognizable types but also may vary over time and geographic region. Written descriptions cannot capture all local or regional variation and many, perhaps most, stands of natural vegetation do not strictly fit into any named type. Therefore, a mapped unit is given the best name available in the classification, which may not fully reflect site-specific conditions.
- Vegetation is often patchy, with small patches of one named type are often included within larger stands mapped as units of another type. In desert habitats, such as those occurring in the project area, broadly defined monotypic vegetation communities (i.e., communities dominated by a single species) often mask smaller plant associations or other vegetation types that are not easily observed from aerial imagery alone. Similarly, smaller units of desert wash vegetation are often a small component within larger upland communities. Therefore, photo interpretation of some types may be difficult, and accuracy of a vegetation map will vary depending on ground-truthing efforts.

The applicant identified five native vegetation communities within the solar array facility and along the gen-tie alignment (see **Biological Resources Figures 5.2-1** and **5.2-2**). Vegetation mapped along the proposed access road can be found in RE 2025kkk, Attachment A). Vegetation communities occurring within the project area were defined following the *National Vegetation Classification System per the Manual of California Vegetation (MCV), Second Edition* (Sawyer et al., 2009). One additional land cover type, "Disturbed/Developed", was also mapped within the project area. A summary of the vegetation communities and other land cover types occurring within the project area is presented in **Table 5.2-1**. A description of each of these vegetation communities and land cover types is included below.

TABLE 5.2-1 VEGETATION COMMUNITIES AND LAND COVER TYPES WITHIN THE PROJECT AREA

Vegetation Community/Land Cover Type	Acreage
Creosote Bush – White Bursage Scrub *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance	2,471.25
Creosote Bush Scrub *Larrea tridentata* Shrubland Alliance	158.46
Rigid Spineflower – Hairy Desert Sunflower *Chorizanthe rigida – Geraea canescens* Desert Pavement Sparsely Vegetated Alliance (*Chorizanthe rigida – Geraea canescens* Desert Pavement Association)[t]	32.00
Cheesebush – Sweetbush Scrub *Ambrosia salsola – Bebbia juncea* Shrubland Alliance	11.02
California Joint Fir – Longleaf Joint Fir Scrub *Ephedra californica – Ephedra trifurca* Shrubland Alliance (*Ephedra californica – Ambrosia salsola* Association)[t]	1.20
Vegetated Desert Wash	0.44
Desert Pavement	0.11
Disturbed/Developed	41.82

Notes: [t] Considered a sensitive vegetation community by CDFW
Source: RE 2025f, RE 2025s, RE 2025kkk

b. Creosote Bush – White Bursage Scrub (*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance). Creosote bush – white bursage scrub was the dominant vegetation community with a total of approximately 2,471.25 acres mapped within the project area, composing a majority of the upland habitat. This vegetation community is characterized by an open to intermittent canopy that may be two-tiered. The herbaceous layer is open to intermittent with seasonal annuals. The alliance is typically found in minor washes and rills, alluvial fans, bajadas, and along upland slopes. The soils may be well drained, alluvial, colluvial, and sandy. Creosote bush and white bursage are codominant in the shrub canopy with a lesser degree of allscale saltbush (*Atriplex polycarpa*), desert holly (*Atriplex hymenelytra*), silky dalea (*Dalea mollissima*), silver cholla (*Cylindropuntia echinocarpa*), branched pencil cholla (*Cylindropuntia ramosissima*), and cottontop cactus (*Echinocactus polycephalus*).

c. Creosote Bush Scrub (*Larrea tridentata* Shrubland Alliance). A total of approximately 158.46 acres of creosote bush scrub were mapped within upland habitat in the northwestern and southern portions of the project area and along portions of the proposed access roads. This community is characterized by an open to intermittent canopy with an herbaceous layer that includes seasonal annuals and perennial grasses. The alliance is typically found on alluvial fans, bajadas, and upland slopes, and along minor intermittent washes. Soils typically are well drained. Creosote bush is dominant or codominant in the shrub canopy with white bursage, cheesebush (*Ambrosia salsola*), desert holly, and allscale saltbush also occurring.

Rigid Spineflower – Hairy Desert Sunflower (*Chorizanthe rigida – Geraea canescens* Desert Pavement Sparsely Vegetated Alliance [*Chorizanthe rigida – Geraea canescens* Desert Pavement Association]). Approximately 32.00 acres

of the project area were mapped as rigid sunflower – hairy desert sunflower vegetation. This community is characterized by a sparse to intermittent herbaceous layer with an open to sparse shrub layer with less than 5 percent perennial cover. It is typically found in broad alluvial fans and lower slopes of the desert. Soils may be sandy and gravelly, with various rocks and gravel along with interstitial fine sediments. Rigid spineflower is dominant or codominant in the sparsely distributed shrub layer while hairy desert sunflower and scattered creosote bushes may be present. Sparse herbs, including trailing windmills (*Allionia incarnata*), pincushions (*Chaenactis* spp.), desert plantain (*Plantago ovata*), brittle spineflower (*Chorizanthe brevicornu* var. *brevicornu*), and beavertail cactus (*Opuntia basilaris* var. *basilaris*) also occur. This vegetation association is considered sensitive by the California Department of Fish and Wildlife (CDFW) as defined under "Sensitive Vegetation Communities" below.

Cheesebush – Sweetbush Scrub (*Ambrosia salsola – Bebbia juncea* Shrubland Alliance). Approximately 11.02 acres of cheesebush – sweetbush scrub were mapped primarily within the major ephemeral washes in the eastern portion of the project area and along portions of the proposed access roads. This community is characterized by an open or intermittent canopy with an herbaceous layer that is sparse or seasonally present. The alliance is typically found along intermittently flooded channels, arroyos, and washes in valleys, flats, and rarely flooded low-gradient deposits. Soils are alluvial, sandy, and gravelly. Cheesebush is dominant or codominant in the shrub canopy with sweetbush, woolly brickellia (*Brickellia incana*), desert senna (*Senna armata*), brittlebush (*Encelia farinosa*), little-leaved ratany (*Krameria erecta*), and Thurber's sandpaper plant (*Petalonyx thurberi* ssp. *thurberi*).

California Joint Fir – Longleaf Joint Fir Scrub (*Ephedra californica – Ephedra trifurca* Shrubland Alliance [*Ephedra californica – Ambrosia salsola* Association]). Approximately 1.2 acres of California joint fir – longleaf joint fir scrub were mapped within an ephemeral wash in the southeastern portion of the project area. This community is characterized by an open to intermittent canopy with an herbaceous layer that is composed of sparse to intermittent seasonal annuals and perennial grasses. The association is typically found on intermittently flooded arroyos, washes, and adjacent alluvial fans in transmontane settings. Soils may be coarse to medium sands, loamy sands, and sandy clay loams. California joint fir is either dominant or codominant in the shrub canopy with white bursage and creosote bush. This vegetation association is considered sensitive by CDFW as defined under "Sensitive Vegetation Communities" below.

Vegetated Desert Wash. Approximately 0.44 acres of vegetated desert wash were mapped along the proposed access roads. Streambed vegetation primarily consists of plants adapted to the stream environment rather than terrestrial plants. Streambeds are typically found within a channel or confined by banks and can be categorized by their material (e.g., sand, gravel, cobble, boulders) and the water velocity. The type of vegetation present can vary based on these factors and the overall stream ecosystem.

Desert Pavement. Approximately 0.11 acre of desert pavement was mapped along the proposed access roads. Desert pavement is characterized as surfaces of closely packed angular and rounded rock fragments that form a mosaic in a matrix of fine sediment (e.g., sand, silt, and/or clay) (USEPA 2004). Desert pavement can cover areas ranging from a few square meters to hundreds of square kilometers. It occurs mostly in sand-poor regions, such as desert plains, on plateaus, in dry washes and terraces, and on alluvial fans.

Disturbed / Developed. Approximately 41.82 acres of the project area were mapped as disturbed/developed. The applicant defines this cover type as areas mostly devoid of vegetation due to anthropogenic activities and that have little to no potential to support native species. This includes maintained dirt roads and other disturbed sites within the project area.

Non-Native Invasive / Noxious Weeds

Non-native invasive or noxious weeds are plants that can directly or indirectly cause problems for natural resources, wildlife, agriculture, recreation, navigation, public health, or the environment. The California Department of Food and Agriculture (CDFA) and the California Invasive Plant Council (Cal-IPC) have rated invasive or noxious weeds in California based on the threat these species pose to the natural landscape (Cal-IPC 2025).

The applicant identified several non-native invasive plant species within the project area during surveys conducted in 2021 and 2023. **Table 5.2-2** provides a list of the non-native invasive species documented by the applicant.

TABLE 5.2-2 NON-NATIVE INVASIVE WEEDS IDENTIFIED IN THE PROJECT AREA

Common Name *Scientific Name*	**Rating**		**Comments**
	CDFA[1]	**Cal-IPC[2]**	
Athel tamarisk *Tamarix aphylla*	B	Limited	Shrub or tree found along streams and lakeshores throughout California; less invasive than other tamarisk species; likely depletes water table and interferes with water flow which can exacerbate over-bank flooding; can contribute to reduction in native wildlife and herbivore abundance.
Redstem filaree *Erodium cicutarium*	—	Limited	Aggressive annual/biannual that is very widespread throughout California; commonly found along roadsides, grasslands, fields, and semi-desert to desert areas; seeds natural or anthropogenic disturbance for establishment; provides forage for kangaroo rats and desert tortoises; can be dispersed by clinging to shoes and clothes, tires, and heavy equipment.
Common Mediterranean grass *Schismus barbatus*	—	Limited	Annual grass in disturbed areas and deserts; contributes to conversion of desert shrublands into grasslands; can probably spread rapidly by wind dispersal; competes with native plants that are preferred forage of desert tortoise.

TABLE 5.2-2 NON-NATIVE INVASIVE WEEDS IDENTIFIED IN THE PROJECT AREA

Common Name *Scientific Name*	Rating		Comments
	CDFA[1]	Cal-IPC[2]	
Hare barley *Hordeum murinum*	—	Moderate	Annual grass native to the Mediterranean, northern Africa, and temperate Asia; common throughout California in disturbed areas and can persist even with frequent mowing by growing nearly flat; may be dispersed by attaching to tires, heavy equipment, shoes and clothing.
London rocket *Sisymbrium irio*	—	Limited	Winter annual herb that occurs in abandoned fields, roadsides, orchards, and other disturbed areas across southern and central California; matures earlier in the year than most native species, allowing it to outcompete; consumption may have negative physiological effects on desert tortoise.
Mediterranean grass *Schismus arabicus*	—	Limited	Annual grass found mostly in disturbed areas and deserts; contributes to conversion of desert shrublands into annual grasslands by carrying fire across open areas; anthropogenic disturbance facilitates dominance of this species; very high cover in areas disturbed by OHVs, fire and previous cropping agriculture; competes with native annual plants that are the preferred forage for desert tortoise.
Puncture vine *Tribulis terrestris*	—*	Limited	Annual herb found all over California, but most common in grasslands and dunes; forms dense and deep populations which can restrict light availability for native plants; seeds dispersed via water, wool, vehicles, and agricultural activities; spines on fruit damage feet of animals, particularly horses, sheep, cattle, and dogs.
Red brome *Bromus madritensis* ssp. *rubens*	—	High	Cool-season annual grass found throughout California, especially in the southern part of the state; invades disturbed areas, roadsides, agricultural fields, rangelands, and forestry sites, in addition to native vegetation communities; spreading rapidly in desert shrublands, pinyon-juniper woodlands, and coastal scrub.
Saharan mustard *Brassica tournefortii*	C	High	Winter annual found in deserts, dunes, and coastal scrub; readily invades burn areas; high biomass may deplete soils of important nutrients, making native habitat recovery more difficult; may complete with native annuals preferred by desert tortoise.
Slenderleaf iceplant *Mesembryanthemum nodiflorum*	—	Limited	Herb found in desert ranges and south coast ranges of California; releases accumulated salt into soil, limiting establishment of native plants; can cause oxalate poisoning in sheep.
Tamarisk (unidentified)			See athel tamarisk above

[1] CDFA Ratings:

A = A pest of known economic or environmental detriment and is either not known to be established in California or it is present in a limited distribution

[2] Cal-IPC Ratings:

High = These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of

TABLE 5.2-2 NON-NATIVE INVASIVE WEEDS IDENTIFIED IN THE PROJECT AREA

Common Name *Scientific Name*	Rating		Comments
	CDFA[1]	Cal-IPC[2]	
that allows for the possibility of eradication or successful containment. B = A pest of known economic or environmental detriment and, if present in California, it is of limited distribution. C = A pest of known economic or environmental detriment, if present in California, it is usually widespread. D = An organism known to be of little or no economic or environmental detriment, to have an extremely low likelihood of weediness, or is known to be a parasite or predator. Q = An organism or disorder suspected to be of economic or environmental detriment, but whose status is uncertain because of incomplete identification or inadequate information. * = An asterisk next to the rating indicates that a plant is included in the CCR Section 4500 list of California State Noxious Weeds.			dispersal and establishment. Most are widely distributed ecologically. Moderate = These species have substantial and apparent, but generally not severe, ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread. Limited = These species are invasive, but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic. Alert = An Alert is listed on species with High or Moderate impacts that have limited distribution in California, but may have the potential to spread much farther. Watch = These species have been assessed as posing a high risk of becoming invasive in the future in California.

Sources: Cal-IPC 2025, RE 2025f, RE 2025s

Aquatic Resources

The project area is located on a broad alluvial fan situated between the formations of the Soda Mountains that border I-15. Surface water and drainage patterns within the project area flow southeast, terminating at Soda Dry Lake, a playa that periodically holds water after rain events and is heavily comprised of salt and alkaline deposits. However, a small portion of the southwestern corner of the project area ultimately drains to Cronise Valley and East Cronise Lake, also a dry lakebed, reflecting a minor watershed divide within the project area.

Within the project area, the alluvial fan is a gently sloping depositional feature formed where ephemeral streams emerge from steep canyons and spread onto the adjacent desert basin. It consists of coarse, poorly sorted sediments (e.g., sand, gravel, cobbles) derived from the surrounding volcanic and sedimentary bedrock. Hydrologically, the area is dominated by episodic, high-intensity storm events that generate sheet flow, shallow braided flows, and occasional debris flows. These flows are flashy and sediment-laden, shifting laterally across the alluvial surface during floods, which creates a relatively unpredictable network of channels. Because these processes do not result in sustained surface flow, and infiltration rates are high due to the coarse texture of the deposits, most runoff infiltrates rapidly and contributes to localized groundwater recharge rather than continuous surface connectivity (Ventra and Clark 2018). Under current federal regulation (33 CFR §328.3(b)(3), streams or features that flow only in

direct response to precipitation are not considered "waters of the United States" under the jurisdiction of the U.S. Army Corps of Engineers as they do not support relatively permanent flow or possess ordinary high-water marks, and they lack a continuous surface connection to adjacent jurisdictional waters.

Ephemeral drainages in the Mojave Desert are critically important to wildlife because they provide temporary but essential resources in an otherwise arid environment. During infrequent storm events, these channels concentrate and convey water across the landscape, creating moist soils and supporting short-lived vegetation growth that attracts insects and other prey species. This pulse of productivity offers food and cover for reptiles, birds, and mammals, while the infiltration of runoff into coarse sediments helps recharge localized groundwater, sustaining desert plants that form the basis of many food chains (Lovich et al. 1999). Additionally, the linear corridors of ephemeral streams serve as movement pathways and habitat connectivity for wildlife, linking isolated patches of suitable habitat across the desert.

As part of the initial application, the applicant submitted an Aquatic Resources Delineation Report dated January 2025 (RE 2025t). Since that initial filing, there has been coordination between the applicant, staff, and the applicable resource agencies, resulting in a revised report submitted by the applicant in October 2025 (RE 2025aaaa, RE 2025bbbb, RE 2025cccc).

To date, the applicant has documented numerous features within the project area that meet the jurisdictional definitions of non-wetland waters of the state under the Lahontan Regional Water Quality Control Board and streambed features under CDFW regulations. **Figure 5.2-3** illustrates the network of ephemeral drainage features that occur within the project area. Note that based on the scale of the map presented in **Figure 5.2-3**, the features appear to occupy a larger portion of the project area than actual field conditions. No wetland or non-wetland features that meet current U.S. Army Corps of Engineers jurisdiction were identified in the project area. In total, the applicant identified 213.55 acres of non-wetland waters of the state and 366.24 acres of CDFW-regulated streambed within the project area.

Critical Habitat and Special Habitat Designations

The federal Endangered Species Act (ESA) defines critical habitat as specific geographic areas that contain features essential to the conservation of an endangered or threatened species that may require special management and protection. Critical habitat may also include areas that are not currently occupied by the species but will be needed for its recovery. The U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service publish proposals to designate critical habitat in the Federal Register, a daily publication of the federal government.

Critical habitat for federally listed species does not occur in or adjacent to the project area. Critical habitat for desert tortoise (*Gopherus agassizii*), a state and federally

threatened species, occurs approximately 7 miles away from its nearest proximity to the project area (RE 2025s).

Wildlife Corridors, Special Linkages, and Important Bird Areas

Wildlife corridors connect patches of habitat that allow for migration across the landscape as seasons change. These corridors contribute to population success through genetic exchange between populations, providing access to habitat for food, water, and mating, and provides for recolonization of habitat after disturbance, such as fire (Chetkiewicz et al. 2006, Haddad et al. 2015). However, increasing habitat fragmentation has put these essential movements at risk. Habitat fragmentation occurs when development (e.g. cities, roads, large renewable energy facilities) encroach on natural habitat or cut off migration routes, leaving wildlife trapped in small or isolated sections of their natural range (Pimm and Raven 2000, Lovich and Ennen 2011). When wildlife populations are left with only islands or patches of habitat (e.g., national parks), they are at a greater risk of starvation, inbreeding, and death (Rayfield et al. 2011). Movement and dispersal corridors that connect blocks of habitat are essential to the long-term viability of plant and wildlife populations on both a regional and local scale (Fletcher et al. 2016).

Regionally, the Soda Mountains are a critical ecological zone for wildlife movement and habitat connectivity. The region serves as a natural corridor linking the Mojave National Preserve to the south with the Death Valley and Clark Mountain areas to the north. This connectivity is essential for wide-ranging species such as desert bighorn sheep (*Ovis canadensis nelsoni*), which rely on seasonal movement between habitat patches for access to forage, water, and breeding grounds (Epps et al. 2018, Aiello et al. 2024).

The California Essential Habitat Connectivity Plan (Connectivity Plan) was commissioned by the California Department of Transportation (Caltrans) and CDFW to create a statewide assessment of essential habitat connectivity to be used for conservation and infrastructure planning (Spencer et al., 2010). One of its goals was to create the Essential Connectivity Map, which depicts large, relatively natural habitat blocks that support native biodiversity (Natural Landscape Blocks) and areas essential for ecological connectivity between them (Essential Connectivity Areas). These maps do not reflect the needs of particular species but are based on overall biological connectivity and ecological integrity. The Connectivity Plan identifies the Soda Mountains as part of a broader Essential Connectivity Area, a network of large, relatively intact habitat blocks connected by corridors that facilitate ecological processes and species movement. These Essential Connectivity Area are designed to guide land-use planning and infrastructure development to minimize fragmentation and maintain long-term ecological integrity.

Additionally, the Terrestrial Connectivity dataset, one of four key components that is included in CDFW's Areas of Conservation Emphasis (ACE) dataset, further builds upon the California Essential Habitat Connectivity dataset. The intent of the Terrestrial Connectivity dataset is to provide an overview of landscape connectivity across

California based on the most up to date information, assess the connectivity importance of the landscape, and serve as a spatial library that compiles existing connectivity studies across the state. The data are presented as a map of hexagons that encompass 2.5 square miles. Each hexagon is assigned a connectivity ranking from 1 to 5 based on the conservation and connectivity importance of an area. According to the data, the project area is mapped as Rank 3 and Rank 4. Rank 3 hexagons have been identified as having connectivity importance but have not been identified as channelized areas, species corridors, or habitat linkages at this time; however, this may change with future changes to the surrounding lands. Rank 4 hexagons include habitat connectivity linkages that represent the best connections between core natural areas in order to maintain habitat connectivity. These rankings are considered from a multi-species perspective. When considering a metapopulation structure species, such as desert bighorn sheep, that primarily relies on "islands" within the landscape, Rank 3 and Rank 4 areas have greater importance (RE 2024vv).

A conservation plan complementing this effort, *A Linkage Network for the California Deserts*, developed by SC Wildlands and partners, highlights the Soda Mountains as a key linkage point in desert-wide connectivity. The linkage designs focus on focal species such as desert tortoise, American badger, desert kit fox, and desert bighorn sheep and incorporates land facet corridors, areas defined by enduring physical features like slopes and flats, that are expected to remain ecologically functional under climate change scenarios (SC Wildlands 2012).

To address long-standing fragmentation caused by I-15, the Brightline West High-Speed Rail Project, in partnership with Caltrans and CDFW, is planning to construct three major wildlife overcrossings. Construction at one of these crossings, which will be located just north of the project area, is scheduled to begin in early 2026. This crossing will be specifically designed to facilitate safe passage for desert wildlife, especially bighorn sheep, across both the highway and the future rail corridor. These overcrossings will span 240 to 400 feet and include directional fencing to guide animals toward the structures. The high-speed rail project also includes upgrades to over 600 existing culverts and installation of desert tortoise exclusion fencing, enhancing permeability across the landscape (Wildlife Society 2025, Aiello et al. 2024).

In addition to terrestrial corridors, the region's dry lakebeds, such as East and West Cronese Lakes, play a vital role in supporting migratory birds. These intermittent playas provide seasonal habitat for shorebirds, waterfowl, and raptors. During wet periods, these features become critical stopover sites along the Pacific Flyway, offering feeding and resting opportunities in an otherwise arid environment (Lovich et al. 2014).

As described by the applicant, the project area currently provides unrestricted wildlife movement, as there are no fences or other obstructions to wildlife passage on a local scale (RE 2025s). However, I-15 inhibits movement to the northwest except for species that can use the existing underpasses that occur under the highway. Desert kit fox, American badger, and coyote may travel across the project area in search of prey opportunities, and to access higher-quality habitat for both prey and cover. Migratory

birds may utilize the project area for breeding, nesting, and foraging, or as transient rest sites during migration flights.

Important Bird Areas. The Audubon Society has identified Important Bird Areas (IBAs) throughout the western hemisphere that provide essential habitat for birds (Audubon, 2025a). Although IBAs are non-regulatory designations, they provide important contextual information in determining the types of birds that are occurring in regions within and around the IBA along with the way in which habitats within those regions are being utilized by avian species. These IBAs include sites for breeding, wintering, and migrating birds and can range from only a few acres to thousands of acres in size.

The North Mojave Dry Lakes IBA currently includes four large dry lakes and associated seasonal wetlands between Ridgecrest in Kern County and Barstow in San Bernardino County, California. According to the Audubon Society, however, Cronese Lake, located within 5 miles of the southern and western boundary of the project area, and Silver Lake, located within 10 miles of the northern boundary of the project area, could also be included in this IBA, but their current resources are poorly understood at this time. Avian use of seasonal desert wetlands is complex and highly variable depending on rainfall. As defined under the overall North Mojave Dry Lakes IBA, bird activity at large dry lakes in the Mojave Desert is relatively quiet in winter. By late March, migratory waterfowl and shorebirds typically begin to gather, which can bring thousands of waterbirds into large dry lakes throughout the region.

Common Wildlife

This section describes common wildlife species that were documented during studies and/or surveys conducted by the applicant or that have the potential to occur within or adjacent to the project area.

Under the California Environmental Quality Act (CEQA) Guidelines Section 15380, lead agencies are required to evaluate potential impacts to species that may qualify as rare or endangered even if they are not formally listed. However, species that lack any formal designation, but appear solely on the CDFW Special Animals List (SA), CDFW Watch List (WL), and/or are considered Birds of Conservation Concern (BCC), are not automatically subject to protection or mitigation requirements under CEQA. Their inclusion in environmental review is discretionary and typically based on site-specific evidence of ecological significance, such as local rarity, habitat dependence, or potential for population-level impacts. For the purposes of this report, such species are considered for analysis but included in this common wildlife section.

During the 2023 and 2025 surveys, the applicant observed and/or otherwise detected (e.g., scat, bones, tracks, feathers, burrows, etc.) several common wildlife species, all of which are known from the region (RE 2025f, RE 2025s, RE 2025kkk). These included an abundant variety of invertebrates, reptiles, birds, and mammals.

Invertebrates. As in all ecological systems, invertebrates play a crucial role in multiple biological processes. They serve as the primary or secondary food source to a number of wildlife species; they provide pollination vectors for numerous plant species; they act as efficient components in controlling pest populations; and they support naturally occurring maintenance of an area by consuming detritus and contributing to necessary soil nutrients.

The project area provides microhabitat conditions for a variety of terrestrial invertebrates. These microhabitats can be found at ground level within friable soils or under vegetation, woody debris, rocks, and trash piles. They can also occur within vegetation which provides refuge from predators, food resources for some species, and substrates for various invertebrate life stages.

Some of the common invertebrates that were identified by the applicant during field surveys included harvester ant (*Pogonomyrmex* sp.), velvet ant (*Dasymutilla* sp.), Say's stink bug (*Chlorochroa sayi*), seven-spotted ladybug (*Coccinella septempunctata*), elegant blister beetle (*Eupompha elegans*), western honey bee (*Apis millifera*), urbane digger bee (*Anthophora urbana*), pallid-winged grasshopper (*Trimerotropis pallidipennis*), queen butterfly (*Danaus gilippus*), and painted lady (*Vanessa cardui*).

Fishes and Amphibians. The project area does not support suitable aquatic habitat for common fishes or amphibians, and none are expected to occur. No common fishes or amphibians were observed by the applicant during 2021 and 2023 surveys (RE 2025f, RE 2025s).

Reptiles. The number and type of reptiles that occur at a given location is related to a number of biotic and abiotic features. These include the diversity of plant communities, substrates, and soil types, and the presence of refugia such as rock piles, boulders, and native debris. These are crucial components to support the survival and reproduction of various reptile species.

Most reptiles, even if present in an area, are difficult to detect because they are cryptic and various life history characteristics (e.g., foraging, thermoregulation, searching for mates, etc.) limit the ability for observation during most surveys. Many species are active only within relatively narrow thermal limits, avoiding hot and cold conditions, and most take refuge in microhabitats that may not be directly visible to the observer, such as rodent burrows, crevices, under rocks or boards, and in dense vegetation where they are protected from predators and/or unsuitable environmental conditions. In many cases, they are only observed when flushed from their refugia.

Common reptiles that were identified by the applicant during field surveys included western side-blotched lizard (*Uta stansburiana elegans*), Great Basin whiptail (*Aspidoscelis tigris tigris*), western zebra-tailed lizard (*Callisaurus draconoides rhodostictus*), long-nosed leopard lizard (*Gambelia wislizenii*), northern desert iguana (*Dipsosaurus dorsalis dorsalis*), southern desert horned lizard (*Phrynosoma platyrhinos calidiarum*), and Mohave desert sidewinder (*Crotalus cerastes cerastes*).

Birds. The diversity of birds is a function of habitat characteristics, climate, land use, and relative disturbance. Habitat within and adjacent to the project area is broadly characterized by desert vegetation communities. Resident birds in these habitats are well-adapted to arid environments, low precipitation, seasonal extremes, and cycles of resource availability.

The applicant identified a broad assemblage of bird species within and adjacent to the project area during 2021 and 2023 surveys. Some of the common passerine species detected included bushtit (*Psaltriparus minimus*), house finch (*Haemorhous mexicanus*), black-throated sparrow (*Amphispiza bilineata*), verdin (*Auriparus flaviceps*), white-crowned sparrow (*Zonotrichia leucophrys*), blue-gray gnatcatcher (*Polioptila caerulea*), Say's phoebe (*Sayornis saya*), and Cassin's vireo (*Vireo cassinii*).

The rugged terrain, ephemeral drainages, and open alluvial habitat within the project area support suitable foraging and perching sites for a variety of common raptors. Some that were observed by the applicant include red-tailed hawk (*Buteo jamaicensis*), turkey vulture (*Cathartes aura*), and American kestrel (*Falco sparverius*).

The general region is within the Pacific Flyway and migrants, and seasonal visitors may occur as they pass through during migratory movements between breeding and non-breeding grounds or establish non-breeding territories. Species that migrate seasonally through the Soda Mountains region typically use ephemeral lakes and playas like Soda Dry Lake and East and West Cronese Dry Lakes during spring and fall migration when temporary water sources provide foraging habitat. Their presence is closely tied to existing detention ponds and precipitation and runoff events that create shallow pools, offering mudflats rich in invertebrates. These stopover sites are critical for replenishing energy reserves during long migratory journeys across arid landscapes. These include common shorebirds, such as black-necked stilt (*Himantopus mexicanus*), least sandpiper (*Calidris minutilla*), and long-billed dowitcher (*Limnodromus scolopaceus*), and common wading birds, including great egret (*Casmerodius albus*), snowy egret (*Egretta thula*), and white-faced ibis (*Plegadis chihi*).

Mammals. The distribution of mammals in an area is associated with the presence of available water, suitable habitat and vegetation, foraging capacity, and topographical and structural components (e.g., rock piles, soil types, steepness of terrain, etc.). Structures that provide refugia and cover and the presence of suitable soils for digging and burrowing are important habitat features.

Black-tailed jackrabbit (*Lepus californicus*) was the only small common mammal species observed by the applicant during the 2021 and 2023 surveys. However, several additional species are known from the general region, including, but not limited to, desert pocket mouse (*Chaetodipus penicillatus*), cactus deer mouse (*Peromyscus eremicus*), desert kangaroo rat (*Dipodomys deserti*), white-tailed antelope squirrel (*Ammospermophilus leucurus*), and desert cottontail (*Sylvilagus audubonii*).

Among mid- to large-sized common mammal species, observations were limited to coyote (*Canis latrans*) during the 2021 and 2023 surveys, although raccoon (*Procyon lotor*), gray fox (*Urocyon cinereoargenteus*), and bobcat (*Lynx rufus*) are also commonly documented in the general region. The applicant also observed or detected domestic dog (*Canis familiaris*) and feral donkey (*Equus africanus asinus*), which are routinely identified in this area of the Mojave Desert, but are not afforded protections as biological resources under CEQA

Bat species in the Mojave Desert play a vital ecological role as insectivores, helping control insect populations, including agricultural pests. These species often roost in rock crevices, abandoned mines, and human structures throughout the region, emerging at dusk to forage. Bat activity is closely associated with water availability and season insect abundance. Despite the harsh, arid environment, the region supports a diverse bat community and common species detected by the applicant included canyon bat (*Parastrellus hesperus*) and Mexican free-tailed bat (*Tadarida brasiliensis*).

Sensitive Biological Resources

This section provides an overview of sensitive biological resources associated with the project area. It also provides methods utilized to determine the sensitive vegetation communities and special-status plants and wildlife species observed within or near the project area or with the potential to be present. The specific habitat requirements and the locations of known occurrences of each special-status species were the principal criteria used for inclusion in the lists of special-status species potentially occurring within or near the project area.

Since its original proposal in 2012, the project has undergone multiple phases of environmental review, with the CDFW previously serving as the CEQA lead agency before the applicant applied under the CEC's jurisdiction under the Opt-in Certification program. The project has undergone extensive biological review and analysis including various field studies and surveys for sensitive biological resources. The methods discussed below reflect those implemented during the biological review for the current project footprint.

Literature Reviews. As part of developing the baseline conditions for biological resources within the project area, the applicant performed a comprehensive literature and database search. The focus of the review was to identify biological resources that could potentially occur within the project area and a 10-mile buffer. Sources utilized during this review included species records from wildlife studies completed at or near the project area, published literature, databases, coordination with CDFW, and the professional judgement of biologists representing the applicant based on past work in the Mojave Desert.

In addition to the applicant's review described above, staff conducted an independent and thorough literature review that included an evaluation of applicant reports and documents, coordination with the applicable resources agencies, and an updated

database assessment. The following list includes the resources considered in the reviews conducted by both the applicant and staff:

- 2013 Biological Resources Technical Report for the Soda Mountain Solar Project (Panorama Environmental 2013)
- Soda Mountain Solar Project Proposed Plan Amendment/Final Environmental Impact Statement/Environmental Impact Report (BLM 2015)
- USFWS Information for Planning and Conservation (IPaC) Program (USFWS 2025a)
- USFWS Environmental Conservation Online System (USFWS 2025b)
- USFWS Critical Habitat Portal (USFWS 2025c)
- BLM Lists of Sensitive Plant and Wildlife Species (BLM 2019, BLM 2023)
- DRECP Gateway (CBI 2025)
- National Park Service, Mojave National Preserve species checklists (NPS 2025)
- National Resources Conservation Service Soils Data (NRCS 2025)
- CDFW California Natural Diversity Database, Rarefind Version 5 (CDFW 2025a)
- CDFW Vegetation Maps and Data (CDFW 2025b)
- CDFW Special Vascular Plants, Bryophytes, and Lichens List, July 2025 (CDFW 2025c)
- California Wildlife Habitat Relationships Maps and Data (CDFW 2025d)
- California Native Plant Society Inventory of Rare and Endangered Plants of California (CNPS 2025)
- Calflora Information on California plants web application (Calflora 2025)
- Consortium of California Herbaria Database (CCH 2025)
- CDFW Special Animals List, July 2025 (CDFW 2025e)
- iNaturalist citizen-based observations (iNaturalist 2025)
- California Herps: A Guide to the Amphibians and Reptiles of California (Nafis 2025)
- eBird citizen-based observation network (eBird 2025)
- Caltrans Log of Bridges on State Highways, District 8 (Caltrans 2018)

The applicant conducted a series of focused and protocol-level surveys for the proposed project. Each of these studies are referenced below and were included in the staff literature review. Survey information provided by the applicant was also considered by staff during the analysis of potential impacts to biological resources (RE 2025f).

Reconnaissance Surveys. A reconnaissance-level survey was conducted of the solar array facility and gen-tie alignment by the applicant in December 2021 (RE 2025f, RE 2025s). The purpose of the survey was to document current habitat conditions in

comparison with the site conditions documented in the 2013 Biological Resources Technical Report for the Soda Mountain Solar Project (Panorama Environmental 2013). This also included a combined windshield and pedestrian survey to document plant and wildlife species observations. The applicant conducted an additional reconnaissance-level field verification of the proposed access road alignment in August 2025 (RE 2025kkk). The intent of this survey was to verify the desktop mapping of vegetation communities and to document the existing habitat conditions for any special-status species that could potentially occur.

Sensitive Natural Communities

Sensitive natural communities have been previously defined by CDFW as "communities that are of limited distribution statewide or within a county or region and are often vulnerable to environmental effects of projects". CDFW uses the NatureServe conservation status ranking system to assess the rarity and vulnerability of natural communities (NatureServe 2025). Ranks range from S1 to S5, where "S" stands for State-level status. More recently, CDFW has stated that sensitive natural communities with state ranks of S1 (Critically Imperiled), S2 (Imperiled), or S3 (Vulnerable) should be addressed in the environmental review process of CEQA and its equivalents (CDFW 2025f, CDFW 2025g). Additionally, vegetation associations that do not have a state ranking are considered sensitive by CDFW.

The applicant did not detect any sensitive alliance-level vegetation communities. However, two sensitive associations were mapped within the project area by the applicant. These include approximately 32 acres of Rigid Spineflower – Hairy Desert Sunflower (*Chorizanthe rigida – Geraea canescens* Desert Pavement Sparsely Vegetated Alliance (*Chorizanthe rigida – Geraea canescens* Desert Pavement Association) scattered at various locations throughout the project area and 1.2 acres of California Joint Fir – Longleaf Joint Fir Scrub (*Ephedra californica – Ephedra trifurca* Shrubland Alliance (*Ephedra californica – Ambrosia salsola* Association) which is isolated to a narrow strip of vegetation along the southern boundary of the project area. Although neither of these communities are considered sensitive at the alliance level, the associations are each state unranked and are defined as sensitive by CDFW.

Under the DRECP, "Special Vegetation Features" refer to unique or ecologically significant plant-related elements within the plan area that are of high conservation value because of their limited distribution, ecological function, or sensitivity to disturbance (CEC et al. 2015). These communities often include rare alliances and special features such as unique desert scrub alliances, riparian corridors, playas and ephemeral wetlands, rock outcrops and cliff habitats, aeolian sand transport systems, Joshua tree woodland, microphyll woodlands, carbon sequestration vegetation types, seeps and springs, and climate refugia. The applicant did not identify any DRECP Special Vegetation Features within the project area (RE 2025s).

Special-Status Plants

For the purposes of this report, special-status plants include:

- Listed, proposed for listing, or candidates for listing as threatened or endangered species (including designated or proposed critical habitat) under the federal ESA
- Listed, or candidates for listing as threatened or endangered under the California Endangered Species Act (CESA)
- Plants considered sensitive by the BLM Barstow Field Office
- Plants that are covered species under the DRECP
- Plants assigned a California Rare Plant Rank (CRPR) by the California Native Plant Society (CNPS), including CRPR 1A, 1B, 2, 3, and 4[1]
- Plants listed as rare under the California Native Plant Protection Act
- Plants afforded protection under the California Desert Native Plants Act (CDNPA)
- Plants the meet the definition of rare or endangered under the California Environmental Quality Act (CEQA) section 15380 (b) and (d)

Rare Plant Surveys. Focused pedestrian surveys for special-status plants with the potential to occur in the project area were conducted in concurrence with vegetation mapping refinements performed between April and May 2023 discussed above. In April 2023, and prior to rare plant surveys, the applicant visited CNDDB reference populations for small-flowered androstephium (*Androstephium breviflorum*) and Emory's crucifixion-thorn (*Castela emoryi*) to assess blooming status and habitat conditions. These reference populations are in proximity to the project area and both species were initially determined to have a high potential to occur within the project area based on the applicant's literature review. Approximately 10 individual small-flowered androstephium plants were identified at the reference population (RE 2025f). Each of these were found on a west-facing slope with a sparse coverage of creosote bush, white bursage, and desert lily (*Hesperocallis undulata*). The substrate included mostly aeolian sands interspersed with gravel. Only one plant was observed flowering, with the remaining plants in bud or in a vegetative state. Approximately five individual Emory's crucifixion-thorn shrubs were observed at the reference site (RE 2025f). These plants were observed along the margins of a drainage growing with creosote bush and white bursage. None of the plants were blooming; however, the distinct shrub is identifiable at any phenological stage.

Focused surveys were conducted between April 10 and May 2, 2023, which was consistent with the blooming periods for special-status plant species with the potential to occur within or adjacent to the project area. The surveys were executed in a manner consistent with the methods and guidance in the *Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Sensitive Natural Communities* (CDFW 2018). This consisted of walking parallel transects up to 30 meters apart throughout the project area. Portions of the project area determined to have a higher

1 CRPR 3 or 4 species may or may not be considered under CEQA. If a CRPR 3 or 4 species is locally rare, or the population is at an extreme end of the species range, it would be considered for impacts under CEQA.

potential for special-status plants, including sandy washes and areas with aeolian sands, were surveyed more intensely with parallel transects up to 10 meters apart. Plant species or subspecies were identified to the highest taxonomic level possible when encountered. Plants that could not be identified in the field were collected and later identified using *The Jepson Manual: Vascular Plants of California* and Jepson eFlora (Baldwin et al. 2012; Jepson Flora Project 2023 [as cited in RE 2025f]). Special-status plants encountered were recorded using a Geode Geographical Positioning System (GPS) unit with submeter accuracy.

Survey Results and Potential to Occur. Several special-status plants were identified within 10-miles of the project area during the literature review. However, most of these were considered to be unlikely to occur based on a lack of suitable habitat, the project area occurring outside of the known geographic or elevation ranges, and/or an absence of recorded occurrences near the project area. Only one species, Utah vine milkweed (*Funastrum utahense*), a CRPR 4.2 plant, was documented within the project area during focused rare plant surveys conducted by the applicant. Eight additional special-status plant species were determined to have at least some potential to occur within the project area (see **Table 5.2-3**). None of these are currently listed or proposed for listing under the ESA or CESA. Several species identified during the literature review were determined to have no potential to occur based on the project area being located outside of known geographic or elevation ranges for these species, a lack of suitable habitat, the absence of recent records or documentation, coordination with the applicable resource agencies, and/or staff's professional judgement. Plant species with no potential to occur are not discussed further in this document.

TABLE 5.2-3 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS WITHIN THE PROJECT AREA

Common Name *Scientific Name*	**Status[1]**	**Range, Habitat, and Blooming Period**	**Potential to Occur[2] and Comments**
Borrego milk-vetch *Astragalus lentiginosus* var. *borreganus*	CNPS: 4.3 Global Rank: G5T5? State Rank: S4	Annual herb found in Mojavean desert scrub and Sonoran desert scrub; sandy soils; elev. 100 to 2,935 ft (30 – 895 m); blooms Feb to May.	**Low.** Project area supports suitable habitat and is within the known geographic and elevation ranges of the species; however, no records occur within 10 miles of the project area; one record of *A. lentiginosus* not identified to variety located approximately 3 miles west of project area.
Cove's cassia *Senna covesii*	CNPS: 2B.2 Global Rank: G5 State Rank: S3	Perennial herb found in washes and on slopes in Sonoran desert scrub; elev. 740 – 4250 ft (225 – 1295 m); blooms Mar – Jun.	**Low.** Project area supports suitable habitat but is likely outside of the natural range of this species. Recently observed along I-15, several miles southwest of the project area and likely introduced by Caltrans.
Crowned muilla *Muilla coronata*	CNPS: 4.2 Global Rank: G3 State Rank: S3	Perennial bulbiferous herb found in chenopod scrub, Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland; elev. 2,200 – 6,430 ft (670 – 1,960 m); blooms Mar – Apr	**Low.** Project area supports suitable habitat and is within the known geographic and elevation ranges of the species; nearest record located near Baker, approximately 7 miles northeast of project area.
Desert winged-rockcress *Sibara deserti*	CNPS: 4.3 Global Rank: G4 State Rank: S4	Annual herb found in Mojavean desert scrub; elev. 1,130 – 4,265 ft (345 – 1,300 m); blooms Mar – Apr	**Low.** Project area supports suitable habitat and is within the known geographic and elevation ranges of the species; nearest record located near Baker, approximately 5.5 miles northeast of project area.
Emory's crucifixion-thorn *Castela emoryi*	CNPS: 2B.2 Global Rank: G3G4 State Rank: S2S3	Perennial deciduous shrub found in Mojavean desert scrub, playas, Sonoran desert scrub; elev. 295 – 2,380 ft (90 – 725 m); blooms Jun – Jul	**Moderate.** Project area supports suitable habitat and is within the known geographic and elevation ranges of the species; nearest record located within 0.5-mile north of project area; however, conspicuous species not observed during 2023 surveys.
Harwood's eriastrum *Eriastrum harwoodii*	BLM: S CNPS: 1B.2 Global Rank: G2 State Rank: S2	Annual herb found in desert dunes; elev. 410 – 3,000 ft (125 – 915 m); blooms Mar – Jun	**Low.** Project area supports suitable habitat and is within the known geographic and elevation ranges of the species; nearest record located approximately 6 miles south of project area.
Small-flowered androstephium	CNPS: 2B.2 Global Rank: G5	Perennial bulbiferous herb found in desert dunes, Mojavean desert scrub	**Moderate.** Project area supports suitable habitat and is within the known geographic and elevation

TABLE 5.2-3 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS WITHIN THE PROJECT AREA

Common Name *Scientific Name*	**Status[1]**	**Range, Habitat, and Blooming Period**	**Potential to Occur[2] and Comments**
Androstephium breviflorum	State Rank: S2?	(bajadas); elev. 720 – 2,625 ft (220 – 800 m); blooms Mar - Apr	ranges of the species; nearest record occurs approximately 1 mile south of project area.
Utah vine milkweed *Funastrum utahense*	CNPS: 4.2 Global Rank: G4 State Rank: S4	Perennial herb found in Mojavean desert scrub and Sonoran Desert scrub; gravelly (sometimes), sandy (sometimes) soils; elev. 330 – 4,710 ft (100 – 1,435 m); blooms Apr - Jun	**Present.** Several individuals observed along gen-tie alignment during 2023 surveys.
Wright's jaffueliobryum moss *Jaffueliobryum wrightii*	CNPS: 2B.3 Global Rank: G5 State Rank: S2S3	Moss found in alpine dwarf scrub, Mojavean desert scrub, pinyon and juniper woodland; carbonate, dry openings, rock crevices; elev. 525 – 8,205 ft (160 – 2,500 m)	**Low.** Project area supports marginally suitable habitat and is within the known geographic and elevation ranges of the species; nearest record located on east side of Soda Mountains approximately 2.7 miles east of project area.

[1]FEDERAL STATUS DESIGNATIONS

BLM (Bureau of Land Management – Barstow Field Office):
S = Sensitive

STATE STATUS DESIGNATIONS

CNPS (California Native Plant Society – California Rare Plant Rank):
1B = Rare, threatened, or endangered in California and elsewhere
2B = Rare, threatened, or endangered in California but mostly common elsewhere
4 = Watch list (limited distribution)

Threat Rank:
1. = Seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat)
2. = Moderately threatened in California (20-80% occurrences threatened/moderate degree and immediacy of threat)
3. = Not very threatened in California (less than 20% of occurrences threatened/low degree and immediacy of threat or no current threats known)

NatureServe Global / State Ranks:

[2]POTENTIAL TO OCCUR DEFINITIONS:

The definitions provided below are general parameters used to establish a baseline potential for each species to occur. These may be slightly altered due to survey results, professional experience, and/or coordination with the applicable resource agencies.

Present: Observed within or near project area during surveys.

High: Suitable habitat is present; project area is within known geographic and elevation ranges of species; and recent (within 10 years) record(s) located within 10 miles of project area

Moderate: Suitable habitat is present; project area is within known geographic and elevation ranges of species; and recent (within 10 years) record(s) located within 10 miles of project area OR typically suitable habitat is present; project area is within geographic and elevation ranges of species; and somewhat recent (within 20 years) record(s) located within 10 miles of project area

Low: Typically or occasionally suitable habitat is present; project area is outside of known geographic and/or elevation ranges; and recent (within 10 years) record(s) located within 10 miles of project area OR typically or occasionally suitable habitat is present; project area is within known geographic and elevation ranges; and recent (within 10

TABLE 5.2-3 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS WITHIN THE PROJECT AREA

Common Name *Scientific Name*	**Status[1]**	**Range, Habitat, and Blooming Period**	**Potential to Occur[2] and Comments**
(G/S) 1 = Critically imperiled; at very high risk of extinction or elimination due to very restricted range, very few populations or occurrences, very steep declines, very severe threats, or other factors (G/S) 2 = Imperiled; at high risk of extinction or elimination due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors (G/S) 3 = Vulnerable; at moderate risk of extinction or elimination due to fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors (G/S) 4 = Apparently secure; at fairly low risk of extinction or elimination due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors (G/S) 5 = Secure; at very low risk of extinction or elimination due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats SNR = State not ranked T = Subspecies/varieties receive a "T" rank attached to the "G" rank. With subspecies/varieties, the "G" rank reflects the condition of the entire species, whereas the "T" rank reflects the global situation of just the subspecies or variety.			years) or somewhat recent (within 20 years) located within 10 miles of project area **Not likely to occur:** Typically or occasionally suitable habitat is not present and/or the project area is outside of the known geographic and/or elevation ranges of the species; no known records located within 10 miles of project area. Sources: BLM 2015, BLM 2019, BLM 2023, Calflora 2025, CBI 2025, CCH 2025, CDFW 2025a, CDFW 2025c, CNPS 2025, Panorama Environmental 2013, RE 2025f, RE 2025s

Borrego milk-vetch. Borrego milk-vetch (CRPR List 4.3) is an annual herb that is known from scattered locations in Imperial, Inyo, Riverside, San Bernardino, and San Diego Counties where it typically occurs in sandy soils within Mojavean and Sonoran desert scrub habitats at elevations from 100 to 2,935 feet. The blooming period occurs between February and May. This species was not observed during focused rare plant surveys conducted by the applicant. Although there are no current records of Borrego milk-vetch within 10 miles, the project area supports suitable habitat and is within the known geographic and elevation ranges of the species. Additionally, the species has been documented approximately 3 miles west of the project area; however, this record was not recorded to the variety. Therefore, there is a low potential for Borrego milk-vetch to occur.

Cove's cassia. Cove's cassia (CRPR List 2B.2) is a perennial herb that is known from scattered locations in Imperial, Kern, Riverside, San Bernardino, and San Diego Counties where it occurs along dry, sandy desert slopes and washes within Sonoran Desert scrub habitats at elevations from 740 to 4,250 feet. The blooming period occurs between March and June. Current threats include vehicles and road maintenance. This species was not observed during focused rare plant surveys conducted by the applicant and there are no records within 10 miles. However, the project area supports suitable habitat and was identified by staff along I-15 several miles southwest of the project area. It was likely that this occurrence was introduced by Caltrans during road maintenance activities. Therefore, there is a low potential for Cove's cassia to occur in the project area.

Crowned muilla. Crowned muilla (CRPR List 4.2) is a perennial bulbiferous herb that is known from various locations in Inyo, Kern, Los Angeles, San Bernardino, and Tulare Counties where it is found in chenopod scrub, Joshua tree woodland, Mojavean desert scrub, and pinyon and juniper woodland habitats at elevations from 2,200 to 6,430 feet. The blooming period occurs between March and April. This species is possibly threatened by road widening, vehicles, illegal dumping, and development. Crowned muilla was not observed during focused rare plant surveys conducted by the applicant. However, the project area supports suitable habitat and is within the known geographic and elevation ranges of the species and there are recent records located near Baker approximately 7 miles to the northeast. Therefore, there is a low potential for crowned muilla to occur.

Desert winged-rockcress. Desert winged-rockcress (CRPR List 4.3) is an annual herb that is known from Inyo and San Bernardino Counties where it occurs in Mojavean desert scrub habitat at elevations from 1,130 to 4,265 feet. The blooming period occurs between March and April. Desert winged-rockcress was not observed during focused rare plant surveys conducted by the applicant; however, the project area supports suitable habitat and is within the known geographic and elevation ranges of the species. The nearest recent record is located near Baker approximately 7 miles to the northeast. Therefore, there is a low potential for desert winged-rockcress to occur.

Emory's crucifixion-thorn. Emory's crucifixion-thorn (CRPR List 2B.2) is a perennial deciduous shrub that is known from Imperial, Inyo, Riverside, and San Bernardino Counties where it is found in gravelly soils and playas within Mojavean and Sonoran Desert scrub habitats at elevations from 295 to 2,380 feet. The blooming period occurs between June and July. Current threats to this species include solar energy development and military activities. It is also possibly threatened by road maintenance and herbicide use. The applicant identified approximately 5 Emory's crucifixion-thorn individuals at the reference population site visited prior to focused rare plant surveys; however, this species was not observed within the project area. Nonetheless, the project area supports suitable habitat and is within the known geographic and elevation ranges of the species and the nearest record is located within 0.5 mile to the north. Therefore, there is a moderate potential for Emory's crucifixion-thorn to occur.

Harwood's eriastrum. Harwood's eriastrum (CRPR List 1B.2) is an annual herb that is known from Imperial, Riverside, San Bernardino, and San Diego Counties where it occurs in desert dune habitat at elevations from 410 to 3,000 feet. The blooming period occurs between March and June. Threats to this species include mining, non-native plants, and vehicles with solar energy development, grazing, and trampling also being potentially identified. Harwood's eriastrum was not observed during focused rare plant surveys conducted by the applicant. However, the project area supports suitable habitat and is within the known geographic and elevation ranges of the species. The nearest record is located approximately six miles to the south. Therefore, there is a low potential for Harwood's eriastrum to occur.

Small-flowered androstephium. Small-flowered androstephium (CRPR List 2B.2) is a perennial bulbiferous herb that is known from Inyo, Riverside, and San Bernardino Counties where it occurs in desert dunes and bajadas within Mojavean desert scrub habitat at elevations from 720 to 2,625 feet. The blooming period occurs between March and April. Solar energy development has been identified as the prominent threat to this species. Small-flowered androstephium was not observed during focused rare plant surveys conducted by the applicant. However, approximately 10 individual plants were observed by the applicant at the reference site prior to surveys. The project area supports suitable habitat and is within the known geographic and elevation ranges of the species. The nearest record is located approximately 1 mile south of the project area. Therefore, there is a moderate potential for small-flowered androstephium to occur.

Utah vine milkweed. Utah vine milkweed (CRPR List 4.2) is a perennial herb that is known from Imperial, Inyo, Riverside, San Bernardino, and San Diego Counties where it is found in sometimes gravelly or sandy soils within Mojavean and Sonoran Desert scrub habitats at elevations from 330 to 4,710 feet. The blooming period occurs between April and June. Known threats to this species include solar energy development, although it may also be at potential risk from vehicles. Three Utah vine milkweed individual plants were observed near the proposed gen-tie line during focused rare plant surveys conducted by the applicant. The plants were generally found along the margins of an

ephemeral wash at the interface of creosote bush – white bursage scrub (*Larrea tridentata – Ambrosia dumosa* shrubland alliance) and cheesebush – sweetbush scrub (*Ambrosia salsola – Bebbia juncea* shrubland alliance) vegetation communities. The applicant also noted additional individual plants that were identified outside of the project area.

Wright's jaffueliobryum moss. Wright's jaffueliobryum moss (CRPR List 2B.3) is a moss that is known from Inyo, Riverside, San Bernardino, and Tulare Counties where it is associated with carbonate soils in dry opening and rock crevices within alpine dwarf scrub, Mojavean desert scrub, and pinyon and juniper woodland habitats at elevations from 525 to 8,205 feet. This species was not observed during focused rare plant surveys conducted by the applicant; however, the project area supports suitable habitat and is within the known geographic and elevation ranges of the species. The nearest record is located on the east side of the Soda Mountains approximately 2.7 miles east of the project area. Therefore, there is a low potential for Wright's jaffueliobryum moss to occur.

Special-Status Wildlife

For the purposes of this report, special-status wildlife species include:

- Listed, proposed for listing, or candidates for listing as threatened or endangered species (including designated or proposed critical habitat) under the federal ESA
- Listed, or candidates for listing as threatened or endangered under the CESA
- Bald and golden eagles protected under the Bald and Golden Eagle Protection Act
- Considered sensitive by the BLM Barstow Field Office
- Covered species under the DRECP
- Designated as Fully Protected (FP) by the CDFW
- Designated as a Species of Special Concern (SSC) by CDFW

In addition to the literature review and field surveys described above, the applicant conducted several focused and protocol-level surveys for special-status wildlife species. **Table 5.2-4** summarizes the special-status wildlife surveys that were conducted by the applicant.

TABLE 5.2-4 SUMMARY OF SPECIAL-STATUS WILDLIFE SURVEYS CONDUCTED BY APPLICANT FOR THE PROJECT

Survey Focus	Survey Type	Dates
Crotch's Bumble Bee	Focused	May 22 – 26, 2023 June 14 – 16, 2023 July 16 – 18, 2023 August 14 – 16, 2023
Mojave Fringe-Toed Lizard	Focused	March 26, 2023 July 11, 2023
Desert Tortoise	Protocol	April 5 – May 5, 2023 May 22 – May

TABLE 5.2-4 SUMMARY OF SPECIAL-STATUS WILDLIFE SURVEYS CONDUCTED BY APPLICANT FOR THE PROJECT

Survey Focus	Survey Type	Dates
Nesting Birds	Point-Count	January 24 – 26, 2023 (winter) March 23 – 24, 2023 (spring) July 12 – 14, 2023 (summer) October 9 – 11, 2023 (fall) April 29 – 30, 2024 (spring) May 20 – 21, 2024 (spring)
Raptors	Focused	April 29 – 30, 2024 May 20 – 21, 2024
Burrows (Burrowing Owl, Desert Kit Fox, American Badger)	Focused	March 27 – April 5, 2023 May 8 – 12, 2023 May 22 – 25, 2023
Burrowing Owl	Protocol (Breeding-Season)	June 5 – 6, 2023 July 6, 2023 July 24, 2023
Bat Habitat Assessment	Reconnaissance	June 27 – 28, 2023
Bats	Nighttime Acoustic	July 23 – 26, 2023 August 14 – 17, 2023 August 28 – 31, 2023

Source: RE 2025f and RE 2025s

Crotch's Bumble Bee Focused Surveys. Prior to the field surveys, the applicant conducted a desktop assessment for Crotch's bumble bee (*Bombus crotchii*), which included a review of the nesting, foraging, and overwintering requirements for the species. In addition, data collected from earlier surveys in spring 2023 was used to assess areas that were likely to contain suitable habitat for the species along with co-occurring pollinator species. The methods for focused surveys for Crotch's bumble bee were developed in coordination with CDFW and were based on the USFWS's *Survey Protocols for the Rusty Patched Bumble Bee (Bombus affinis*), Version 2.2 (USFWS, 2019a). On June 6, 2023, CDFW published *Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species*, which included new survey guidance for Crotch's bumble bee (CDFW, 2023). However, the applicant continued using the CDFW-approved methods already in progress for consistency.

The purpose of the surveys was to identify the availability of nesting, foraging, and overwintering habitat, and to search for Crotch's bumble bee individuals within the project area. Teams of three to four biologists performed four focused surveys during the colony active period (April to August) to allow for the highest probability of detection. The surveys were focused in areas with the highest abundance of plants that could provide nectar for foraging bumble bees, specifically along the largest washes. Nectar plants were recorded using a handheld GPS unit. No bumble bees were captured or handled during the surveys.

The applicant noted specific limitations that may have reduced the probability of detecting Crotch's bumble bee during the surveys. These included high desert temperatures which exceeded the optimal range of 60 to 90°F, particularly during the July surveys. Additionally, suboptimal wind conditions during the May and August

surveys may have reduced the potential to detect the species. However, appropriate temperatures and conditions were at least partly present on each survey day.

Mojave Fringe-Toed Lizard Focused Surveys. There are currently no published survey protocols for Mojave fringe-toed lizard (*Uma scoparia*); therefore, the applicant developed survey methods in coordination with CDFW. This included implementing methods based on *Coachella Valley Fringe-toed Lizard (Uma inornata) Survey Protocols*, which were established for the federally and state-endangered Coachella Valley fringe-toed lizard, a species that occurs in similar habitat as Mojave fringe-toed lizard but in a geographically distinct area (USFWS 2007). Additionally, BLM-recommended methods used during previous surveys conducted for the project in 2009 and 2012 were used for follow up surveys conducted in 2023 (Panorama Environmental 2013, BLM 2015).

The surveys were conducted during the active season (March to October) for Mojave fringe-toed lizard and focused on the southeastern portion of the project area and a wash just outside the project area where Mojave fringe-toed lizard individuals had been previously documented. The methods included walking 10-meter transects throughout areas with suitable habitat. Binoculars were used to observe lizards at a distance to confirm species identification. All observations were recorded using a GPS unit.

Desert Tortoise Protocol Surveys. The purpose of protocol-level surveys for desert tortoise (*Gopherus agassizii*) was to document individual tortoises, burrows, and diagnostic sign (e.g., scat, tracks, drinking depressions, courtship rings, eggshell fragments, carcasses) within the project area. The applicant conducted surveys in accordance with published USFWS protocols during the spring survey period (USFWS 2019b).

Surveys were performed in teams of two to four biologists during a 4-week period from April 5 through May 4, 2023, and from May 24 through May 29, 2023. Conditions were ideal for the detection of live tortoises, with temperatures reaching no more than 94°F on any given day. The biologists walked 10-meter-wide belt transects throughout the entire project area.

Tortoise burrows were identified by the distinctive half-moon shape of the entrance and the walls of the tunnel. Upon encountering a potential tortoise burrow, a mirror or bright flashlight was used to view the interior of the burrow. Each burrow was assigned a condition class as described in the USFWS *Desert Tortoise (Mojave Population) Field Manual* (USFWS 2009). In addition to these distinct burrows, tortoises are also known to seek shelter under shrubs, within caliche caves, and within burrows excavated by other species. Each non-tortoise burrow or den that was observed was classified based on the shape of the entrance, size, and presence of sign, such as scat, claw mark scrapes, owl pellets, whitewash, and/or prey remains. The presence of extensive cobwebs, debris, or partial collapse was used to indicate that the burrow was likely unoccupied. All burrow locations were recorded using a GPS unit with submeter accuracy.

During the survey, biologists also searched for live tortoises and diagnostic signs of tortoise presence. When tortoise sign was encountered, the approximate age was estimated based on the condition of the sign.

Avian Use Surveys. Avian use surveys provide the species data necessary to determine how implementation of the project could affect use by resident, seasonal, and migratory birds. Avian use survey methods implemented by the applicant included a series of four replicate point counts spread over the entire year in 2023 thus covering all seasons (i.e., winter, spring, summer, and fall). An additional survey was conducted in the spring of 2024.

Each of the 2023 surveys consisted of 24 avian point-count locations throughout the project area excluding the gen-tie alignment while the 2024 surveys consisted of 22 avian point-count locations throughout the project area and gen-tie alignment. The 2024 locations were distributed in areas not previously surveyed in 2023. All point-count locations were recorded using a GPS unit with submeter accuracy and descriptions, including habitat types and quality, were documented. Each 2023 point-count location was monitored for 20 minutes and each 2024 location for 10 minutes. Monitoring was conducted at various times of the day to maximize the potential of detecting all avian species within the survey area. Incidental observations of avian and other wildlife outside the formal survey periods were documented to develop a comprehensive species list for the project area and to record any observations or patterns of use that may be relevant to the project.

Raptor Surveys. Raptor and large bird surveys were conducted by the applicant in April and May 2024. These surveys consisted of visiting five observation points scattered throughout the project area, including the gen-tie alignment, and were selected to afford clear views of the mountains surrounding the project area. Each point was visited no earlier than 10 a.m. for one-hour long observation periods concurrent with 2024 avian point-count surveys discussed above. All large birds (e.g. raptors, ravens, etc.) detected within 800 meters of the observer were documented, along with flight paths and behavior consistent with the methods recommended by the CDFW and USFWS *Eagle Conservation Plan Guidance* (USFWS 2013). The distance to each bird was estimated with the use of a laser rangefinder and terrain features. Incidental observations of birds and other wildlife outside of the formal survey periods were documented to supplement the comprehensive species list for the project area. Patterns of use that may be relevant to the project, such as large flocks or concentrated movement around specific landscape features, were also recorded.

Burrow Surveys for Burrowing Owl, Desert Kit Fox, and American Badger Surveys. Burrow surveys were conducted by the applicant between March and May 2023. The purpose of these surveys was to identify habitat and suitable burrows capable of supporting western burrowing owl (*Athene cunicularia hypugaea*), American badger (*Taxidea taxus*), and desert kit fox (*Vulpes macrotis arsipus*). The surveys were performed throughout the project area, including the gen-tie alignment, and consisted

of walking parallel transects approximately 20 meters apart. All potential burrows or dens encountered were thoroughly examined and general size and shape along with any signs of occupancy were recorded.

Potential burrowing owl burrows were identified based on several factors, including the presence of whitewash, pellets, decorations, and/or location within areas that provided suitable conditions. Suitable factors included burrow entrance size and proximity to low-growing vegetation and perch locations. Potential desert kit fox burrows and dens were identified based on the presence of multiple entrances, burrow shape, and the presence of scat and tracks while American badger burrows and dens were identified based on horizontal scrapes along the walls of the entrance and the presence of large spoils. Several medium-sized mammal burrows could not be identified due to the lack of diagnostic characteristics, or due to only being partially dug or collapsed. These burrows were described as inactive/unknown. Each burrow was photographed, and its location was recorded on a GPS unit.

Burrowing Owl Breeding Season Surveys. Burrowing owl breeding surveys were conducted by the applicant as recommended by the CDFW *Staff Report on Burrowing Owl Mitigation* (CDFW 2012). These surveys consisted of three site visits subsequent to the burrow surveys discussed above, with two visits occurring during the peak of the breeding season (between April 15 and July 15) and one occurring after July 15. During each visit, burrows that had been previously identified as potentially suitable for burrowing owl were examined. Detailed observations were made to document any changes compared with the previous status of each burrow recorded during the burrow survey. The entrance of each of these burrows was assessed and involved determining if the burrow was intact, noting evidence of fresh excavations or scrapings. Potential burrows were examined with a focus on the presence of pellets, prey remains, whitewash, and/or decoration. Non-breeding season surveys were not performed. Although non-breeding surveys may provide information on burrowing owl occupancy, they do not substitute for breeding season surveys because results are typically inconclusive (CDFW 2012).

Bat Habitat Assessment and Surveys. The purpose of these surveys was to document the suitability of the project area and surrounding landscape and structures to support potential maternity, hibernacula, and/or nocturnal roost sites for bats. The surveys were conducted in accordance with *Caltrans Bat Mitigation: A Guide to Developing Feasible and Effective Solutions* (HT Harvey and Associates 2019), *A Plan for the North American Bat Monitoring Program* (Loeb et al. 2015), and *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (Collins 2016 [as cited in RE 2025f]). These efforts consisted of an initial daytime habitat assessment and three subsequent rounds of nighttime acoustic surveys consisting of dusk roost emergence and activity transect surveys.

The daytime habitat assessment was performed in June 2023 and evaluated various types of structures, including stormwater culverts, bridges, large-diameter trees with

suitable cavities, boulder piles with appropriate openings, and other comparable features that have the potential to provide suitable bat roosting sites. During the assessment, the focus was on identifying specific indicators for the presence of bats. These included signs of guano, insect carapaces, urine staining, or deceased specimens. Specific locations that were determined to have the potential to support roosting bats were mapped.

Prior to nighttime acoustic surveys, five transects were predetermined to account for all habitat types within the project area. The transects were distributed along areas that encompassed characteristics important for bat roosting and foraging, including rocky crevices, tree cavities, and human-made structures known to harbor suitable roosting features. This focused approach aimed to investigate areas with a higher likelihood of bat activity, considering such factors as the presence of water features, insect abundance, and vegetation types that support feeding habits (Pierson and Rainey 1994).

Nighttime acoustic surveys were conducted in July and August 2023 at locations identified during the daytime habitat assessment and along the predefined transects discussed above. They were performed from a half hour prior to sunset to 2 hours after sunset. Calls were recorded using acoustic monitoring equipment including two Wildlife Acoustics Echo Meter Touch units with built-in species identifiers (connected to Android Galaxy tablets), a Pettersson u384 Ultrasonic Microphone (connected to a Lenovo IdeaPad laptop running BatSound software), and an Anabat Scout standalone unit. Calls were analyzed to species level. All potential roost locations were recorded using a GPS unit.

Survey Results and Potential to Occur. Surveys conducted by the applicant identified six special-status wildlife species present within or near the project area. These included desert tortoise, western burrowing owl, loggerhead shrike (*Lanius ludovicianus*), desert bighorn sheep, American badger, and desert kit fox. Staff determined that an additional 32 species have at least some potential to occur in or near the project area based on the presence of suitable habitat, proximity to documented occurrences, and/or through coordination with CDFW (see **Table 5.2-5**). Several species identified during the literature were determined to have no potential to occur based on the project area being located outside of known ranges for these species, a lack of suitable habitat, the absence of recent records or documentation, coordination with the applicable resource agencies, and/or staff's professional judgement. Wildlife species with no potential to occur are not discussed further in this document.

Federal- and State-Listed Wildlife. Two federal- and/or state-listed species, including desert tortoise (threatened under the ESA and CESA) and western burrowing owl (candidate for listing under CESA) were observed during surveys conducted by the applicant. An additional six federal- and/or state-listed species were determined to have some potential to occur within or near the project area. These include monarch

butterfly (*Danaus plexippus*) (proposed for listing as threatened under the ESA), bank swallow (*Riparia riparia*) (listed as threatened under the ESA), tricolored blackbird (*Agelaius tricolor*) (listed as threatened under the CESA), Swainson's hawk (*Buteo swainsoni*) (listed as threatened under the CESA), willow flycatcher (*Empidonax traillii*) (listed as endangered under the CESA), and mountain lion (*Puma concolor*) (candidate for listing as a threatened Evolutionarily Significant Unit [ESU] under the CESA).

Fully Protected Wildlife. In addition to desert bighorn sheep, which was determined to be present in the project area, two species that receive full protection under the California Fish and Game Code have some potential to occur in or near the project area. These include golden eagle (*Aquila chrysaetos*) and southern California ringtail (*Bassariscus astutus*). Additionally, desert kit fox, which is protected under the California Code of Regulations, Title 14, section 460, was identified as present during the applicant's surveys.

Other Special-Status Wildlife. Two additional special-status wildlife species were observed or detected by the applicant during the 2023 and 2024 surveys, including loggerhead shrike (*Lanius ludovicianus*) and American badger. Each of these are defined by CDFW as species of special concern. An additional 23 special-status wildlife species were determined to have some potential to occur in or near the project area.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA			
Common Name *Scientific Name*	**Status[1]**	**Range and Habitat**	**Potential to Occur[2] and Comments**
INVERTEBRATES			
Crotch's bumble bee *Bombus crotchii*	CESA: **SC-E** Global Rank: G2 State Rank: S2	Found between San Diego and Redding in a variety of habitats, including open grasslands, shrublands, chaparral, desert margins, and semi-urban settings; nests underground but nest characteristics not well documented; generalist forager with typical floral resources including plants in the Fabaceae, Apocynaceae, Asteraceae, Lamiaceae, Boraginaceae families; overwinter in soft, disturbed soils or under leaf litter or other debris, but very little is known about hibernacula characteristics.	**Low (nesting, foraging, overwintering):** Project area supports suitable nesting and foraging habitat; however, the species was not detected during focused surveys and there are no known records within 10 miles; two bumble bees were incidentally observed by the applicant outside of the project area but could not be identified, therefore, the presence of this species cannot be excluded.
Monarch butterfly – California overwintering population *Danaus plexippus*	ESA: **FP-T** Global Rank: G4T1T2Q State Rank: S2	Overwinter in groves of trees scattered from Mendocino County south to Baja California; start to migrate inland in the spring feeding on flower nectar, mating and laying eggs on a variety of milkweed (*Asclepias* spp.) plants, the sole source of food for caterpillars.	**Not likely to occur (overwintering, breeding) / Low (migrating):** Project area does not support suitable overwintering habitat and is well outside the known overwintering grounds along the coast; may periodically occur during migration; nearest records located at Zzyzx, approximately 3.5 miles to the west and in Baker, just over 7 miles to the northeast.
REPTILES			
Desert tortoise *Gopherus agassizii*	ESA: **FT** BLM: S DRECP: C CESA: **ST** Global Rank: G3 State Rank: S2S3	Mojave population range includes north and west of the Colorada River in the Mojave Desert of California, Nevada, Arizona, and southwest Utah, and in the Sonoran (Colorado) desert in California; found in most desert habitats, but primarily in Joshua tree woodland, desert scrub, desert wash, and creosote scrub; friable soils required for burrows	**Present:** Project area supports suitable habitat with low densities of desert tortoise at this time; five years of protocol surveys detected one live tortoise in 2013; surveys conducted in 2023 detected 182 desert tortoise burrows ranging from Class 2 through 5 and two scats, one less than one day old in the northeast corner of the project area and one

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Common Name *Scientific Name*	**Status[1]**	**Range and Habitat**	**Potential to Occur[2] and Comments**
		and nests; large wildflower blooms preferred for foraging.	less than one month old in the northwestern portion of the project area.
Mojave fringe-toed lizard *Uma scoparia*	BLM: S DRECP: C CDFW: SSC Global Rank: G3G4 State Rank: S3S4	Patchily distributed throughout much of the Mojave Desert in California with range extending from southern end of Death Valley sough through San Bernardino and Riverside Counties; occurs exclusively on fine, wind-blown sand generally consisting of sparse creosote scrub habitat.	**Moderate:** Species was observed within suitable habitat just outside southeastern edge of project area during focused surveys; southernmost portion of project area supports small areas of suitable habitat however these areas were stabilized by invasive grasses during 2024 surveys; likely occurs as a periodic forager or during dispersal.
BIRDS			
American white pelican *Pelecanus erythrorhynchos*	USFWS: BCC CDFW: SSC Global Rank: G4 State Rank: S1S2	Breeding in California limited to northeastern portion of the state; occurs widely during migration and may summer, or disperse to, nearly anywhere in the normal migrant and winter ranges; nests in colonies at remote sites with minimal disturbance; forages in shallow inland waters.	**Not likely to occur (nesting, foraging) / Low (migration):** Project area does not support suitable nesting or foraging habitat and is outside the known breeding range; may periodically occur during migration; nearest records associated with impoundments around Baker and Zzyzx, approximately 7.2 miles northeast and 3.5 miles east, respectively.
Bank swallow *Riparia riparia*	BLM: S CESA: **FT** Global Rank: G5 State Rank: S3	Neotropical migrant found primarily in riparian and other lowland habitats in California west of the desert during the spring-fall period; spring and fall migrant in the interior; uncommon and very local summer resident; primarily a colonial breeder requiring fine-textured sandy banks or cliffs; nest almost always near water.	**Not likely to occur (nesting, foraging) / Low (migration):** Project area does not support suitable nesting or foraging habitat and is outside the known breeding range; may periodically occur during migration; nearest records associated with impoundments around Baker and Zzyzx, approximately 7.2 miles northeast and 3.5 miles east, respectively.
Bendire's thrasher[t] *Toxostoma bendirei*	USFWS: BCC BLM: S DRECP: C CDFW: SSC Global Rank: G4 State Rank: S2	Summer resident in California from March to late August; breeding range is patchily distributed and extends from southern Nevada, Utah, and Colorado south through southeastern California, Arizona, and western New Mexico;	**Moderate (nesting, foraging, migration):** Project area supports suitable nesting and foraging habitat; although no known records within 10 miles of project area, several scattered occurrences throughout the region,

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Common Name *Scientific Name*	**Status[1]**	**Range and Habitat**	**Potential to Occur[2] and Comments**
		abundance can vary greatly in response to climatic variables; in Mojave Desert, primarily breed in desert scrub comprised of succulent plant species.	particularly within the Mojave National Preserve to the east.
Black tern *Chlidonias niger*	USFWS: BCC CDFW: SSC Global Rank: G4G5 State Rank: S2	In California, occurs primarily as a migrant and summer resident from mid-April to mid-October; breeding range extends from southern Canada and northern United States, reaching southwestern limit in Central Valley; migrates broadly across North America to South America wintering grounds; nest semi-colonially in protected areas of marshes.	**Not likely to occur (nesting, foraging) / Low (migration):** Project area does not support suitable nesting or foraging habitat and is outside the known breeding range; may periodically occur during migration; nearest records associated with impoundments around Baker approximately 7.2 miles to the northeast and Zzyzx approximately 3.5 miles to the east.
Common loon *Gavia immer*	CDFW: SSC Global Rank: G5 State Rank: S1	Occurs as a migrant in California moving between northern breeding grounds in western Canada and Alaska to coastal ocean waters along Pacific, but may winter inland on large reservoirs and slow-moving rivers or use these features during migration.	**Not likely to occur (nesting, foraging) / Low (migration):** Project area does not support suitable nesting or foraging habitat and is outside the known breeding range; may periodically occur during migration; nearest records associated with impoundments around Baker approximately 7.2 miles to the northeast.
Crissal thrasher *Toxostoma crissale*	CDFW: SSC Global Rank: G5 State Rank: S2	Year-round resident occurring in widely scattered patches from southeastern California east through southern Nevada, southwestern Utah, northern Arizona, and southwestern New Mexico to western Texas; occupies a variety of desert riparian and scrub habitats, preferring dense, low scrubby vegetation.	**Low (nesting) / Moderate (foraging):** Project area supports marginal desert riparian habitat for nesting; may occur as an infrequent forager; nearest record located around Baker approximately 7.2 miles to the northeast; however, several scattered records in the region.
Golden eagle *Aquila chrysaetos*	USFWS: BGEPA DRECP: C CDFW: **FP**, WL	Yearlong resident and migrant throughout California except center of Central Valley; nests in dense, even-	**Not likely to occur (nesting) / Moderate (foraging):** Project area does not support suitable nesting habitat; however, may

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Common Name *Scientific Name*	**Status[1]**	**Range and Habitat**	**Potential to Occur[2] and Comments**
	Global Rank: G5 State Rank: S3	aged single-layered forest canopy; usually in dense, pole, and small-tree stands of conifers, which are cool, moist, shaded, little groundcover, near water; forages in open habitats including grasslands, shrublands and desert areas.	periodically forage over the site; scattered records within 10 miles of project area with the nearest occurring along I-15 approximately 5.2 miles to the northeast.
Grasshopper sparrow *Ammodramus savannarum*	CDFW: SSC Global Rank: G5 State Rank: S3	Occurs in California primarily as a summer resident from March to September; partly migratory with rare winter occurrences; prefer short to middle-height, moderately open grasslands with scattered shrubs.	**Not likely to occur (nesting, foraging) / Low (migration):** Project area does not support suitable nesting or foraging habitat and is outside the known breeding range; may periodically occur during migration; nearest records located around Baker approximately 7.2 miles to the northeast and Zzyzx approximately 3.5 miles to the east.
Le Conte's thrasher[t] *Toxostoma lecontei*	USFWS: BCC CDFW: SSC Global Rank: G4 State Rank: S3	Uncommon to rare local resident in southern California deserts from Mono County south to the Mexican border; occurs primarily in open desert wash, desert scrub, alkali desert scrub, desert succulent shrub, and Joshua tree habitat with scattered shrubs; nests in dense, spiny shrub or densely branched cactus in desert wash habitat.	**High (nesting, foraging):** Project area supports suitable nesting and foraging habitat; nearest records located within 5 miles to the east and southwest.
Loggerhead shrike *Lanius ludovicianus*	CDFW: SSC Global Rank: G4 State Rank: S4	Common yearlong resident in lowlands and foothills throughout California; prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches; nests on stable branches in densely-foliaged shrubs or trees.	**High (nesting) / Present (foraging):** Project area supports suitable nesting and foraging habitat; multiple individuals observed within project area during surveys.
Lucy's warbler *Leiothlypis luciae*	CDFW: SSC Global Rank: G5 State Rank: S3	Small, localized summer breeding populations known in the Mojave Desert from Big Morongo Canyon near Barstow,	**Low (nesting, foraging) / Moderate (migration):** Project area supports marginal nesting and foraging habitat; may occur as a

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Common Name *Scientific Name*	**Status[1]**	**Range and Habitat**	**Potential to Occur[2] and Comments**
		near Baker, on the Amargosa River, and around Klinefelter; nest almost exclusively in honey mesquite thickets but will also use riparian woodland, blue palo verde, ironwood, and tamarisk.	as a fall/winter migrant; several records located around Baker and Zzyzx, approximately 7.2 miles northeast and 3.5 miles east, respectively.
Northern harrier *Circus hudsonius*	USFWS: BCC CDFW: SSC Global Rank: G5 State Rank: S3	Yearlong resident within its breeding range in California; breed and forage in a variety of open (treeless) habitats that provide vegetative cover, including annual and perennial grasslands, weed fields, agricultural fields, sagebrush flats, and desert sinks, among others.	**Not likely to occur (nesting) / Moderate (foraging):** Project area does not support suitable nesting habitat; may occur as an infrequent forager; nearest records located along Zzyzx Road approximately 2.7 miles to the east.
Olive-sided flycatcher *Contopus cooperi*	USFWS: BCC CDFW: SSC Global Rank: G4 State Rank: S3	Uncommon to common summer resident in a wide variety of forest and woodland habitats throughout California, exclusive of the deserts, Central Valley, and other lowland valleys and basins; does not breed in the Mojave Desert, but may migrate through between breeding sites in California and overwintering grounds in South America; preferred nesting habitats include mixed conifer, montane hardwood-conifer, Douglas-fir, redwood, red fir, and lodgepole pine.	**Not likely to occur (nesting, foraging) / Low (migration):** Project area does not support suitable nesting or foraging habitat and is outside the known breeding range; may periodically occur during migration; nearest records located around Baker approximately 7.2 miles to the northeast and Zzyzx approximately 3.5 miles to the east.
Purple martin *Progne subis*	CDFW: SSC Global Rank: G5 State Rank: S3	Occurs as a summer resident and migrant, primarily from mid-March to late September; widely but locally distributed in forest and woodland areas throughout most of California; overwinters in South America; colonial nester utilizing a variety of substrates (e.g., tree cavities, bridges, utility poles, etc.); highly prefers low canopy cover at nest height in adjacent habitats.	**Not likely to occur (nesting, foraging) / Low (migrating):** Project area does not support suitable nesting or foraging habitat and is outside the known breeding range; may periodically occur during migration; nearest records located around Baker approximately 7.2 miles to the northeast and Zzyzx approximately 3.5 miles to the east.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Common Name *Scientific Name*	**Status[1]**	**Range and Habitat**	**Potential to Occur[2] and Comments**
Redhead *Aythya americana*	CDFW: SSC Global Rank: G5 State Rank: S3	Yearlong resident in California, though status varies regionally as fall and winter migrants augment breeding populations; nests in freshwater emergent wetlands; forages in large, deep bodies of water.	**Not likely to occur (nesting, foraging) / Low (migration):** Project area does not support suitable nesting or foraging habitat and is outside the known breeding range; may periodically occur during migration; nearest records located around Baker approximately 7.2 miles to the northeast and Zzyzx approximately 3.5 miles to the east.
Summer tanager *Piranga rubra*	CDFW: SSC Global Rank: G5 State Rank: S3	Primarily a summer visitor in California, arriving from mid-April to early May and departing in early October; most often occurs along lower Colorado River but also very locally elsewhere in southern deserts; found in additional deserts and other localities during migration; breeds in mature, desert riparian habitat dominated by cottonwoods and willows.	**Not likely to occur (nesting, foraging) / Low (migration):** Project area does not support suitable nesting or foraging habitat; may periodically occur during migration; nearest records located around Baker approximately 7.2 miles to the northeast and Zzyzx approximately 3.5 miles to the east.
Swainson's hawk *Buteo swainsoni*	DRECP: C CESA: **ST** Global Rank: G4 State Rank: S3S4	Known breeding resident and migrant in the Mojave Desert; nests peripheral to riparian systems or in lone trees in agricultural fields or pastures and roadside trees when available and adjacent to suitable foraging habitat; forages in adjacent grasslands or suitable grain or alfalfa fields.	**Not likely to occur (nesting) / Moderate (foraging, migration):** Project area is outside known breeding range and does not support suitable nesting habitat; may infrequently forage in the area during migratory/seasonal movements between breeding and non-breeding habitats; several scattered observations located within 10 miles of project area.
Tricolored blackbird *Agelaius tricolor*	USFWS: BCC DRECP: C CESA: **ST** CDFW: SSC Global Rank: G1G2 State Rank: S2	Yearlong resident that makes extensive migrations and movements within their range in California; colonial breeding occurs near fresh water, preferably wetlands with tall cattails or tules, but also in thickets of willow, blackberry, wild rose, and tall herbs; often congregate in huge, mixed-species	**Not likely to occur (nesting, foraging) / Low (migration):** Project area does not support suitable nesting or foraging habitat; may periodically occur during migration within home ranges; nearest records located at Zzyzx approximately 3.5 miles to the east.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Common Name *Scientific Name*	**Status[1]**	**Range and Habitat**	**Potential to Occur[2] and Comments**
		blackbird flocks that forage in grasslands and agricultural fields with low-growing vegetation during the winter.	
Vaux's swift *Chaetura vauxi*	USFWS: BCC CDFW: SSC Global Rank: G5 State Rank: S3	Fairly common migrant throughout most of California in April and May, and August and September with a few winter migrants irregularly in southern coastal lowlands; does not breed in the Mojave Desert; preferred nesting sites include large hollow trees and snags in redwood and Douglas-fir habitats; forages high in the air in most habitats.	**Not likely to occur (nesting, foraging) / Low (migration):** Project area does not support suitable nesting habitat and is outside the known breeding range; may periodically occur during migration; several scattered records located within 10 miles of project area.
Vermilion flycatcher *Pyrocephalus rubinus*	CDFW: SSC Global Rank: G5 State Rank: S2S3	In California, primarily a resident in the Colorado Desert, but breeding individuals in the Mojave Desert may withdraw or migrate, at least partially, to nonbreeding areas in the winter; nests primarily occur in desert riparian habitat adjacent to irrigated fields and ditches, pastures, and other open, mesic areas; forages near water.	**Not likely to occur (nesting, foraging) / Low (migration):** Project area does not support suitable nesting or foraging habitat; may periodically occur during migration; nearest records located around Baker and Zzyzx, approximately 7.2 miles northeast and 3.5 miles east, respectively.
Western burrowing owl *Athene cunicularia hypugaea*	USFWS: BCC BLM: S DRECP: C CESA: **SC-E** CDFW: SSC Global Rank: G4 State Rank: S2	Mostly yearlong resident throughout much of California, but migrants from other parts of western North America may augment resident lowland populations in winter; nests in underground burrows in a variety of arid and semi-arid habitats characterized by sparse vegetation, such as grasslands, shrublands, and deserts; forages within proximity to nesting sites.	**High (nesting, overwintering) / Present (foraging):** One individual and multiple potential burrows observed within the project area during focused surveys; project area supports suitable nesting, foraging, and overwintering habitat.
Willow flycatcher *Empidonax traillii*	CESA: **SE** Global Rank: G5 State Rank: S3	Rare to locally uncommon summer resident in wet meadow and montane riparian habitats in the Sierra Nevada	**Not likely to occur (nesting, foraging) / Low (migration):** Project area does not support suitable nesting or foraging habitat;

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Common Name *Scientific Name*	**Status[1]**	**Range and Habitat**	**Potential to Occur[2] and Comments**
		and Cascade Range; may nest elsewhere in lowland California; common spring and fall migrant at lower elevations; prefers extensive thickets of low, dense willow edges on wet meadows, ponds, or backwaters.	may periodically occur during migration; nearest records located around Baker approximately 7.2 miles to the northeast and Zzyzx approximately 3.5 miles to the east.
Yellow-breasted chat *Icteria virens*	CDFW: SSC Global Rank: G5 State Rank: S4	Occurs as a summer resident and migrant in California primarily from late March to late September; found locally throughout the Mojave and Colorado deserts; nests in early successional riparian habitats with well-developed shrub layer and open canopy;	**Not likely to occur (nesting, foraging) / Low (migration):** Project area does not support suitable nesting or foraging habitat; may periodically occur during migration; nearest records located around Baker approximately 7.2 miles to the northeast and Zzyzx approximately 3.5 miles to the east.
Yellow-headed blackbird *Xanthocephalus xanthocephalus*	CDFW: SSC Global Rank: G5 State Rank: S3	Occurs as a migrant and local breeder in deserts; nesting colonies located in dense emergent wetlands of cattails, tules, and other aquatic vegetation along border of lake or pond; most foraging occurs over water, near water, or on moist ground.	**Not likely to occur (nesting, foraging) / Low (migration):** Project area does not support suitable nesting or foraging habitat; may periodically occur during migration; nearest records located around Baker approximately 7.2 miles to the northeast and Zzyzx approximately 3.5 miles to the east.
Yellow warbler *Setophaga petechia*	CDFW: SSC Global Rank: G5 State Rank: S3	Primarily occurs in California as a summer resident and migrant from late March through early October; breeding occurs very locally in low densities within the southern deserts; nests in riparian vegetation in close proximity to water along streams and wet meadows.	**Not likely to occur (nesting, foraging) / Low (migration):** Project area does not support suitable nesting or foraging habitat; may periodically occur during migration; nearest records located around Baker and Zzyzx, approximately 7.2 miles northeast and 3.5 miles east, respectively.
MAMMALS			
American badger *Taxidea taxus*	CDFW: SSC Global Rank: G5 State Rank: S3	Uncommon permanent resident found throughout most of California except along northern coast; most abundant in drier open stages of most shrub, forest, and herbaceous habitats; require friable soils for burrowing.	**Present:** Project area supports suitable habitat; no individuals observed during focused surveys; however, several inactive burrows with distinct badger sign identified within project area.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Common Name *Scientific Name*	**Status[1]**	**Range and Habitat**	**Potential to Occur[2] and Comments**
California leaf-nosed bat *Macrotus californicus*	BLM: S DRECP: C CDFW: SSC Global Rank: G3G4 State Rank: S3	Typically roosts in deep mine tunnels, caves, and occasionally buildings or bridges; night roosts may occur in buildings, mines, bridges, rock shelters, or other sites with overhead protection;	**Not likely to occur (roosting) / Low (foraging):** Project area does not support suitable roosting habitat; however, roosting sites may occur in adjacent structures and foothills; may occur as an infrequent forager although no known records within 50 miles.
Desert bighorn sheep *Ovis canadensis nelsoni*	BLM: S DRECP: C CDFW: **FP** Global Rank: G4T3 State Rank: S3	Prefers areas with high visibility and avoids habitat with dense vegetation; often found in steep, rugged mountainous terrain; also uses canyon bottoms, alluvial fans, and sandy washes to forage and find water.	**Present:** Project area supports suitable habitat; well-documented Soda Mountain population may occur within and immediately adjacent to the project area.
Desert kit fox *Vulpes macrotis arsipus*	CDFW: Title 14 Global Rank: G4 State Rank: SNR	Uncommon to rare permanent resident that inhabits the Mojave and Colorado Deserts; primarily found in sparsely vegetated scrub habitat and closely associated with creosote scrub communities; require friable, well-drained soils for burrowing.	**Present:** Project area supports suitable habitat; one individual, several potential burrows, and recent sign observed during surveys.
Mountain lion – Southern California/Central Coast ESU *Puma concolor*	CESA: **SC-T** Global Rank: G5 State Rank: SNR	ESU boundary includes areas east of the Pacific Ocean, south of the San Francisco Bay Area and I-80, west of I-5 to the intersection of I-5 and SR-58 at Bowerbank / Buttonwillow, south of SR-58 to I-15, south of the I-15 from the SR-58 intersection to the California-Nevada border, and north of the California Mexico border; utilize expansive home ranges for breeding, foraging, and dispersal.	**Low:** Project area supports suitable habitat; may occur as an infrequent transient; nearest record located near Flynn approximately 25 miles to the southeast.
Pallid bat *Antrozous pallidus*	BLM: S DRECP: C CDFW: SSC Global Rank: G4	Roosting sites are variable and can include caves, rock crevices, mines, hollow trees, buildings; favors rocky outcrops and desert habitats.	**Low (roosting) / Moderate (foraging):** Project area does not support suitable roosting habitat; however, roosting sites may occur in adjacent structures and foothills; may occur as

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Common Name *Scientific Name*	**Status[1]**	**Range and Habitat**	**Potential to Occur[2] and Comments**
	State Rank: S3		an infrequent forager; nearest records located at Zzyzx approximately 3.5 miles to the east; not detected during focused acoustic surveys.
Southern California ringtail *Bassariscus astutus octovus*	CDFW: **FP** Global Rank: G5T3 State Rank: S3	Widely distributed common to uncommon permanent resident; occurs in various riparian habitats, and in brush stands of most forest and shrub habitats at low to middle elevations; nests in rock recesses, hollow trees, logs, snags, abandoned burrows, or woodrat nests; usually not found more than 0.6 mile from permanent water.	**Low:** Project area supports marginal habitat; suitable habitat may be present in adjacent hills where seeps and springs occur; may occur as an infrequent forager; nearest record located at Zzyzx approximately 3.5 miles to the east.
Townsend's big-eared bat *Corynorhinus townsendii*	BLM: S DRECP: C CDFW: SSC Global Rank: G4 State Rank: S2	Found throughout California but details of distribution not well known; requires caves, mines, tunnels, buildings, or other human-made structures for roosting; forages by gleaning from brush or trees or feeds along habitat edges.	**Low (roosting) / Moderate (foraging):** Project area does not support suitable roosting habitat; however, roosting sites may occur in adjacent structures and foothills; may occur as an infrequent forager; nearest records located at Zzyzx approximately 3.5 miles to the east; not detected during focused acoustic surveys.
Western mastiff bat *Eumops perotis californicus*	BLM: S CDFW: SSC Global Rank: G4G5T4 State Rank: S3S4	Primarily roosts in crevices often composed of exfoliating slabs of granite, sandstone slabs, cliff faces, or large boulders; forages in dry desert washes, flood plains, chaparral, oak woodlands, pine forests, grasslands, and agricultural fields.	**Not likely to occur (roosting) / Low (foraging):** Project area does not support suitable roosting habitat; however, roosting sites may occur in adjacent structures and foothills; may occur as an infrequent forager although no known records within 50 miles.

[1]FEDERAL STATUS DESIGNATIONS

ESA (Federal Endangered Species Act):
FT = Federally threatened
FP-T = Federally proposed as threatened

USFWS (U.S. Fish and Wildlife Service):
BGEPA = Bald and Golden Eagle Protection Act
BCC = Bird of Conservation Concern

[2]POTENTIAL TO OCCUR DEFINITIONS:

The definitions provided below are general parameters used to establish a baseline potential for each species to occur. These may be slightly altered due to survey results, professional experience, and/or coordination with the applicable resource agencies.

Present: Observed within or near project area during surveys.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Common Name *Scientific Name*	**Status[1]**	**Range and Habitat**	**Potential to Occur[2] and Comments**
BLM (Bureau of Land Management – Barstow Field Office): S = Sensitive *DRECP (Desert Renewable Energy Conservation Plan):* C = Covered species **STATE STATUS DESIGNATIONS** *CESA (California Endangered Species Act):* ST = State threatened SE = State endangered SC-E = State candidate for listing as endangered SC-T = State candidate for listing as threatened ŧ = recently petitioned for listing but final determination pending *CDFW (California Department of Fish and Wildlife)* FP = Fully protected species SSC = Species of special concern Title 14 = Title 14 species WL = Watch List species *NatureServe Global / State Ranks:* (G/S) 1 = Critically imperiled; at very high risk of extinction or elimination due to very restricted range, very few populations or occurrences, very steep declines, very severe threats, or other factors (G/S) 2 = Imperiled; at high risk of extinction or elimination due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors (G/S) 3 = Vulnerable; at moderate risk of extinction or elimination due to fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors (G/S) 4 = Apparently secure; at fairly low risk of extinction or elimination due to an extensive range and/or many populations			**High:** Suitable habitat is present; project area is within known geographic and elevation ranges of species; and recent (within 10 years) record(s) located within 10 miles of project area **Moderate:** Suitable habitat is present; project area is within known geographic and elevation ranges of species; and recent (within 10 years) record(s) located within 10 miles of project area OR typically suitable habitat is present; project area is within geographic and elevation ranges of species; and somewhat recent (within 20 years) record(s) located within 10 miles of project area **Low:** Typically or occasionally suitable habitat is present; project area is outside of known geographic and/or elevation ranges; and recent (within 10 years) record(s) located within 10 miles of project area OR typically or occasionally suitable habitat is present; project area is within known geographic and elevation ranges; and recent (within 10 years) or somewhat recent (within 20 years) located within 10 miles of project area **Not likely to occur:** Typically or occasionally suitable habitat is not present and/or the project area is outside of the known geographic and/or elevation ranges of the species; no known records located within 10 miles of project area.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Common Name *Scientific Name*	**Status[1]**	**Range and Habitat**	**Potential to Occur[2] and Comments**
or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors (G/S) 5 = Secure; at very low risk of extinction or elimination due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats SNR = State not ranked T = Subspecies/varieties receive a "T" rank attached to the "G" rank. With subspecies/varieties, the "G" rank reflects the condition of the entire species, whereas the "T" rank reflects the global situation of just the subspecies or variety.			

Sources: BLM 2015, BLM 2019, BLM 2023, CBI 2025, CDFW 2025a, CDFW 2025d, CDFW 2025e, eBird 2025, iNaturalist 2025, Nafis 2025, NPS 2025, RE 2025f, RE 2025s, RE 2025kkk, USFWS 2025a, USFWS 2025b

Special-Status Invertebrates

Crotch's bumble bee. Crotch's bumble bee does not have federal listing status but is currently designated as a candidate species under the California Endangered Species Act (CESA). As a candidate species, it receives the same protections as if it were listed as threatened or endangered until the California Fish and Game Commission issues a final determination on its status.

Once widespread in California's Central Valley, this species is now absent from much of its historic range. Its current range is estimated at approximately 55,600 square miles (144,000 square kilometers), with a nearly 98 percent decline in relative abundance over the past decade (Los Padres Forest Watch 2025). Ongoing threats to Crotch's bumble bee include habitat conversion, pesticide use, disease from managed bees, and other factors such as invasive species (Xerces 2018).

Crotch's bumble bee inhabits diverse environments, including grasslands, shrublands, chaparral, desert margins, and semi-urban areas. As generalists, the species utilizes a wide range of plants for nectar, including, but not limited to, members of the genera *Antirrhinum*, *Asclepias*, Chaenactis, *Clarkia*, *Dendromecon*, Eschscholzia, *Eriogonum*, *Lupinus*, *Medicago*, *Phacelia*, and *Salvia* (Xerces 2018). Nests are typically found in small underground burrows, but also occur in abandoned rodent and bird nests, rock piles, tufts of grass, and cavities of dead trees.

Although potentially suitable foraging and nesting habitat was determined to be present within the project area, no foraging individuals or nests of Crotch's bumble bee or other *Bombus* species were encountered during any of the four focused surveys. However, two potential *Bombus* individuals were incidentally observed within approximately 0.5 mile of the project area during nighttime acoustic bat surveys, but the species could not be confirmed. There are no known records of Crotch's bumble bee within 10 miles of the project area. Therefore, there is a low potential for this species to occur.

Monarch butterfly. Originally native to North America, the monarch butterfly has dispersed to other parts of the world and non-migratory populations are found from islands in the Pacific Ocean to the western edge of Europe (USFWS 2025d). North American migratory monarch butterflies are divided into eastern and western populations with the western population generally found west of the Rocky Mountains. This population can migrate annually up to 300 to 1,000 miles (USFWS 2025d). There are also non-migratory monarchs that remain year-round at the southern end of their breeding range in parts of Florida, the Gulf Coast, and California. The primary threats to North American migratory populations include the loss and degradation of breeding, migratory, and overwintering habitat from past conversion of grasslands and shrublands to agriculture and urban development, exposure to pesticides, and effects of climate change (CBD 2025).

Each fall, monarch butterflies go into diapause, a suspended state of reproduction, and begin their long migration to overwintering sites which consist of hundreds of tree

groves along the California coast down into northern Baja California. Flowering plants and milkweed plants are essential in monarch butterfly habitat. Adult monarchs require the nectar from a variety of flowering plants while foraging during breeding and migration. Eggs are deposited on milkweed plants (*Asclepias* spp.) which are the sole resource that caterpillars consume.

The project area does not support suitable tree groves and is outside the known overwintering range for the species. Plants, including desert milkweed (*A. erosa*) and rush milkweed (*A. subulate*) that could support potential larvae sites were identified within the project area during various surveys. However, monarch butterflies rarely breed in the Mojave Desert. Scientific surveys conducted by Grodsky et al. (2020) in the Ivanpah Valley, approximately 100 miles north of the project area, examined use of butterflies on Mojave milkweed (*A. nyctaginifolia*). During spring sampling, no monarch eggs or larvae were found within the sample area while queen butterfly (*Danaus gilippus*) laid 276 eggs on the same plants. This suggests that monarchs do not typically use Mojave Desert habitats for oviposition, likely due to extreme aridity, limited milkweed availability, and seasonal conditions unfavorable for larval development. Nonetheless, recent records of the species have been documented at Zzyzx and Baker, less than 10 miles from the project area. It is likely that these records consist of migrant individuals passing through the region to more suitable breeding or overwintering grounds. Therefore, there is a low potential for monarch butterfly to occur as a migrant in the project area; however, this species is not expected to overwinter or breed.

Special-Status Fish

The project area does not support suitable habitat for special-status fish, and none are expected to occur.

Special-Status Amphibians

The project area does not support suitable habitat for special-status amphibians, and none are expected to occur.

Special-Status Reptiles

Desert tortoise. The Mojave desert tortoise population includes animals living north and west of the Colorado River in the Mojave Desert of California, Nevada, Arizona, and southwest Utah, and in the Sonoran (Colorado) Desert in California (USFWS 1994). Typical habitat for the desert tortoise in the Mojave Desert has been characterized as creosote bush scrub below 5,500 feet, where precipitation ranges from 2 to 8 inches, the diversity of perennial plants is relatively high, and production of ephemeral plants is high. Throughout most of the Mojave Desert, tortoises occur most commonly on gently sloping terrain with sandy-gravel soils and where there is a sparse cover of low-growing shrubs. Soils must be friable enough for digging burrows, but firm enough so that burrows do not collapse.

This species spends much of its life in burrows, even during seasons of higher activity. In late winter or early spring, individuals emerge from overwintering burrows and typically remain active through fall. Activity decreases in summer, but tortoises often emerge after summer rainstorms. Mating occurs during spring, summer, and fall (Rostal et al. 1994). The number of eggs (1 to 10) as well as the number of clutches (set of eggs laid at a single time) (0 to 3) that a female can produce in a season is dependent on a variety of factors, including environment, habitat, availability of forage and drinking water, and physiological conditions (Mueller et al. 1998; McLuckie et al. 2002). Hatchlings emerge at about 2 inches in length. During activity periods, desert tortoises eat a wide variety of herbaceous vegetation, particularly grasses and the flowers of annual plants.

Surveys for desert tortoise conducted for the original project in 2009 and 2012 identified suitable habitat, burrows, carcasses, and scat; however, no live individuals were observed. Recent protocol-level surveys, completed in 2023 to support the opt-in application, produced similar results with no live tortoises being detected but suitable burrows and fresh sign recorded. Across the project area, 182 features were identified as potential tortoise burrows, meaning they had been originally excavated by desert tortoise, whether or not they were currently suitable for occupancy (see **Figure 5.2-4**). The eastern and northeastern portions of the project area supported the highest concentration of burrows, likely due to less rocky substrates. Fresh scat (less than 1 day old) from a subadult was found within the northeast corner of the project area. The scat was classified as recent due to the retention of dark coloration and moisture and its intact structure. An additional scat (less than 1 month old) from a juvenile tortoise was observed in the northwestern portion of the project area. Therefore, desert tortoise is considered present within the project area at low densities.

Mojave fringe-toed lizard. Mojave fringe-toed lizard is patchily distributed throughout much of the Mojave Desert in California. The range extends from near the southern end of Death Valley at the Inyo-San Bernardino County line south through San Bernardino and Riverside Counties, extending west narrowly into Los Angeles County (Stebbins 2003). This species lives exclusively on loose, fine wind-blown sand, particularly aeolian deposits and the immediate surroundings and captures of individuals more than 150 feet from this environment have not been documented (USFWS 2011). Habitat where individuals are found in the highest abundance generally consists of relatively sparse creosote scrub on loose sand dunes. Mojave fringe-toed lizards are not present in areas where the sand becomes too firmly packed to allow for sand swimming, and washes and desert flats are generally unsuitable. Some vegetation is required for food and shade. Adult lizards overwinter in the sand between November and February, then become active on the surface throughout the day as temperatures allow (Norris 1958; USFWS 2011). This species has a generalized diet that includes a variety of beetles, ants, wasps, flies, and other small arthropods, as well as plant leaves and seeds (Stebbins 1944).

The project area was previously surveyed for the species in 2009 and 2012 and approximately 5.82 acres of suitable habitat overlapping the southeastern portion of the previously proposed project boundary was identified (RE 2025f). No Mojave fringe-toed lizards were observed within that project boundary during the surveys, but a total of 26 lizards were documented with the closest observation located approximately 1,000 feet from the southwest project boundary. However, the 5.82 acres of previously defined suitable habitat is no longer within the current project area. During the most recent surveys conducted by the applicant in 2023, a total of 5 Mojave fringe-toed lizards were observed within a sandy wash outside of the southern portion of the project area, with the nearest observation occurring approximately 1,000 feet south of the project area. This result is consistent with the previous 2009 and 2012 results for that area. Suitable habitat for the species occurs within the southeastern portion of the current project area footprint. These isolated and semi-stabilized sand fields provide potential refuge areas during periodic foraging periods or during dispersal. Therefore, there is a moderate potential for Mojave fringe-toed lizard to occur within or adjacent to the project area.

Special-Status Birds

American white pelican. American white pelican is among North America's largest waterbirds, with a breeding range concentrated in the interior regions of the continent, extending from the Canadian prairies south through the Intermountain West to northeastern California and western Nevada (Knopf and Evans 2004). Wintering populations occur along the Pacific coast and inland lowlands from central California and southern Arizona south through Baja California and western Mexico (Knopf and Evans 2004). In California, the species formerly bred widely but now nests primarily at Lower Klamath and Clear Lake National Wildlife Refuges in the Klamath Basin (Shuford and Gardali 2008a). Breeding occurs from April to August, while migrants are common statewide during spring and fall and wintering birds are locally common on coastal bays and inland lakes (Shuford and Gardali 2008a). Occurrences in the Mojave Desert are rare and typically limited to migration stopovers at large water bodies (Shuford and Gardali 2008a). The species nests colonially on isolated islands in large freshwater or saline lakes, constructing shallow depressions lined with vegetation. The diet consists almost entirely of fish captured by cooperative foraging in shallow waters (Knopf and Evans 2004).

American white pelican was not observed during any of the 2023 or 2025 surveys conducted by the applicant. The project area is outside the known breeding range for the species and does not support suitable breeding or foraging habitat. There are several recent records for the species within 10 miles of the project area (eBird 2025). However, these are located around the areas of Baker and Zzyzx and associated with water impoundments that are not present within the project area. Therefore, American white pelicans are not expected to nest or forage within or adjacent to the project area but have a low potential to infrequently occur during seasonal migration periods.

Bank swallow. Bank swallow is a small, colonial nesting passerine with one of the broadest ranges among birds. In North America, it breeds from Alaska and Canada south through much of the northern United States and winters primarily in Central and South America (Garrison 1989). In California, the species is now largely restricted to the northern Central Valley, where most colonies occur along the Sacramento and Feather Rivers, with smaller concentrations in the Klamath Basin and Modoc County. It Is extirpated as a breeder from southern California (CDFW 1989). During migration, the species occurs statewide in open habitats but is uncommon on the coast and deserts, with occurrences in the Mojave Desert extremely rare and limited to migration periods due to a lack of suitable nesting habitat (Garrison 1999). Bank swallows excavate burrows in vertical banks of friable soils near water, forming colonies that may contain dozens to thousands of pairs. The species feeds almost exclusively on flying insects captured in flight over riparian areas, wetlands, and open fields (Garrison 1999).

Bank swallow was not observed during any of the 2023 or 2025 surveys conducted by the applicant. The project area is outside the known breeding range for the species and does not support suitable breeding or foraging habitat. There are recent records for the species within 10 miles of the project area (eBird 2025; iNaturalist 2025). However, these are located around the areas of Baker and Zzyzx and associated with water impoundments that are not present within the project area. Therefore, bank swallows are not expected to nest or forage within or adjacent to the project area but have a low potential to infrequently occur during seasonal migration periods.

Bendire's thrasher. Bendire's thrasher is a medium-sized songbird of arid desert habitats, characterized by a relatively short, slightly curved bill and grayish-brown plumage adapted for camouflage in open scrub (Audubon 2025b). Its overall range extends from southern Nevada, Utah, and Colorado south through southeastern California, Arizona, and western New Mexico into northwestern Mexico (England and Laudenslayer 1993; Shuford and Gardali 2008b). In California, the species is primarily a summer resident in the Mojave Desert, occurring from March to late August, with breeding documented from late March through July. Most individuals leave the state by mid-August (England and Laudenslayer 1993). Historically, Bendire's thrasher was considered a fairly common but very local summer resident in the Mojave Desert, with breeding populations concentrated to the east and scattered sites near Joshua Tree National Park (Shuford and Gardali 2008b). Current breeding distribution remains patchy and localized. Preferred habitat consists of desert scrub dominated by Joshua trees, Mojave yucca (*Yucca schidigera*), cholla cactus (*Opuntia* spp.), and other succulents, often with open ground for foraging (England and Laudenslayer 1993). Occurrences in the Mojave Desert are strongly linked to these habitats and population numbers appear to fluctuate annually in response to climatic conditions such as rainfall (England and Laudenslayer 1993). Nests are bulky structures of twigs placed in shrubs or low trees, often yucca or cholla. Bendire's thrashers primarily forage on the ground, feeding on insects, spiders, and occasionally small fruits (Audubon 2025b).

Bendire's thrasher was not observed during any of the 2023 or 2025 surveys conducted by the applicant. However, the project area is within the known breeding range of the species and supports suitable nesting and foraging habitat. Although there are no known records within 10 miles of the project area, there are several scattered occurrences throughout the general region, particularly concentrated within the Mojave National Preserve to the east (eBird 2025). Therefore, there is a moderate potential for Bendire's thrasher to nest, forage, and migrate within the project area.

Black tern. The black tern is a small, dark marsh tern that breeds across much of southern Canada and the northern United States, from Oregon east to the Great Lakes, with its southernmost breeding range extending into northern California and Colorado (Audubon 2025c). It winters primarily along tropical coastlines of Central and South America, often near estuaries and lagoons (Audubon 2025c). In California, black terns breed locally in northeastern regions, including the Klamath Basin and Modoc Plateau, and formerly nested in the Central Valley. They are now largely absent from southern California (Zeiner et al. 1988a; Audubon 2024c). The species is present in California from May through August for breeding and departs in late summer for wintering grounds. During migration, individuals occur statewide at wetlands and large lakes but are rare in desert regions, including the Mojave Desert, where occurrences are limited to transient stopovers at suitable water bodies (Zeiner et al. 1988a). Black terns' nest in loose colonies within shallow freshwater marshes dominated by emergent vegetation. The species primarily feeds on insects during the breeding season, captured in flight over wetlands, and supplements its diet with small fish during migration and winter (Cornell Lab of Ornithology 2025a).

Black tern was not observed during any of the 2023 or 2025 surveys conducted by the applicant. The project area is outside the known breeding range for the species and does not support suitable breeding or foraging habitat. There are recent records for the species within 10 miles of the project area (eBird 2025). However, these are located around the areas of Baker and Zzyzx and associated with water impoundments that are not present within the project area. Therefore, black terns are not expected to nest or forage within or adjacent to the project area but have a low potential to infrequently occur during seasonal migration periods.

Common loon. The common loon is a large, diving waterbird that breeds primarily on freshwater lakes across northern North America, including Alaska, Canada, and the northern tier of the United States, and winters along coastal marine waters and large inland reservoirs (Cornell Lab of Ornithology 2025b). In California, the species does not breed but occurs widely as a winter visitor and migrant, primarily along the coast and on large inland lakes and reservoirs (Zeiner et al. 1988b). It is most numerous from October through April, with peak abundance in winter. Spring and fall migration periods bring individuals to inland waters statewide. Occurrences in the Mojave Desert are rare and generally limited to large reservoirs such as Lake Mead or Lake Mohave during migration or winter (Zeiner et al. 1988b). Nesting only occurs in the breeding range, where pairs establish territories on clear lakes with islands or sheltered shorelines. The

species forages by pursuit diving, feeding mainly on fish, supplemented by crustaceans and other aquatic prey.

Common loon was not observed during any of the 2023 or 2025 surveys conducted by the applicant. The project area is outside the known breeding range for the species and does not support suitable breeding or foraging habitat. There are recent records for the species within 10 miles of the project area (eBird 2025; iNaturalist 2025). However, these are located around the areas of Baker and Zzyzx and associated with water impoundments that are not present within the project area. Therefore, common loons are not expected to nest or forage within or adjacent to the project area but have a low potential to infrequently occur during seasonal migration periods.

Crissal thrasher. Crissal thrashers are large, ground-dwelling songbirds found primarily in desert riparian habitats of the southwestern United States and northwestern Mexico. The overall range of the species extends from southeastern California east through southern Nevada, southwestern Utah, northern Arizona, and southwestern New Mexico to western Texas, and south into central Mexico and northeastern Baja California (Shuford and Gardali 2008c). In California, the species is restricted to desert washes and riparian thickets in the Mojave and Colorado Deserts, with the greatest abundance along the Colorado River and scattered occurrences westward into the Imperial and Coachella Valleys and north to the Providence Mountains (Shuford and Gardali 2008c). The Crissal thrasher is a year-round resident in California, breeding primarily from February through late July (Cody 2020). It occupies dense vegetation in desert washes, mesquite thickets, and riparian corridors. Occurrences in the Mojave Desert are localized to suitable riparian habitats and are generally uncommon away from major desert drainages (Shuford and Gardali 2008c). Nests are built in dense shrubs, typically 3 to 8 feet above the ground, and constructed of twigs lined with finer vegetation. This species forages on the ground, probing leaf litter with its long, decurved bill for insects, spiders, seeds, and fruits.

Crissal thrasher was not observed during any of the 2023 or 2025 surveys conducted by the applicant. Although the project area is within the known breeding range of the species, only marginal nesting habitat is available. Therefore, there is a low potential for Crissal thrasher to nest within or adjacent to the project area. The project area does support suitable foraging habitat and there are several scattered records of the species in the general region (eBird 2025). Therefore, there is a moderate potential for Crissal thrasher to forage within or adjacent to the project area.

Golden eagle. Golden eagles are found worldwide and are known to nest in the Mojave Desert. Breeding occurs between late January and August, peaking in March through July. Nests are constructed on cliffs or in the largest trees of forested stands that often afford an unobstructed view of the surrounding habitat. This species typically avoids nesting near urban habitats and may abandon nests in early incubation if disturbed (Zeiner et al. 1988c). Old nests are frequently reused, and alternative nest sites are maintained. Foraging requires open terrain and grasslands, deserts, savannahs, and early successional stages of shrub and forest habitats are most often

used. Golden eagles are aerial predators but will hunt by both flying and while perched. Small mammals, such as rabbits, hares, and ground squirrels, are their preferred prey, but they may also hunt reptiles, birds, and other small mammals (Zeiner et al. 1988c). They are also known to scavenge and consume carrion.

Golden eagle was not observed during any of the 2023 or 2025 surveys conducted by the applicant. Although the project area is within the known breeding range of the species, it does not support suitable breeding habitat. Therefore, golden eagles are not expected to nest within or adjacent to the project area. Suitable foraging habitat is present throughout the general region and there are several scattered records located within 10 miles of the project area with the nearest occurring along I-15 approximately 5.2 miles to the northeast (CDFW 2025a; eBird 2025). Therefore, there is a moderate potential for golden eagle to forage within and adjacent to the project area.

Grasshopper sparrow. The grasshopper sparrow is a small, secretive songbird of open grasslands, breeding across much of North America from southern Canada to the central and eastern United States, with disjunct populations extending south to parts of Mexico and Central America (Vickery 1996). In California, it is an uncommon and local summer resident and breeder in foothills and lowlands west of the Cascade-Sierra Nevada Crest, from Mendocino and Trinity Counties south to San Diego County (Dobkin et al. 2008). It occupies dry, dense grasslands with a mix of grasses and forbs and scattered shrubs for singing perches. The species is partly migratory with most individuals departing by September, and winter status in California poorly understood, though it appears to occur rarely and irregularly, mostly along the southern coastal slope (Grinnell and Miller 1944; Unitt 2004). Occurrences in the Mojave Desert are extremely rare and limited to migration periods, as suitable grassland habitat is largely absent (Dobkin et al. 2008). Nests are constructed on the ground in a slight depression, concealed at the base of overhanging grasses or forbs.

Grasshopper sparrow was not observed during any of the 2023 or 2025 surveys conducted by the applicant. The project area is outside the known breeding range for the species and does not support suitable breeding or foraging habitat. There are recent records within 10 miles of the project area (eBird 2025; iNaturalist 2025). However, these are located around the areas of Baker and Zzyzx and associated with areas of more suitable habitat for the species. Therefore, grasshopper sparrows are not expected to nest or forage within or adjacent to the project area but have a low potential to infrequently occur during seasonal migration periods.

Le Conte's thrasher. Le Conte's thrashers are year-round residents within their range, which includes some of the hottest and driest habitats in the southwestern United States and northwestern Mexico. The primary range includes the deserts of southeastern California, southern Nevada, extreme southwestern Utah south into southwestern Arizona, northeastern Baja California, and northwestern Sonora, Mexico (AOU 1998). Le Conte's thrashers occur primarily in open desert wash, desert scrub, alkali desert scrub, desert succulent, and Joshua tree woodland habitats. The breeding season extends from late January into early June with a peak from mid-March to mid-

April. Nests are commonly located in dense, spiny shrubs or densely branched cacti. Most foraging occurs on the ground surface or by probing and digging for terrestrial arthropods, small vertebrates, and seeds (Sheppard 1970).

Le Conte's thrasher was not observed during any of the 2023 or 2025 surveys conducted by the applicant. The project area supports suitable nesting and foraging habitat and there are records located within 5 miles (CNDDB 2025; eBird 2025). Therefore, there is a moderate potential for the species to nest and forage within and adjacent to the project area.

Loggerhead shrike. Loggerhead shrikes breed widely throughout the United States except portions of the northwest, northeast, and at higher elevations. This species is present year-round throughout most of its California range. Shrikes are generally more numerous in the southern deserts than toward the southern coast and are relatively common in the Mojave Desert (Shuford and Gardali 2008). In southern California, loggerhead shrikes breed from as early as January or February to July (Unitt 2004). Breeding in the southeast deserts occurs primarily in desert scrub, sparse riparian woodland, and occasionally in rural and agricultural hedgerows (Rosenberg et al. 1991). Nests are placed in shrubs or trees at variable heights above ground, generally between 3 to 6 feet. Tall structures, including vegetation, fences, or power lines, are required for hunting perches as well as cache sites for impaling, manipulating, or storing prey. The diet varies seasonally and includes arthropods, reptiles, amphibians, small rodents, and birds (Craig 1978; Yosef 1996).

Several loggerhead shrike individuals were observed within the project area during the spring avian use survey conducted by the applicant, and an individual was also incidentally observed southeast of Rasor Road in the eastern portion of the project area during 2023 surveys (RE 2025f, RE 2025s). Although no active nests or cache sites were documented during surveys, the project area supports suitable breeding and foraging habitat for the species. Therefore, it is assumed that loggerhead shrike are present as breeding and foraging individuals within and adjacent to the project area.

Lucy's warbler. Lucy's warbler is a small, pale gray warbler with a breeding range restricted to the arid southwestern United State, including Arizona, southern New Mexico, southwestern Texas, extreme southern Nevada and Utah, and southeastern California, as well as adjacent northern Mexico (Dunn and Garrett 1997; Shuford and Gardali 2008). Within California, the species breeds in very limited areas of the Mojave and Colorado Deserts, primarily along the lower Colorado River and in mesquite bosques and riparian washes (Shuford and Gardali 2008). Lucy's warbler is a neotropical migrant, arriving in California in early to mid-March and breeding from mid-April through early July. Most individuals depart by late summer, with rare occurrences as fall or winter vagrants (Garrett and Dunn 1981; Shuford and Gardali 2008). Occurrences in the Mojave Desert are tied to breeding habitat availability and are highly localized to riparian corridors with mesquite or cottonwood trees (Shuford and Gardali 2008). This species nests in tree cavities such as old woodpecker holes, cracks behind

bark, or abandoned verdin nests. They forage within stands of desert trees, gleaning insects from foliage and buds.

Lucy's warbler was not observed during any of the 2023 or 2025 surveys conducted by the applicant. Although the project area is within the known breeding range of the species, only marginal nesting and foraging habitat is available. There are recent records within 10 miles of the project area (eBird 2025). Therefore, there is a low potential for Lucy's warbler to nest or forage within the project area, but a moderate potential that this species could occur during seasonal migration periods.

Northern harrier. Northern harriers breed widely but locally in North America from northern Alaska and Canada south to middle and lower latitudes of the United States and northern Baja California. This species occurs year-round within its breeding range in California with some breeding populations being resident. Most of the breeding within the state occurs in wetlands and other reserves, agricultural fields, and pastures of the Central Valley. Suitable habitats in the southern deserts of California are extremely limited with the center of abundance located within northern Los Angeles County (Shuford and Gardali 2008). The northern harrier breeding season extends from March through August; however, this species occurs more broadly and in much greater numbers during migration and winter than during the breeding season (Loughman and McLandress 1994). Northern harriers breed and forage in a variety of open treeless habitats that provide adequate vegetative cover, an abundance of suitable prey, and scattered hunting and lookout perches, such as shrubs and fence posts. In California, these habitats include freshwater marshes, wet meadows, weedy borders of lakes, rivers and streams, grasslands, weed fields, pastures, croplands, sagebrush flats, and desert sinks (MacWhirter and Bildstein 1996). This species occurs regularly in the Mojave Desert during winter and migration, primarily in open flats and desert washes with sparse vegetation; however, breeding in the Mojave Desert is rare and generally limited to areas with extensive marsh or grassland habitat (Garrett and Dunn 1981). Nests are constructed on the ground, mostly within patches of dense, often tall, vegetation in undisturbed areas. This species feeds on a broad variety of small- to medium-sized vertebrates, primarily rodents and passerine birds.

Northern harrier was not observed during any of the 2023 or 2025 surveys conducted by the applicant. Although the project area is within the known breeding range for the species, breeding in the Mojave Desert is rare and associated with highly suitable habitat that is lacking within the project area. The project area does support suitable foraging habitat and there are recent records located along Zzyzx Road less than 3 miles to the east (eBird 2025; iNaturalist 2025). Therefore, northern harriers are not expected to nest, but there is a moderate potential that the species could forage within or adjacent to the project area or occur during seasonal migration periods.

Olive-sided flycatcher. Olive-sided flycatcher is a large, robust tyrant flycatcher that breeds across boreal and montane coniferous forests from Alaska and Canada south through the western United States to Baja California and locally in the Rocky Mountains to Arizona and New Mexico (Altman and Sallabanks 2000). Wintering occurs primarily in

Panama and the Andes of South America, with some individuals in southern Mexico and Central America (Altman and Sallabanks 2000). In California, the species is a summer resident and migrant, occurring mainly from mid-April through early October, with breeding from early May to late August (Bent 1942; Shuford and Gardali 2008). Current breeding in the state is primarily limited to montane forests of the Sierra Nevada, Cascade Range, and Klamath Mountains, and locally in coastal ranges. It is absent from lowland areas except as a migrant (Grinnell and Miller 1944; Shuford and Gardali 2008). Occurrences in the Mojave Desert are rare and limited to migration periods, as suitable breeding habitat is absent. Nests are placed high in conifer trees, often near forest openings or burns. Olive-sided flycatchers forage by sallying from high, exposed perches to capture flying insects, primarily bees and wasps.

Olive-sided flycatchers were not observed during any of the 2023 or 2025 surveys conducted by the applicant. The project area is outside of the known breeding range for the species and does not support suitable breeding or foraging habitat. There are recent records within 10 miles of the project area (eBird 2025). However, these appear to be associated with water impoundments around Baker and Zzyzx and the project area lacks similar features. Therefore, olive-sided flycatchers are not expected to nest or forage within or adjacent to the project area, but there is a low potential of occurrence during seasonal migration periods.

Purple martin. Purple martin is the largest North American swallow. Its breeding range extends across much of the United States and southern Canada, with western populations occurring from British Columbia south through California and east to the Rocky Mountains (Brown 1997). Wintering occurs primarily in South America, especially Brazil, with migration through Central America and Mexico (Brown 1997). In California, the species breeds locally in the northern Sierra Nevada foothills, Cascade Range, and Klamath Mountains, as well as in parts of the Coast Ranges from Mendocino County south to Santa Cruz County. It is absent from southern California except as a rare migrant (Shuford and Gardali 2008). Occurrences in the Mojave Desert are rare and limited to migration periods, as suitable nesting habitat is absent (Garrett and Dunn 1981; Shuford and Gardali 2008). Western populations typically nest in natural cavities such as old woodpecker holes in snags, often in burned or open forest habitats. Purple martins forage aerially, capturing flying insects over open areas, often near water or forest edges.

Purple martin was not observed during any of the 2023 or 2025 surveys conducted by the applicant. The project area is outside the known breeding range and does not support suitable breeding or foraging habitat. There are recent records within 10 miles of the project area (eBird 2025; iNaturalist 2025). However, these appear to be associated with water impoundments around Baker and Zzyzx and similar features are lacking within the project area. Therefore, purple martins are not expected to nest or forage within or adjacent to the project area, but there is a low potential of occurrence during seasonal migration periods.

Redhead. The redhead is a medium-sized diving duck with a breeding range extending across the prairie pothole region of south-central Canada and the north-central United States, with small populations in the Intermountain West and locally in California (Bellrose 1980; Baldassarre 2014). Wintering occurs primarily along the Gulf Coast, southern Atlantic coast, and in Mexico, with significant numbers also wintering in California and other western states (Bellrose 1980). In California, this species breeds locally in northeastern regions, including the Klamath Basin and Modoc Plateau (Shuford and Gardali 2008). It is a common winter visitor to the Central Valley, coastal estuaries, and large inland lakes and reservoirs, arriving in late September and departing by April. Occurrences in the Mojave Desert are rare and generally limited to migration or wintering at large water bodies such as the Salton Sea or Colorado River corridor (Garrett and Dunn 1981). Nests are either built or parasitized in dense emergent vegetation over water. Redheads forage by diving and dabbling in shallow waters, feeding primarily on submerged aquatic vegetation, seeds, and invertebrates.

Redhead was not observed during any of the 2023 or 2025 surveys conducted by the applicant. The project area is outside the known breeding range for the species and does not support suitable breeding or foraging habitat. There are recent records for the species within 10 miles of the project area (iNaturalist 2025). However, these are associated with water impoundments around Baker and Zzyzx and similar features are lacking within the project area. Therefore, redheads are not expected to nest or forage within or adjacent to the project area, but there is a low potential of occurrence during seasonal migration periods.

Summer tanager. The summer tanager is a medium-sized songbird. Its breeding range extends across the southern United States from California to east to the Atlantic coast and south into northern Mexico, with northern limits reaching the Midwest (Robinson 1996). Wintering occurs primarily in Mexico, Central America, and northern South America (Robinson 1996). In California, summer tanagers are rare and local breeders in riparian woodlands of the southeastern deserts, particularly along the lower Colorado River and in mesquite bosques of the Imperial Valley (Garrett and Dunn 1981). This species is a regular spring and fall migrant in desert regions and occasionally elsewhere in southern California. Most individuals arrive in late April and depart by September and winter records are exceptional (Garrett and Dunn 1981). Occurrences in the Mojave Desert are limited to migration stopovers and rare breeding attempts in riparian corridors (Shuford and Gardali 2008). Nests are constructed in horizontal forks of tree branches, typically in cottonwoods or willows. Summer tanagers typically forage on insects, especially bees and wasps, which they capture by sallying from perches and often kill by rubbing against branches to remove stingers. They also consume fruits during migration and on wintering grounds.

Summer tanagers were not observed during any of the 2023 or 2025 surveys conducted by the applicant. The project area does not support suitable nesting or foraging habitat for the species. There are recent records located within 10 miles of the project area (eBird 2025; iNaturalist 2025). However, these are located around the areas of Baker

and Zzyzx and associated with water impoundments and the project area lacks similar features. Therefore, summer tanagers are not expected to nest or forage within or adjacent to the project area but have a low potential to infrequently occur during seasonal migration periods.

Swainson's hawk. Swainson's hawks breed in the western United States and Canada while the wintering range occurs in isolated areas of California, Mexico, and Central America, through South America and as far south as Argentina (Bechard et al. 2010; Kochert et al. 2011). In California, this species is an uncommon breeding resident and migrant in the Central Valley, Klamath Basin, Northeastern Plateau, Lassen County, and the Mojave Desert, although breeding pairs within the Mojave Desert are concentrated within the Antelope Valley to the west of the project area. Breeding occurs from late March to late August with peak activity in late May through July. Suitable breeding habitat typically includes trees within mature open riparian forests or corridors, lone oak trees and oak groves, and mature roadside trees in sparsely vegetated flatlands. In the Mojave Desert, Joshua trees, ornamental trees, and lone trees along roadsides or on private property are commonly used as nesting sites (Bloom 1980). Large open areas of suitable foraging habitat with abundant and available prey base in association with suitable nesting habitat are basic requirements for successful reproduction (Estep 2009).

Swainson's hawk was not observed during any of the 2023 or 2025 surveys conducted by the applicant. The project area is outside of the known breeding range for the species and does not support suitable breeding habitat. However, the project area does support suitable foraging habitat and there are several scattered records within 10 miles (eBird 2025; iNaturalist 2025). Therefore, Swainson's hawks are not expected to nest within or adjacent to the project area but have a moderate potential to forage or occur during seasonal migration periods.

Tricolored blackbird. Tricolored blackbirds form the largest breeding colonies of any North American landbird (Cook and Toft 2005). Except for small nesting colonies found locally in Oregon, Washington, Nevada, and coastal Baja California, this species is native to California where it is a permanent resident. Tricolored blackbirds are rare in the Mojave Desert, with occasional records during migration or winter, but breeding is not documented due to a lack of suitable habitat (Garrett and Dunn 1981). Wintering populations move extensively throughout their range in the nonbreeding season. The basic requirements for selecting breeding sites include open accessible water; a protected nesting substrate, including either flooded or thorny or spiny vegetation; and a suitable foraging space providing adequate insect prey within a few kilometers of the nesting colony (Beedy and Hamilton 1999). This species usually breeds between mid-April into late July. Wintering birds often congregate in huge, mixed-species blackbird flocks in grasslands and agricultural fields with low-growing vegetation. Tricolored blackbirds forage primarily on seeds and insects, often in agricultural fields during the non-breeding season.

Tricolored blackbird was not observed during any of the 2023 or 2025 surveys conducted by the applicant. The project area is outside the known breeding range for the species and does not support suitable breeding or foraging habitat. There are recent records within 10 miles of the project area (eBird 2025; iNaturalist 2025). However, these are located around Zzyzx and associated with water impoundments. The project area lacks similar features. Therefore, tricolored blackbirds are not expected to nest or forage within or adjacent to the project area, but there is a low potential of occurrence during seasonal migration periods.

Vaux's swift. Vaux's swifts are small, cigar-shaped aerial insectivores with long, narrow wings and a short tail adapted for continuous flight. This species breeds from southeastern Alaska and British Columbia south through the western United States into central California and locally in mountains of Mexico (Bull and Collins 1993). Wintering primarily occurs in southern Mexico and Central America (Bull and Collins 1993). In California, individuals breed locally in mature coniferous forests of the Coast Ranges, Cascade Range, and Sierra Nevada, where large hollow trees provide nesting sites. Vaux's swifts are absent from lowland areas of the state except during migration (Shuford and Gardali 2008). Occurrences in the Mojave Desert are rare and limited to migration periods, as suitable nesting habitat is absent (Garrett and Dunn 1981; Shuford and Gardali 2008). Vaux's swifts forage exclusively on flying insects captured in continuous flight, often high above forest canopies or openings.

Vaux's swift was not observed during any of the 2023 or 2025 surveys conducted by the applicant. The project area is outside the known breeding range for the species and does not support suitable nesting or foraging habitat. There are several scattered records within 10 miles of the project area (eBird 2025; iNaturalist 2025). Therefore, Vaux's swifts are not expected to nest or forage within or adjacent to the project area, but there is a low potential of occurrence during seasonal migration periods.

Vermilion flycatcher. The vermilion flycatcher is a small tyrant flycatcher that breeds from the southwestern United States through Mexico and Central America into South America, with northern limits in southern California, Arizona, New Mexico, and Texas (Wolf and Jones 2000). Wintering occurs mainly in Mexico and Central America, though some individuals remain year-round in the southern United States (Wolf and Jones 2000). In California, the species is a rare and local breeder in riparian and desert habitats of the southeastern deserts, particularly along the lower Colorado River and in the Imperial Valley (Garrett and Dunn 1981). It is a regular migrant and winter visitor in these areas and occasionally elsewhere in southern California. Most individuals arrive in March and depart by October, though some overwinter in suitable habitats. Occurrences in the Mojave Desert are limited to migration stopovers and rare breeding attempts in riparian corridors (Garret and Dunn 1981). Nests are built in horizontal forks of trees, typically cottonwoods or mesquite. Vermilion flycatchers forage by sallying from low perches to capture flying insects, often returning to the same perch.

Vermilion flycatcher was not observed during any of the 2023 or 2025 surveys conducted by the applicant. The project area does not support suitable nesting or

foraging habitat for the species. There are recent records within 10 miles of the project area (eBird 2025; iNaturalist 2025). However, these are located around Baker and Zzyzx and associated with water impoundments. The project area lacks similar features. Therefore, Vermilion flycatchers are not expected to nest or forage within or adjacent to the project area, but there is a low potential of occurrence during seasonal migration periods.

Western burrowing owl. Western burrowing owls range from the Mississippi River to the Pacific Ocean, north into Canada, and south to Mexico and western Panama. In California, they are found throughout the Central Valley and in the northeastern and southern parts of the state. Most burrowing owls in California are year-round residents but some may move away from breeding grounds during the nonbreeding season (Shuford and Gardali 2008). This species uses a variety of arid and semi-arid habitats, with well-drained, level to gently sloping topography (Haug et al. 1993; Dechant et al. 1999). Primary habitat requirements include the presence of suitable burrows for nesting and roosting and vegetation structure that is relatively short and sparse. Burrows used in California are usually excavated by California ground squirrels, but in southern deserts owls may use desert tortoise or mid-sized mammal burrows (Conway 2018). This species breeds between February and August and owls may change burrows several times during the breeding season. Individuals are most active at night but hunting activities have been observed over 24 hours (Coulombe 1971; Marti 1974). Open fields or grasslands are required to access abundant prey resources which primarily include large insects and small rodents; however, a wide variety of other prey items will be opportunistically consumed (Thomsen 1971).

One western burrowing owl was observed within the project area during 2023 surveys conducted by the applicant. The observation occurred within a desert wash approximately 0.28 miles south of Rasor Road in the southern section of the solar array facility. No nesting burrows were identified within proximity to the observation and the owl did not display any breeding or nesting behaviors (RE 2025f). A total of 50 potential owl burrows were documented within the project area during the 2023 surveys, with 1 of these exhibiting recent whitewash staining around the entrance (see **Figure 5.2-5**). The remaining 49 potential burrows were not inhabited or actively being used at the time of the 2023 surveys. There were no western burrowing owl individuals, sign, or potential burrows detected along the gen-tie alignment or proposed access road during the 2023 or 2025 surveys (RE 2025kkk), although suitable habitat occurs throughout the project area and these surveys were conducted outside of the breeding season for the species. Therefore, western burrowing owl is assumed to be present and could occur during breeding and non-breeding seasons within and adjacent to the project area.

Willow flycatcher. Willow flycatchers are small, inconspicuous tyrant flycatchers that breed across much of the United States and southern Canada, with western subspecies occurring from Washington and Oregon south through California and east to the Rocky Mountains (Sedgwick 2021). Wintering occurs primarily in Mexico and Central America

(Sedgwick 2021). In California, the species breeds locally in riparian habitats dominated by willows, cottonwoods, and alders, primarily in the Sierra Nevada, Cascade Range, and northern Coast Ranges, with isolated populations in the Owens Valley and along the Kern River. Willow flycatchers are present from late May through early September, with peak breeding activity in June and July. Occurrences in the Mojave Desert are rare and limited to migration stopovers in riparian corridors (Garrett and Dunn; Shuford and Gardali 2008). Nests are placed in shrubs or small trees, usually in dense willow thickets. This species forage by sallying from perches to capture flying insects and also glean insects from foliage.

Willow flycatcher was not observed during any of the 2023 or 2025 surveys conducted by the applicant. The project area does not support suitable breeding or foraging habitat for the species. There are recent records within 10 miles of the project area (eBird 2025; iNaturalist 2025). However, these are located around Baker and Zzyzx and associated with water impoundments. The project area lacks similar features. Therefore, willow flycatchers are not expected to nest or forage within or adjacent to the project area, but there is a low potential of occurrence during seasonal migration periods.

Yellow-breasted chat. The yellow-breasted chat is the largest North American warbler. Its breeding range spans much of the United States and southern Canada, with western populations occurring from British Columbia south through California and east to the Great Plains (Eckerle and Thompson 2001). Wintering occurs primarily in Mexico and Central America (Eckerle and Thompson 2001). In California, individuals breed locally in dense riparian thickets and brushy habitats, primarily in the Central Valley, foothills, and along major rivers, with scattered occurrences in coastal valleys and desert riparian zones. Yellow-breasted chat is absent from most of the Mojave Desert except for rare breeding attempts in riparian corridors and occasional migrants (Garrett and Dunn 1981; Shuford and Gardali 2008). Chats are present from late April through early September, with peak breeding activity in May and June. Nests are placed in dense shrubs or low trees, often well-concealed. This species typically forages on insects and berries, gleaning prey from foliage and occasionally taking insects in flight.

Yellow-breasted chat was not observed during any of the 2023 or 2025 surveys conducted by the applicant. The project area does not support suitable breeding or foraging habitat for the species. There are recent records within 10 miles of the project area (eBird 2025; iNaturalist 2025). However, these are located around Baker and Zzyzx and associated with water impoundments. The project area lacks similar features. Therefore, yellow-breasted chats are not expected to nest or forage within or adjacent to the project area, but there is a low potential of occurrence during seasonal migration periods.

Yellow-headed blackbird. Yellow-headed blackbirds are large songbirds that breed across western and central North America, from southern Canada through the northern and western United States, with concentrations in prairie wetlands and marshes (Twedt and Crawford 1995). Wintering occurs primarily in the southwestern United States and

Mexico, often in agricultural areas and open fields (Twedt and Crawford 1995). In California, the species breeds locally in freshwater marshes of the northeastern plateau, Central Valley, and scattered sites in the Mojave Desert where dense emergent vegetation occurs. Occurrences in the Mojave Desert are tied to marsh habitats and are generally limited to breeding colonies in suitable wetlands and migration stopovers (Shuford and Gardali 2008). Nests are constructed in emergent vegetation, such as cattails or bulrushes, suspended above water. This species forages on seeds and insects, often during the breeding season and in open fields during migration and winter.

Yellow-headed blackbird was not observed during any of the 2023 or 2025 surveys conducted by the applicant. The project area does not support suitable breeding or foraging habitat for the species. There are recent records within 10 miles of the project area (eBird 2025; iNaturalist 2025). However, these are located around Baker and Zzyzx and associated with water impoundments. The project area lacks similar features. Therefore, yellow-headed blackbirds are not expected to nest or forage within or adjacent to the project area, but there is a low potential of occurrence during seasonal migration periods.

Yellow warbler. Yellow warblers are small, bright yellow songbirds. The species' breeding range spans much of North America, from Alaska and Canada south through the United States, with western populations occurring throughout California in suitable riparian habitats (Lowther et al. 1999). Wintering occurs primarily in Mexico, Central America, and northern South America (Lowther et al. 1999). In California, the species breeds widely in riparian woodlands dominated by willows, cottonwoods, and alders, from lowlands to mid-elevation valleys. It is absent from most desert areas except for localized breeding in riparian corridors of the Colorado River and rare occurrences in the Mojave Desert during migration (Garrett and Dunn 1981). Nests are built in shrubs or small trees, usually in dense riparian vegetation. Yellow warblers forage primarily on insects, gleaning caterpillars, beetles, and other arthropods from foliage and occasionally hawking prey in flight.

Yellow warbler was not observed during any of the 2023 or 2025 surveys conducted by the applicant. The project area does not support suitable breeding or foraging habitat for the species. There are recent records within 10 miles of the project area (eBird 2025; iNaturalist 2025). However, these are located around Baker and Zzyzx and associated with water impoundments. The project area lacks similar features. Therefore, yellow warblers are not expected to nest or forage within or adjacent to the project area, but there is a low potential of occurrence during seasonal migration periods.

Special-Status Mammals

American badger. The American badger overall range includes the central western provinces of Canada, throughout the western United States, and south throughout mountainous regions of Mexico (Shefferly 1999). This species occurs as an uncommon

permanent resident throughout most of California, except along the northern coast (Grinnell et al. 1937). American badgers are most abundant in drier open stages of most shrub, forest, and herbaceous habitats with friable soils for burrowing (Ahlborn 1990). The species is active year-round but may experience variable periods of torpor during the winter (Long 1973). Badgers mate in summer and early fall with young born mostly in March and April due to an extended gestation period varying from 183 to 265 days (Long 1973). Young are born in burrows dug in relatively dry, often sandy, soil, usually in areas with a sparse overstory. A typical burrow may be as far as roughly 10 feet below the surface and contain over 30 feet of tunnel.

American badger was not directly observed during any of the 2023 or 2025 surveys conducted by the applicant. However, a total of 5 inactive badger dens were identified scattered throughout the solar array facility site (see **Figure 5.2-5**). These burrows were identified as American badger by the distinct claw marks and size and shape of the den entrance; however, none exhibited sign, such as fresh tracks or claw scrapings, of recent use. Based on the presence of suitable habitat, documented inactive burrows, and diagnostic sign, American badger are assumed to be present within and adjacent to the project area.

California leaf-nosed bat. California leaf-nosed bat occurs in hot desert regions of the southwestern United States and northwestern New Mexico, including southern California, southern Nevada, southwestern Arizona, Baja California, Sonora, and adjacent areas of northern Mexico (Tuttle 1998). In California, the species is restricted to low-elevation desert habitats below about 1,800 feet, primarily in the Colorado River Valley and adjacent desert regions of Riverside, Imperial, and San Bernardino Counties. This species is non-migratory and does not hibernate, meaning it remains active year-round. It occurs locally in the Mojave Desert where suitable roosting sites, such as caves, abandoned mines, and rocky crevices, are available. It is most often associated with rugged terrain near desert washes and riparian areas (CDFW 2024). These bats are nocturnal insectivores, feeding on crickets, beetles, grasshoppers, moths, and occasionally cactus fruit.

California leaf-nosed bat was not observed or detected during any of the 2023 or 2025 surveys conducted by the applicant. A total of 4 potentially suitable roosting locations were identified during 2023 daytime habitat assessments with each of these located within stormwater culverts passing underneath I-15 just west of the solar array facility (RE 2025f). These sites are too exposed for the species, which typically requires deep, dark, thermally stable environments for roosting. Suitable foraging habitat for California leaf-nosed bat occurs throughout the project area and the species is known from the Mojave Desert; however, there are no known records within 50 miles. Therefore, California leaf-nosed bats are not expected to roost within or immediately adjacent to the project area, but there is a low potential for foraging individuals to occur.

Desert bighorn sheep. As described by CDFW (RE 2024vv), desert bighorn sheep is one of two subspecies of bighorn sheep in California. They occur in California's desert mountain ranges from the White Mountains of Mono and Inyo Counties south to the

San Bernardino Mountains, and further southeast to the Mexican border, with key populations found in the Clark, Kingston, Providence, and Soda Mountains (Ruben et al. 2002; Zeiner et al. 1990; CDFW 2023). Terrain is one of the major factors that influence desert bighorn sheep habitat selection. In general, bighorn habitat can be separated into two categories. These include mountain and intermountain habitat. Mountain habitat includes historic habitat of desert bighorn sheep within California with a slope of 15 percent (or lower depending on specific herd usage), while intermountain habitat includes low-lying, relatively flat areas. Sheep spend most of their time in mountain habitat, as it is visually open, allowing for early predator detection, and it provides escape terrain in the form of steep, generally rocky, slopes. Female sheep often select steeper slopes, particularly during lambing season (CDFW 2012). Intermountain habitat is less visually open. Therefore, sheep spend less time in these areas. However, intermountain habitat is critical as it provides the ability for movement and connectivity between populations, as well as the recolonization of suitable habitat (Bleich et al. 1990; Epps et al. 2007; Epps et al. 2010; Epps et al. 2018; Creech et al. 2014). Additionally, intermountain habitat can provide access to resources such as early forage in the spring (CDFW 2012).

Previous studies have demonstrated that, while the species is typically associated with mountainous terrain, they will use canyon bottoms, washes, alluvial fans, plateaus, and valley floors, not only for movement between mountain habitat areas, but also as important foraging areas (Schwartz et al. 1986; Bleich et al. 1997). Access to adequate forage and sources of water are also key factors that influence bighorn sheep habitat selection. Bighorn sheep are primarily browsers but exhibit seasonal shifts in diet. They consume a variety of desert shrubs such as creosote bush and white bursage, as well as forbs and grasses when available (Hansen 1980; Bleich et al. 1997). They require access to reliable water sources, typically within 2 to 3 miles of forage areas, although they can survive extended periods without drinking water by relying on moisture from forage and physiological adaptations (Turner and Weaver 1980; Bleich et al. 2006).

In California, desert bighorn sheep once existed as a single metapopulation until the broad region was divided by interstate highways that created movement barriers for these animals, dividing the metapopulations into metapopulation fragments (Epps et al. 2005, Epps et al. 2007, CDFW 2012). Each metapopulation fragment is comprised of multiple small and relatively isolated herds, which occupy one or more mountain ranges (RE 2024vv). The South Soda Mountains are located within the north-central metapopulation fragment and are inhabited by a herd estimated to be between 51 and 100 individuals (RE 2024vv). The South Soda Mountain herd is 1 of 10 desert bighorn sheep herds that make up the north-central metapopulation fragment. The Cady Mountains are located just southeast of the South Soda Mountains and are also inhabited by a herd of desert bighorn sheep. According to the Conservation Plan for Desert Bighorn Sheep in California, these two herd units have a high priority level for conservation as they are located at a potential desert bighorn sheep migration pathway across I-15 between the Cady and South Soda Mountains and the Soda Mountains north of I-15 (CDFW 2012).

As recent studies demonstrate, desert bighorn sheep in the South Soda Mountains spend a majority of their time close to ridgelines in mountainous habitat as these areas provide better visual perspective and escape terrain (Aiello 2023; RE 2024vv). However, the data illustrates that sheep are also utilizing the intermountain habitat at lower elevation flat areas. This includes the intermountain habitat located between the South Soda Mountains and the project area, particularly along the northeastern portion of the solar array facility. **Figure 5.2-6** demonstrates use of the mountainous and intermountain habitat within and immediately adjacent to the solar array facility by male bighorn sheep. The data shows that there is a similar abundance of female sheep using these habitats; however, there are some seasonal variations between male and female use in different areas. It appears that the sheep included within the Aeillo (2023) study showed a preference for north-facing slopes in the fall (October through November), and a preference for south-facing slopes in the winter (December through March). Incursions into the project area appear to primarily occur during the winter period when the herd most often congregates along south facing slopes adjacent to the project area. During the warmer summer months, the herd most often appears around an established water source on the northeastern side of the South Soda Mountains.

Although the applicant did not conduct focused surveys for desert bighorn sheep, suitable grazing habitat was identified within the project area and an individual skull was incidentally observed during burrowing owl surveys in 2023 (RE 2025s). Nonetheless, the previous studies performed within and immediately adjacent to the project area and throughout the general Soda Mountain region demonstrate the presence of suitable mountain and intermountain habitat and usage of the project area and surrounding habitats by desert bighorn sheep (RE 2024vv). Therefore, desert bighorn sheep are known to be present within and adjacent to the project area and could occur at any time of year.

Desert kit fox. In California, desert kit fox occurs in the Mojave and Colorado Deserts from Inyo County to the Mexican border. The range also extends into southern Nevada, western Arizona, the southwest tip of Utah, and Mexico. This species is primarily found in flat, arid desert habitats with sparse vegetation, such as creosote bush scrub, creosote-white bursage scrub, desert washes, and Joshua tree woodland, among others. Kit foxes dig dens in open, level areas within loose-textured, sandy and loamy soils. Dens typically have several entrances, and a fox or family group of foxes may have several dens or den complexes within their home range. The dens are used for birthing and rearing young, cover during the daytime, and refuge from predators. The natal season (period covering birth, rearing, and dispersal of young) for desert kit fox can begin as early as January and continue through October, with variations depending on local conditions and individual populations. Desert kit foxes hunt primarily at night by searching, meandering, circling clumps of brush, and wandering back and forth between patches of vegetation. The principal prey consists of rabbits, kangaroo rats, ground squirrels, reptiles, some birds and eggs, insects, and vegetation.

Although desert kit fox was not directly observed during focused burrow surveys conducted by the applicant in 2023, recent sign, including fresh scat, entrance scrapings, and tracks, were identified at six burrow locations within the project area (see **Figure 5.2-5**) (RE 2025f). Additionally, an individual fox was incidentally observed within the project area during nighttime bat surveys in 2023. Therefore, desert kit fox is present within the project area and could occur during any time of year.

Mountain lion. The Southern California/Central Coast ESU of mountain lion is comprised of six genetically distinct populations and includes lions that occur south of the San Francisco Bay and I-80, west of I-5 to the intersection of I-5 and SR-58, south of SR-58 to I-15, south of I-15 from the SR-58 intersection to the California-Nevada border, and as far south as the California-Mexico border (Gustafson et al. 2018). Although discrete populations have been identified throughout these boundaries, other mountain lions have been regularly observed outside of defined core areas, including transient and resident individuals in the Mojave and Colorado Deserts. Mountain lions require large areas of relatively undisturbed habitats with adequate connectivity to allow for dispersal and gene flow. They have large home ranges that include heterogenous habitats. In the United States, these often consist of pine forests, riparian and oak woodlands, stream corridors, chaparral, and grasslands, though they are also known to occur in desert habitats (Yap and Rose 2019). They can be typically found wherever native or introduced ungulates, such as mule deer, elk, bighorn sheep, or feral hogs are present. Most often, caves, other natural cavities, and dense thickets of vegetation are used for denning.

Mountain lion was not observed or detected during any of the 2023 or 2025 surveys conducted by the applicant. Although the nearest known record is located near Flynn, approximately 25 miles to the southeast, mountain lions exhibit very large home ranges, particularly in desert environments where prey resources are scarcer. Additionally, the closest evidence of a mountain lion fatality from vehicle collision was documented along I-40 approximately 40 miles to the southeast (CDFW 2024). These records likely represent extreme movements as the region is generally less suitable for the species. Mountain lions are capable of moving such distances and do occasionally find their way to these areas and hunt, but they are transient (CDFW 2024). It is unlikely that mountain lions would find or stay near the project area very often or for very long periods of time. Therefore, there is a low potential for mountain lion to occur within or adjacent to the project area.

Pallid bat. The pallid bat is a large, pale-colored bat that occurs in arid and semi-arid regions of western North America, from British Columbia and central Mexico west to California and east to Texas. It is most common in desert basins and foothills with rocky outcrops and sparse vegetation (Hermanson and O'Shea 1983). In California, pallid bats are widespread in low-elevation deserts, grasslands, and oak woodlands, occurring from the Mojave and Colorado Deserts north through the Central Valley and into foothill habitats. This species is generally non-migratory and active year-round in mild climates, though some individuals may enter short periods of torpor during cold weather. Pallid

bats are relatively common in the Mojave Desert, roosting in rock crevices, caves, and abandoned mines near desert washes and foraging in open habitats. This species will also utilize human-made structures when natural roost sites are limited in an area (Wetzel and Roby 2023). Additionally, pallid bats have also been documented nesting in burrows within creosote bush scrub (Brown-Berry Consulting 2012). They primarily feed on large ground-dwelling arthropods, such as crickets, beetles, and scorpions, which they capture by landing and gleaning from the substrate.

Although pallid bat was not observed or detected during any of the 2023 or 2025 surveys conducted by the applicant, this species is known to occur throughout the Mojave Desert with the nearest records located at Zzyzx less than 5 miles to the east (iNaturalist 2025). A total of 4 potentially suitable roosting locations were identified during 2023 daytime habitat assessments with each of these within stormwater culverts passing underneath I-15 just west of the solar array facility (TN261590). The entire project area supports suitable foraging habitat for this species. Therefore, there is a low potential for pallid bats to roost within or adjacent to the project area and a moderate potential to occur during foraging.

Southern California ringtail. Ringtails can be found from southern Mexico north to Kansas, southern Wyoming, and Oregon. In California, this species is a widely distributed permanent resident that occurs in various riparian habitats and in brush stands of most forest and shrub habitats from sea level up to 9,500 feet but is most common below 4,600 feet (NatureServe 2025). Ringtails are seldomly found more than 0.6 miles from permanent water (Ahlborn 1990). Denning sites typically occur in rock recesses, hollow trees, logs, snags, abandoned burrows, or woodrat nests. This nocturnal species is primarily carnivorous, mainly feeding on rodents and rabbits, birds and eggs, and reptiles and invertebrates; however, it will also consume fruits, nuts, and carrion.

Southern California ringtail was not observed during any of the 2023 or 2025 surveys conducted by the applicant. The project area does not support suitable denning habitat for the species and is more than 3 miles west of permanent water sources at Zzyzx, where this species has been documented. Although there are no known records for the area, ringtails could utilize habitats in foothills adjacent to the project area where natural seeps and springs are present. Therefore, there is a low potential for southern California ringtails to occur within or adjacent to the project area.

Townsend's big-eared bat. Townsend's big-eared bat occurs throughout western North America from southern British Columbia south along the Pacific coast to central Mexico and east into the Great Plains (NPS 2025). This species is found throughout California, but the details of its distribution are not well known (Harris 2000). It is known to occur in a variety of habitats throughout the state at elevations between sea level and 10,826 feet but is most associated with desert scrub, mixed conifer forest, and pinyon-juniper woodlands (Harris 2000; NPS 2025). During hibernation, which usually occurs between October and April, Townsend's big-eared bats typically prefer habitats with relatively cold (but above freezing) temperatures in quiet, undisturbed

sites often in more interior, thermally stable portions of caves and mines (Barbour and Davis 1969; Humphrey and Kunz 1976). During spring and summer, males are solitary while females establish maternity colonies in the warm parts of caves, mines, and buildings (Pierson et al. 1991). Night roosts may include buildings or other structures, such as bridges. This species primarily feeds on small moths but will consume other insects.

Townsend's big-eared bat was not observed or detected during any of the 2023 or 2025 surveys conducted by the applicant. However, this species is known to occur throughout the general region with the nearest record located at Zzyzx less than 5 miles to the east. The 4 stormwater culverts passing under I-15 just west of the solar array facility could provide potential roosting sites in the absence of more suitable locations. The entire project area supports suitable foraging habitat for this species. Therefore, there is a low potential for Townsend's big-eared bats to roost within or adjacent to the project area and a moderate potential to occur during foraging.

Western mastiff bat. Western mastiff bat is the largest bat in North America. It occurs in arid and semi-arid regions of the southwestern United States and northern Mexico, including southern California, Arizona, New Mexico, Texas, and Baja California. It is strongly associated with rugged terrain and rocky outcrops that provide suitable roosting sites (Best et al. 1996). In California, this species is found primarily in desert regions and foothills of the southern Coast Ranges, Transverse Ranges, and Peninsular Ranges, as well as the Mojave and Colorado Deserts. Western mastiff bats are non-migratory and remain active year-round in mild climates, though activity may decrease during cold periods. This species forages on large flying insects, such as moths and beetles, often at high altitudes over the open terrain.

Western mastiff bat was not observed or detected during any of the 2023 or 2025 surveys conducted by the applicant. Although the applicant identified 4 potential roosting sites for bats within the stormwater culverts just west of the solar array facility, this species is not known to utilize these features since their large size and flight mechanics require roosts sites with sufficient space to drop and take flight (Constatine 1998). Although they are known from the Mojave Desert, there are no known records for western mastiff batt within 50 miles of the project area. Therefore, western mastiff bats are not expected to roost within or immediately adjacent to the project area, but there is a low potential for foraging individuals to occur.

Regulatory

Federal

Endangered Species Act (16 U.S.C. § 1531 et seq., and 50 C.F.R., part 17.1, et seq.). The federal Endangered Species Act (ESA) designates and provides for protection of threatened and endangered plant and animal species, and their critical habitat. Its purpose is to protect and recover imperiled species and the ecosystems on which they depend. It is administered by the USFWS and the National Marine Fisheries

Service. The USFWS is responsible for terrestrial and freshwater organisms while National Marine Fisheries Service is responsible for marine wildlife. Species may be listed as endangered or threatened. All species of plants and animals, except pest insects, are eligible for listing. Species are defined to include subspecies, varieties, and for vertebrates, distinct population segments. The ESA protects endangered and threatened species and their habitats by prohibiting the "take" of listed animals and the interstate or international trade in listed plants and animals, including their parts and products, except under a federal permit. "Take" is broadly defined in the ESA to include "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct" (16 U.S.C., § 1532 [19]). Take can also include significant habitat modification or degradation that directly results in death or injury to a listed wildlife species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering (50 C.F.R., § 17.3). Take of federally listed species as defined in the ESA is prohibited without incidental take authorization, which may be obtained through Section 7 consultation (between federal agencies) or a Section 10 Habitat Conservation Plan.

Bald and Golden Eagle Protection Act (16 U.S.C. § 668-668c). The BGEPA, enforced through regulations written by the USFWS, prohibits the "taking" of bald and golden eagles, including their parts, nests, or eggs. "Take" is defined as to "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest, or disturb" any bald or golden eagle, whether "alive or dead...unless authorized by permit".

Migratory Bird Treaty Act (16 U.S.C. § 703-711). The Migratory Bird Treaty Act (MBTA) makes it illegal to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, any migratory bird or other parts, nests, or eggs of such a bird except under the terms of a valid federal permit. The USFWS has authority and responsibility for enforcing the MBTA.

California Desert Conservation Area Plan. The California Desert Conservation Area (CDCA) Plan encompasses 25 million acres in southern California and was designated by Congress in 1976 through the FLPMA. BLM manages approximately 10 million of the 25 million acres in the CDCA. Congress directed the BLM to prepare and implement a comprehensive long-range plan for the management, use, development, and protection of public lands within the CDCA. The CDCA Plan is based on the concepts of multiple use, sustained yield, and maintenance of environmental quality. The CDCA Plan provides overall regional guidance for BLM-administered lands in the CDCA and establishes long-term goals for protection and use of the California desert.

Desert Renewable Energy Conservation Plan. In September 2016, the BLM adopted the Desert Renewable Energy Conservation Plan (DRECP) Land Use Plan Amendment (LUPA) to the CDCA Plan, Bishop Resource Management Plan, and Bakersfield Resource Management Plan (BLM 2016). The DRECP LUPA addresses solar, wind, geothermal energy generation, and transmission projects on 10.8 million acres of BLM-administered lands in the desert regions of southern California.

The BLM DRECP LUPA establishes several land use classifications, including Development Focus Areas (DFAs), Variance Process Lands (VPLs), Recreation Management Areas, and Conservation Areas. BLM Conservation Areas include National Landscape Conservation System lands, Areas of Critical Environmental Concern (ACECs), and Wildlife Allocations. An additional classification, General Public Lands, are BLM-administered lands that do not meet any of the above designations. The majority of the project area is located on DRECP General Public Lands with the gen-tie alignment located within an ACEC.

The DRECP LUPA includes a list of over 200 Conservation and Management Actions (CMAs) that prescribe avoidance, minimization, and compensatory mitigation actions that are applicable to new projects on BLM-administered lands in the DRECP plan area. The CMAs address siting, design, preconstruction, construction, maintenance, implementation, operations, and decommissioning activities of renewable energy projects. The applicability of each CMA to a particular project depends on the BLM land designation(s) at the project area, project type, and resources present at the site.

West-Wide Energy Corridor Plan. The West-Wide Energy Corridor Plan was established under Section 368 of the Energy Policy Act of 2005, directing federal agencies to designate energy corridors across 11 western states for oil, gas, hydrogen pipelines, and electricity transmission and distribution. The corridors serve as preferred locations for future energy transport infrastructure to streamline permitting and reduce environmental conflicts.

Noxious Weed Act of 1974 (7 U.S.C., § 2801 et seq.). The Noxious Weed Act established a national framework for controlling and eradicating non-native plant species deemed harmful to agriculture, ecosystems, and public health. It authorizes the Secretary of Agriculture to regulate the movement of noxious weeds, enforce quarantines, and implement integrated management systems for federally managed lands.

Executive Order 13112. Executive Order 13112, issued in February 1999, established the National Invasive Species Council and directed federal agencies to prevent the introduction and spread of invasive species. It requires agencies to identify, control, and monitor invasive species, and to avoid actions likely to cause or promote their spread, while coordinating efforts across departments and with stakeholders.

Clean Water Act Sections 401 and 404 (33 U.S.C., § § 1251 – 1376). The Clean Water Act requires the permitting and monitoring of all discharges to surface water bodies. Section 404 (33 U.S.C., § 1344) requires a permit from the U.S. Army Corps of Engineers for a discharge from dredged or fill materials into a water of the United States, including wetlands. Section 401 (33 U.S.C., § 1341) requires a permit from the regional water quality control board for the discharge of pollutants. By federal law, every applicant for a federal permit or license for an activity that may result in a discharge into a California water body, including wetlands, must request state

certification that the proposed activity will not violate state and federal water quality standards.

State

California Endangered Species Act (Fish and G. Code, §§ 2050 – 2098). The California Endangered Species Act (CESA) of 1984 states that all native species of plants, invertebrates, fish, amphibians, reptiles, birds, and mammals, and their habitats, threatened with extinction and those experiencing a significant decline which, if not halted, would lead to a threatened or endangered designation, will be protected and preserved. CESA prohibits the take of any species of wildlife designated by the California Fish and Game Commission as endangered, threatened, or candidate species. The CDFW may authorize the take of any such species if certain conditions are met. These criteria are listed in Title 14 of the California Code of Regulations, Section 783.4, subdivisions (a) and (b). For purposes of CESA, "take" means to hunt, pursue, catch, capture, or kill (California Fish and G. Code, § 86). For projects under the exclusive jurisdiction of the CEC, incidental take authorization may be granted through the CEC's certification instead of ("in lieu of") a take permit issued by CDFW.

Fully Protected Species (Fish and G. Code §§ 2081.15, 3511, 4700, 5050, and 5515). These sections designate certain species as fully protected and prohibit the take of such species or their habitat unless for scientific purposes (see also Cal. Code Regs., tit. 14, § 670.7). The incidental take of fully protected species may also be authorized in an approved natural community conservation plan (California Fish and G. Code, § 2835) or more recently by state legislation related to some renewable energy projects.

Senate Bill 147, effective as of July 10, 2023, amends California Fish and Game Code, Sections 3511, 4700, 5050, and 5515 and adds Section 2081.15. This legislation allows CDFW to issue incidental take permits for fully protected species under specific and limited circumstances, including for PV solar projects and related infrastructure. Under the Warren-Alquist Act, the CEC has in-lieu permitting authority to issue the incidental take authorization if project activities would impact state-listed species.

Bird, Nest, and Eggs Protection. The following California Fish and Game Code sections designate protections for birds and/or their nests or eggs. The administering agency is CDFW

- Section 3503: Makes it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto.
- Section 3503.5: Makes it unlawful to take, possess, or destroy any birds in the order Falconiformes and Strigiformes or to take, possess, or destroy the nest or eggs of any such bird.
- Section 3513: Makes it unlawful to take or possess any migratory nongame bird as designated in the MBTA or any part of such migratory nongame bird.

- Section 3800: Makes it unlawful to take any nongame bird except as provided in this code or in accordance with regulations of the commission or, when relating to mining operations, a mitigation plan approved by the department. All birds occurring naturally in California that are not resident game birds, migratory game birds, or fully protected birds, are nongame birds.

Furbearing and Mammal Protection. Regulations are in place protecting furbearing mammals as follows:

- California Code of Regulations, Title 14, Section 251.1 prohibits the harassment of any furbearing mammal. Harass is defined as an intentional act that disrupts an animal's normal behavior patterns, which includes, but is not limited to, breeding, feeding, or sheltering.
- California Code of Regulations, Title 14, Section 460 states that fisher, marten, river otter, desert kit fox, and red fox may not be taken at any time.

Native Plant Protection Act (Fish and G. Code, §§ 1900 - 1913). The Native Plant Protection Act (NPPA) was enacted in 1977 and directed the California Fish and Game Commission to carry out the Legislature's intent to "preserve, protect, and enhance rare and endangered plant in the State." The NPPA gave the Commission the power to designate native plants as "endangered" or "rare" and protect endangered and rare plants from take. The NPPA thus includes measures to preserve, protect, and enhance rare and endangered native plants.

The CESA has largely superseded the NPPA for all plants designated as endangered by the NPPA. The NPPA nevertheless provides limitations on take of rare and endangered species as follows: "no person will import into this state, or take, possess, or sell within this state" any rare or endangered native plant except in compliance with provisions of the CESA. Individual landowners are required to notify CDFW at least 10 days in advance of changing land uses to allow CDFW to salvage any rare or endangered native plant material.

California Desert Native Plants Act (California Food and Agriculture Code §§ 80001 to 80201). The California Desert Native Plant Act (CDNPA) affords protection to certain native desert plant species to make the harvest, transport, sale, or possession of these species unlawful unless a permit is first obtained. It restricts harvesting of the following plants, except for educational or scientific purposes under a permit issued by the commissioner of the county in which the native plants are growing:

- All species of the Burseraceae family (such as elephant tree [*Bursera microphylla*], saguaro cactus [*Carnegiea gigantean*], barrel cactus [*Ferocactus acanthodes*], and Panamint dudleya [*Dudleya saxosa*]).

The CDNPA also restricts harvesting of the following species, except under a permit issued by the commissioner or the sheriff of the county in which the native plants are growing:

- All species of the cacti family (Cactaceae), besides saguaro and barrel cactus, which are protected as described above;
- All species of the agave family (Agavaceae) and ocotillo and candlewood family (Fouquieriaceae);
- All species of the genera *Prosopis* and *Cercidium*;
- Catclaw (*Acacia greggii*), desert-holly (*Atriplex hymenelytra*), smoke tree (*Dalea spinosa*), and desert ironwood (*Olneya tesota*).

California Lake and Streambed Alteration Notification/Agreement (Fish and G. Code, §§ 1602 et seq.). These sections stipulate that an entity shall not substantially divert or obstruct the natural flow of, or substantially change or use any material from, the bed, channel, or bank of any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake. Under the Public Resources Code, the CEC has in-lieu permitting authority to issue the Lake and Streambed Alteration Agreement if project activities would result in impacts to CDFW jurisdictional streambeds and riparian habitats.

Porter-Cologne Water Quality Control Act (California Water Code Division 7). The State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs) have jurisdiction over all surface water and groundwater in California, including wetlands, headwaters, and riparian areas. For projects obtaining CEC licensing, the certification authorizing the construction and operation of the facility issued by the CEC acts as the waste discharge permit and includes all required siting, construction, and operation mitigation measures.

Cumulative

Under CEQA, cumulative impacts are defined as past, present, and reasonably foreseeable future projects that, when viewed in connection with the proposed project, cause its effects on biological resources to be potentially significant. The proposed project is in San Bernardino County. This analysis considers biological resources within the Mojave Desert region, focusing on sensitive species, habitat connectivity, and ecosystem sustainability.

The geographic scope of this cumulative impact analysis includes the northern Mojave Desert corridor along I-15, encompassing Soda Mountain, Clark Mountain, Cave Mountain, and adjacent valleys that provide habitat for special-status species, including desert bighorn sheep, desert tortoise, and desert kit fox, among many others. According to **Appendix A, Table A-1**, the existing, approved, pending, and proposed projects that could combine with the proposed project to result in cumulatively considerable impacts include:

- Brightline West – Las Vegas to Victor Valley (0.05 mile)
- Ivanpah Control Transmission Line Project (0.62 mile)

- I-15 Mojave Wildlife Crossings Restoration Project (Soda Mountain, Cave Mountain, Clark Mountain) (3 miles, 5 miles, 7 miles, respectively)
- Love's Travel Stop and Manufactured Home Park Project (7.36 miles)
- Eldorado Pisgah Lugo TLRR Project (10.31 miles)
- City of Barstow General Plan Update & Barstow International Gateway Specific Plan (60.31 miles)

5.2.2 Environmental Impacts

BIOLOGICAL RESOURCES Would the project:	**Significant and Unavoidable Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a. have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b. Have 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 California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☒	☐	☐	☐
c. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐
d. 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 wildlife nursery sites?	☒	☐	☐	☐
e. Conflict with any federal, state, or local plans, policies or regulations protecting biological resources?	☒	☐	☐	☐
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Communities Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☒	☐

BIOLOGICAL RESOURCES Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix G, biological resources.				

5.2.2.1 Methodology and Thresholds of Significance

In addition to the above environmental checklist, staff used the following methodology and thresholds of significance to evaluate the project.

Methodology

Impacts on biological resources were assessed through consideration of effects on the landscape, habitat, community, and species level for the proposed project and alternatives. Impacts refer to any project-related activity including initial ground disturbance, vegetation removal, road construction and maintenance during construction, transport of water from offsite sources, operation of the facility, and any other long-term operation and maintenance activities that would be implemented to support the operation of the proposed project.

Appendix G of the California Environmental Quality Act (CEQA) Guidelines provides a set of topical guidance questions for an agency to consider when determining whether the project has any significant impacts. For biological resources, the questions are listed in the table above.

Thresholds of Significance

For the proposed project an impact to biological resources would be considered significant (before considering offsetting mitigation measures) if the construction or operation of the project would result in one or more of the following:

- The potential for reduction, loss, or degradation of habitat for threatened, endangered, or special status species;
- The potential for loss or "take" of any federal or state listed plant or animal species; fully protected species; special status wildlife species, the loss of more than 10 percent of a known population or locally significant occurrence of a CRPR 1B or 2B species, or species protected under the federal or state MBTA or other regulations;
- A net loss or permanent change in the extent or functional value of any habitat or biotic community considered biologically, scientifically, recreationally, or economically significant by federal, state, or local policies, statutes, and regulations;
- Adverse effect on federally protected wetlands as defined in Section 404 of the Clean Water Act;
- Alteration or destruction of habitat that precludes reestablishment of native populations of plants and animals;

- Impairment of movement, migration, or dispersal of resident and migratory fish and wildlife species; or
- Substantial loss of habitat or population decline of any native fish, wildlife or plant species, or overall reduction in biological diversity.

Direct and Indirect Impacts. The CEQA Guidelines define direct impacts as those effects that result from a project and occur at the same time and place. Some examples of direct impacts include the removal of vegetation or habitat; disruption of natural behavior from increased human presence and/or equipment noise; mortality or injury from crushing, trampling, or entrapment; disruption of essential behaviors that reduce access to important foraging and/or lambing habitat, burrow collapse from grading, vibration, or the placement of solar panel foundations, and exposure to fugitive dust, herbicides, or other hazardous materials. Traffic on desert roads to access the gen-tie and project area would result in increased risk of roadkill for desert dwelling species and could displace bighorn sheep from access to important habitat features.

Indirect impacts are caused by a project but can occur later in time or are farther removed in distance but are still reasonably foreseeable and related to the project. Indirect impacts would include the potential for avian collision with solar panels, fencing, and the gen-tie lines, possible entrapment within the solar arrays, the disruption of native seed banks, and the spread of invasive plant species imported onto the site by construction equipment. Indirect impacts may also include alterations in light regimes (i.e., shade from solar panels), fragmentation of habitat and the displacement of important habitat for desert bighorn sheep, edge effects, and human disturbance during operation and maintenance.

Operational impacts include direct and indirect impacts that occur during the life of project operation. Generally, these impacts occur during maintenance activities and are like those that occur during construction but occur at substantially lower levels and of less duration. In addition to routine activities during operation of the project, it is possible that the BESS system could be subject to thermal runaway and result in a battery fire. Fires at battery storage facilities can be difficult to extinguish and can result in the discharge of hydrogen fluoride, heavy metals such as lithium, cobalt, nickel and copper, and semi-volatile organic compounds (SVOCs) (TEEX, 2024). In addition to smoke and fine particles these materials can directly injure plants and wildlife and can contaminate adjacent habitat and water sources (Claassen et al., 2024).

Permanent and Temporary Impacts. Permanent or long-term project related impacts include the conversion of land to a new use, such as the construction of the project area, construction of transmission line poles associated with the new 1-mile 500-kilovolt (kV) gen-tie line, and new utility switchyard. Temporary or short-term impacts result from activities that are typically of short duration (i.e., 6 to 12 months) and that do not result in a permanent land use conversion such as temporary work areas needed to construct the transmission line poles, pull sites, and or splicing areas. However, because of the arid location, the difficulty in restoring desert ecosystems, and

the large-scale disruption of hydrology staff considers all temporary project impacts to be permanent in nature.

The construction and operation of the proposed project may have permanent impacts throughout the solar facility and other project components, such as the location of any project facilities and along any permanent new or widened access routes. In addition, the project may result in long-term impacts to habitat in areas disturbed during temporary construction activities due to potential factors such as slow natural recovery rates, soil degradation, habitat fragmentation, and changes in species composition.

Mitigation Strategy

This CEQA analysis evaluates biological impacts resulting from all aspects of the project. Whenever impacts are identified from development of the site and related facilities, staff has recommended conditions of certification (COCs), to reduce impacts from the proposed project to less than significant levels. Each of the proposed COCs have been developed by staff to ensure that impacts to sensitive biological resources are minimized or avoided to the extent feasible and impacts are reduced to less than significant. Where appropriate, the applicant's proposed mitigation measures were incorporated into the COCs proposed below.

To facilitate effective implementation of Assembly Bill 205 (AB 205), the CEC and CDFW entered into a Memorandum of Understanding (MOU) in 2022. Under this agreement, CEC serves as the in-lieu permitting authority, ensuring compliance with environmental regulations while expediting project approvals, including CDFW-administered permits such as incidental take permits (ITPs) and Lake and Streambed Alteration (LSA) agreements.

The MOU establishes a coordination plan designed to ensure timely and effective consultation between the two agencies regarding potential impacts of energy projects on fish, wildlife, and plant resources, as well as their habitats. As part of this process, CEC serves as the in-lieu permitting authority, ensuring compliance with environmental regulations while expediting project approvals. The MOU ensures CDFW's expertise is integrated into project review, particularly for Fish and Game Code authorizations such as incidental take authorization. These recommendations are incorporated into the CEC's certificate as enforceable COCs, which ensure that approved projects meet environmental protection requirements. In addition, staff incorporates CDFW staff's recommendations into mitigation measures for the non-jurisdictional components of a project, as needed.

Additional impacts associated with project components outside of CEC's jurisdiction, including network upgrades and operation of Los Angeles Department of Water and Power (LADWP) Adelanto and Marketplace switchyards could occur. However, these activities would be implemented within existing facilities and no ground-disturbance would be required. LADWP implements standard environmental measures during the construction and operation of their facilities and staff is not proposing specific COCs for

activities associated with the network upgrades and operations at the existing Adelanto and Marketplace switchyards.

5.2.2.2 Direct and Indirect Impacts

This section analyzes the potential for direct and indirect impacts to biological resources from the construction and operation of the proposed project and provides mitigation, as necessary, to reduce the severity of potentially adverse impacts. For fully protected species including desert bighorn sheep the mitigation is intended to fully mitigate the projects direct and indirect effects to that species. If a significant impact is identified, appropriate mitigation to reduce impacts to below significance is then developed. Within this section, whenever a significant impact is identified appropriate mitigation measures and associated proposed COC(s) immediately follow, including supporting rationale for the effectiveness of the measures. The complete mitigation recommendations are found in the subsection entitled Proposed Conditions of Certification (COCs).

a. Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Construction

Less Than Significant with Mitigation Incorporated. Based on the analysis below, the proposed project would not cause substantial adverse effects on any riparian habitat or other sensitive natural community and the impacts would be less than significant with the implementation of staff's proposed COCs **BIO-1** through **BIO-5, BIO-8** through **BIO-13, AQ-SC3, AQ-SC4, WATER-1, WATER-2,** and **WATER-3.**

Jurisdictional Project Components

As described in **Section 3, Project Description**, construction of the solar facility, BESS, project substation, gen-tie line, utility switchyard, transmission line, and water supply fall under Jurisdictional Project Components. Table **5.2-6** provides a summary of the permanent and temporary impacts to native and non-native vegetation communities along with other land cover types that would be disturbed by the proposed project.

TABLE 5.2-6 VEGETATION COMMUNITIES AND LAND COVER TYPES IN THE PROJECT AREA

Vegetation Community/Land Cover Type	Acreage
Creosote Bush – White Bursage Scrub *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance	2,459
Creosote Bush Scrub *Larrea tridentata* Shrubland Alliance	145
Rigid Spineflower – Hairy Desert Sunflower *Chorizanthe rigida – Geraea canescens* Desert Pavement Sparsely Vegetated Alliance (*Chorizanthe rigida – Geraea canescens* Desert Pavement Association)[t]	32.00
Cheesebush – Sweetbush Scrub *Ambrosia salsola – Bebbia juncea* Shrubland Alliance	8.2

TABLE 5.2-6 VEGETATION COMMUNITIES AND LAND COVER TYPES IN THE PROJECT AREA	
Vegetation Community/Land Cover Type	**Acreage**
California Joint Fir – Longleaf Joint Fir Scrub *Ephedra californica – Ephedra trifurca* Shrubland Alliance (*Ephedra californica – Ambrosia salsola* Association)[t]	1.2
Disturbed/Developed	25
Total	2,670.4

Notes: [t] Considered a sensitive vegetation community by CDFW
Source: RE 2025f, RE 2025s, RE 2025kkk

The project area does not support any riparian habitat. The project is in a large alluvial fan that supports an extensive network of ephemeral drainages. These features do not support unique xeric riparian associated vegetation. However, a large wash coalesces near the center of the site which supports a few scattered palo verde (*Parkinsonia florida*) trees. However, these plants do not meet the definition of a microphyll woodland based on their distribution across the broader wash. Therefore, desert riparian communities would not be subject to direct or indirect impacts from the construction of the project.

Vegetation communities with a state rank of S1, S2, or S3 are considered sensitive by CDFW. The project area supports several native vegetation communities, including two sensitive vegetation associations: Rigid Spineflower–Hairy Desert Sunflower (*Chorizanthe rigida–Geraea canescens* Desert Pavement Association) and California Joint Fir–Longleaf Joint-fir Scrub (*Ephedra californica–Ephedra trifurca* Shrubland Alliance); neither association has an assigned state rarity rank. No sensitive alliance-level vegetation communities or DRECP Special Vegetation Features were observed. The site also supports four additional native vegetation communities, including Creosote Bush Scrub (*Larrea tridentata* Shrubland Alliance), Creosote Bush–White Bursage Scrub (*Larrea tridentata–Ambrosia salsola* Shrubland Alliance), and Cheesebush–Sweetbush Scrub (*Ambrosia salsola–Bebbia juncea* Shrubland Alliance), along with areas of dirt roads and other disturbed land mapped as Developed/Disturbed.

Construction of the proposed project including the solar arrays and mounting structures, access roads, gen-tie line, operation and maintenance buildings and structures, substation and switchyard, and the BESS would result in the permanent removal or degradation of up to 1538.79 acres of acres of habitat. This would include approximately 71.74 acres of permanent loss and 2003.21 acres of temporary loss from grading, construction of roads, and other infrastructure that would occur in areas supporting the solar arrays. This includes direct impacts to approximately 32 acres of Rigid Spineflower–Hairy Desert Sunflower and 1.2 acres of California Joint Fir–Longleaf Joint-fir associations. However, most of these areas would be preserved to some degree and may persist following construction.

Direct impacts include the loss or degradation of vegetation from clearing and grading which involves grubbing vegetation, scraping, or grading large areas, which removes native shrubs, perennials, and cryptobiotic crusts that stabilize desert soils. Grading and excavation destroy or bury native seedbanks beyond viable depths, and the use of

heavy equipment compacts soil, reducing aeration and water infiltration, which are critical for seed germination. Biological soil crusts play an important and sometimes complex role in arid ecosystems and these form from the interaction of bacteria, algae, fungi, lichen, and other organisms with soil particles (Perkins et al. 2018). The loss of delicate cryptobiotic soil crusts, which retain moisture and nutrients, can take decades to recover, if at all. Areas within the solar arrays that are proposed for drive and crush construction techniques would retain vegetation however, these areas could be subject to extensive damage due to repeated vehicle traffic which can break stems, uproot plants, compact soils, and reduce plant survival.

Indirect impacts could occur if construction of the project results in long-term alterations to hydrology that disrupt natural sheet flow and drainage patterns, increases impermeable surface area, reduces soil infiltration and water availability. Indirect impacts to native vegetation communities could also occur if non-native invasive weeds become introduced or established as a result of project construction activities. Weeds are highly adaptable and possess specific botanical and ecological traits, such as rapid growth, high seed production, and the ability to tolerate harsh conditions, that enable them to colonize disturbed areas. Non-native invasive weeds threaten native vegetation communities because they can exclude native plants (including special-status species occurring in the project area), alter habitat structure, increase fire frequency and intensity, decrease forage for herbivorous wildlife (including special-status species), and decrease limited water availability for both plants and wildlife.

For large-scale construction projects, heavy equipment is often transported from distant locations which can result in importing weed seeds and plant parts if they are not properly cleaned prior to use in a new area. Weed seeds can also be carried on hand tools, clothing, and shoes. The applicant identified several non-native invasive weeds, as designated by the California Department of Food and Agriculture (CDFA) and Cal-IPC (see **Table 5.2-2**). These species can act as source populations and quickly spread to recently disturbed areas without management.

Direct and indirect impacts to sensitive natural communities and other vegetation communities discussed above would be considered significant without mitigation. The applicant proposed a series of mitigation measures including development and implementation of the following plans: Vegetation Resources Management Plan which outlines the steps to identify and salvage cacti and other species status plants should they occur, Restoration Plans intended to restore temporarily disturbed areas, and an Integrated Weed Management Plan to control the introduction and spread of non-native weeds.

The applicant has also proposed to restore temporarily disturbed areas and use drive and crush construction methods in the solar arrays. To reduce impacts on native vegetation and allow for preservation of some habitat value in the solar arrays after construction, the applicant has proposed to use an advanced technology, terrain-following solar tracker system (such as the Nextracker NX Horizon-XTR-0.75 10-inch tracker system, Nevados All Terrain Tracker system, or other system) that minimizes

grading under the solar field (RE 2025cc). During installation of these units, specialized construction equipment would drive and crush vegetation rather than physically removing the vegetation.

The preservation of native vegetation communities beneath and around solar arrays would be expected to provide residual habitat value for small mammals, reptiles, and insects by maintaining soil stability, native seedbanks, and providing structural cover and refugia. Typically, most of the ecological loss that occurs at solar facilities is not from the arrays or panels but from construction and vehicle disturbance, which removes vegetation and habitat and often compacts soils. By limiting this disturbance and retaining some form of intact vegetation, residual habitat for pollinators, reptiles, small mammals, and ground-nesting birds under the solar arrays can be provided. It is possible that the sensitive natural communities could persist in some locations. Nonetheless, the placement of solar arrays would likely displace some foraging birds that prefer more open habitats, and most individuals would likely move into suitable habitats adjacent to the project area.

Staff reviewed the applicant's proposed mitigation and incorporated the applicant's measures, as appropriate, into staff's proposed COCs **BIO-8** (Vegetation Management Plan) and **BIO-13** (Vegetation Resources Management Plan). These measures would require the basic restoration of temporary disturbance areas to prevent the establishment of weed sources, salvage of topsoil and seedbank resources, and ongoing monitoring and reporting of restoration sites.

Since all impacts to vegetation would be fully mitigated through measures addressing impacts to desert tortoise, desert kit fox, and burrowing owl (See proposed COC **BIO-20**) the intent of staff's recommended COC **BIO-8** (Vegetation Management Plan) would be to transplant cacti, establish basic cover, and prevent the establishment of high risk weed species rather than to fully restore lost functional values within the solar arrays.

The implementation of COCs **BIO-1** through **BIO-5** would require that qualified biologists and monitors are present during construction activities to ensure impacts to native vegetation are reduced along with requiring environmental training for all construction personnel. To reduce impacts from offsite erosion and sedimentation, staff proposes implementation of a Storm Water Pollution Prevention Plan (SWPPP) (COC **WATER-1**) (**Section 5.16, Water Resources**) which would ensure that development of the site does not result in substantial stormwater runoff from the project area during construction. Additionally, COC **WATER-2** (Drainage, Erosion and Sedimentation Control Plan [DESCP]) is recommended to ensure that all project elements of stormwater management are addressed during project operations COC **WATER-3** requires the project owner to implement a Channel Maintenance Program to ensure that the natural channels convey storm flows effectively. COC **WATER-9** requires the development of a Fluvial Geomorphic Stormwater Design Plan (FGSD Plan) prior to project construction and concurrent with final engineering. The FGSD Plan shall incorporate fluvial geomorphic design principles to preserve and create stable, self-

sustaining stream channels and floodplains that maintain and/or mimic natural hydrologic and sediment transport processes in the project area. Indirect impacts from the introduction of non-native invasive weeds would be reduced to less than significant through the implementation of staff's proposed COCs **BIO-9** (Integrated Weed Management Plan) and **BIO-10** (Invasive Species Management Plan). These COCs require implementation of measures to identify, control, and manage existing and potential weed infestations in the project area, worker education on the detrimental effects of invasive species, and requirements to maintain clean equipment and vehicles that could carry weed seeds and plant parts into the project area. With implementation of staff's proposed COCs **BIO-8** through **BIO-13** and **WATER-1** through **WATER-3,** and **WATER-9** impacts to sensitive natural communities and native vegetation would be reduced to less than significant. Impacts from fugitive dust would be mitigated by implementation of staff's proposed COC **AQ-SC3** which include watering roads and or stabilizing them with soil binders. Dust suppressants would be durable non-toxic soil stabilizers, and many other activity-specific control measures would be applied to reduce fugitive dust and to ensure activities do not create visible dust emissions during construction. Staff's proposed COC **AQ-SC4** would require a qualified dust monitor during dust producing activities and require remedial measures if fugitive dust exceeds authorized limits. See **Section 5.1, Air Quality** for additional information related to dust control.

Non-Jurisdictional Project Components

LADWP would make upgrades to the protection settings at the Marketplace (Boulder City, Nevada) and Adelanto (Adelanto, California) substations. These would include line tuners, wave traps, microwave telecom links, relay protection equipment, and metering and controls equipment. These upgrades to the existing substations would not require ground disturbance and would not impact sensitive vegetation or other biological resources because the upgrades are confined to existing developed substation footprints. Therefore, there would be no impact to riparian habitat or sensitive vegetation communities and no COCs are recommended.

Operation

Less Than Significant with Mitigation. Based on the analysis below, operation of the project would not cause substantial adverse effects on any riparian habitat or other sensitive natural community and the and the impact would be less than significant with the implementation of staff's proposed COCs **BIO-8** through **BIO-13**, **AQ-SC3, AQ-SC4, HAZ-9, WATER-1** through **WATER-3**, **WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-6, WORKER SAFETY-7,** and **WORKER SAFETY-10.**

Jurisdictional Project Components

Direct and indirect impacts to sensitive plant communities and other native vegetation communities from operation would be similar in type but greatly reduced in magnitude compared to those discussed for construction. Vegetation removal and grading activities would occur during the construction phase of the project. During operation, all activities

would occur in previously developed areas within the project area or along existing access roads. It is possible that periodic vegetation maintenance would be required under the solar arrays should the height of vegetation interfere with the movement of the solar panels.

Although the project incorporates a "low impact design" which would substitute mowing for grading where feasible and would maintain natural drainage features to the extent possible, functional habitat values on the project area for most species of wildlife would be lost. Outside of access roads and maintenance tracks, vegetation may be cut to ground level as needed for construction, but roots would be left intact, allowing for some regrowth. During operation, vegetation would be cut or removed as needed to provide clearance for the solar arrays and manage potential fire hazard. Native shrubs subjected to repeated mowing would be weakened and diminished in size, degrading or eliminating their value as wildlife habitat. Overall impacts of these operation activities would cause degradation to native vegetation and wildlife habitat overtime. However, to the extent that native shrubs persist on the site, they are expected to have some benefit to soils and hydrology, by reducing likely soil erosion throughout the solar arrays.

Operation of the project is not expected to attenuate most of the stream flow through the solar arrays. Under the current project design, surface water would generally flow unconstrained through the solar fields along the existing drainages except where they are intercepted by the temporary detention basins that would assist in managing storm flows during construction. These drainage features would still receive water during precipitation events and while they would lose some function from construction disturbance they would still convey flow, nutrients, and sediment through the project area. Likewise, during rain events water would be conveyed from the surface of the solar panels to concentrated areas below the arrays which could increase plant vigor in those areas. However, this concentrated runoff could also increase the risk for the establishment of weeds.

To reduce impacts from the loss or degradation of existing hydrology to less than significant staff recommend implementation of COC **WATER-9** which would require the development of a FGSD Plan prior to project construction and concurrent with final engineering. The FGSD Plan shall incorporate fluvial geomorphic design principles to preserve and create stable, self-sustaining stream channels and floodplains that maintain and/or mimic natural hydrologic and sediment transport processes in the project area.

Indirect impacts may also occur if non-native invasive weeds are introduced or become established from operational activities. These impacts would be similar to those discussed for the construction phase but would be greatly reduced in magnitude since major ground-disturbing activities would have been completed and temporary disturbance areas would have been restored and reseeded with native seed mixes.

The implementation of staff's proposed COC **BIO-8** through **BIO-13** and **WATER-1** through **WATER-3**, and **WATER-9** during operation would reduce impacts to sensitive natural communities and other native vegetation communities to less than significant.

Thermal Runaway and BESS Fires. As described in **Section 5.7**, **Hazards, Hazardous Materials/Waste, and Wildfire**, the risk of thermal runaway or BESS fire is low and considering the infrequent, irregular, and unplanned nature of such events and the short exposure duration, the potential for adverse impact would be a very low probability event. Although the risk is low during operation of the project, it is possible that the BESS system could be subject to thermal runaway and result in a battery fire. Fires at battery storage facilities can be difficult to extinguish and can result in the discharge of hydrogen fluoride, heavy metals such as lithium, cobalt, nickel and copper, and semi-volatile organic compounds (SVOCs) (TEEX 2024). In addition to smoke and fine particles these materials can directly injure plants and wildlife and can contaminate adjacent habitat and water sources (Claassen et al., 2024).

Data collected from other BESS fire incidents suggest that water and air sampling conducted determined the constituents did not pose a concern to the public (NYSERDA 2023). However, Claassen et al., found that the release of particulate matter (PM) 2.5 from battery fires contains acidic particles and fluoride, which can deposit in soil and water, affecting desert ecosystems (Claassen et al. 2024). In addition, after the January 2025 fire at the Vistra Energy lithium-ion battery facility in Moss Landing, California, researchers conducted post-fire environmental sampling in adjacent habitats, including the Elkhorn Slough Reserve, a sensitive coastal wetland and ecological preserve. Dr. Aiello and researchers from the Moss Landing Marine Laboratory (MLML) documented elevated concentrations of nickel, manganese, and cobalt in soils within a two-mile radius of the facility (Aiello 2025). These metals are commonly used in lithium-ion batteries and were found at levels 10 to 1,000 times greater than pre-fire concentrations. The metals were detected in fine particulate form (1–20 microns), indicating airborne deposition during the fire event. The study indicated there is a risk of bioaccumulation of metals in aquatic and terrestrial food webs that could adversely affect affecting nutrient cycling and microbial communities. The study suggested there could also be potential long term ecological impacts to native vegetation, invertebrates, and wildlife species in that location. Based on this information a BESS fire at the proposed project area could result in adverse impacts to local plants and wildlife.

As described in **Section 5.7, Hazards, Hazardous Materials/Waste, and Wildfire**, recent updates to how BESS systems are configured has reduced the risk of large-scale fires, however some risk is inherent in these types of systems. Although unlikely, if a fire occurs at the proposed project native vegetation and the sensitive species that use these areas for foraging and other life history traits would be subject to a range of impacts from exposure to toxic chemical emissions (Willstrand et al., 2025). It is possible these chemicals can be transported for miles depending on the size of the fire and local wind speeds which can be extreme in this portion of the Mojave Desert. These substances can result in plant mortality, affect nutrient cycling, and result in reduced

photosynthetic output. Heavy metals and other SVOCs can result in soil contamination which can adversely affect desert vegetation (Claassen et al., 2024). Desert plants are particularly vulnerable due to their slow growth rates, limited resilience to disturbance, and specialized adaptations to nutrient-poor soils.

Localized contamination from BESS fires can result in long-term shifts in plant community composition, potentially favoring invasive species and reducing habitat quality for native wildlife. Because these native habitats support sensitive wildlife impacts from a BESS fire would be considered significant without mitigation. To reduce these impacts the applicant has proposed a series of mitigation measures to reduce fire risk, contain BESS fires, and ensure access to local firefighting personnel via a Fire Management and Prevention Plan.

Per **Section 5.7, Hazards, Hazardous Materials/Waste, and Wildfire,** staff recommends COCs **WORKER SAFETY-1**, **WORKER SAFETY-2**, **WORKER SAFETY-6, WORKER SAFETY-7**, and **WORKER SAFETY-10** which would minimize the impact of potential BESS fires (during transport to and from the site, and onsite) during construction and operation to a less-than-significant level. In addition, staff recommend COC **HAZ-9**, which would require an air and water sampling plan and would require the project owner to develop an air sampling plan to ensure that information can be relayed to first responders in a timely manner. Additionally, water quality testing would be conducted prior to any disposal of water used for an incident. To further reduce impacts to biological resources should a BESS fire occur staff recommend implementation of COC **BIO-11** (Post BESS Fire Monitoring and Management Plan) which includes soil testing and remedial actions that would be required if sensitive species habitat is contaminated due to a BESS fire. See **Section 4.4, Worker Safety and Fire Protection** and **Section 5.7 Hazards, Hazardous Materials/Waste, and Wildfire** for further information.

With the implementation of COCs **WORKER SAFETY-1**, **WORKER SAFETY-2**, **WORKER SAFETY-6, WORKER SAFETY-7**, **WORKER SAFETY-10, HAZ-9** and **BIO-11** impacts from a potential BESS fire would be reduced to less than significant.

Non-Jurisdictional Project Components

LADWP would make network upgrades to the protection settings at the at the existing Marketplace and Adelanto substations. The operation of the existing substation would not impact sensitive vegetation or other biological resources because the upgrades are confined to existing developed substation footprints. Therefore, there would be no impacts to riparian habitat or sensitive vegetation communities resulting from network upgrades during operations.

b. Would the project have 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 California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Special-Status Plants

Construction

Less Than Significant with Mitigation. Based on the analysis below, the proposed project would not substantially adversely affect any special-status plant species, either directly or through habitat modification and impacts would be less than significant with the implementation of staff's proposed COCs **BIO-1** through **BIO-13, WATER-1** through **WATER-3**, and **WATER-9, AQ-SC3**, and **AQ-SC4**.

Jurisdictional Project Components

State or federally listed plants were not detected during surveys for the proposed project, nor are they expected to occur in this location. Eight special-status plants were determined to have a low, moderate, or high potential to occur based on the desktop review conducted by the applicant. One sensitive plant Utah vine milkweed, a California Rare Plant Rank (CRPR) 4.3 perennial herb that flowers between April and June, was detected along the proposed gen-tie route (RE 2025c). This species occurs peripherally in California, mainly in the eastern desert regions. Although it is not widespread in the state, it is generally common in other parts of its range throughout the southwestern United States. No other sensitive plants were detected in the project area. No sensitive plant species were detected in the project area during previous surveys to support the initial San Bernardino County EIR/EIS (RE 2024aa).

Impacts to special-status plants, should they occur, would closely resemble those discussed above for native vegetation communities. Direct impacts to special-status plants would include the removal or destruction of individuals or small populations, loss of habitat, destruction or disturbance of seedbanks, and exposure to increased erosion and sedimentation, excessive fugitive dust, and hazardous materials.

Direct and indirect impacts to plants would be considered significant without mitigation if project activities result in the loss of a substantial portion of a known occurrence of a CRPR List 1B or 2 species. Staff determined that the loss of more than ten percent of the known individuals within an occurrence would be a significant impact in this case because it could reduce the occurrence size below a critical threshold, increasing the risk the loss of genetic diversity or the ability to respond following drought or other disturbances. In addition, for small or isolated groups of plants the loss of more than 10 percent of the occurrence could adversely affect seed production and seed banks that could result in long-term population decline.

However, CRPR List 4 plants are not automatically protected under CEQA because they are considered "plants of limited distribution" or a "watch list," rather than formally rare, threatened or endangered. However, they may warrant protection in unusual circumstances such as when they represent a locally significant or unique occurrence,

are considered a locally endemic species, or face cumulative threats that could elevate their conservation status. Therefore, impacts to CRPR List 4 species, such as Utah vine milkweed, a CRPR 4.3 species would be less than significant.

To protect sensitive plants, the applicant proposed measures that included conducting preconstruction surveys for rare plants, avoiding plants when possible, and conducting salvage if plants would be impacted. Staff reviewed the applicant's proposed mitigation and incorporated the applicant's measures, as appropriate, into staff's proposed COC **BIO-12** (Special-Status Plant Avoidance Measures). This condition includes but is not limited to preconstruction floristic surveys within all project disturbance areas and a 100-foot buffer, the establishment of protective buffers, and requirement for compensatory land acquisition should impacts occur above the identified thresholds. While these measures help avoid direct impacts to sensitive plants, successful restoration and long-term plant establishment in desert environments is still constrained by natural ecological factors.

Staff notes that despite favorable precipitation, germination of native desert plants may be limited by a combination of physiological dormancy, temperature mismatches, soil surface conditions, and competition from invasive species. Many desert annuals and perennials possess dormancy mechanisms that prevent germination until multiple environmental cues including such as moisture, temperature fluctuation, and light exposure are met (Luo et al., 2024). Staff has observed this directly when conducting annual surveys across the same locations of the Mojave Desert. Additionally, rainfall occurring outside optimal temperature ranges may fail to trigger germination, as shown in studies of desert shrub species in Asia with narrow thermal thresholds (Lai et al., 2016). Soil surface conditions, including cryptobiotic crusts and compaction, can further inhibit seedling emergence by restricting root penetration and water infiltration. The presence of invasive grasses such as bromes and Mediterranean grass can also suppress native germination by monopolizing resources and altering fire regimes (Brooks, 2000). All of these factors can affect the emergence of sensitive plants.

In addition, staff recommends implementation of the following COCs **BIO-1** (Designated Biologist Selection), **BIO-2** (Designated Biologist Duties), **BIO-3** (Designated Monitor Selection), **BIO-4** (Designated Biologist and Biological Monitor Authority), **BIO-5** (Worker Environmental Awareness Program [WEAP]), **BIO-6** (Biological Resources Mitigation Implementation and Monitoring Plan), **BIO-7** (General Impact and Avoidance Measures), **BIO-8** (Vegetation Management Plan), **BIO-9** (Integrated Weed Management Plan), **BIO-10** (Invasive Species Management Plan), **BIO-11** (Post BESS Fire Monitoring and Management Plan) and **BIO-13** (Vegetation Resources Management Plan). These measures include, but are not limited to, biological monitoring during construction, worker training to provide information on special-status plants occurring in the project area, general construction Best Management Practices (BMPs) to avoid sensitive biological resources, habitat restoration, and conditions to minimize the introduction and spread of non-native invasive weeds.

Impacts from offsite erosion and sedimentation would be reduced through the implementation of staff's proposed COC **WATER-1**, a SWPPP would ensure that development of the site does not result in substantial stormwater runoff from the project area during construction. Additionally, staff's proposed COC **WATER- 2** (Construction Erosion and Sedimentation Plan Operations Drainage, Erosion and Sedimentation Plan) is recommended to ensure that all project elements of stormwater management are addressed during project operations. COC **WATER-3** requires the project owner to implement a Channel Maintenance Program to ensure that the existing channels convey storm flows effectively (see **Section 5.16, Water Resources**). To reduce impacts from the loss or degradation of existing hydrology to less than significant staff recommends COC **WATER-9** which would require the development of a FGSD Plan prior to project construction and concurrent with final engineering. The FGSD Plan shall incorporate fluvial geomorphic design principles to preserve and create stable, self-sustaining stream channels and floodplains that maintain and/or mimic natural hydrologic and sediment transport processes in the project area. Impacts from fugitive dust would be mitigated by implementation of staff's proposed COC **AQ-SC3** (**Section 5.1, Air Quality**) which include watering roads and or stabilizing them with soil binders. Dust suppressants would be durable non-toxic soil stabilizers, and many other activity-specific control measures would be applied to reduce fugitive dust and to ensure activities do not create visible dust emissions during construction. Staff's proposed COC **AQ-SC4** would require a qualified dust monitor during dust producing activities and require remedial measures if fugitive dust exceeds authorized limits.

Non-Jurisdictional Project Components

Network upgrades at the existing Marketplace and Adelanto substations would not impact sensitive plants because the upgrades are confined to existing developed substation footprints and no ground-disturbing activities are proposed. Therefore, there would be no impacts to special-status plants resulting from network upgrades.

Operation

Less Than Significant with Mitigation Based on the analysis below, the operations associated with the proposed project would not substantially adversely affect any candidate, sensitive, or special-status plant species, either directly or through habitat modification and impacts would be less than significant with the implementation of staff's proposed COCs **BIO-1** through **BIO-13**, **WATER-1** through **WATER-3**, **WATER-9**, **AQ-SC3**, **AQ-SC4, WORKER SAFETY-1**, **WORKER SAFETY-2**, **WORKER SAFETY-6, WORKER SAFETY-7**, **WORKER SAFETY-10,** and **HAZ-9.**

Jurisdictional Project Components

Sensitive plants were not detected in the project area. Direct and indirect impacts to sensitive plants are not expected to occur during operation activities. Should sensitive plants be detected impacts would be similar in type but greatly reduced in magnitude compared to those discussed for construction. Implementation of the COCs identified for construction would reduce impacts to special-status plants to less than significant.

Thermal Runaway and BESS Fires. Potential impacts from a BESS fire on sensitive plant species would be comparable to those described above for sensitive vegetation communities, including risks from chemical exposure, soil contamination, mortality, and habitat degradation. The risk is related to the size of the fire, the direction of the wind or plume, the distance from the fire, and the season when the fire occurs. It is likely that plants that occur in the primary deposition areas would be subject to higher risks compared to plants that receive lower doses of contamination. The deposition of fire related chemicals from a battery storage fire would be considered significant without mitigation. To reduce these impacts the applicant has proposed a series of measures to reduce fire risk, contain BESS fires, and ensure access to local firefighting personnel via a Fire Management and Prevention Plan. Section 5.7 (Hazards, Hazardous Materials/Waste, and Wildfire). Staff has proposed COCs **WORKER SAFETY-1**, **WORKER SAFETY-2**, **WORKER SAFETY-6, WORKER SAFETY-7**, and **WORKER SAFETY-10** which would mitigate the impact of potential BESS fires (during transport to and from the site, and onsite) during construction and operation to a less-than-significant level. Staff's proposed COC **HAZ-9** would require an air and water sampling plan and would require the project owner to develop an air sampling plan to ensure that information can be relayed to first responders in a timely manner. Additionally, water quality testing would be conducted prior to any disposal of water used for an incident. See **Section 4.4, Worker Safety and Fire Protection** and **Section 5.7, Hazards, Hazardous Materials/Waste, and Wildfire** for further information.

To reduce and manage the risk of BESS fires to biological resources staff has proposed COC **BIO-11** (Post BESS Fire Monitoring and Management Plan) which includes soil testing and remedial actions that would be required if sensitive species habitat is contaminated due to a BESS fire. Staff's proposed COC **BIO-11** (Post BESS Fire Monitoring and Management Plan) includes pre-sampling of adjacent habitat to establish baseline contaminant levels, an initial post fire assessment within two weeks following the fire to establish if any changes to baseline conditions and test for residual chemicals, and quarterly monitoring for 3 years to monitor the health of plants and wildlife and determine if species are being displaced or lost through mortality. Should chemical testing render the habitat unsuitable or unsafe to wildlife cleanup operations be required and compensatory land acquisition at a 1:1 ratio may be required depending on the extent of the damage.

Non-Jurisdictional Project Components

Network upgrades at the existing Marketplace and Adelanto substations would not impact sensitive vegetation or other biological resources because the upgrades are confined to existing developed substation footprints. Impacts to sensitive biological resources are not anticipated as no ground disturbing activity is proposed. Therefore, there would be no impact to sensitive plants resulting from network upgrades.

Common Wildlife

Construction

Less Than Significant. Impacts to common wildlife are not considered a significant impact under CEQA. Based on the analysis below, the proposed project would not result in significant impacts on common wildlife. However, the implementation of staff's proposed COCs **BIO-5** through **BIO-10, BIO-12, BIO-13, BIO-18, AQ-SC3, AQ-SC4, HAZ-1, HAZ-6, HAZ-7, VIS-5,** and **WATER-1** through **WATER-3**, and **WATER-9** would further reduce impacts from the project.

Jurisdictional Project Components

The project area supports a variety of common wildlife species known from this portion of the Mojave Desert. Direct and indirect impacts to these species depend on many factors that include but are not limited to the species use of the site (i.e., size of their home range); behavioral factors that result in wildlife seeking refuge rather than dispersing (i.e., site fidelity, cryptic behavior); a species dispersal ability and ecological characteristics (e.g., fossorial, highly motile versus slow moving); ecological characteristics (i.e., fossorial, aerial dispersal, highly mobile); and the ability of the species to evade or disperse from the construction activity. Project level effects on wildlife are further influenced by factors such as the seasonal use of the site. For example, some species including small mammals and many reptiles are year-round residents with small or restricted home ranges while other species including some birds may be periodic visitors or have large or overlapping home ranges. Other species such as large raptors limit their activity on the site to foraging from the adjacent Soda Mountains or other suitable nesting locations. Likewise, many species of birds may be semi-permanent dwellers or seasonal residents (i.e., migratory birds) that are present either as breeding pairs or overfly the area to forage at the nearby Soda Lake west of Zzyzx.

Direct impacts to wildlife could include mortality from trampling or crushing; increased noise levels due to heavy equipment use; light impacts from construction during low-light periods; increased vehicular and human presence along existing access roads; displacement due to habitat modifications, including vegetation removal, alterations of existing soil conditions; vibration and fugitive dust; and increased erosion and sediment transport. Wildlife could also become entombed in burrows or be subject to increased risk of predation when flushed from cover by equipment or construction workers. Fires that occur because of construction activities can quickly spread in arid regions where the concentrations of brome or Mediterranean grass are established.

Noise from clearing, grading and construction activities could also affect wildlife in adjacent habitats by interfering with breeding or foraging activities and movement patterns, causing animals to temporarily avoid areas adjacent to the construction zone. See **Section 5.9, Noise and Vibration**, which provides additional information on construction and operational noise levels. Nocturnal wildlife would be affected less by construction than diurnal species since construction would occur primarily during

daylight hours. However, construction may also occur during dusk and dawn when many species are highly active. More mobile species such as birds and larger mammals would likely disperse into adjacent habitat areas during the land clearing and grading phases of solar array and road construction. However, smaller animals would be less able to disperse. During construction it is likely that many of these species, especially fossorial, or slow-moving species, would be subject to displacement, injury, or mortality. Because the site would be surrounded by desert tortoise exclusion fencing, many small animals would be trapped within the fence line.

Lighting may also be required to facilitate nighttime construction activities, which could disrupt the activities and affect behavior of nocturnal wildlife. As discussed in **Section 5.15, Visual Resources**, construction lighting must be consistent with worker safety codes, directed toward the center of the construction site, shielded to prevent light from straying offsite, and task specific rather than broadcast lighting. Staff's proposed COC **VIS-5** requires temporary lighting measures during construction activity and on the laydown area. See **Section 5.15, Visual Resources**, for more details about staff's proposed COC **VIS-5**. Staff' proposed COC **BIO-7** (General Impact and Avoidance Measures) also requires shielding nighttime lighting to prevent light pollution to adjacent habitat. With implementation of **VIS-5** and **BIO-7**, impacts to common wildlife from construction lighting would be less than significant.

Indirect impacts to wildlife include the disruption of the native seed bank that supports foraging plants, the spread of invasive plant species that alter prey items, alterations in light regimes and the creation of overhead structures (i.e., shade from solar panels), or changes to soil or hydrology that adversely affect native species overtime. Indirect impacts may also include increased traffic and human disturbance and the disruption of prey base or increased predation through alterations of the physical landscape from project features (i.e., fencing, solar arrays, or power poles) that provide perch sites or shelter for predators.

Construction related effects to common wildlife are typically not considered significant under CEQA. However, staff conclude that the scale and duration of construction (i.e., over 2,000 acres over a period of 29 months); the variety of wildlife present at the project area; and the use of perimeter fencing, which would prevent many species from dispersing, would result in significant effects to common wildlife without implementation of mitigation measures.

By design, the project facility would include perimeter fencing to prevent desert tortoise and other species from entering the work area. Prior to construction, desert tortoises and other species (i.e. desert kit fox, American badger, and burrowing owl) inhabiting the project area would be relocated/translocated to suitable receptor sites. Except for birds, this barrier would exclude or entrap wildlife at the project area. Therefore, during construction, terrestrial wildlife trapped within the perimeter fence would have limited dispersal ability. This would subject any trapped wildlife to repeated disturbance from construction and the use of roads to support maintenance activities. While many species of wildlife can tolerate human disturbance to some degree; implementation of

the proposed project would result in an ongoing loss of wildlife from mowing, vehicle traffic, nest failure, and alteration of foraging habitat.

The most likely long-term effect of the project on wildlife trapped within the project by perimeter fencing is mortality from road traffic and the loss of habitat functions and value due to vegetation management. In addition, during road grading and construction activities displaced animals or those killed during construction would attract common ravens and other predatory birds that would increase edge effects and risk to other native species within and adjacent to the project. Ravens are opportunistic predators and well adapted to foraging at construction sites. Displacement would likely result in mortality or decreased fitness for some species while other species may benefit from preying on displaced animals. For example, it is common to observe ravens feeding on displaced or injured animals that have been exposed during initial vegetation or grading activities. Similarly, some species of predatory birds also are attracted to the initial construction activities where they prey on small insects, mice, and reptiles. These impacts would also occur during the gen-tie line construction but to a lesser degree.

The applicant has recommended general impact avoidance and minimization measures to reduce construction related impacts to common and sensitive wildlife. Staff has reviewed these measures and incorporated them into staff's proposed COCs and enhanced them as necessary to reduce effects on common wildlife. These include **BIO-5** (Worker Environmental Awareness Program [WEAP]), **BIO-6** (Biological Resources Mitigation Implementation and Monitoring Plan), **BIO-7** (General Impact and Avoidance Measures), **BIO-8** (Vegetation Management Plan), **BIO-9** (Integrated Weed Management Plan), **BIO-10** (Invasive Species Management Plan), **BIO-12** (Special-Status Plant Avoidance Measures), **BIO-13** (Vegetation Resources Management Plan), **BIO-18** (Nesting Bird Avoidance and Minimization Measures), **AQ-SC3**, **AQ-SC4**, **HAZ-1**, **HAZ-6**, **HAZ-7**, and **WORKER SAFETY-1**. These COCs are designed to educate workers of the presence and sensitivity of wildlife that may occur in the project area; provide limitations on the work that may occur during the breeding season; require inspection for wildlife under vehicles; reducing or controlling fugitive and vehicle speeds; monitoring construction to reduce direct wildlife mortality; and the control of noxious weeds. The conditions also reduce impacts to common wildlife from the effects of noise and lighting.

Non-Jurisdictional Project Components

Network upgrades at the existing Marketplace and Adelanto substations would not impact common wildlife because the upgrades are confined to existing developed substation footprints. Impacts to common wildlife are not anticipated as no ground disturbing activity is proposed. There is some potential that common nesting birds could be present during various upgrades however the Los Angeles Department of Water and Power (LADWP) implements standard environmental practices that would reduce this impact. Therefore, there would be no impact to common nesting birds resulting from network upgrades.

Operation

Less Than Significant with Mitigation Incorporated. Based on the following analysis, operations associated with the proposed project would not result in significant impacts to common wildlife. The implementation of staff's proposed **BIO-7, BIO-11, BIO-18, BIO-19, HAZ-9, WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-6, WORKER SAFETY-7**, and **WORKER SAFETY-10** would reduce impacts from the project to less than significant.

Jurisdictional Project Components

Direct and indirect impacts associated with operation activities would be substantially reduced relative to initial construction activities. Operation activities would include routine inspection of facilities, washing of solar panels, periodic vegetation management under the arrays, and other routine activities. During these events it is possible that direct impacts to wildlife could result from crushing or trampling of wildlife that are in the facility or the disruption of nesting birds. It is likely that common birds would nest or use the new arrays after the completion of construction. Operational noise at the project is expected to be low and human presence limited to facility staff and periodic maintenance activities. Although noise levels are generally high due to the adjacent Highway, sound attenuates on portions of the project closer to the Soda Mountains.

Insects and other wildlife are likely to be attracted to any ponded water that may occur after large storm events. While the existing drainages are not expected to hold surface water for extended periods of time, they could hold water for a short period of time (less than one day) after a large storm event. This could provide subsidized water for ravens as well as attract other forms of wildlife. Because these features are natural and are not expected to entrap wildlife it is unlikely they would pose a serios risk of entrapment or drowning. However, there is a potential that birds could collide with the solar arrays should they mistake them for water that is present in the existing channels after a large storm event. As a part of the project design storm flows would be allowed to move through the project site along the existing drainage features and the large natural channels are expected to convey large storm events. However, as described by the applicant, based on additional hydrology studies there may be some channel construction to ensure the passage of large flows.

To address these concerns, staff has proposed specific measures in COC **BIO-7** (General Impact and Avoidance Measures) that would include ensuring that appropriate wildlife ramps are installed to reduce entrapment and limit access to any location that could entrap wildlife. Birds and insects may also collide with the solar arrays and other project components during the operation of the facility. These impacts are described below under common and special status birds and would be reduced through the implementation of COC **BIO-18** (Nesting Bird Avoidance and Minimization Measures) and **BIO-19** (Bird and Bat Conservation Plan).

CEC staff conclude that the implementation of the proposed COCs described for construction would reduce project related impacts to common wildlife, including common birds.

Thermal Runaway and BESS Fires. Potential impacts from a BESS fire on common wildlife could include risks from chemical exposure, smoke inhalation, soil and water contamination, mortality, and habitat degradation. In addition, a BESS fire could result in the disruption of typical activity patterns and alter animal behavior. Post fire clean up and repairs would also subject wildlife to human disturbance which could disrupt nesting, foraging, or other essential behaviors.

Factors such as wind speed, rainfall, and species activity periods influence the extent and severity of these impacts. Fires involving lithium-ion batteries release toxic gases (e.g., hydrogen fluoride, carbon monoxide) and heavy metals (e.g., nickel, cobalt, manganese) that settle on soil, vegetation, and water sources, degrading foraging habitat and posing ingestion or exposure risks to wildlife. While larger animals would likely move away from the area during a fire, small animals with limited dispersal abilities or those that are fossorial or have behaviors that promote seeking refuge or hiding may be at greater risk of exposure.

Common wildlife could also be at higher risk of exposure following a rainfall event when chemicals become concentrated or transported to ephemeral water sources which are critical resources to many desert species. Conversely, if a BESS fire occurs during periods of low rainfall, foraging animals could be exposed to longer periods of exposure to toxic byproducts of the fire.

To reduce these impacts the applicant has proposed a series of measures to reduce fire risk, contain BESS fires, and ensure access to local firefighting personnel via a Fire Management and Prevention Plan. As described in Section 5.7 (Hazards, Hazardous Materials/Waste, and Wildfire) include staff's proposed COCs **WORKER SAFETY-1**, **WORKER SAFETY-2**, **WORKER SAFETY-6**, **WORKER SAFETY-7**, and **WORKER SAFETY-10** which would mitigate the impact of potential BESS fires (during transport to and from the site, and onsite) during construction and operation to a less-than-significant level. Staff's recommended COC **HAZ-9** would require an air and water sampling plan and would require the project owner to develop an air sampling plan to ensure that information can be relayed to first responders in a timely manner. Additionally, water quality testing would be conducted prior to any disposal of water used for an incident. Staff's proposed COC **BIO-11** (Post BESS Fire Monitoring and Management Plan) includes soil testing and remedial actions including pre- and post-fire ecological monitoring, and runoff containment. See **Section 4.4, Worker Safety and Fire Protection** and **Section 5.7 Hazards, Hazardous Materials/Waste, and Wildfire** for further information.

Non-Jurisdictional Project Components

Network upgrades at the existing Marketplace and Adelanto substations would not impact common wildlife during operation of those projects because the upgrades are confined to existing developed substation footprints. Impacts to common wildlife are not anticipated as no ground disturbing activity is proposed. There is some potential that nesting birds could be present during various upgrades however LADWP implements standard environmental practices that would reduce this impact. Therefore, there would be no impact resulting from network upgrades.

Special Status Wildlife

Habitat in the project area has the potential to support a variety of special-status wildlife. Some of the sensitive species observed in the project area include desert tortoise, burrowing owl, desert kit fox, Le Conte's thrasher, American badger, and Nelson's or desert bighorn sheep. Biological Resource **Table 5.2-5** lists the special-status wildlife species that have the potential to occur in the project area. Impacts to special-status or listed species would occur in the same way as described for common wildlife and could be caused by a variety of direct and indirect factors. Impacts to special-status species are described below.

Special Status Invertebrates

Special status invertebrate species, including those that may be threatened, endangered, candidate, proposed for listing, or designated as sensitive were not observed in the project area during biological surveys conducted by the applicant. Crotch's bumble bee has a low potential to occur. Monarch butterfly also has the potential to occur in the project area, however foraging plants for this species were not detected on the project area.

Crotch's Bumble Bee

Construction

Less Than Significant with Mitigation. Based on the analysis below, the proposed project would not substantially affect Crotch's bumble bee, either directly or through habitat modifications, and impacts would be less than significant with the implementation of staff's proposed COCs **BIO-1** through **BIO-10, BIO-14, AQ-SC3, AQ-SC4, HAZ-1, HAZ-6, HAZ-7,** and **WORKER SAFETY-1**.

Jurisdictional Project Components

Crotch's bumble bee is a candidate for listing under CESA. Crotch's bumble bee was not detected by the applicant during surveys conducted during May, June, July, and August of 2023. However, two unidentified species of bumble bees were detected by the applicant north of the gen-tie line. The project area is located outside of the geographic range of this species however there have been observations of this species at higher elevations in Death Valley which is located north of the project area. There are no other detections of this species within 10 miles of the site. While bumble bees can forage and

disperse over relatively long distances, isolated patches of habitat may not be sufficient to support bumble bee populations (Hatfield and LeBuhn, 2007; Ockinger and Smith, 2007). While it is possible that this species could be found in more arid locations staff considers the likelihood of encountering this species to be low.

Crotch's bumble bee has a wide geographic and elevational distribution and utilizes a variety of habitats throughout its current range. Despite population declines, there remains a relatively large amount of intact habitat across their range. Ongoing survey efforts, such as those conducted through projects like the California Bumble Bee Atlas (https://www.cabumblebeeatlas.org/point-surveys.html), are providing a better understanding region-wide of the current distribution, habitat use, and threats to Crotch's bumble bee. As a result of these efforts, detections of Crotch's bumble bees across California are increasing and bees have been detected in a much broader area than previously documented.

Construction of the proposed project is not expected to remove currently utilized foraging habitat or result in the direct loss of individual bees or colonies. Therefore, direct impacts to Crotch's bumble bee are not expected to occur. However, there remains some uncertainty as to annual distribution and range of Crotch's bumble bee in this portion of the Mojave Desert, particularly because surveys do not also detect animals when they are in low densities. Crotch's bumble bee populations are also patchy, often occur at low densities, and may occur as isolated occurrences.

The absence of recent survey detections near Soda Mountains does not confirm absence of the species. In this portion of the Mojave Desert, foraging resources can vary widely and are dependent on seasonal rainfall. The project area is at a relatively low elevation and supports sparse floral resources, except in years with above average rainfall. It is likely that the range and distribution of Crotch's bumble bees in this area varies greatly year to year and may be limited to higher elevation areas with greater floral resources similar to those found near the iNaturalist recorded occurrence in Death Valley.

Therefore, if Crotch's bumble bee is present during construction, potential impacts would include the loss of individuals, loss or modification of sparse foraging and possibly nesting habitat, the disturbance or destruction of occupied nesting sites, and exposure of individuals and/or nesting sites to fugitive dust, ground vibration from drilling or auguring in the foundations for the arrays, grading, collision with vehicles, herbicides, and other hazardous materials. Indirect impacts could include habitat fragmentation and the loss or degradation of habitat from invasive weeds. The loss of bees and occupied foraging habitat would be considered a significant impact without mitigation.

The applicant did not request take authorization for Crotch's bumble bee and full avoidance would be necessary. The applicant has proposed to avoid take by conducting pre-construction surveys and avoidance of the species should it be identified. In addition, the applicant has proposed a series of general and specific measures to

reduce and mitigate impacts to Crotch's bumble bee should they be detected including but not limited to worker training, conducting pre-construction surveys, monitoring, and the implementation of non-disturbance buffers.

CEC staff has incorporated these measures into proposed COCs, as appropriate. The COCs also include recommendations that were developed in coordination with the CDFW to ensure that take of this species is avoided. To reduce impacts and avoid take staff recommends COC **BIO-14** (Crotch's Bumble Bee Avoidance Measures), which would require identifying suitable habitat for Crotch's bumble bees within the project area, surveying those areas for active nesting sites, and avoiding active nesting sites, if present. Work would be directed around the active nest site until the bees have left the colony or the colony has completed its lifecycle and is subject to seasonal die-off. Risk to individual bees would be minimized through the implementation of **BIO-7** (General Impact and Avoidance Measures), which include best management practices to avoid impacts to sensitive wildlife.

In addition, staff recommends implementation of the following COCs: **BIO-1** (Designated Biologist Selection), **BIO-2** (Designated Biologist Duties), **BIO-3** (Designated Monitor Selection), **BIO-4** (Designated Biologist and Biological Monitor Authority), **BIO-5** (Worker Environmental Awareness Program [WEAP]), **BIO-6** (Biological Resources Mitigation Implementation and Monitoring Plan), **BIO-7** (General Impact and Avoidance Measures), **BIO-8** (Vegetation Management Plan), **BIO-9** (Integrated Weed Management Plan), **BIO-10** (Invasive Species Management Plan), as well as **AQ-SC3, AQ-SC4, HAZ-1, HAZ-6, HAZ-7**, and **WORKER SAFETY-1**. Implementation of the above measures would avoid impacts to Crotch's bumble bee from construction of the project.

Non-Jurisdictional Project Components

Network upgrades at the existing Marketplace and Adelanto substations are not expected to impact Crotch's bumble bees because the upgrades are confined to existing developed substation footprints. Impacts are not anticipated as no ground disturbing activity is proposed. Therefore, there would be no impact resulting from network upgrades.

Operation

Less than Significant with Mitigation. Based on the analysis below, the operations associated with the proposed project would not substantially adversely affect Crotch's bumble bee, either directly or through habitat modification, and impacts would be less than significant with the implementation of staff's proposed COCs **BIO-1** through **BIO-11, BIO-14, AQ-SC3, AQ-SC4, HAZ-1, HAZ-6, HAZ-7, HAZ-9, WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-6, WORKER SAFETY-7,** and **WORKER SAFETY-10.**

Jurisdictional Project Components

Direct and indirect impacts associated with operation of the proposed project would be substantially reduced relative to initial construction activities. Generally, there would be no impacts to habitat outside of periodic vegetation management under the arrays and to repair roads, fences, or culverts after storm events. If present, bees could be disturbed from noise or vibration should they nest immediately adjacent to disturbance areas but those impacts are expected to be limited and have a low likelihood of occurring. The implementation of the same staff proposed COCs identified for construction, including **BIO-1** through **BIO-10, BIO-14, AQ-SC3, AQ-SC4, HAZ-1, HAZ-6, HAZ-7**, and **WORKER SAFETY-1**, would reduce impacts to Crotch's Bumble Bee to less than significant and avoid take of a candidate species should take occur.

Thermal Runaway and BESS Fires. Potential impacts from a BESS fire on Crotch's bumble bee, if present would be similar to the impacts described for common wildlife. These impacts could include risks from chemical exposure, smoke inhalation, soil and water contamination, direct mortality if nest sites are present, and habitat degradation. However, because the risk of a fire is low and the potential for this species to occur in the project area is low the implementation of the same staff proposed COCs for common wildlife and sensitive plants, including **BIO-11, HAZ-9, WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-6, WORKER SAFETY-7**, and **WORKER SAFETY-10**, would reduce impacts to Crotch's bumble bee to less than significant and reduce the potential take of a candidate species should they occur.

Non-Jurisdictional Project Components

Operational impacts associated with network upgrades are not anticipated as no ground disturbing activity is proposed and work would be confined to developed facilities. Therefore, there would be no impact to Crotch's bumble bee resulting from network upgrades.

Monarch Butterfly

Construction

Less Than Significant with Mitigation. Based on the analysis below, the proposed project would not substantially affect monarch butterfly, either directly or through habitat modifications, and impacts would be less than significant with the implementation of staff's proposed COCs **BIO-1** through **BIO-9, BIO-13, AQ-SC3,** and **AQ-SC4**.

Jurisdictional Project Components

Monarch butterfly is a candidate for federal listing. Although species designated as federal candidates for listing do not receive full protection under the Endangered Species Act (ESA), take would only be authorized under the context of the appropriate permits issued by the U.S. Fish and Wildlife Service (USFWS) if the species is officially designated as federally threatened or endangered prior to implementation of the project.

The abundance and migratory behavior of monarch butterflies are a product of the diversity and abundance of larval milkweed host plants of the genus Asclepias (Malcolm, 2018). During the breeding season, monarch butterflies lay their eggs on their obligate milkweed host plant which provide toxins to protect them from predation. Larvae emerge after two to five days and develop while feeding on the milkweed host plant.

Monarch butterflies were not detected in the project area. In addition, the project area is well outside the known overwintering range for the species. Some milkweed plants were observed by the applicant during focused rare plant surveys in 2023 and 2024. The nearest records for this species are located at Zzyzx, approximately 3.5 miles to the west and in Baker, just over 7 miles to the northeast.

Therefore, monarch butterfly overwintering or breeding individuals are not likely to occur, but there is a low potential the species could be present as an infrequent migrant and forager within or adjacent to the project area.

There is a low potential for direct impacts to monarch butterfly, if present during construction activities, which could include exposure to fugitive dust, herbicides, and other hazardous materials. Indirect impacts could include collisions with solar arrays of habitat fragmentation and the loss or degradation of habitat from invasive weeds. If present during project activities, impacts to monarch butterfly due to exposure to herbicides or other hazardous materials, exposure to fugitive dust, and degradation of habitat from invasive or noxious weeds would be considered a significant impact absent mitigation.

To reduce impacts to less than significant, staff proposes implementation of the following COCs: **BIO-1** (Designated Biologist Selection), **BIO-2** (Designated Biologist Duties), **BIO-3** (Designated Monitor Selection), **BIO-4** (Designated Biologist and Biological Monitor Authority), **BIO-5** (Worker Environmental Awareness Program [WEAP]), **BIO-6** (Biological Resources Mitigation Implementation and Monitoring Plan), **BIO-7** (General Impact and Avoidance Measures), **BIO-9** (Integrated Weed Management Plan), and **BIO-13** (Vegetation Resources Management Plan). As a component of **BIO-8** (Vegetation Management Plan) the project owner would be required to include suitable milkweed species as part of the seed mix along with other flowering plants used by pollinators such as monarchs and bumble bees. This would ensure that temporarily disturbed areas that are proposed for restoration would offer host plants for this species in the future. In addition, staff's proposed COC **BIO-7** identifies a series of standard environmental measures that must be complied with during construction. Staff's proposed COC **BIO-9** (Integrated Weed Management Plan) would require the identification and avoidance of milkweed plants during vegetation management or herbicide use should they be present.

Impacts from fugitive dust would be mitigated by implementation of staff's recommended COCs **AQ-SC3** and **AQ-SC4**, which include watering roads and or stabilizing them with soil binders and would require a qualified dust monitor. Implementation of these measures would reduce impacts to a less than significant level.

Non-Jurisdictional Project Components

Network upgrades at the existing Marketplace and Adelanto substations are not expected to impact monarch butterflies because the upgrades are confined to existing developed substation footprints. Impacts are not anticipated as no ground disturbing activity is proposed. Therefore, there would be no impact to monarch butterflies resulting from network upgrades.

Operation

Less Than Significant with Mitigation. Based on the analysis below, the operations associated with the proposed project would not substantially adversely affect monarch butterfly, either directly or through habitat modification, and impacts would be less than significant with the implementation of staff's proposed COCs **BIO-1** through **BIO-9**, **BIO-11**, **BIO-13, AQ-SC3**, and **AQ-SC4.**

Jurisdictional Project Components

Direct and indirect impacts associated with operation activities would be substantially reduced relative to initial construction activities. The placement of the solar arrays could alter the behavior of some wildlife species by creating a phenomenon called Polarized Light Pollution (PLP) which occurs from light reflecting off dark colored anthropogenic structures and has been demonstrated to be generated from even low-reflectance photovoltaic panels (Horvath et al. 2009). According to Horvath et al., PLP caused by anthropogenic structures can alter the ability of wildlife to seek out suitable habitat and elude or detect the presence of predators (Horvath et al. 2010). It has also been documented that for a variety of birds and other species PLP can affect their ability to detect natural polarized light patterns in the sky which can negatively affect navigation ability and ultimately affect dispersal and reproduction (Horvath et al. 2009). Although the proposed heliostats are not expected to result in PLP the effects of large reflective surfaces are poorly understood. Polarizing surfaces are also known to disrupt insect behavior, causing some insects to react as though the surface is water, and depositing eggs on polarizing surfaces (Horvath et al. 2009). Horvath et al (2009) determined that minimization of polarizing effects was possible by adding white grids onto solar panels or otherwise minimizing the solar active area.

Unlike birds and bats, there are no published studies that document monarch butterfly collisions with solar panels. The phenomenon Horváth described (i.e., solar panels reflecting horizontally polarized light that mimics water surfaces) is primarily a risk for aquatic insects (mayflies, caddisflies, dragonflies, etc.) that use polarized light to locate oviposition (egg-laying) sites. Butterflies, including monarchs, are not known to rely on polarized light in this way, and there is no scientific evidence that they are attracted to solar panels as false water bodies. Their risks around solar farms are more associated with habitat loss, nectar plant removal, and potential heat/reflection stress, not direct attraction to panels.

An important consideration for this project is the applicant's intent to preserve habitat within the solar arrays and allow some species of wildlife access to the solar field post development. The U.S. Geological Survey (Karban et al., 2024) developed a framework on wildlife responses to solar development that highlights large-scale solar in desert ecosystems can remove or fragment ephemeral foraging habitat for pollinators, including monarchs. However, it also notes that preserving vegetation and augmenting habitat can improve or preserve habitat that would otherwise be lost due to large scale land clearing. In addition, the report predicts that species with behavioral flexibility and broad ecological requirements such as lizards, burrowing owls, and kit foxes would be more capable of taking advantage of areas affected by solar development, while species with specific habitat requirements such as some species of plants, insects including native bees, desert tortoises, and bighorn sheep would be more vulnerable and tend to avert or avoid being impacted (ibid). Similarly, species such as coyotes, ravens, and non-native grasses may be able to exploit these areas because they are disturbance tolerant (ibid).

Thermal Runaway and BESS Fires. Potential impacts from a BESS fire on monarch butterflies would be similar to the impacts described for common wildlife. Thes impacts could include risks from chemical exposure, smoke inhalation, soil and water contamination, direct mortality if present, and habitat degradation. However, as this species has not been detected on the project area and foraging habitat is sparse the risk to this species from a BESS fire is low. The implementation of the staff's proposed COCs for project construction including **BIO-1** through **BIO-9, BIO-13, AQ-SC3**, and **AQ-SC4**, along with **BIO-11** (Post BESS Fire Monitoring and Management Plan) would reduce operation impacts to monarch butterflies to less than significant.

Non-Jurisdictional Project Components

Operational impacts associated with network upgrades are not anticipated as no ground disturbing activity is proposed and work would be confined to developed facilities. Therefore, there would be no impact to monarch butterflies resulting from network upgrades.

Special-Status Fish

Construction

No Impact. Based on the analysis below, the proposed project would not substantially affect special-status fish, either directly or through habitat modifications, and impacts would not occur resulting from construction associated with the proposed project.

Jurisdictional and Non-Jurisdictional Project Components

The project area does not support suitable habitat for special-status fish, and none are expected to occur. Special-status fish are not expected to be affected by construction activities associated with the project. The closest known location of special-status fish is at Zzyzx located on the southern side of the South Soda Mountains. The water source

for this pond is hydrologically distinct from any ground water that would be used to support the construction of the proposed project. As noted in the BO for the original Soda Mountain Project (USFWS 2016) the results the U.S. Geological Survey (2014) used the results of Panorama's (2014a) groundwater well test to assess the potential effects of pumping groundwater from the Soda Mountain basin and found that the proposed pumping for the Soda Mountain Solar Project was unlikely to measurably affect discharge from nearby areas that support Mohave tui chub. Therefore, no impacts are expected to occur.

The BLM did include a revised groundwater monitoring and mitigation plan to reflect the results of the groundwater well test and identified thresholds that would trigger corrective measures to avoid effects to Mohave tui chub (Panorama 2014a). Based on the groundwater monitoring and mitigation plan (Panorama 2014a), the USFWS concluded that the proposed Soda Mountain Solar Project may affect, but is not likely to adversely affect, the Mohave tui chub.

Operation

No Impact. Based on the analysis below, the proposed project would not substantially affect special-status fish, either directly or through habitat modifications, and impacts would not occur resulting from operations associated with the proposed project. Nonetheless, the implementation of staff proposed COC **BIO-11** would be implemented to ensure impacts to special-status fish are avoided during operation activities.

Jurisdictional and Non-Jurisdictional Project Components

This species is not expected to be impacted during the operation of the project. However, staff has proposed COC **BIO-11** (Post BESS Fire Monitoring and Management Plan) in the unlikely event a BESS battery fire occurred. This would require post fire monitoring at the Zzyzx ponds and would require remedial cleanup should contaminants be detected in the water following a BESS fire.

Special-Status Amphibians

No Impact. The project area does not support suitable habitat for special-status amphibians, and none are expected to occur. Special-status amphibians are not expected to be affected by construction or operations associated with the project.

Special-Status Reptiles

The project area is known to support a very low-density population of desert tortoise. In addition, Mojave fringe-toed lizards are known immediately south of the project area and could periodically disperse along the southern margin of the project where isolated semi stabilized sand fields were mapped by the applicant. The Mojave fringe-toes lizard is a state species of special concern, and the desert tortoise is federal- and state-listed as threatened under the ESA and California Endangered Species Act (CESA), respectively.

Desert Tortoise

Less Than Significant with Mitigation, Fully Mitigated for CESA Compliance. Based on the analysis below, the proposed project would not substantially affect desert tortoise, either directly or through habitat modifications, and impacts would be less than significant with the implementation of staff's proposed COCs **BIO-1** through **BIO-6, BIO-8, BIO-9, BIO-13, AQ-SC3, AQ-SC4, WATER-1, WATER-2, WATER-3**, and **WATER-9**.

Jurisdictional Project Components

The ITP application provided by the applicant indicated that five protocol-level surveys for desert tortoise were performed in the proposed project area between 2009 and 2023 (261593 ITP App). A detailed description of each of the surveys can be found in the ITP application (261593 ITP App) and supporting application materials (RE 2024c).

The results of these surveys and the conclusions identified in the USFWS BO is that the densities and use of the proposed project area by desert tortoise is low. During each of the previous survey's observations were limited to isolated live animal detections, scat, burrows, and carcasses. The most recent surveys conducted in 2023 identified up to 182 potential desert tortoise burrows ranging from good to poor condition and two scats one less than a day old and one approximately one month old (RE 2024aa). The ITP application noted that the highest concentration of high-quality burrows (Class 2), scat, and carcasses were found in the northern portion of the project, especially in the northeastern area (see **Figure 5.2-4**). However, desert tortoise could occur anywhere in the project area.

Desert tortoises have not been observed along the proposed gen-tie alignment however the habitat in that area appears to be better quality compared to habitat conditions on the project area. The project area is not located within USFWS designated critical habitat for this species. All portions of the project area contain habitat features mapped as conducive to desert tortoise occupancy (Nussear et al. 2009).

Anticipated Take

Habitat Loss. Construction of the proposed project would result in approximately 2,074 acres of permanent and temporary impacts of desert tortoise habitat and other landforms throughout the project area. This would include approximately 71.74 acres of permanent loss and 2002.3 acres of temporary loss from grading, construction of roads, and other infrastructure that would occur in areas supporting the solar arrays. Post construction, approximately 1,506 acres would remain within the fenced solar arrays and 497.26 acres would be subject to restoration. For the purposes of this analysis, these temporary areas would be treated as permanent as they will remain within the fence line or be subject to project related disturbance. Although the project proposes to utilize a "low impact design" which substitutes mowing for grading wherever possible, and maintains natural drainage features as much as possible; functional habitat values in the project area for most species of wildlife including desert tortoise would be lost or degraded.

The applicant has provided a mitigation approach to acquire lands at a 1:1 ratio for permanent impacts and suggests that temporary impacts would be offset by preserving habitat under the solar arrays. Post construction the applicant proposed the removal of the desert tortoise fencing to allow this and other species access to the existing solar fields. The applicant suggests that allowing access to the solar fields would minimize impacts to desert tortoise habitat and reduce the need for mitigation for those areas. This conclusion is partly based on studies of large solar fields located on the Carrizo Plain (an arid region located east of San Luis Obispo, California) where species such as San Joaquin kit fox (*Vulpes macrotis mutica*) and giant kangaroo rat (*Dipodomys ingens*) were found to recolonize portions of the solar field after construction. While these species appear to use these areas, recent studies conducted in the Mojave Desert suggest different conclusions for desert dwelling species. The USGS conducted a study titled Predicting Wildlife and Plant Responses to Solar Energy Development in the Desert Southwest, United States (Karbon et al., 2024) which found that species could be characterized by trait-based responses to development. These included:

Avoiders: Species with narrow niches, specialized diets, or habitat needs that tend to decline under disturbance including desert tortoise and many rare plants.

Tolerators: Species that survive at low abundance and may persist but not thrive such as desert kit fox and western burrowing owls.

Exploiters: Species that are generalists with flexible traits that can benefit from altered conditions (e.g., shade, disturbed soils, human intrusion) including non-native grasses, and some insects, reptiles, birds and mammals.

Desert tortoise is classified as an avoidant species with narrow habitat requirements, low reproductive rates, and sensitivity to disturbance. The study notes that although a pilot study is testing whether tortoises can persist inside photovoltaic facilities that retain some intact vegetation and use wildlife-friendly fencing, the authors caution that the long-term demographic effects are unknown (ibid). Therefore, they do not recommend broadly allowing tortoises to remain inside solar sites at this time; instead, the use of this approach remains an open research question that should be evaluated after additional studies. Staff notes that for this project desert tortoise exclusion fence is currently a requirement of the USFWS Biological Opinion (USFWS 2016) and the removal of the fencing for this project would likely require additional consultation with the USFWS. Specifically, the BO states "the applicant would install permanent security fencing, integrated with desert tortoise exclusion around various portions of the project. Fencing would be approximately 6-feet high with 1 foot of barbed wire at the top and integrated with desert tortoise exclusion fencing". In addition, CDFW and staff have concluded that fencing would be required for this project to reduce operational impacts to the small number of desert tortoise that occur in the project area and to prevent the loss of individual animals over the operational life of the project.

Therefore, for the purposes of impact assessment all areas within the proposed fence line of the project including roads, temporary storm basinsthe switching station, substation, BESS, other components, and the areas under the solar arrays are

considered a permanent loss of habitat for desert tortoise. These impacts would be considered significant and require the acquisition of compensatory mitigation lands to reduce impacts to less than significant under CEQA and to fully mitigate impacts under CESA.

The project would result in "take" of desert tortoise as that term is defined under both state and federal law. Under the CESA, impacts for take of listed species must be "fully mitigated," such that the project does not result in the net loss of the species. CDFW, were it issuing the take permit, would require "compensatory mitigation" to meet the requirement that the project be "fully mitigated." Since the Energy Commission is issuing a permit that subsumes the CDFW "take" permit, staff has consulted with CDFW to determine the compensatory mitigation appropriate for the project.

The BLM and USFWS required a 1:1 mitigation ratio for impacts to desert tortoise habitat in the 2015 EIR/EIS and the 2016 BO.

Staff in coordination with CDFW have developed the following metrics to mitigate impacts to desert tortoise.

- 2.25:1 ratio for all permanent disturbance and for areas located within the fenced project area on the south side of Interstate-15 including the new Rasor Road relocation (1,538.79 x 2.25 = 3,462.3 acres of mitigation);
- 1.5:1 ratio for the areas located between the arrays that allow for the use of and passage for desert tortoise (497.26 x 1.5 = 745.9 acres of mitigation);
- 3:1 ratio for any new access roads, pole foundations, cleared areas, substation located north of Interstate-15 as this area is a proposed ACEC (36.1 x 3 = 108.3 acres of mitigation).
- In total the required compensatory mitigation requirement to fully mitigate impacts to desert tortoise would be 4,316.5 acres.

The rationale for these ratios considered the following factors and or metrics.

- **Location:** The proposed project would result in the permanent disturbance or exclusion of 1551.2 acres of desert tortoise habitat. Surveys indicate sparse occupancy, but the site lies within the Eastern Mojave Recovery Unit and functions as a potential connectivity zone between the South and North Soda Mountains and Mojave National Preserve. The project gen-tie line is within the Soda Mountains Expansion ACEC as designated by BLM. ACECs are designated where the BLM has determined that important historical, cultural, scenic, fish and wildlife, or other natural resources occur, and special protection is warranted (RE 2024aa).
- **Existing Risks:** The project is in an area subject to OHV usage and overnight camping during winter months. Local raven subsidies occur from overnight truck parking at Zzyzx Road, Arrowhead Trail, and Rasor Road. This increases the risk of tortoise mortality from ravens, other subsidized predators, vehicle collision, and collection by the public.

- **Habitat:** Moderately intact creosote scrub is suitable for this species that has been degraded by the attenuation of flows from the construction of I-15.
- **Occupancy:** Low density and not a core population area. This reduces the number of desert tortoises that are present in this area and that would be subject to impacts from construction or translocation.
- **Connectivity:** Location provides potential linkage between recovery lands and Mojave National Preserve. Area may become more important after the completion of the proposed wildlife crossing located north of the site.
- **Cumulative Impacts:** Project located in area with existing and ongoing threats to habitat and the species.

Loss or mortality to Individual Desert Tortoise: Although only a small number of desert tortoises were detected in the project area it is likely that the project area supports a larger number of tortoises than were observed by the surveyors. Desert tortoises are frequently unavailable to be sampled by field crews because they make extensive use of underground shelters (Nussear 2004). Similarly, desert tortoises spend much of the year in burrows even during the active season (Woodbury and Hardy 1948; Marlow 1979; Nagy and Medica 1986; Bulova 1994), and only the proportion of the tortoise population that is above ground is usually sampled (Nussear 2004). Even when desert tortoises are active and above ground during the surveys only a subset of these animals are usually detected. This can lead to a violation of a critical assumption of the line distance sampling technique, namely, that all animals on the line are found (Anderson et al. 2001; Buckland et al. 2001).

To account for observer bias, weather conditions, and desert tortoise behavior the USFWS developed a predictive model (USFWS 2010) for estimating the expected range of desert tortoise that may be present based on the limited ability to detect animals during the surveys. The USFWS 2010 survey protocol considers the probability that tortoises would be present above ground based on the previous winter's rainfall and the fact that not all tortoises within the survey area are seen by surveyors. The model then provides a mathematical formula that is used to estimate the number of adult and subadult tortoises that are present. Statistical techniques can provide further estimates of minimum and maximum numbers of tortoises expected, within a 95 percent confidence interval. In addition, most juvenile tortoises and tortoise eggs are not detected during field surveys.

Based on the predictive formulas the USFWS BO estimated that a maximum of 10 adult or subadult (>180 mm) and 68 juvenile or hatchling (<180 mm) desert tortoises could occur in the area, which fell in the upper bounds of incidental take authorized in the BO (RE 2025i). However, this estimate included solar arrays north of the I-15, which are no longer part of the proposed Project (Ibid). However, for the purposes of this analysis staff is utilizing the numbers for expected take identified for the larger area.

Direct impacts to low numbers of desert tortoise are expected to occur during the construction of the proposed project. Direct impacts could include collision or crushing by heavy equipment and vehicles, collapse of burrows from vehicle or heavy equipment traffic, exposure to herbicides, and displacement from foraging habitat. Construction activities could also result in direct mortality, injury, or harassment of individuals and eggs from encounters with vehicles or heavy equipment. Desert tortoises are known to shelter under parked vehicles and be killed, injured, or harassed when the vehicle is moved. Other direct effects could include individual tortoises or eggs being entombed in their burrows, collection or vandalism, disruption of tortoise behavior during construction and disturbance due to noise or vibrations from heavy equipment. Human disturbance, lighting and noise may disrupt desert tortoises in adjacent lands. Desert tortoises may also be injured or suffer from mortality from encounters with workers' or visitors' pets. Windblown dust can also adversely affect desert tortoise by degrading habitat and decreasing the value of available forage. Desert tortoises may also be attracted to the construction area by the application of water to control dust, placing them at higher risk of injury or mortality by vehicle traffic. Animals could also be injured or lost during burrow excavation, handling, and during translocation to adjacent habitat.

Use of paved roads and the small dirt access roads could result in mortality of desert tortoises by vehicle strikes. The potential for increased traffic-related tortoise mortality is greatest along paved roads where vehicle frequency and speed is greatest. Desert tortoises on dirt roads may also be affected depending on vehicle frequency and speed. Data indicate that desert tortoise numbers decline as vehicle use increases (Bury et al. 1977) and that tortoise sign increases with increased distance from roads (Nicholson 1978; Karl 1989; von Seckendorf & Marlow 1997, 2002). The risk to desert tortoise is expected to be highest along unfenced roads on the north side of I-15 which would be used to support construction of the gen-tie line and sub-station.

Construction during the mating season, or other periods of high activity, could result in the displacement of breeding pairs or the loss of eggs and young. Desert tortoises may also be adversely impacted from increased raven predation or subsidies from the project area and during construction activities. Any raven subsidies would pose a risk to the species by increasing the reproductive success or ravens in the region. Clearing and grading activities would result in the exposure of large numbers of fossorial species such as small rodents and reptiles. Many of these species are killed or injured during these activities and attract ravens and other opportunistic predators. As low numbers of desert tortoise are present in this area the loss of even a small number of animals could have substantial effects on the local occurrence.

Construction activities that result in fires can also directly affect desert tortoise and their habitat. Because of the abundance of annual grasses and weeds in the region wildfires that result from welding, vehicles carelessly parked on vegetation, smoking, or other ignition sources pose a potential direct impact to desert tortoise and can quickly spread to off-site areas. Direct effects of fire on desert tortoises include mortality by incineration, elevating body temperature, poisoning by smoke, and asphyxiation

(Whelan 1995). Small individuals such as hatchlings are more at risk from lethal heating than large ones because they have a higher surface to volume ratio that allows heat to penetrate their vital organs relatively quickly (Brooks and Esque 2002). The fire risk at the Soda Mountain project area appears to be low to moderate see **Section 5.7 Hazards, Hazardous Materials/Waste, and Wildfire** due to the sparse vegetation at the site.

During construction, the proposed project would require the translocation of all desert tortoises that occur in the development footprint prior to ground disturbance. The translocation of desert tortoises from the project area has the potential to adversely affect desert tortoises that may occur on the project area and at designated recipient areas located immediately adjacent to the project area in the south Soda Mountains (See translocation effects below).

Indirect impacts include increased edge effects due to habitat fragmentation particularly along the east side of the project where the fence line abuts the South Soda Mountain, increased competition for resources from habitat displacement, increased risk of predation or raven subsidies, and the introduction of invasive plant species. Post development, desert tortoise could be trapped along fence lines, or become trapped within the natural channels that convey flow between the arrays. It is likely that movement may be restricted in some locations and include habitat fragmentation, the disruption of existing home ranges, and barriers to dispersal.

Indirect effects to desert tortoises could also include soil compaction, fugitive dust, the introduction of non-native and invasive plant species, exposure to herbicides, and increased human presence along access roads. Indirect effects could include increased human presence from new access roads or interest in the facility could lead to increased roadkill along the new Rasor Road alignment, illegal collecting and the spread of disease due to abandonment of captive tortoises infected with upper respiratory tract disease, however the site is extremely isolated from larger urban centers.

There may be some unplanned beneficial impacts to desert tortoise from the removal of the existing north south access road that connects to Rasor Road. The placement of the proposed project would block this road which would prevent vehicle travel and may limit human intrusion to some portions of the Soda Mountains. In addition, fencing proposed by the applicant could further reduce the risk of desert tortoise entering the Interstate where they would be at risk of mortality from collision.

Translocation: Construction of the proposed project would require the translocation or removal of all desert tortoises, including adults, subadults, and any juveniles that are found on the site during clearance surveys. Any desert tortoise detected would be translocated to an area immediately west of the project area in the south Soda Mountains. This location was identified in the previous CEQA/NEPA documents and is a requirement of the existing 2016 USFWS BO.

The risks and benefits associated with translocation of desert tortoise were identified in the 2016 USFWS BO. Capturing, handling, and relocating desert tortoises could result in harassment, injury, or mortality of desert tortoises. Impacts of translocation may include elevated stress hormone levels, changes in behavior and social structure dynamics, genetic mixing, increased movement (caused by antagonistic behavior with other tortoises, avoidance of predators or anthropogenic influence, homing, or seeking out of preferred habitat), spread of disease, and increased predation. Handling, holding, and transport protocols may also compound with abiotic factors to affect the outcome for translocated individuals (Bertolero et al. 2007; Field et al. 2007; Rittenhouse et al. 2007; Teixeira et al. 2007), particularly during extreme temperatures, or if they void their bladders. Averill-Murray (2001) determined that tortoises that voided their bladders during handling had significantly lower overall survival rates (0.81 0.88) than those that did not void (0.96). Desert tortoises that are improperly handled by biologists without the use of appropriate protective measures may be exposed to pathogens that spread among tortoises in both resident and translocated animals. The introduction of diseased tortoises to a recipient site or holding pen may also result in the spread of upper respiratory tract disease (URTD). The USFWS considers URTD to be one of the most serious infectious diseases affecting desert tortoises.

Translocated desert tortoises may also attempt to return to the areas where they were collected which could increase risk to animals that walk fence lines or spend additional time above ground. Because translocated desert tortoises spend more time moving, individuals that are moved during the summer months outside of their active season (i.e., from June to August) could be overexposed to heat and die from hyperthermia (USFWS 2016 BO).

Success rates of herpetofauna translocations range from 14 percent to 42 percent, suggesting that improved efforts are essential for the future recovery of many reptiles and amphibians (Dodd and Seigel 1991; Germano and Bishop 2009). Existing studies also suggest that animals move away from the translocation site and move through the landscape at a higher rate than control animals (Sullivan et al. 2004; Bertolero et al. 2007; Field et al. 2007). More specifically, a review of 91 herpetofauna translocation projects reported the primary causes of translocation failure were homing response by translocated individuals and poor habitat in translocated areas, followed by human collection, predation, food and nutrient limitation, and disease (Germano and Bishop 2009).

The applicant has proposed a series of general and specific measures to reduce and mitigate impacts to desert tortoise including pre-construction surveys, worker training, relocation, monitoring and translocation. In addition, specific conditions have been identified by the BLM and the USFWS. Staff has reviewed these measures and incorporated them into staff's proposed COC **BIO-15** (Desert Tortoise Avoidance and Minimization Measures) and COC **BIO-16** (Habitat Management Land Acquisition for Desert Tortoise).

These measures would require the completion of pre-construction clearance surveys of the project area, the installation of tortoise proof fencing, placement of shade structures along perimeter fences, trash collection, translocation, construction monitoring and the acquisition of compensatory habitat for desert tortoise. The project owner would also be required to participate in the USFWS raven management program.

Staff also recommends the following COCs **BIO-1** (Designated Biologist Selection), **BIO-2** (Designated Biologist Duties), **BIO-3** (Designated Monitor Selection), **BIO-4** (Designated Biologist and Biological Monitor Authority), **BIO-5** (Worker Environmental Awareness Program [WEAP]), **BIO-6** (Biological Resources Mitigation Implementation and Monitoring Plan), **BIO-7** (General Impact and Avoidance Measures), **BIO-8** (Vegetation Management Plan), **BIO-9** (Integrated Weed Management Plan), and **BIO-13** (Vegetation Resources Management Plan) would be required.

Impacts from offsite erosion and sedimentation would be reduced through the implementation of staff's proposed COC **WATER-1**, a SWPPP would ensure that development of the site does not result in substantial stormwater runoff from the project area during construction. Additionally, staff's proposed COC **WATER- 2** (Construction Erosion and Sedimentation Plan Operations Drainage, Erosion and Sedimentation Plan) is recommended to ensure that all project elements of stormwater management are addressed during project operations. COC **WATER-3** requires the project owner to implement a Channel Maintenance Program to ensure that the natural channels convey storm flows effectively.

To reduce impacts from the loss or degradation of existing hydrology to less than significant staff recommend COC **WATER-9** which would require the development of a Fluvial Geomorphic Stormwater Design Plan (FGSD Plan) prior to project construction and concurrent with final engineering. The FGSD Plan shall incorporate fluvial geomorphic design principles to preserve and create stable, self-sustaining stream channels and floodplains that maintain and/or mimic natural hydrologic and sediment transport processes in the project area. See **Section 5.16, Water Resources** for additional information related to the management of storm water runoff.

Impacts from fugitive dust would be mitigated by implementation of staff's recommended COCs **AQ-SC3** and **AQ-SC4**, which include watering roads and or stabilizing them with soil binders and would require a qualified dust monitor. With the implementation of these COCs direct and indirect impacts to individual desert tortoise and its habitat would be reduced to less than significant under CEQA and would comport with CESA standards.

Non-Jurisdictional Project Components

Construction impacts are not anticipated as no ground disturbing activity is proposed and work would be confined to developed facilities. Therefore, there would be no impact to desert tortoise resulting from network upgrades.

Jeopardy Analysis

The USFWS found that the proposed project is not located within and would not affect critical habitat of the desert tortoise. The nearest critical habitat unit is approximately 7 miles from the project area. As part of the Biological Opinion (USFWS 2016), the USFWS conducted a detailed jeopardy analysis of the potential impacts associated with the construction of the project. The jeopardy analysis included consideration of the capability of the species to survive and reproduce, as well as any adverse impacts of the taking on those abilities in light of known population trends, known threats to the species, and reasonably foreseeable impacts on the species from other related projects and activities.

Implementation of the proposed project is not expected to result in substantial adverse impacts to desert tortoise. Desert tortoises occur in very low densities across the site. The project would likely disrupt the home ranges of only a few animals across a portion of the site close to the Soda Mountains. The 2016 BO for the previous project also states that the project is in an area that the USFWS does not consider important to the long-term conservation of desert tortoises, either as a key area to maintain a population of desert tortoises or as an essential linkage between such areas. There are no designated critical habitat units for desert tortoise located within or adjacent to the project area. Permanent impacts to desert tortoise habitat would occur and be fully mitigated through off-site habitat acquisition.

Implementation of the project has the potential to take desert tortoise and their habitat. However, these impacts are expected to occur to a very small number of animals and be fully mitigated through compliance with staff's proposed COC's and permit conditions. The project owner would be required to implement numerous measures to avoid, minimize, and reduce adverse effects to desert tortoise and their habitat as part of the project. Because the project area does not support large numbers of desert tortoise and is fragmented by its proximity to I-15 implementation of the project is not likely to jeopardize the continued existence of the desert tortoise across its range or within this recovery unit.

Operation

Less Than Significant with Mitigation, Fully Mitigated for CESA Compliance. Based on the analysis below, the operations associated with the proposed project would not substantially adversely affect desert tortoise, either directly or through habitat modification, and impacts would be less than significant with the implementation of staff's proposed COCs **BIO-1** through **BIO-6, BIO-8, BIO-9, BIO-11, BIO-13, AQ-SC3, AQ-SC4, HAZ-9, WATER-1, WATER-2, WATER-3, WATER-9, WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-6, WORKER SAFETY-7,** and **WORKER SAFETY-10.**

Jurisdictional Project Components

Direct and indirect impacts associated with operation activities would be substantially reduced relative to initial construction activities. There is some potential that desert tortoise could become entrapped within the project by perimeter fencing or within the large, natural drainages that convey storm flow between the arrays. Periodic maintenance of the channels to remove debris from the desert tortoise fencing could also be required after large storm events. Ravens may also use the perimeter fence as potential perch sites and new transmission line structures as nest and perch sites increasing the potential for loss of tortoises from raven predation.

Desert tortoises would also be subject to periodic disturbance during the translocation efforts. Biologists would be required to conduct periodic inspections of the animals to track their locations and health status. However, the implementation of the same proposed COCs for project construction, including **BIO-1** through **BIO-6, BIO-8, BIO-9, BIO-13, AQ-SC3, AQ-SC4, WATER-1, WATER-2, WATER-3,** and **WATER-9** would reduce impacts to desert tortoise to a less than significant level and ensure compliance with CESA requirements.

Thermal Runaway and BESS Fires. Potential impacts from a BESS fire on desert tortoise could are expected to be very low based on the risk analysis presented in Section 5.7 (Hazards, Hazardous Materials/Waste, and Wildfire). While unlikely impacts could include risks from chemical exposure, smoke inhalation, soil and water contamination, mortality, and habitat degradation. Desert tortoises are known to occur in low densities in the project area and any animals found within the project area would be translocated to adjacent habitat west of the proposed arrays at the foothills of the south Soda Mountains. A BESS fire would be expected to pose a high risk to desert tortoise if the smoke plume deposits chemicals in these areas because they have limited home ranges, forage on plants that would contain harmful chemicals, and rely on ephemeral water sources that could concentrate harmful chemicals should a fire occur. Because this species is fossorial it would be exposed to contaminated soil when burrowing.

Chemical from firefighting runoff can contaminate forage and water, while noise and human activity may disrupt critical behaviors such as foraging and burrow use. Soil contamination and habitat degradation in adjacent areas may also persist long after the fire event. Post fire clean up or soil sampling could result in disturbance to burrows and animals in adjacent habitat and contaminated spoils could transport dust far from the initial source of the fire.

To reduce these impacts the applicant has proposed a series of measures to reduce fire risk, contain BESS fires, and ensure access to local firefighting personnel via a Fire Management and Prevention Plan. **Section 5.7 Hazards, Hazardous Materials/Waste, and Wildfire** include staff's recommended COCs **WORKER SAFETY-1**, **WORKER SAFETY-2**, **WORKER SAFETY-6, WORKER SAFETY-7**, and **WORKER SAFETY-10** which would mitigate the impact of potential BESS fires (during

transport to and from the site, and onsite) during construction and operation to a less-than-significant level. In addition, COC **HAZ-9** would require an air and water sampling plan and would require the project owner to develop an air sampling plan to ensure that information can be relayed to first responders in a timely manner. Additionally, water quality testing would be conducted prior to any disposal of water used for an incident. To reduce and manage the risk of BESS fires to biological resources staff recommended COC **BIO-11** (Post BESS Fire Monitoring and Management Plan) which includes soil testing and remedial actions including pre- and post-fire ecological monitoring, runoff containment, and restrictions on cleanup activities during sensitive biological periods. In addition, health assessments would be required for desert tortoise and additional monitoring to ensure long-term protection of desert tortoise. In addition, should the habitat be deemed contaminated and no longer able to support desert tortoise the acquisition of additional mitigation lands or remediation may be required. With the implementation of these proposed COCs, impacts from a potential BESS fire would likely be reduced to less than significant levels and there would be mechanisms in place to replace lost habitat and care for injured animals.

Non-Jurisdictional Project Components

Operational impacts are not anticipated as no ground disturbing activity is proposed and work would be confined to developed facilities. Therefore, there would be no impact to desert tortoise resulting from network upgrades.

Mojave Fringe-toed Lizard

Less Than Significant with Mitigation. Based on the analysis below, the proposed project would not substantially affect Mojave fringe-toed lizard, either directly or through habitat modifications, and impacts would be less than significant with the implementation of staff's proposed COCs **BIO-1** through **BIO-9, BIO-13, BIO-17, AQ-SC3, AQ-SC4, WATER-1, WATER-2, WATER-3,** and **WATER-9**.

Jurisdictional Project Components

The Mojave fringe-toed lizard is a BLM sensitive and a CDFW species of special concern. The Mojave fringe-toed lizard is widespread geographically across the Mojave and northern Colorado deserts, but its distribution is highly fragmented because it is restricted to habitats containing loose sand, which is patchily distributed (Murphy et al. 2007). This species has not been observed in the project area but is known from habitat immediately south of the project area. The applicant conducted surveys during the active season (March to October) and focused on the southeastern portion of the project area where remnant sand sheets have been identified and a large wash just outside the project area where Mojave fringe-toed lizard individuals had been previously documented. Staff inspected these areas during a site visit conducted on October 16, 2024 and found that the sand in these areas was partially stabilized and likely has a lower potential to support small occurrences. In addition, local populations of this species that occur on small patches of sand and are quite small and fragmented leaves the species vulnerable to local extirpations from habitat disturbance and fragmentation

as well as stochastic events (ibid.). The loose wind-blown sand habitat, upon which the Mojave fringe-toed lizard is dependent, is largely degraded on the project area.

However, it is possible that this species could occur as a migrant or periodically during dispersal events. In addition, there are patches of sandy habitat along portions of the proposed gen-tie route. Therefore, there is a low to moderate potential for this species to occur within or adjacent to the project area particularly near the southern arrays.

Construction of the project could directly affect this species although the numbers are expected to be low. Impacts could include mortality due to collisions with vehicles or heavy equipment, loss or degradation of habitat, fugitive dust, release of hazardous materials, soil compaction, and increased noise. Indirect impacts include the introduction and spread of invasive weeds (particularly Sahara mustard), the creation of perching habitat on perimeter fencing and the arrays, and from ravens. If present during project activities, impacts to this species would be considered a significant impact.

To reduce impacts, CEC staff recommends implementation of COC **BIO-17** (Special Status Reptile Avoidance and Minimization Measures). This measure would require preconstruction surveys and avoidance of Mojave fringe-toed lizards in suitable habitat and the relocation of the animals to non-disturbance areas outside the project footprint. Surveys would follow the Coachella Valley Fringe-toed Lizard Survey Protocol (USFWS 2007) as specific protocols for Mojave fringe-toed lizards have not been adopted. In addition, staff recommends implementation of the following COCs including **BIO-1** (Designated Biologist Selection), **BIO-2** (Designated Biologist Duties), **BIO-3** (Designated Monitor Selection), **BIO-4** (Designated Biologist and Biological Monitor Authority), **BIO-5** (Worker Environmental Awareness Program [WEAP]), **BIO-6** (Biological Resources Mitigation Implementation and Monitoring Plan), **BIO-7** (General Impact and Avoidance Measures), and **BIO-9** (Integrated Weed Management Plan). As a component of Staff's proposed COCs **BIO-8** (Vegetation Management Plan) and **BIO-13** (Vegetation Resources Management Plan) habitat on the project area would be restored to some degree. Staff's proposed COC **BIO-7** identifies a series of standard environmental measures that must be complied with during construction.

Impacts from erosion and sedimentation would be reduced through the implementation of staff's proposed COC **WATER-1**, **WATER-2**, and **WATER-3** which requires the project owner to implement a Channel Maintenance Program to ensure that the large natural channels convey storm flows effectively between the arrays. To reduce impacts from the loss or degradation of existing hydrology to less than significant staff recommend COC **WATER-9** which would require the development of a FGSD Plan prior to project construction and concurrent with final engineering. The FGSD Plan shall incorporate fluvial geomorphic design principles to preserve and create stable, self-sustaining stream channels and floodplains that maintain and/or mimic natural hydrologic and sediment transport processes in the project area.

Impacts from fugitive dust would be mitigated by implementation of staff's proposed COCs **AQ-SC3** and **AQ-SC4**, which include watering roads and or stabilizing them with soil binders and would require a qualified dust monitor. Implementation of these measures would reduce impacts to a less than significant level.

These proposed COCs would minimize and avoid disturbance, injury, and mortality to special-status reptiles. In addition, although not required for this species the acquisition of mitigation lands to off-set impacts to desert tortoise and burrowing owl could further reduce impacts from the proposed project should any of these areas support aeolian sand habitat or act as dispersal corridors between aeolian systems.

Non-Jurisdictional Project Components

Construction impacts associated with network upgrades are not anticipated as no ground disturbing activity is proposed and work would be confined to developed facilities. Therefore, there would be no impact to Mojave fringe-toed lizards resulting from network upgrades.

Operation

Less Than Significant with Mitigation Incorporated. Based on the analysis below, the operations associated with the proposed project would not substantially adversely affect Mojave fringe-toed lizard, either directly or through habitat modification, and impacts would be less than significant with the implementation of staff's proposed COCs **BIO-1** through **BIO-9, BIO-11, BIO-13, BIO-17, BIO-25, AQ-SC3, AQ-SC4, HAZ-9, WATER-1, WATER-2, WATER-3, WATER-9, WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-6, WORKER SAFETY-7,** and **WORKER SAFETY-10.**

Jurisdictional Project Components

Direct and indirect impacts associated with operation activities would be substantially reduced relative to initial construction activities. Generally, there would be no habitat impacts to areas outside of the solar arrays.

Disruption of Sediment Transport. Construction of the project would have the potential to adversely affect the fluvial transport of nutrients and sediment by blocking small drainages and disrupting sheet flow to downstream areas. However, the applicant has proposed preserving the natural hydrology of the site to the greatest extent possible. During construction, this could result in the movement of sediment across the project site. To reduce these impacts staff proposes COC **WATER-1**, a SWPPP would ensure that development of the site does not result in substantial stormwater runoff from the project area during construction and **WATER-2** (Construction Erosion and Sedimentation Plan Operations Drainage, Erosion and Sedimentation Plan) would ensure that all project elements of stormwater management are addressed during project operations. COC **WATER-3** requires the project owner to implement a Channel Maintenance Program to ensure that the large natural channels convey storm flows effectively. COC **WATER-9** which requires the development of a FGSD Plan prior to

project construction and concurrent with final engineering. The FGSD Plan shall incorporate fluvial geomorphic design principles to preserve and create stable, self-sustaining stream channels and floodplains that maintain and/or mimic natural hydrologic and sediment transport processes in the project area.

Construction of the project would not likely to affect habitat used by the Mojave fringe-toed lizards, which is located south of Array 3. However, it could affect sandy areas east of Array 3 if storm flows are inadvertently diverted around the project (see **Figure 5.2-7**). Similarly, it is possible that sand sheets could develop where low intensity storms or winds allow for the accumulation of fine sands along portions of the project that trap fine sediment. It is possible that the deposition of material in these areas could provide opportunistic habitat for this species which is known from adjacent areas and expose these species to impacts during O&M activities. The implementation of the same COCs for the project construction and COC **BIO-25** (Lake and Streambed Equivalency Conditions) would reduce impacts these species to a less than significant level.

Thermal Runaway and BESS Fires. Potential impacts from a BESS fire on Mojave fringe-toed lizards would be similar to desert tortoise and in the low likelihood an event occurs could include risks from chemical exposure, smoke inhalation, soil and water contamination, mortality, and habitat degradation. As this species is fossorial and relies on fine aeolian sands it would be exposed to contaminated soil when burrowing. Impacts to this species from a BESS fire could be locally adverse but would be considered less than significant with mitigation. To reduce these impacts staff has proposed COCs **WORKER SAFETY-1**, **WORKER SAFETY-2**, **WORKER SAFETY-6, WORKER SAFETY-7**, **WORKER SAFETY-10,** and **HAZ-9**. Staff's recommended COC **BIO-11** (Post BESS Fire Monitoring and Management Plan) includes soil testing and remedial actions that would be required if sensitive species habitat is contaminated due to a BESS fire. With the implementation of these COCs, impacts from a potential BESS fire would be reduced to less than significant levels.

Non-Jurisdictional Project Components

Operational impacts are not anticipated as no ground disturbing activity is proposed and work would be confined to developed facilities. Therefore, there would be no impact to Mojave fringe-toed lizards resulting from network upgrades.

Common and Special-Status Birds

Because the site is located along a portion of the Pacific Flyway a wide range of migratory species has the potential to be present during the construction or operation of the project. Birds are the most conspicuous vertebrates found in the California Deserts (Latting and Rowlands 1995). Records exist for at least 425 species (Garrett and Dunn 1961) from 18 orders and 55 families. These approximately 350 species are characterized as neotropical migrants that pass through the region during spring and fall migrations. These birds include various raptors including Swainson's hawk (*Buteo swainsoni*); turkey vulture (*Cathartes aura*); and numerous passerines some of which include willow flycatcher (*Empidonax traillii*), many hummingbirds, and various

warblers. Shorebirds and other waterfowl are common migrants that have the potential to occur in the project area. The project area also provides foraging, cover, or breeding habitat for a variety of resident birds.

The extent to which a given species may be affected by the construction or operation of the project depends on the species' ecology and behavior. Although the project area does not provide breeding habitat for many species (i.e., Swainson's hawks, northern harriers, golden eagles, American white pelicans, Ridgeways rails, peregrine falcons, or yellow warblers) these species are known from the region and have been documented flying over the site during migration or in the winter. These species may periodically forage or rest within the project area. Similarly, many species of raptors winter in desert regions and become seasonal long-term winter residents. Resident species may also be affected based how they use the site. Some species of birds may be semi-permanent dwellers during the nesting season and exhibit strong site fidelity and territorial behavior; however, these same species may have much broader home ranges during the winter. These birds include merlin, Brewer's sparrow, and others are considered USFWS Bird's of Conservation Concern (BCC) or are listed by CDFW as Watch List or Special Animal species.

Loggerhead shrike is a CDFW species of special concern and was detected during surveys conducted by the applicant. This species known to occur in the project area and are likely nesters in sparse scrub communities present at the project area and along portions of the linear facilities. Compared to most bird species, loggerhead shrikes often investigate construction sites where prey items may be flushed from the ground. Another important consideration for loggerhead shrike is they cache prey items in the spines of trees, fences, and other naturally sharp items. Cached prey are often retrieved later and may become less desirable if located near large scale construction projects.

Except for a few non-native birds such as European starling (*Sturnus vulgaris*) and house sparrow (*Passer domesticus*), the take of active bird nests or young is prohibited by the Federal Migratory Bird Treaty Act (MBTA) and Fish and Game Code, section 3503. The California Migratory Bird Protection Act (MBPA; AB 454) also reaffirms the State's authority to protect migratory birds from incidental take. Therefore, the loss or disturbance of active nests, eggs, or dependent young would be a potentially significant impact.

Construction

Less Than Significant with Mitigation. Based on the analysis below, the proposed project would not substantially affect common and special-status nesting birds, either directly or through habitat modifications, and impacts would be less than significant with the implementation of staff's proposed COCs **BIO-1** through **BIO-5, BIO-7** through **BIO-9, BIO-17, AQ-SC3, AQ-SC4, HAZ-1**, and **WORKER SAFETY-1**.

Jurisdictional Project Components

Construction of the project could result in direct and indirect impacts to nesting bird species protected under California Fish and Game Code, sections 3503.5 and 3511, California Migratory Bird Protection Act, and the federal MBTA. Construction activities, primarily though removal of vegetation, could cause destruction or abandonment of active nests or the mortality of adults, young, or eggs.

Direct impacts to nesting birds include ground-disturbing activities associated with construction of the solar arrays, switch yard, sub-station, BESS facility, and gen-tie line, as well as increased noise levels from heavy equipment, ground borne vibration, increased human presence, and exposure to fugitive dust. Indirect impacts to nesting birds could include the loss of habitat due to the colonization of weeds, dust, or human disturbance due to weed maintenance, and routine inspection and maintenance at the facility.

Construction activities conducted during the breeding season could result in the displacement of breeding birds and the abandonment of active nests, as well as a disruption in foraging activity. The removal of habitat during the breeding season could result in the displacement of breeding birds and the abandonment of active nests. Small, well-hidden nests could be subject to loss during construction and can be difficult to locate during pre-construction surveys. Clearing vegetation may also result in adverse effects from habitat fragmentation for some species and reduce future nesting opportunities. Conversely there would be some species of more disturbance tolerant birds that benefit from disturbance and the creation of perching sites on the arrays and perimeter fencing.

Breeding birds and other wildlife may temporarily or permanently leave their territories to avoid construction activities, which could lead to reduced reproductive success and increased mortality on a local scale. Increased vehicle travel on the proposed northern access road could displace nesting birds or result in lower nest success in adjacent habitat.

How construction noise affects a specific bird can vary greatly depending on the particular species, location of a nest, and the species' or individual bird's nesting behavior. The scientific record contains extensive research documenting the negative effects of anthropogenic generated sound levels to many species of nesting birds. Noise disturbance due to construction, traffic, and other anthropogenic activity has been found to have detrimental impacts on pairing success and clutch size in some bird populations (Habib et al., 2007; Halfwerk et al., 2011). However, other more disturbance tolerant birds such as house finches and king birds appear to successfully nest near noise producing sources and some activity build nests within active construction sites. However, there may be underlying risks to birds who elect to nest near locations with elevated sound levels such as a construction project, highway, or other sound generating facility.

Conversely, many other birds are intolerant of any human disturbance. Anthropogenic noise may affect populations by masking or distorting male song patterns or inducing a stress response that negatively impacts fitness (Habib et al., 2007; Kleist et al., 2018). Barber et al., (2009) noted that elevated noise levels can result in masking of predators and decrease communication between individual groups of birds. They also found that regardless of the mechanisms involved, their study suggested that noise decreases a direct measure of fitness and hatching success, in the western bluebird, a species previously thought to be noise tolerant.

Current noise and disturbance regimes associated with portions of the project located near I-15 or Razor Road may reduce the risk of disturbing some species or limit nesting opportunities for some birds. Ambient disturbance varies from low to high levels throughout the Project area, particularly near the Interstate. In addition, anthropogenic disturbances including off-highway vehicle (OHV) occur to some degree along portions of the gen-tie line and Arrowhead Trail. However, most other portions of the project area remain relatively undisturbed and support scattered low scrub nesting habitat.

During construction it is likely the site would still provide suitable substrate for some species of birds. Depending on the species, birds may actively nest on the ground close to equipment or even on idle construction equipment. In southern California deserts, birds have been documented nesting on vehicles, foundations, construction trailers, solar arrays, and other equipment left overnight or during a long weekend. In areas where construction may be phased, birds may quickly utilize these features as nest sites. Many of the birds that would be likely to use these types of nesting substrates are common species such as ravens, house finches, and doves. Some cavity nesting species may also become trapped should they enter vertical pipes, outhouse vents, or other equipment. Uncapped vertical pipes have been documented to kill large numbers of birds annually and the BLM issued a national policy directive in 2016 (https://www.blm.gov/press-release/blms-new-policy-will-reduce-threats-migratory-birds) to ensure that markers, mining claims and other vertical caps required covers, screens or the removal of pipes. If the project owner elects to use hollow pipes to support the solar arrays, staff's proposed COC **BIO-7** (General Impact and Avoidance Measures) would require the installation of caps or other suitable covers.

Although the risk is low, individual birds could be exposed to herbicides or hazardous materials such as coolant, fuel, or other fluids. Even if birds do not come into direct contact with herbicides or other hazardous materials, they can be affected via food-chain concentrations, particularly when these materials are widely applied across a landscape. This can occur when small herbivores consume material exposed to contaminants or contaminant residue. The contaminant accumulates in the tissue of the predatory animal through bioaccumulation as exposed prey items are consumed. Even at non-fatal levels, the bioaccumulation of some contaminants can result in a reduction in the amount of food consumed, loss of weight, changes in physical activity, and a decrease in the production, fertility, and hatchability of eggs (Cox, 1991).

Any project related impact that results in the loss of nesting habitat, disturbance of breeding behavior, destruction of nests or eggs, exposure to herbicides or other hazardous materials, and mortality or injury to individual birds would be considered a significant impact. The applicant and CDFW proposed measures to reduce impacts to nesting birds. Staff incorporated language from these measures into staff's proposed COC **BIO-18** (Nesting Bird Avoidance and Minimization Measures), as appropriate. This proposed COC would require pre-construction surveys for nesting birds and the establishment of non-disturbance buffers to avoid disturbing active nest sites. This recommended COC also would require the development of a Nesting Bird Management Plan that contains the types of birds that have the potential to nest in the project area, where they likely nest, prescriptive language on who is qualified to conduct nesting bird surveys and monitor active nests, the methodology of the surveys, when surveys would be required, and the frequency they must be repeated. The measure would also require the establishment of a nesting bird log to track active nests and provide routine reports to the CEC Compliance Project Manager (CPM) on nest status.

Staff also recommends the following COCs: **BIO-1** through **BIO-4** (Designated Biologist Selection and Qualifications, Designated Biologists Duties, Biological Monitor Selection, and Designated Biologist and Biological Monitor Authority), **BIO-5** (Worker Environmental Awareness Program [WEAP]), **BIO-7** (General Impact and Avoidance Measures), **BIO-8** (Vegetation Management Plan), and **BIO-9** (Integrated Weed Management Plan). These measures would educate workers regarding the legal protections for nesting birds and who to contact should a nest be detected, restore native vegetation communities, and require the identification and treatment of weed infestations. The weed management plan would contain prescriptive measures including conducting preconstruction surveys and treatment of weeds prior to ground disturbance should the work occur when plants are visible.

To reduce impacts from exposure to hazardous materials and improper herbicide use staff recommends COC **HAZ-1** which would require the preparation of a Spill Prevention Control and Countermeasures Plan (SPCC), **WORKER SAFETY-1** which includes construction worker safety programs to protect workers from exposure to hazardous material and waste, and **BIO-9** (Integrated Weed Management Plan) which includes the requirements and safe handling practices for herbicide use. In addition, **BIO-5** (Worker Environmental Awareness Program [WEAP]) would educate workers to the risk of hazardous materials and provide protocols for notifying construction managers should spills or leaks be detected.

Impacts from fugitive dust would be mitigated by implementation of staff's proposed COC **AQ-SC3** (**Section 5.1, Air Quality**) which include watering roads and or stabilizing them with soil binders and COC **AQ-SC4** would require a qualified dust monitor during dust producing activities and require remedial measures if fugitive dust exceeds authorized limits.

Non-Jurisdictional Project Components

Network upgrades at the existing Marketplace and Adelanto substations have some potential to impact birds during construction of those projects because birds are known to nest in developed substations. However, impacts are not anticipated because LADWP implements standard environmental practices to protect nesting birds that would reduce this impact. Therefore, there would be no impact to nesting birds resulting from network upgrades.

Operation

Less Than Significant with Mitigation. Based on the analysis below, the operations associated with the proposed project would not substantially adversely affect common and special-status nesting birds, either directly or through habitat modification, and impacts would be less than significant with the implementation of staff's proposed COCs **BIO-11, BIO-19, HAZ-9, WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-6, WORKER SAFETY-7**, and **WORKER SAFETY-10.**

Jurisdictional Project Components

Direct and indirect impacts associated with operation activities would be substantially reduced relative to initial construction activities. Generally, there would be no habitat impacts to areas outside of the arrays. However, nesting birds could be disturbed during routine operation activities, exposure to chemicals, smoke or other disturbance related to a BESS fire, and collision with project infrastructure including the solar arrays.

Thermal Runaway. While the likelihood of a BESS fire is low, should a fire occur potential impacts would be similar to those described for desert tortoise and other wildlife and could include risks from chemical exposure, smoke inhalation, soil and water contamination, mortality, and habitat degradation. The specific risks to nesting birds is dependent on many factors including the timing of the fire, the proximity of the nest to the fire, and the stage of the nest. Adult birds would likely flee the area however eggs or chicks could be lost as they are unable to leave the nest. Adult birds may also be lost if they elect to stay at the nest to protect their brood. Birds could also be harmed should they forage on prey items that are exposed to any residual chemicals that remain post fire.

To reduce these impacts the applicant has proposed a series of measures to reduce fire risk, contain BESS fires, and ensure access to local firefighting personnel via a Fire Management and Prevention Plan. **Section 5.7, Hazards, Hazardous Materials/Waste, and Wildfire** include staff's recommended COCs **WORKER SAFETY-1**, **WORKER SAFETY-2**, **WORKER SAFETY-6, WORKER SAFETY-7**, and **WORKER SAFETY-10**. In addition, COC **HAZ-9** would require an air and water sampling plan and water quality testing would be conducted prior to any disposal of water used for an incident. To further reduce impacts, staff's proposed COC **BIO-11** (Post BESS Fire Monitoring and Management Plan) includes soil testing and remedial actions that would be required if sensitive species habitat is contaminated due to a

BESS fire. With the implementation of these proposed COCs, impacts from a potential BESS fire would be reduced to less than significant levels.

Lake Effects and Risk of Collision. Birds could also be at risk from collisions with solar panels. Horváth et al. (2009) noted that polarized light pollution (PLP) can mimic the appearance of water bodies to birds creating a false lake effect. Several studies indicate that many bird species, particularly water-dependent and migratory birds, use polarized light cues to locate water bodies for foraging, resting, and nesting (Horvath et al. 2009; Kosciuch et al. 2021; CEC 2024). Solar panels, due to their dark, smooth surfaces and reflective properties, can mimic these cues, creating what is commonly referred to as the "lake effect." The USGS (2016) also found that migrating birds have the potential to be attracted to these areas and risk collision or entrapment within the arrays.

A similar phenomenon was found at the Desert Sunlight Solar project located near Desert Center, Ca. Aquatic birds were found at the Desert Sunlight solar facility and it was postulated that these birds may have mistook the solar field for a lake (Kagan et al., 2014; Walston et al., 2016; Kosciuch et al., 2020). However, Kosciuch et al. (2021) found that while some aquatic bird occurrences do occur at photovoltaic solar facilities in Southern California the attraction was likely nuanced and not uniform but suggested that "lake effect" may contribute to collision mortality but is not the sole factor. Flemming (2025) also suggested that reflective glare from solar panels mimics water, confusing migrating birds and altering foraging behavior. That study noted that risks of collisions and entrapment could occur, especially when combined with fencing around solar farms (ibid).

However, recent studies in the southwestern U.S. and Alberta, Canada have shown that the patterns of avian mortality observed at Desert Sunlight have not been observed at other facilities (Kosciuch et al., 2021; Kosciuch et al., 2022). Staff notes that this may be an artifact of the project's regional location compared to areas of North America where lakes and surface water are more prevalent. The CEC also provided funding for an Electric Program Investment Charge (EPIC) study that investigated the lake effect hypothesis by simulating visual cues birds use to locate water bodies (CEC, 2024). The CEC through its EPIC program, funded applied research to evaluate whether utility-scale solar arrays attract birds due to the "lake effect" caused by polarized light reflection. This research was intended to address knowledge gaps regarding avian interactions with photovoltaic facilities and inform mitigation strategies to reduce bird mortality. The CEC's role was to provide financial support and oversight for these studies, ensuring that findings contribute to environmentally responsible renewable energy development in California. The study concluded that solar panels used in large solar facilities can polarize light in a way that mimics natural water bodies from a range of angles, elevations, and distances that birds would experience. The study noted that the risk of landing was more common for south-bound birds (possibly migrating) and peaked near midday, suggesting the birds were seeking water or shelter in the arid landscape and that photovoltaic panels in less arid areas may be less attractive to birds (CEC, 2024).

The study indicated that the lake effect may hold for some species in some landscapes, but that it cannot be readily generalized to all aquatic habitat birds in all landscape contexts. The study found there were no aquatic bird carcasses in desert scrub reference areas outside solar facilities and a small number found in the associated facility. The report concludes that birds are more attracted to highly polarized sources of visible light and that solar panels polarize light in a manner like water.

It is likely that the solar arrays could have the potential to attract low numbers of aquatic species however, staff acknowledge that additional studies need to be conducted to determine what other factors contribute the presence of aquatic birds within solar arrays in southern California deserts. It is likely that the presence of the solar fields would result in small numbers of aquatic birds colliding or becoming trapped within the solar arrays over the life of the project.

The potential for avian collisions with solar panels due to the "lake effect" is strongly influenced by landscape context. Studies have shown that risk is elevated in arid desert environments compared to non-arid regions (CEC, 2024; Kagan et al., 2014; Walston et al., 2016). This is primarily because water is scarce in desert landscapes, and aquatic bird species may be more likely to seek visual cues that indicate water availability during migration or stopover periods. This is supported by the data from the Desert Sunlight facility in California that documented high aquatic bird mortality, which led to the development of the lake effect hypothesis (Kagan et al., 2014; Walston et al., 2016). In addition, the 2024 CEC study found that solar panels polarize light in a manner similar to water surfaces, and descent behavior was notably more common for southbound birds during midday in desert conditions. Conversely, studies in Alberta and other non-arid regions (Kosciuch et al., 2021; Kosciuch et al., 2022) reported substantially lower mortality rates, suggesting that attraction is context-dependent and greatest where water scarcity increases avian search images for water resources.

These impacts are expected to be less than significant with the implementation of staff's proposed **BIO-19** (Bird and Bat Conservation Plan) which includes 5 years of post-construction monitoring, and the implementation of adaptive management measures should aquatic avian species be detected within the facility. These may include the use of visual or acoustic deterrents, adding ultraviolet stripes of other patterns to dissuade avian use, adding contrast markings, or use of anti-reflective coatings.

Collision and Electrocution. The most likely operational risk to birds is collision with the new gen-tie line. The applicant has proposed to place all feeder lines underground to reduce collision risk across the solar field. There are several factors that contribute to avian collisions including the location of the line, the type and behavior of the bird, weather conditions, and size or type of the towers. Bird collisions with powerlines, or more commonly with the thin shield wire located above the powerlines, is a known phenomenon and can pose a risk to birds. Studies indicate that most observed power line collisions were with narrower, less visible overhead shield wires and lines that cross daily movement corridors (between roosting, nesting, and feeding areas) (Luzenski et

al., 2016). Collisions risk depends on a species' ability to detect these thin wires and shield wires are 50 percent thinner and less visible than the larger more visible transmission lines and account for most collisions with transmission lines (Bernardino et al. 2018). Several other factors can affect the risk of birds related to collision with transmission lines including the bird's morphological characteristics such as vision and flight patterns, and their behavioral characteristics such as flocking or foraging behavior, or migratory patterns (Bateman et al., 2023). Collision rates can increase in low light conditions, during inclement weather, such as fog, rain, snow, or strong winds, and during panic flushes when birds are startled by a disturbance or are fleeing from danger (Brown and Drewien, 1993; Luzenski et al., 2016).

Another factor is the height of the transmission line. Most birds fly below 500 feet except during migration to avoid the expenditure of energy required to fly higher, and to avoid hazards such as winds or predators (Ehrlich et al., 1988). Generally, taller structures pose a higher collision risk as birds flying at wire height would tend to fly higher to avoid the line as opposed to passing below. However, wire height is typically associated with other features that could impact collision like voltage, number and spacing of wires, span length, and diameter of conductors and shield wires. The combination of the existing distribution line and the new transmission line would likely result in an increased level of collisions compared to baseline conditions.

The highest risk is in locations where a transmission line bisects a daily or migratory flight path or during poor weather conditions. Collision risk increases where lines are located near or bisect important foraging habitat, riparian areas, lakes, ponds, and wetlands most of which do not occur at the project area. In the project area birds are attracted to the large Soda Lake and the ponds near Baker. However, birds could collide with the gen-tie lines to some degree because it would be located between the north and south Soda Mountains.

One study examined the impact of changing tower heights on raptor flight responses, increasing towers from 20 to 25 meters tall (65-85 feet) to 55-60 meters (180-195 feet) tall (Luzenski et al., 2016). The study showed that prior to increasing the tower height, approximately 75 percent of raptors crossed above the wires and 25 percent crossed within the wire zone; few crossed below. After increasing the tower height 92 percent of raptors crossed above the wires and few crossed within or below, indicating that raptors were more likely to pass above the higher wires. Overall, there was a 28 percent increase in the proportion of birds flying above the wire zone after the construction of taller towers. The study concluded that increasing flight elevation to pass above the wires may indicate that the raptors could identify the wire zone and appropriately alter flight to avoid it. Their results further suggest that well-marked lines or lines with increased diameter, even in movement corridors, can lessen collision risk.

Collision mortality estimates in North America have not identified a noticeable effect on long-term population trends; however, it may increase risk for a subset of species with susceptible characteristics. Collisions primarily affect strong, fast fliers with poor or restricted vision (i.e., waterfowl and crane species) (Bateman et al., 2023). Additionally,

large, heavy-bodied birds (swans, pelicans, herons, and cranes) are thought to be more vulnerable than smaller, more maneuverable species (Luzenski et al., 2016). One study identified that vulnerable species that may be at risk of population-level impacts shared characteristics including low maneuverability in flight, hazardous behavioral traits (especially flight height and flocking flight), long-lived and slow-reproducing life-history, habitat specialization, and unfavorable conservation status (D'Amico et al., 2019).

Passerines (i.e., songbirds) and waterfowl (e.g., ducks) collide with powerlines (APLIC, 2012), particularly during nocturnal migrations or poor weather conditions (Avery et al., 1978). However, passerines and waterfowl may have a lower potential for collisions than larger birds, such as raptors, due to behavioral factors. For example, smaller birds tend to reduce their flight activity during poor weather conditions (Avery et al., 1978). Additionally, passerines and waterfowl tend to fly under power lines, as opposed to larger species, which generally fly over the lines and risk colliding with the higher static lines.

Operation of the project would likely result in small numbers of birds periodically colliding with the shield wire along the length of the alignment. Except for raptors there does not appear to be a substantial risk of collision for most species based on the location of the line. Therefore, although adverse, impacts would be considered less than significant for passerines but may pose a risk to raptors or shorebirds who may lower their flight heights to assess if the solar fields are a source of water.

Raptors, ravens, and other large birds often perch and nest on tall structures, including electrical transmission towers and poles. Golden eagles, peregrine falcons, and other large raptors are most susceptible to electrocution on transmission structures because of their large size and wingspan, distribution, and behavior (APLIC 2012). Collisions involving raptors have occurred but appear to be relatively uncommon compared with collisions involving other species groups (Luzenski et al. 2016). Distribution lines that are greater than 1 kilovolt (kV) but less than 69 kV generally have less spacing than transmission lines, thus posing an electrocution hazard for perching raptors. Configurations less than 1 kV or greater than 69 kV, like the proposed 115 kV sub transmission system, typically do not present an electrocution potential, based on conductor placement and orientation (APLIC 2012). The likelihood of electrocutions occurring at voltages greater than 69 kV is extremely low (APLIC 2012) and is not expected to occur on the proposed 230 kV transmission line. Therefore, the risk of electrocution would be considered less than significant.

Non-Jurisdictional Project Components

Operational impacts are not anticipated as no ground disturbing activity is proposed and work would be confined to developed facilities. In addition, LADWP implements standard environmental practices to protect nesting birdsthat would reduce this impact. Therefore, there would be no impact to nesting birds resulting from network upgrades.

Western Burrowing Owl

Construction

Less Than Significant with Mitigation, Fully Mitigated for CESA Compliance. Based on the analysis below, the proposed project would not substantially affect western burrowing owl, either directly or through habitat modifications, and impacts would be less than significant with the implementation of staff's proposed COCs **BIO-1** through **BIO-9, BIO-20, BIO-21, AQ-SC3**, and **AQ-SC4**.

Jurisdictional Project Components

The western burrowing owl is a State candidate for listing under CESA. It is also a BLM sensitive species and a State Species of Special Concern. It is also protected under the federal MBTA and California Fish and Game Code. Threats to western burrowing owl include habitat loss, predation, including by predators such as ravens (*Corvus corax*) and coyotes (*Canis latrans*) attracted by human activity, roadkill, reduced burrow availability due to rodent control, and pesticides. Suitable habitat is present throughout the project area.

The ITP application provided by the applicant indicated that four surveys for western burrowing owl were performed in the proposed project area from 2012 to 2023, with two additional biological resource surveys in which owls were observed incidentally (RE 2025i). The most recent surveys conducted in 2023 identified one live western burrowing owl, but it was not associated with a known burrow. The 2023 surveys noted a total of 50 potential western burrowing owl burrows, one of which had diagnostic sign, indicating that it was recently occupied by western burrowing owl (ibid). However, staff notes that any of the 182 potential desert tortoise burrows could also be used by this species.

This species or their diagnostic sign has been routinely detected at the project area over an 11-year period. These observations include:

- Four western burrowing owls were observed in 2012 during desert tortoise surveys and nine burrowing owls were noted during the 2012 botanical surveys.
- No owls were observed however 50 western burrowing owl burrows with sign were observed in 2013.
- No western burrowing owls or their sign were observed in 2021.
- One western burrowing owl not associated with a known burrow and 50 potential burrowing owl burrows, one of which had sign, were observed in 2023.

Based on the information provided in the ITP application and the periods when western burrowing owls were detected it is likely the site supports migratory or wintering owls. However, there is a large gap in the data and it is possible burrowing owls periodically use the area for breeding during years of good foraging conditions or may colonize the site prior to the initiation of construction.

Staff has developed the following mitigation metrics to reduce impacts from the proposed project to less than significant levels and comport with CDFW requirements to meet the fully mitigate standard required by CESA. The rationale for these ratios relate to the assessment of the current owl density and use of the project area (i.e., wintering and during migration with a low to moderate potential for nesting), existing habitat value of the site, and the ability of portions of the project area to provide ecological functions after construction. Higher ratios correspond to greater and irreversible impacts to western burrowing owl habitat or ecological value.

- 3:1 ratio for permanent impacts that result in the loss of ecological value and remove habitat from the project area. These features include all permanent structures (BESS, Switching and Substation, and ancillary buildings, well footprints), gen-tie and array foundations, fencing, any areas maintained free from vegetation, and roads. There are 71.74 acres that meet these criteria. At the proposed 3:1 ratio 215.22 acres would be required to offset these impacts.
    - Rational for ratio: Permanent loss of habitat and ecological value to the western burrowing owls. These areas (BESS, substations, roads, fenced zones) eliminate and fragment habitat entirely, removing foraging and refugia habitat.
- 2:1 ratio for any areas under the arrays that remain vegetated. There are 1505.93 acres that meet these criteria. At the proposed 2:1 ratio 3011.86 acres would be required to offset these impacts.
    - Rational for ratio: There is some evidence that western burrowing owls could forage within portions of the solar arrays that retain vegetation post construction. However, there is not strong evidence to suggest they would permanently occupy these areas should burrowing sites be available. Staff has proposed a lower mitigation for these areas as they act as a base for prey items and owls could persist in the margins of the site post development. The placement of artificial burrows could enhance use of these areas along the margins of the facility.
- 1.5:1 ratio for temporary disturbance areas between the arrays and areas located within the limits of disturbance. There are 497.26 acres that meet these criteria. At the proposed 1.5:1 ratio 745.89 acres would be required to offset these impacts.
    - Rationale for ratio: These areas could provide partial ecological function and could be used as foraging habitat for western burrowing owls. Some ecological function would remain.
- In total the required compensatory mitigation requirement to fully mitigate impacts to western burrowing owl would be 3,724.34 acres.

Anticipated Take. Construction of the proposed project would result in permanent loss and temporary loss of habitat from grading, construction of roads and other infrastructure that would occur in areas supporting the solar arrays. Construction of the proposed project has a low potential to result in the direct loss of nesting western burrowing owl. While it is possible that western burrowing owls could retain use of

some portions of the solar fields the physical structure and presence of the arrays and other infrastructure would likely prevent owls from effectively foraging at the site.

Construction of the project could directly affect western burrowing owl and its habitat by the loss and degradation of habitat, mortality due to collisions with vehicles or heavy equipment, destruction of burrows, exposure to noise and ground borne vibration from controlled detonations, fugitive dust, and the release of hazardous materials. Adult western burrowing owls would generally shelter in their burrow rather than flee from disturbance, and construction activities could result in injury and mortality to adults, damage or destruction of burrows, and injury or mortality to eggs and nestlings should they occur in the development footprint or near disturbance areas. Indirect impacts include the introduction and spread of invasive weeds, providing predator subsidies to ravens and coyotes, and increased human presence. Increased perch sites on fencing can increase foraging opportunities for burrowing owl but also support owl predators such as raptors and ravens. Noise from the operation of the project could also adversely affect owls in areas adjacent to the project area.

Based on the survey data provided by the applicant, construction of the proposed project is not expected to result in the loss of active nest sites. However, during construction it is possible that burrowing owls would be encountered in the project area and may require passive relocation. Should this occur, the project owner would limit this activity to the non-breeding season and comply with the requirements identified in staff's proposed conditions of certification identified below which would require pre-construction surveys, monitoring of burrow sites, use of cameras and monitors to determine if a burrow is in use, and the placement of one-way doors. Staff acknowledge that the passive relocation of burrowing owls can increase the risk of predation if alternative sheltering locations are not available or known to the animal. Therefore, if this action was to be proposed the project owner would need to construct a series of artificial burrows prior to the displacement or preserve existing burrows in locations not currently subject to disturbance to give the owls time to identify their presence within their range. Once a burrow is collapsed it would be carefully blocked and or excavated to prevent reuse by the species. Should an active nest be detected a non-disturbance buffer shall be implemented and routinely monitored until the nest has fledged.

Direct impacts to burrowing owls or their nests could be significant without mitigation. Any direct impacts to western burrowing owl that result in mortality would constitute take under CESA.

The applicant provided a series of avoidance and minimization measures to reduce impacts to this species. Staff have incorporated these measures into staff's proposed COC, as appropriate. To reduce these impacts staff recommends implementation of COC **BIO-20** (Burrowing Owl Impact Avoidance, Minimization, and Mitigation Measures) that would include specific survey, monitoring, and relocation methods. These include preparing detailed burrowing owl maps, a Burrowing Owl Mortality Reduction Plan, and a Burrowing Owl Artificial Burrow Replacement Plan. In addition,

staff's proposed COC **BIO-21** (Habitat Management Land Acquisition for Western Burrowing Owl) requires the project owner to obtain mitigation lands to replace habitat lost from the development of the project.

Staff also recommends COCs **BIO-1** (Designated Biologist Selection), **BIO-2** (Designated Biologist Duties), **BIO-3** (Designated Monitor Selection), **BIO-4** (Designated Biologist and Biological Monitor Authority), **BIO-5** (Worker Environmental Awareness Program [WEAP]), **BIO-6** (Biological Resources Mitigation Implementation and Monitoring Plan), **BIO-7** (General Impact and Avoidance Measures), **BIO-8** (Vegetation Management Plan), and **BIO-9** (Integrated Weed Management Plan) would be required.

Impacts from fugitive dust would be mitigated by implementation of staff's proposed COCs **AQ-SC3** and **AQ-SC4**, which include watering roads and or stabilizing them with soil binders and would require a qualified dust monitor. Impacts to western burrowing owl would be avoided and minimized to the maximum extent practicable and staff's proposed COCs outline full mitigation as necessary pursuant to CESA.

Non-Jurisdictional Project Components

Network upgrades at the existing Marketplace and Adelanto substations are not expected to impact western burrowing owls because the upgrades are confined to existing developed substation footprints. Impacts are not anticipated as no ground disturbing activity is proposed. Although western burrowing owls could nest in adjacent habitats LADWP implements standard environmental measures to protect sensitive plants and wildlife. Therefore, there would be no impact to western burrowing owls.

Jeopardy Analysis. The petition for listing provides evidence that the western burrowing owl is in decline across the state of California and describes several anthropogenic sources of population decline. These include direct mortality and habitat loss caused by urbanization, and reduction or elimination of their primary burrow excavators, ground squirrels, from grazing and agricultural lands. The widespread development of landscape level renewable energy facilities has also contributed to the loss of habitat across portions of the Mojave Desert and arid southwestern California.

Construction of the proposed project would remove wintering and foraging habitat for western burrowing owls. It is uncertain whether the proposed project would directly affect nesting owls, but it is possible. Construction may also adversely affect foraging or nesting owls in adjacent habitat during construction. There are several important factors that staff considered during the analysis of this project.

- Multiple surveys have established that burrowing owls use the project area for wintering and migration and may possibly nest there in low densities.
- Multiple burrows with evidence of sign have been observed over the last decade and 182 potential desert tortoise burrows could also be used by this species.

- Few owls are likely to be injured or killed because of relocation as no active burrows were found on the project area and nesting is expected to occur in low numbers based on historical data for the region.
- The project owner would be required to implement numerous COCs to avoid and minimize impacts to western burrowing owls if they are present during construction, and would ensure owls are protected by no-activity buffers or passively moved out of the project footprint so that injury and death of burrowing owls is minimized (i.e., clearance surveys, construction buffers, relocation, translocation, and employing qualified avian biologists).
- The project owner would manage potential subsidies such as trash and water to reduce the potential for increased predation by common ravens and would implement weed management and revegetation to reduce the spread of invasive nonnative plants in the project area.
- Compensation requirements of acquisition and/or restoration/enhancement for desert tortoises would result in the preservation and enhancement in the quantity and quality of habitat managed for desert tortoise and burrowing owl conservation.

Therefore, although the project would potentially reduce the quality and value of western burrowing owl habitat lost during construction and could adversely affect owl use to some degree in adjacent lands large blocks of intact habitat would remain in the region. Given the small number of owls potentially directly affected by the project, there is no information to indicate that development of the project would appreciably reduce western burrowing owl population levels in the region. Based on the status, environmental baseline for the project area, effects of the proposed project, and cumulative effects on western burrowing owls in the region, the proposed project is not likely to jeopardize the continued existence of the western burrowing owl in the region.

Operation

Less Than Significant with Mitigation. Based on the analysis below, the operations associated with the proposed project would not substantially adversely affect western burrowing owl, either directly or through habitat modification, and impacts would be less than significant with the implementation of staff's proposed COCs **BIO-1** through **BIO-9, BIO-11, BIO-19, BIO-20, BIO-21, AQ-SC3, AQ-SC4, HAZ-9, WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-6, WORKER SAFETY-7**, and **WORKER SAFETY-10**.

Jurisdictional Project Components

Direct and indirect impacts associated with operation and maintenance of the project would be substantially reduced relative to initial construction activities. Impacts from the risk of collision and electrocution are described above under common birds and would be less than significant with the implementation of **BIO-19** (Bird and Bat Conservation Plan) which would require post construction monitoring and the use of visual markers to alert birds of the presence of the fencing and solar arrays should

mortality be detected. Burrowing owl are a known local resident of the project area, and this measure would reduce collision risk for resident birds. Currently there is no substantial evidence to suggest that solar panels pose a collision risk to western burrowing owls, rather impacts are more associated with habitat loss, habitat fragmentation, and loss of suitable burrows (Karban et al., 2024).

Post construction it is possible that portions of the project area could be used by western burrowing owls should suitable burrows persist or be constructed on site by fossorial species. However, this is unlikely as all potential burrows would be excavated to inspect for desert tortoise and collapsed post construction. As described in the (Karban et al., 2024) report, burrowing owls are classified as a potential tolerator species which means they could survive in low abundances and may persist but not thrive. If allowed to occur on site, direct and indirect impacts could occur throughout the life of the project. Therefore, staff recommend that active owl burrows not be retained on the project area post construction. The implementation of the same COCs, for project construction, including **BIO-1** through **BIO-9, BIO-20, BIO-21, AQ-SC3**, and **AQ-SC4**, would reduce impacts to western burrowing owl to a less than significant level and ensure compliance with CESA requirements.

Thermal Runaway and BESS Fires. The risk of a BESS fire at the project area is expected to be extremely low. Should a fire occur potential impacts from a BESS fire on western burrowing owls would be similar to those described for desert tortoise and could include risks from chemical exposure, smoke inhalation, soil and water contamination, mortality, and habitat degradation. Burrowing owls are known to occur in low densities in the project area and are likely to use the site for wintering and during migration. If present during a BESS fire it is likely that owls could disperse from the area and avoid most of the effects of smoke and chemical exposure. However, owls could be harmed should they forage on small mammals and insects that are exposed to any residual chemicals that remain in prey items. Owls that are too small to fly may also be subject to loss from smoke or chemical deposition however they may be shielded from exposure by the burrow.

To reduce these impacts the applicant has proposed a series of measures to reduce fire risk, contain BESS fires, and ensure access to local firefighting personnel via a Fire Management and Prevention Plan. **Section 5.7, Hazards, Hazardous Materials/Waste, and Wildfire** include staff's recommended COCs **WORKER SAFETY-1**, **WORKER SAFETY-2**, **WORKER SAFETY-6, WORKER SAFETY-7**, **WORKER SAFETY-10**, and **HAZ-9**. To further reduce impacts to biological resources should a BESS fire occur staff recommended COC **BIO-11** (Post BESS Fire Monitoring and Management Plan) which includes soil testing and remedial actions that would be required if sensitive species habitat is contaminated due to a BESS fire. With the implementation of these proposed COCs impacts from a potential BESS fire would be reduced to less than significant levels and would provide a mechanism to mitigate take should western burrowing owls be harmed in the unlikely event of a BESS fire.

Non-Jurisdictional Project Components

Operation of the existing Marketplace and Adelanto substations are not expected to impact western burrowing owls because the upgrades are confined to existing developed substation footprints. Impacts are not anticipated as no ground disturbing activity is proposed. Although western burrowing owls could nest in adjacent habitats LADWP implements standard environmental measures to protect sensitive plants and wildlife. Therefore, there would be no impact to western burrowing owls

Bendire's, LeConte's, and Crissal Thrashers

Construction

Less Than Significant with Mitigation. Based on the analysis below, the proposed project would not substantially affect Bendire's, LeConte's, or Crissal thrasher, either directly or through habitat modifications, and impacts would be less than significant with the implementation of staff's proposed COCs **BIO-1** through **BIO-5, BIO-7, BIO-8, BIO-9, BIO-16, BIO-18, BIO-21, AQ-SC3, AQ-SC4, HAZ-1**, and **WORKER SAFETY-1**.

Jurisdictional Project Components

LeConte's, Crissal, and Bendire's thrashers are designated as CDFW SSC and are BLM sensitive. Bendire's and LeConte's thrashers are experiencing significant population declines and have been identified as high-priority conservation concerns. The Center for Biological Diversity (Center) petitioned the CDFW to list these species under the CESA (Center 2025). The petition noted that the population of Bendire's and LeConte's thrashers population has declined by approximately 90% and 70% respectively over the last 50 years (Ibid). CDFW is currently evaluating this petition, and these species may be listed under CESA in the future. Crissal thrashers were not included in the petition but are included here because they have similar life histories and are known from the region.

Bendire's thrashers have a moderate potential to occur on the project area but were not detected during previous surveys. LeConte's has a high potential to occur and is known from adjacent habitat. The project area supports marginal habitat for Crissal thrasher, and this species was not detected during surveys.

Bendire's, LeConte's and Crissal thrasher were not directly observed in the project area but are known to occur within 10 miles of the site and could nest in the sparse scrub communities present at the project area and along portions of the linear facilities. However, the site contains sparse vegetative cover and does not support extensive cholla, mesquite, or other preferred nesting habitat. Nonetheless, potential nesting cannot be ruled out.

Direct and indirect impacts to these species would be the same as described for other birds. Construction of the proposed project would result in the loss of foraging habitat and could disrupt breeding habitat. However, most of the region supports ample habitat in adjacent areas and it is likely that the birds would move to adjacent habitat during

construction. Any project related impact that results in the loss of nesting habitat, disturbance of breeding behavior, destruction of nests or eggs, disruption of cache sites, exposure to herbicides or other hazardous materials, and mortality or injury to individual birds would be considered a significant impact.

To reduce impacts on thrashers staff recommends implementation of **BIO-18** (Nesting Bird Avoidance and Minimization Measures). This measure requires pre-construction surveys for nesting birds and includes targeted surveys to detect thrashers following the guidelines identified by the Desert Thrasher Working Group which includes repeated surveys and callback recordings. In addition, the establishment of non-disturbance buffers to avoid disturbing active nests would be required. Because of the sensitivity of desert thrashers these buffers would be larger compared to more disturbance tolerant species. These buffers would be established by the approved biologist and the nests would be avoided until the birds have fledged or the nest has failed. This measure also requires the development of a Nesting Bird Management Plan that contains the types of birds that have the potential to nest in the project area, where they likely nest, prescriptive language on who is qualified to conduct nesting bird surveys and monitor active nests, the methodology of the surveys, when surveys would be required, and the frequency they must be repeated. The measure would also require the establishment of a nesting bird log to track active nests and provide routine reports to the CPM on nest status. In addition, staff recommend COCs **BIO-16** (Habitat Management Land Acquisition for Desert Tortoise) and **BIO-21** (Habitat Management Land Acquisition for Burrowing Owl) which would require the project owner to obtain mitigation lands to replace habitat lost from the development of the project and would preserve habitat that could be used by these species.

Staff also recommend COC **BIO-1** through **BIO-4** (Designated Biologist Selection and Qualifications, Designated Biologists Duties, Biological Monitor Selection, and Designated Biologist and Biological Monitor Authority), **BIO-5** (Worker Environmental Awareness Program [WEAP]), **BIO-7** (General Impact and Avoidance Measures), **BIO-8** (Vegetation Management Plan), and **BIO-9** (Integrated Weed Management Plan). These measures would educate workers regarding the legal protections for nesting birds and who to contact should a nest be detected, restore native vegetation communities, and require the identification and treatment of weed infestations. The weed management plan would contain prescriptive measures including conducting preconstruction surveys and treatment of weeds prior to ground disturbance should the work occur when plants are visible.

Impacts from fugitive dust would be mitigated by implementation of staff's proposed COC **AQ-SC3** (**Section 5.1, Air Quality**) which include watering roads and or stabilizing them with soil binders and COC **AQ-SC4** would require a qualified dust monitor during dust producing activities and require remedial measures if fugitive dust exceeds authorized limits.

To reduce impacts from exposure to hazardous materials and improper herbicide use Staff recommends **HAZ-1** which would require the preparation of a Spill Prevention

Control and Countermeasures Plan (SPCC), **WORKER SAFETY-1** which includes construction worker safety programs to protect workers from exposure to hazardous material and waste, and **BIO-9** (Integrated Weed Management Plan) which includes the requirements and safe handling practices for herbicide use.

Non-Jurisdictional Project Components

Network upgrades to the existing Marketplace and Adelanto substations are not expected to impact these thrashers because the upgrades are confined to existing developed substation footprints. Impacts are not anticipated as no ground disturbing activity is proposed. Although these thrashers could nest in adjacent habitat LADWP implements standard environmental measures to protect sensitive plants and wildlife. Therefore, there would be no impact resulting from network upgrades.

Operation

Less Than Significant with Mitigation. Based on the analysis below, the operations associated with the proposed project would not substantially adversely affect western burrowing owl, either directly or through habitat modification, and impacts would be less than significant with the implementation of staff's proposed COCs **BIO-11, BIO-19, HAZ-9, WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-6, WORKER SAFETY-7**, and **WORKER SAFETY-10**.

Jurisdictional Project Components

Direct and indirect impacts associated with operation activities would be substantially reduced relative to initial construction activities. Generally, there would be no habitat impacts to areas outside of the arrays. Impacts from potential collision, thermal runaway and lake effects have are described above under common and sensitive birds. The implementation of the same COCs, including **BIO-11, BIO-19, HAZ-9, WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-6, WORKER SAFETY-7**, and **WORKER SAFETY-10**, would reduce impacts to less than significant levels.

Non-Jurisdictional Project Components

Operation of the existing Marketplace and Adelanto substations are not expected to impact these thrashers because the upgrades are confined to existing developed substation footprints. Impacts are not anticipated as no ground disturbing activity is proposed. Although these thrashers could nest in adjacent habitats LADWP implements standard environmental measures to protect sensitive plants and wildlife. Therefore, there would be no impact resulting from network upgrades.

Golden Eagles

Construction

Less Than Significant with Mitigation. Based on the analysis below, the proposed project would not substantially affect golden eagle, either directly or through habitat

modifications, and impacts would be less than significant with the implementation of staff's proposed COC **BIO-18**.

Jurisdictional Project Components

Golden eagles are state fully protected and are known to forage across the Mojave Desert. Both species are protected by the federal Bald and Golden Eagle Protection Act. There are scattered records within 10 miles of project area with the nearest occurring along I-15 approximately 5.2 miles to the northeast. Golden eagle was not observed or detected during any of the 2023 and 2024 surveys conducted by the applicant and there does not appear to be any known nests within direct line of site of the proposed project in either the north or south Soda Mountains. The BLM noted in the 2016 EIS that a golden eagle nest was observed 7.75 miles from the project area during surveys and a possible nest may exist in the Mojave National Preserve approximately 4 miles east of the Project area. The project area does not support suitable breeding habitat. Golden eagles can be extremely susceptible to disturbance during the breeding season (Anderson et al. 1990), and adverse effects are possible from various human activities up to (and in some cases exceeding) one mile from a nest site (Whitfield et al. 2008). Pagel et al (2010) also noted that human intrusions near golden eagle nest sites have resulted in nest abandonment with high nestling mortality when young go unattended due to altered behavior by the parent birds.

Staff concluded that project construction activities could potentially injure or disturb golden eagles if nests were established sufficiently close to project boundaries to be affected by the sights and sounds of construction. Staff consider these potential impacts unlikely, however, because suitable nesting substrate (i.e., cliff ledges, rocky outcrops, or large trees) does not occur within one mile of the project area. While there are ledges and rock outcrops on the south and north Soda Mountains these do not appear to be utilized for nesting to date. This may be the result of the nest sites being accessible to terrestrial predators and not sufficiently isolated by physical barriers.

However, as part of staff's proposed COCs these areas would be subject to intensive searches prior to construction. Potential nesting substrate is present along the existing transmission line towers that occur north and west of I-15. If nesting occurs on transmission lines, disturbance to golden eagle nests would be avoided with implementation of staff's recommended COC **BIO-18** (Nesting Bird Avoidance and Minimization Measures). This condition recommends that during construction, golden eagle nest surveys be conducted in accordance with USFWS guidelines to verify the status of golden eagle nesting territories within one mile of the project boundaries.

Non-Jurisdictional Project Components

Network upgrades at the existing Marketplace and Adelanto substations are not expected to impact golden eagles because the upgrades are confined to existing developed substation footprints. Impacts are not anticipated as no ground disturbing activity is proposed. Therefore, there would be no impact to golden eagles resulting from network upgrades.

Operation

Less Than Significant with Mitigation. Based on the analysis below, the operations associated with the proposed project would not substantially adversely affect golden eagle, either directly or through habitat modification, and impacts would be less than significant with the implementation of staff's proposed COCs **BIO-11, BIO-19, HAZ-9, WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-6, WORKER SAFETY-7**, and **WORKER SAFETY-10**.

Jurisdictional Project Components

Direct and indirect impacts associated with operation activities would be substantially reduced relative to initial construction activities. Generally, there would be no habitat impacts to areas outside of the arrays. Impacts from potential collision, thermal runaway and lake effects are described above under common and sensitive birds.

Non-Jurisdictional Project Components

Operation of the existing Marketplace and Adelanto substations are not expected to impact golden eagles because the upgrades are confined to existing developed substation footprints. Impacts are not anticipated as no ground disturbing activity is proposed. Therefore, there would be no impact to golden eagles resulting from network upgrades.

Desert Bighorn Sheep

Construction

Significant and Unavoidable, Conflicts with Fully Mitigate Standard for CESA Compliance. Based on the analysis below, the proposed project would substantially affect desert bighorn sheep, and impacts would be significant and unavoidable. Although implementation of staff's proposed COCs **BIO-1** through **BIO-9, BIO-24, AQ-SC3,** and **AQ-SC4** would reduce impacts, this would not occur at a level adequate enough to result in less than significant impacts to desert bighorn sheep or to meet the fully mitigate standard for CESA.

Jurisdictional Project Components

Except for a reduction in the project footprint to avoid essential habitat used by this species, see Relocation and Wildlife Buffer Alternative, there are no feasible mechanisms to reduce impacts to a less than significant level to this specific herd and meet CESA standards to full mitigation of project impacts. See **Section 8, Alternatives** for further information.

Desert bighorn sheep are a State Fully Protected species. They are also a BLM sensitive species. Current threats to this species include habitat fragmentation from the construction of highways and interstates, urbanization, and the construction of large-scale energy projects that hinder movement and disrupt genetic flow between populations or herds (CDFW 2025 and Aiello and Epps 2023). Access to reliable water

sources, disease from domestic livestock including sheep and goats, and human disturbance are other threats to this species (ibid).

There have been several recent studies completed to evaluate potential threats to bighorn sheep along their range and more specifically for the Soda Mountain herd. These include the CDFW Desert Bighorn Sheep Study completed for the Soda Mountain Solar Project (CDFW 2024) and a research-based study completed by bighorn sheep experts Dr. Christina Aiello and Dr. Clinton Epps from Oregon State University, titled Potential Impacts of the Proposed Soda Mountain Solar Development on Desert Bighorn Sheep (Aiello 2025. In addition, CDFW published the Conservation and Management Plan for Bighorn Sheep in California in 2025 (CDFW 2025) which provides additional guidance for the evaluation of impacts and protection of desert bighorn sheep herds. Additional documents that describe potential impacts to this species include the 2016 EIR/EIS for the original Soda Mountain Solar Project which concluded for the purposes of CEQA the project would have Significant and Unavoidable impacts to desert bighorn sheep and the NEPA conclusion which concluded that residual effects to this species would remain after mitigation.

These and other studies were considered in staffs' analysis. Staff also conducted routine coordination with CDFW staff including CDFW bighorn sheep experts.

In addition to a variety of mitigation measures the CDFW report concluded that:

- The project footprint is adjacent to occupied desert bighorn sheep habitat and a planned I-15 wildlife overcrossing intended to restore connectivity between bighorn populations north and south of the interstate.
- Desert bighorn sheep rely on steep, rocky terrain for predator avoidance, but also use intermountain flats and washes for movement and seasonal foraging.
- Access to reliable water sources is critical, especially during hot, dry periods.
- Populations are fragmented by highways and development, leading to genetic isolation and increased extinction risk.
- Loss of foraging habitat within the project footprint and fencing may restrict movement, leading to entrapment or increased risk of vehicle collisions.
- Construction noise and human activity may cause stress, habitat avoidance, and lamb mortality.
- Long-term fencing and proximity to habitat may disrupt movement corridors and access to resources by displacing animals from historic foraging habitat adjacent to the project area above the 10 percent slope.
- Potential for disease introduction via contaminated footwear or domestic animals.
- The project is near a planned critical wildlife overcrossing designed to restore population connectivity for desert bighorn sheep. Any additional barriers or disturbances in proximity to this area could undermine this restoration effort.

- Recommended the project be reduced to avoid encroachment within a 0.25-mile buffer from the 10 percent slope hinge point, especially near the wildlife the proposed crossing (See Relocation and Wildlife Buffer Alternative in Section 8).

In summary the Aiello and Epp report concluded the following:

- The proposed solar facility would be the closest large-scale solar development to occupied bighorn habitat in California and overlaps with areas of documented bighorn use.
- Geographical Positioning System (GPS) collar data and movement simulations show that bighorn sheep periodically use the project footprint and substantially use adjacent areas, especially for winter foraging.
- Bighorn sheep are sensitive to human disturbance, noise, and large structures, often exhibiting avoidance behaviors that can persist for years.
- Studies on other ungulates (pronghorn, mule deer) show that avoidance of energy developments can extend up to 1–3 km from the facility, reducing habitat use and connectivity.
- The Soda and Cady Mountains are critical for desert bighorn sheep metapopulation connectivity in the Mojave Desert.
- The area near Soda Mountain is a regionally significant movement corridor, essential for gene flow, recolonization, and population resilience.

And that under the no buffer scenario desert bighorn sheep could permanently avoid essential habitat that could lead to the loss of the Soda-Cady Mountains movement corridor, increased the risk of local extinction for the Soda Mountain herd, reduce lost recreational activities, and render the public funds dedicated to the planned I-15 wildlife overpass for desert bighorn sheep (wildlife crossing) wasted. The report proposed the following.

- Suggest the CDFW 0.25-mile buffer is insufficient and recommend the buffer be increased to at least 0.62 miles and ideally to 1.24 miles between the project and bighorn habitat to protect both frequently and infrequently used habitat and vital movement corridors.
- Delay project construction until after the I-15 wildlife overpass is built and bighorn movement across the highway is re-established and monitored.
- Add adaptive mitigation as needed should a smaller version of the project be constructed.

CEC commissioner and staff also conducted a site visit of the project area on November 20, 2025 with Dr. Aiello and Neal DeGrasse, a representative from the National Parks Conservation Association. Following this site visit the National Parks Conservation Association filed a letter report to the docket emphasizing the need for the implementation of the larger buffers, delaying project construction until the proposed

wildlife crossing is constructed, and implementing adaptive management should the project be constructed (NPCA 2025a).

Direct effects on bighorn sheep from the construction of the proposed project could include the loss of seasonal foraging habitat in the project footprint and in areas adjacent to the project that are avoided by bighorn sheep during and post construction; general disturbance from construction activities that displace sheep or result in mortality or reduced fitness, potential vehicle collisions, noise, and lighting. Sheep could also be at risk from entanglement with perimeter fencing. Fugitive dust that degrades habitat, night lighting, and the placement of fencing could disrupt local movement however periodic.

Indirect impacts include the degradation of habitat in the region from invasive weeds, human disturbance, and lighting. Additional indirect effects include avoidance of areas near manufactured structures such as the solar arrays, increased traffic on desert roads by the public, and risk of wildfires. Degradation of seeps or springs from groundwater pumping is not expected to occur. The most important long term adverse indirect impact is the displacement of sheep from historic foraging, lambing, and movement corridors.

Construction of the project is expected to result in substantial impacts to desert bighorn sheep. The CDFW and Aiello and Epp papers note that the bighorn sheep in the Soda and Cady Mountains form a critical part of the Mojave Desert metapopulation and rely on intermountain movement corridors for gene flow, recolonization, and access to seasonal resources. GPS collar data demonstrate that bighorn sheep regularly use the area overlapping the proposed Soda Mountain Solar project footprint, especially for winter foraging (see **Figure 6**). These areas are located extremely close to the proposed projects fence line.

Staff is concerned that while desert bighorn sheep are known to move close to I-15 near the proposed wildlife crossing location, bighorn sheep would avoid these areas during and after construction because the species would have limited site availability through the solar arrays and there would be an increased human presence during construction. This species is strongly associated with steep escape habitat but does move to lower gradient slopes to take advantage of seasonal increases in forage after winter rainfall. CDFW defined this important gradient as occurring at the 10 percent slope where the project abuts steeper mountain escape habitat. The habitat at and above the 10 percent slope provides important seasonal foraging and escape habitat. The CDFW and Aiello reports contend that the construction of and the placing of the solar field this close to an area extensively used by the species may limit or preclude use of the area for foraging. This would place an undue burden on foraging resources in other portions of the range and would likely compromise the survivorship of sheep.

In addition, construction of the proposed project could compromise the use of the planned wildlife crossing. The planned I-15 wildlife overpass is located within 2 km (1.24 miles) of the project area and is designed to restore connectivity between

fragmented populations. These movement paths indicate frequent travel between the Soda and Cady Mountains, with the project area (south Soda Mountains) serving as a key corridor (Aiello and Epp. 2023). Even infrequently used habitat within the footprint is important for population health and resilience.

Any impacts that displace sheep, remove important foraging habitat or result in loss or mortality or decreased fitness would be considered a significant impact and would not be consistent with the requirements of CESA.

To reduce construction related impacts to bighorn sheep the applicant has proposed a series of measures including but not limited to the implementation of weed management, worker training, and monitoring. In addition, the applicant is committed to implementing all the conditions identified in the CDFW report except for the 0.25-mile buffer. The applicant has offered to provide compensatory mitigation in off-site areas that they believe would benefit desert bighorn sheep across the arid southwest. The Aiello and CDFW report both included a series of prescriptive measures to reduce construction and operational related impacts to bighorn sheep. Some of these measures include the development of a Worker Environmental Awareness Program (WEAP) that requires training for all personnel on bighorn sheep biology, sensitivity, and avoidance measures; restriction of pets except for approved detection dogs; biological monitoring during construction; exclusion fencing for bighorn sheep; installation of artificial water sources within five miles of the project to enhance sheep movement across the proposed wildlife crossing; implementation of seasonal work restrictions during the lambing period (December 1 to June 30) for areas within 500 m (0.3-miles) of the 10 percent slope contour; and decontamination stations for worker footwear. In addition, a specific bighorn sheep monitoring plan and compensatory land acquisition for lost foraging habitat was also recommended. CDFW and the Aiello papers also recommended the project be redesigned to avoid placing any project features near the 10 percent contour line. CDFW recommended a 0.25-mile buffer and Aiello-Epp recommended a 0.62-miles to 1.24-miles buffer.

Staff have incorporated all relevant mitigation options into our proposed COCs except for the implementation of the 0.25-mile CDFW buffer or the 0.62-mile and 1.24-mile buffer identified in the Aiello and Epp report (2023). Staff concluded that use of the buffer options would be analyzed as a separate project Alternative, the Relocation and Wildlife Buffer Alternative, rather than a mitigation measure see **Section 8, Alternatives**. Staff's proposed COCs include **BIO-24** (Bighorn Sheep Avoidance and Minimization Measures) that include full time monitoring, the implementation of seasonal work restrictions to avoid impacts to lambing, creation or funding of five new artificial water sources in consultation with the BLM and CDFW, and funding CDFW to acquire and implement additional radio collaring of desert bighorn sheep to better understand movement in the region should the project be constructed.

Staff also recommends COCs **BIO-1** (Designated Biologist Selection), **BIO-2** (Designated Biologist Duties), **BIO-3** (Designated Monitor Selection), **BIO-4** (Designated Biologist and Biological Monitor Authority), **BIO-5** (Worker Environmental

Awareness Program [WEAP]), **BIO-6** (Biological Resources Mitigation Implementation and Monitoring Plan), **BIO-7** (General Impact and Avoidance Measures), **BIO-8** (Vegetation Management Plan), and **BIO-9** (Integrated Weed Management Plan) would be required. Impacts from fugitive dust would be reduced by implementation of staff's proposed COCs **AQ-SC3** and **AQ-SC4**.

Except for moving project components outside of essential desert bighorn sheep habitat each of staff's proposed COCs reduce but cannot mitigate direct and indirect impacts to desert bighorn sheep to a less than significant level. These impacts would likely occur primarily through habitat loss, the disruption of movement and reduction in genetic flow, increased risk of disease and stress, reduced fitness by limiting access to foraging habitat; abandonment or injury to lambs, and possible abandonment of important foraging and movement habitat. These impacts would be considered significant and unavoidable even with the application of mitigation and would not comport with CESA requirements to fully mitigate impacts on this species. These impacts could be considered less than significant and meet CESA requirements under the Relocation and Wildlife Buffer Alternative (Bighorn Sheep Avoidance Buffer).

The applicant initially provided information to the project docket that indicates the 0.25-mile buffer or any required reduction on the project footprint is not warranted nor required to mitigate impacts to desert bighorn sheep. They contend that the use of buffers is infeasible and state there are specific economic, legal, environmental, social, and technological factors that make implementing a 0.25-mile buffer infeasible as a project alternative or mitigation measure (RE 2025x).

The applicant argues that there is insufficient evidence to support the need for a 0.25-mile buffer or any larger buffer around the project area to protect desert bighorn sheep, beyond the mitigation measures already proposed. They assert that their current suite of mitigation measures is adequate to reduce impacts to less than significant, and therefore, additional buffers are neither warranted nor appropriate. The applicant also contends that the limited number of bighorn sheep data points within the project area, the infrequent use of the site by sheep, and the absence of high-quality habitat or reliable water sources further diminish the justification for imposing such buffers.

Staff, however, finds these arguments unpersuasive and notes that the applicant has not provided compelling evidence to counter the recommendations in the CDFW and Aiello reports. Staff acknowledge that the applicant's mitigation measures may reduce impacts to some degree, but emphasizes that the regulatory standard for State Fully Protected species is much higher, requiring avoidance of any take, including indirect impacts that result in loss or displacement of animals. Staff also points out that the proposed mitigation does not fully address operational impacts that could disrupt sheep use of adjacent slopes and alter critical behavioral patterns that may lead to the loss of this herd overtime.

Furthermore, staff highlights that the buffer is intended to protect important seasonal foraging and escape habitat identified in both the CDFW and Aiello reports, not just the

few sheep observed within the project footprint. The reports argue that construction and operation of the solar facility near these habitats could discourage sheep from using key terrain, with cascading effects on population health and survivorship. Staff conclude that the applicant's reliance on limited data and narrow definitions of habitat utility presents an incomplete picture, and that a precautionary approach including incorporating buffers as recommended by CDFW and Aiello remains essential for effective conservation and long-term resilience of desert bighorn sheep populations.

The applicant has also suggested that obtaining mitigation lands in other areas could benefit desert bighorn sheep. Staff notes that acquiring mitigation lands for bighorn sheep outside the project impact area do not reduce the risks associated with the proposed project to the Soda Mountains herd. In addition, CDFW manages desert bighorn sheep populations on a herd-by-herd basis, recognizing that each herd occupies distinct habitat patches, faces different threats, and contributes uniquely to regional genetic diversity and population resilience (CDFW 2025). While mitigation in other areas may provide benefits to the species on a regional scale it does not offset the direct, indirect, and operational impacts to the herd that is being affected by the proposed project.

Therefore, staff requires that mitigation measures be targeted to the population and habitat directly impacted by the proposed project. Conservation actions that benefit distant herds do not compensate for the loss of foraging grounds, movement corridors, or genetic exchange opportunities for the local population. As noted in the CDFW and Aiello reports, ensuring the persistence of each herd is critical to maintaining the overall metapopulation and the loss or decline of a single group can have adverse effects on connectivity and long-term viability.

Although noting that the Bighorn Sheep Buffer and Relocated Battery Energy Storage System Alternative #2, which includes the 0.25-mile setback from the 10 percent slope contour that defines the lower extent of desert BHS foraging and escape habitat, as described in **Section 8, Alternatives**, "is extremely constrained," the applicant considers it "a feasible alternative" (RE 2025iii).

Non-Jurisdictional Project Components

Network upgrades at the existing Marketplace and Adelanto substations are not expected to impact desert bighorn sheep because the upgrades are confined to existing developed substation footprints. Impacts are not anticipated as no ground disturbing activity is proposed. Therefore, there would be no impact to desert bighorn sheep resulting from network upgrades.

Operation

Significant and Unavoidable, Conflicts with Fully Mitigate Standard for CESA Compliance. Based on the analysis below, the operations associated with the proposed project would adversely affect desert bighorn sheep, and impacts would be significant and unavoidable. Although implementation of staff's proposed COCs **BIO-1** through **BIO-9,**

BIO-11, BIO-24, AQ-SC3, AQ-SC4, HAZ-9, WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-6, WORKER SAFETY-7, and **WORKER SAFETY-10** would reduce operational impacts, this would not occur at a level adequate enough to result in less than significant impacts to desert bighorn sheep or to meet the fully mitigate standard for CESA.

Jurisdictional Project Components

Direct and indirect impacts associated with operation and maintenance of the project would be reduced relative to initial construction activities however the placement of the project in this location is expected to have long term permanent adverse effects to desert bighorn sheep. Even with the implementation of the applicants and staffs proposed COCs, including **BIO-1** through **BIO-9, BIO-24, AQ-SC3**, and **AQ-SC4,** there is substantial evidence to suggest that the size and scale of the proposed project would intrude onto important habitat for desert bighorn sheep which would result in significant and unavoidable impacts under CEQA and be inconsistent with the requirements of CESA.

Thermal Runaway and BESS Fires. The risk of a BESS fire at the project area is expected to be extremely low. Should a fire occur potential impacts there are several factors that influence the risk to sheep and other species. This includes the time when the fire occurs, the size of the fire, existing weather patterns including wind direction and seasonal rainfall, and the seasonal presence of sheep. The timing and size of a BESS fire would be important factors that determine the scale of the potential impacts to desert bighorn sheep. For example, desert bighorn sheep have seasonal activity patterns in the south Soda Mountains. Aiello et al. (2023) found that the desert bighorn sheep included within their study showed a preference for north-facing slopes in the fall, which was defined as October through November, and a preference for south-facing slopes in the winter, defined as December through March (CDFW 2024). A large BESS fire during this time may disrupt sheep more compared to a fire when most sheep activities are concentrated on the south facing slopes away from the proposed project area. In addition, a large BESS fire that burns for multiple days coupled with seasonal winds that deposit chemicals onto sheep foraging habitat would also increase the risk to the species.

While direct studies on battery fire impacts to desert bighorn sheep have not been completed, existing data on wildfire smoke, respiratory disease, and habitat contamination strongly suggest that such events could pose significant risks to this species.

Should a battery related fire occur desert big horn sheep could be exposed to smoke related airborne toxicants depending on the type of battery that is used for the proposed project. Chemicals from battery fires contain harmful chemicals such as hydrogen fluoride, sulfur dioxide and other harmful chemicals that can damage the respiratory tracts or result in chemical burns to wildlife that are directly exposed to smoke. The CDFW 2025 report on managing desert bighorn sheep have already noted

that this species is highly susceptible to respiratory infections, particularly sheep respiratory pneumonia (*Mycoplasma ovipneumoniae*) which has caused significant die-offs in Mojave populations. Exposure to smoke and airborne pollutants could from a BESS fire could exacerbate existing infections, impair lung functions and possibly place the animals at further risk of infections.

Smoke from battery fires can also result in the contamination of important foraging habitat or possibly contaminate water sources depending on the direction of the wind during the fire event. The primary springs utilized by desert bighorn sheep are on the opposite side of the south Soda Mountains, staff is unsure whether these areas would be subject to the deposition of harmful chemicals should a battery fire occur. Smoke from fires can also increase stress and lead to displacement from areas adjacent to the smoke plume or from firefighting activities. This could displace sheep from preferred habitat, interrupt the use of important movement corridors including the proposed wildlife crossing over I- 15, and increase energy expenditure and stress on sheep.

Currently, the operation of the proposed project is expected to result in significant and unavoidable impacts to desert bighorn sheep because the project is expected to displace sheep from important foraging habitat and could disrupt important habitat usage. While the potential for a BESS fire to occur is low, fire related impacts that degrade habitat, displace animals, increase the risk of respiratory damage, or impede usage of movement corridors would further exacerbate these conditions and would be considered a significant impact.

To reduce these impacts the applicant has proposed a series of measures to reduce fire risk, contain BESS fires, and ensure access to local firefighting personnel via a Fire Management and Prevention Plan. Section 5.7 (Hazards, Hazardous Materials/Waste, and Wildfire) includes staff's proposed COC **WORKER SAFETY-1**, **WORKER SAFETY-2**, **WORKER SAFETY-6**, **WORKER SAFETY-7**, **WORKER SAFETY-10**, and **HAZ-9**. To further reduce impacts to biological resources should a BESS fire occur staff recommended COC **BIO-11** (Post BESS Fire Monitoring and Management Plan) which includes soil testing and remedial actions that would be required if sensitive species habitat is contaminated due to a BESS fire. With the implementation of these recommended COCs impacts from a potential BESS fire would be reduced to less than significant levels and would provide a mechanism to mitigate take should bighorn sheep be harmed in the unlikely event of a BESS fire. However, even with these measures existing operational impacts would remain significant and unavoidable.

Non-Jurisdictional Project Components

Operation of the existing Marketplace and Adelanto substations are not expected to impact desert bighorn sheep because the upgrades are confined to existing developed substation footprints. Impacts are not anticipated as no ground disturbing activity is proposed. Therefore, there would be no impact to desert bighorn sheep resulting from network upgrades.

American Badger and Desert Kit Fox

Construction

Less Than Significant with Mitigation. Based on the analysis below, the proposed project would not substantially affect American badger or desert kit fox, either directly or through habitat modifications, and impacts would be less than significant with the implementation of staff's proposed COCs **BIO-1** through **BIO-5, BIO-7, BIO-8, BIO-9, BIO-16, BIO-20, BIO-21, BIO-22, AQ-SC3, AQ-SC4, HAZ-1,** and **WORKER SAFETY-1**.

Jurisdictional Project Components

The American badger is a CDFW Species of Special Concern. The desert kit fox may not be taken at any time under California Code of Regulations Title 14, section 460. Suitable dens for American badger and desert kit fox were observed during surveys conducted by the applicant. Several inactive burrows with diagnostic badger sign were noted. Desert kit foxes are known to occur in the project area. Several kit fox complexes were detected during the surveys that contained recent sign, and one kit fox was observed on the access road leading to the proposed gen-tie during a bat survey. Both species are considered to have a high potential to occur in the project area.

Construction of the project could directly affect American badger, desert kit fox, and their habitat by the loss and degradation of habitat; disturbance of foraging, dispersal, and breeding activities; mortality due to crushing by foot traffic, vehicles, or heavy equipment; fugitive dust; ground borne vibration, exposure to hazardous materials; soil compaction that prevents burrowing; and increased noise and disturbance. Each of these species can also be susceptible to collisions with vehicles along project access roads including Rasor Road, Arrowhead Trail, and the gen-tie access road. Desert kit fox may also search out water sources, and this species has been found drowned within water tanks that do not contain escape ramps or uncovered water storage tanks (water buffaloes). Desert kit foxes are also susceptible to canine distemper virus (CDV) which has been identified in desert kit fox populations in the Colorado Desert portion of their range. It is thought that stress from animals being passively relocated or disturbed may put animals at greater risk of contracting the disease if conducted in an area experiencing or adjacent to a CDV outbreak, as CDV infection decreases immune function (Clifford 2011b). In addition, passive relocation activities in an area experiencing a CDV outbreak may result in increased movement of animals shedding the virus and thereby increase transmission into new areas.

Construction that results in injury or mortality to these species would be considered a significant impact. To reduce impacts to this species staff recommends the implementation of COC **BIO-22** (American Badger and Desert Kit Fox Avoidance and Minimization Measures) which requires conducting pre-construction surveys and establishing non-disturbance buffers for the animals. The plan will require specific information on survey methodologies, roles of designated staff, methods for den assessments and avoidance buffers, methods proposed for passive relocation efforts

and den excavation for American badgers and desert kit fox only, management of sick or diseased animals including notification should any kit foxes be identified of CDV, and reporting requirements.

During preconstruction surveys, all desert kit fox and American badger observations, including individual animals, dens and den complexes, and sign, will be recorded. Any dens or den complexes identified during preconstruction surveys will be classified using the following designations:

- Active (Natal or Non-Natal)
- Potentially Active (Natal or Non-Natal)
- Inactive (Care must be taken to ensure burrows are inactive)

Den protection for both species will be based on the following guidance:

- Inactive Dens. Dens that are within disturbance limits or the required 500-foot survey buffer that exhibiting no evidence of desert kit fox or American badger use and a clearly visible terminus will be defined as inactive and will be blocked or collapsed during preconstruction surveys to prevent future use by American badgers or desert kit fox.
- Inactive dens outside of disturbance limits will be subject to passive exclusion methods to ensure any animals are not still within the burrow. Any inactive den within the disturbance limits and is determined to be inactive after the assessment will be subject to passive exclusion methods or may be excavated depending on construction requirements. Wherever possible, inactive dens will be preserved for future occupancy. These dens will be preserved to the maximum extent feasible.
- Potentially Active dens. Dens that are active or potentially active identified during the preconstruction surveys will require the establishment of a 500-foot non-disturbance buffers until the status of the den can be determined. To determine if a den is inactive the project owner shall conduct an assessment over a period of five (5) consecutive nights as required in staff's proposed COC **BIO-22** (American Badger and Desert Kit Fox Avoidance and Minimization Measures). If the den is active the avoidance buffer will remain intact, and no construction activities will be permitted within the buffer without prior approval from the CPM in coordination with the CDFW.
- Active dens. If an active desert kit fox den is detected within 500 feet of any work area during the desert kit fox pupping season (January 1 through August 31), they will be designated as an avoidance area, and a minimum 500-foot avoidance buffer will be established and maintained until the den is confirmed to be inactive. If an active American badger den is detected within 100 feet of any work area during the pupping season (March 1 through August 31) a minimum 100-foot avoidance buffer will be established until the den is confirmed to be inactive.
- If an active desert kit fox or American badger den is detected within 500 feet of any work area outside of the pupping seasons described above a minimum 200-foot

avoidance buffer will be established for desert kit fox and 100-foot avoidance buffer for American badger will be established and maintained until the den is confirmed to be inactive. Avoidance buffers may be adjusted only with advance written approval from the CPM in coordination with CDFW.

- Relocation of American badger will only be allowed outside the pupping season.
- Relocation of desert kit fox will be allowed on a case-by-case basis after coordination with the CPM and with the concurrence of the CDFW, but would only occur outside of the pupping season. Any relocation of desert kit foxes will be avoidance-based and intended to prevent prohibited take, not authorize the taking of the species.

Any impact on these species would be considered a significant impact if it results in injury or mortality. To reduce impacts to this species staff recommends the implementation of **BIO-22** (American Badger and Desert Kit Fox Avoidance and Minimization Measures) and **BIO-16** (Habitat Management Land Acquisition for Desert Tortoise) and **BIO-21**(Habitat Management Land Acquisition for Burrowing Owl) which would provide compensatory land to reduce impacts from habitat loss. Staff also recommends **BIO-1** through **BIO-4** (Designated Biologist Selection and Qualifications, Designated Biologists Duties, Biological Monitor Selection, and Designated Biologist and Biological Monitor Authority), **BIO-5** (Worker Environmental Awareness Program [WEAP]), **BIO-7** (General Impact and Avoidance Measures), **BIO-8** (Vegetation Management Plan), and **BIO-9** (Integrated Weed Management Plan) To reduce impacts from exposure to hazardous materials and improper herbicide use. Staff recommend **HAZ-1** and **WORKER SAFETY-1**. The implementation of these measures would reduce impacts to these species to less than significant levels and would avoid taking of protected furbearing mammals such as the desert kit fox or ringtail. Impacts from fugitive dust would be mitigated by implementation of **AQ-SC3** and **AQ-SC4**, which include watering roads and or stabilizing them with soil binders and would require a qualified dust monitor.

Non-Jurisdictional Project Components

Network upgrades at the existing Marketplace and Adelanto substations are not expected to impact American badger or desert kit fox because the upgrades are confined to existing developed substation footprints. Although it is possible these species could occur in adjacent lands, LADWP implements standard environmental measures during the construction and operation of their facilities. Impacts are not anticipated as no ground disturbing activity is proposed. Therefore, there would be no impact to these species resulting from network upgrades.

Operation

Less Than Significant with Mitigation. Based on the analysis below, the operations associated with the proposed project would not substantially adversely affect American badger or desert kit fox, either directly or through habitat modification, and impacts would be less than significant with the implementation of staff's proposed COCs **BIO-1**

through **BIO-5, BIO-7, BIO-8, BIO-9, BIO-11, BIO-16, BIO-20, BIO-21, BIO-22, AQ-SC3, AQ-SC4, HAZ-1, HAZ-9, WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-6, WORKER SAFETY-7**, and **WORKER SAFETY-10**.

Jurisdictional Project Components

Direct and indirect impacts associated with operation activities would be substantially reduced relative to initial construction activities. Impacts from potential thermal runaway are described above under common wildlife. If present, disturbance would likely be associated with noise and nighttime lighting in the facility which could result in lower activity levels along the fence line. There could be some increase in the risk of roadkill due to increased baseline traffic from facility staff.

The applicant has proposed to allow small mammals including desert kit fox access to the solar arrays following construction of the project. Staff notes that for other solar projects in desert regions desert kit foxes gain access to the sites during and post construction by scaling or excavating under fences, and by entering open gates. The USGS (Karben et al., 2024) framework on wildlife responses to solar development indicated that desert kit fox would be considered a tolerant species, that is a species that survives at low abundances and persists but not thrive in the solar arrays. It is likely that desert kit foxes would enter the facility during the operational phase and may excavate and establish territories within the arrays. It is possible that American badgers may also return to some degree.

Conducting O&M activities close to active den sites during the breeding season could result in disturbance to adults or their young. The same COCs proposed for project construction, including **BIO-1** through **BIO-5, BIO-7, BIO-8, BIO-9, BIO-16, BIO-20, BIO-21, BIO-22, AQ-SC3, AQ-SC4, HAZ-1**, and **WORKER SAFETY-1** would be implemented. These conditions require adequate avoidance buffers, minimization of light pollution and worker education.

Thermal Runaway and BESS Fires. The risk of a BESS fire at the project area is expected to be extremely low. Should a fire occur potential impacts from a BESS would be similar to those described for other wildlife and could include risks from chemical exposure, smoke inhalation, soil and water contamination, mortality, and habitat degradation. To reduce these impacts the project owner would implement staff's proposed COCs **WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-6, WORKER SAFETY-7, WORKER SAFETY-10**, and **HAZ-9**. COC **BIO-11** (Post BESS Fire Monitoring and Management Plan) includes soil testing and remedial actions that would be required if sensitive species habitat is contaminated due to a BESS fire. With the implementation of these proposed COCs impacts from a potential BESS fire would be reduced to less than significant levels.

Non-Jurisdictional Project Components

Operational impacts are not anticipated as no ground disturbing activity is proposed and work would be confined to developed facilities. Therefore, there would be no impact to these species.

Southern California Ringtail and Mountain Lion

Construction

Less Than Significant with Mitigation. Based on the analysis below, the proposed project would not substantially affect ringtail or mountain lion, either directly or through habitat modifications, and impacts would be less than significant with the implementation of staff's proposed COCs **BIO-1** through **BIO-5, BIO-7, BIO-23, HAZ-1**, and **WORKER SAFETY-1**.

Jurisdictional Project Components

The ringtail is a CDFW fully-protected species which is known to occur in scattered locations across the Mojave Desert where access to reliable water sources occurs. Typically, ringtails are seldomly found more than 0.6 miles (1.0 kilometer) from permanent water. Denning sites typically occur in rock recesses, hollow trees, logs, snags, abandoned burrows, or woodrat nests.

Ringtails have been observed at Zzyzx approximately 3.5 miles to the east of the proposed project area on the other side of the south Soda Mountains. This species is strongly associated with perennial water sources but can disperse across open and dry areas when needed. Habitat on the project area is generally unsuitable for denning but this species may occur as a periodic forager during wetter years. The project has a low potential to result in direct or indirect impacts to this species.

Most of the project area does not support suitable denning habitat but this species could use the numerous desert tortoise and desert kit fox burrows as potential den sites. However, the site does not have a reliable water source nearby. Therefore, there is a low likelihood of encountering this species during construction.

In 2020, the Southern California/Central Coast Mountain Lion ESU was designated as a candidate species for listing under the CESA. Mountain lion was not observed or detected during any of the surveys conducted by the applicant. The general region surrounding the project area supports suitable denning habitat for the species and desert bighorn sheep are present. However, there are no known records of this species occurring in the Soda Mountains. The nearest record for this species is located near Flynn approximately 25 miles to the southeast. Therefore, there is a very low potential that mountain lion could occur as a very infrequent transient within or adjacent to the project area, moving between more suitable habitats.

Direct impacts to mountain lions from construction of the project or gen-tie line are not expected to occur. Mountain lions are secretive, typically move at night and the area

lacks denning or dense cover for them to find shelter. Construction related impacts to ringtail are also not expected to occur. However, impacts to both species would be avoided should they occur in the project area through staff's proposed COCs including **BIO-1** through **BIO-4** (Designated Biologist Selection and Qualifications, Designated Biologists Duties, Biological Monitor Selection, and Designated Biologist and Biological Monitor Authority) **BIO-5** (Worker Environmental Awareness Program [WEAP]), **BIO-7** (General Impact and Avoidance Measures), and **BIO-23** (Mountain Lion and Ringtail Avoidance and Minimization Measures). These conditions include information regarding the detection of these species and provide prescriptive measures should animals be detected in or near proposed work areas. The general impact and avoidance measures would also include pre-construction survey requirements and stop work orders should either of these protected species be detected. To reduce impacts from exposure to hazardous materials and improper herbicide use staff recommend **HAZ-1** and **WORKER SAFETY-1**. The implementation of these measures would reduce impacts to mountain lions and ringtail to less than significant levels and would avoid take of these species.

Non-Jurisdictional Project Components

Network upgrades at the existing Marketplace and Adelanto substations are not expected to impact ringtail or mountain lions because the upgrades are confined to existing developed substation footprints. Although it is possible these species could occur in adjacent lands, LADWP implements standard environmental measures during the construction and operation of their facilities. Impacts are not anticipated as no ground disturbing activity is proposed. Therefore, there would be no impact to these species resulting from network upgrades.

Operation

Less Than Significant with Mitigation. Based on the analysis below, the operations associated with the proposed project would not substantially adversely affect ringtail or mountain lion, either directly or through habitat modification, and impacts would be less than significant with the implementation of staff's proposed COCs **BIO-1** through **BIO-5, BIO-7, BIO-11, BIO-23, HAZ-1, HAZ-9, WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-6, WORKER SAFETY-7**, and **WORKER SAFETY-10**.

Jurisdictional Project Components

Both species have an extremely low potential to occur at the project area. Direct and indirect impacts associated with operational activities, should they occur, would be substantially reduced relative to initial construction activities. If present, disturbance would be associated with noise and nighttime lighting around the perimeter of the facility. Mountain lions typically avoid more developed areas that lack suitable prey opportunities and would likely avoid the facility should they be moving through the adjacent landscape. Like desert kit fox, ringtails are susceptible to vehicle strikes but they expected to occur in very low densities. Impacts from potential thermal runaway are described above under common wildlife.

The implementation of the same COCs for the construction, including **BIO-1** through **BIO-5, BIO-7, BIO-23, HAZ-1,** and **WORKER SAFETY-1**, would reduce impacts these species to less than significant and avoid take.

Thermal Runaway and BESS Fires. The risk of a BESS fire at the project area is expected to be extremely low. Should a fire occur potential impacts would be similar to those described for other mammals and could include risks from chemical exposure, smoke inhalation, soil and water contamination, mortality, and habitat degradation.

Implementation of the same COC's for common and other sensitive wildlife, including **BIO-11, HAZ-9, WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-6, WORKER SAFETY-7,** and **WORKER SAFETY-10,** would reduce potential impacts to these species should they occur and provide a mechanism to mitigate take should ringtail or mountain lions be harmed in the unlikely event of a BESS fire.

Non-Jurisdictional Project Components

Operational impacts are not anticipated as no ground disturbing activity is proposed and work would be confined to developed facilities. While it is possible that ringtail could enter existing facilities LADWP has existing environmental measures to protect sensitive plants and wildlife. Therefore, there would be no impact to these species resulting from network upgrades.

Common and Special-Status Bats

Construction

Less Than Significant with Mitigation. Based on the analysis below, the proposed project would not substantially affect common or special-status bats, either directly or through habitat modifications, and impacts would be less than significant with the implementation of staff's proposed COCs **BIO-1** through **BIO-5, BIO-7, AQ-SC3, AQ-SC4, HAZ-1**, and **WORKER SAFETY-1**.

Jurisdictional Project Components

The applicant conducted a series of daytime roost searches and nighttime acoustic surveys for bats in the project area. The surveys consisted of an initial daytime habitat assessment survey and three subsequent rounds of nighttime acoustic surveys consisting of dusk roost emergence and activity transect surveys (RE 2025s 2025 BRTR). There were no State or federally listed bat species detected during the surveys and none are expected to occur in the project area. Only canyon bat (*Parastrellus hesperus*) and Mexican free-tailed bat (*Tadarida brasiliensis*) were detected during the surveys. The applicant did locate potential areas for roosting primarily along the culverts under I-15 where possible urine staining was observed (ibid). Bats could also use the numerous small mammal and desert tortoise burrows that occur across the project area. However, no roost emergence behavior was observed, and it appeared that bats detected were consistent with foraging or commuting activity. It is unlikely

that the project area supports maternity or hibernaculum areas however the adjacent Soda Mountains contain mines and cavities that could support this use.

Common bats have been detected at the ponds near Zzyzx and bats in general are likely to forage over most of the broader region and likely occur to some degree as periodic foragers across the project area where they prey on small insects, moths, and other invertebrates.

Sensitive bats were not detected by the applicant and CNDDB records for most species of sensitive bats are lacking in the region, most over 50 miles from the site. Although not detected there remains a potential for several sensitive species of bats to occur in the region and which may periodically forage in the project area. In addition, the absence of CNDDB data records in the region more likely reflects the lack of recent regional surveys rather than the absence of bats known to occur across the Mojave Desert. The BLM EIS noted that Blue Bell Mine and the Otto Mountain Mine could all support sensitive bats and they are within foraging distance from the project area. The project area is within the foraging range of pallid bats observed at Otto Mountain Mine and Townsend's bats observed at Blue Bell Mine and Otto Mountain Mine. Thus, foraging special-status bats may occur on the project area. Special status bats known from the Mojave Desert include California leaf-nosed bat, Pallid bat, Townsend big-eared bat, and western mastiff bat. Each of these species is a California SSC. In addition, western red bat, spotted bat, big free-tailed bat, long-legged myotis, and pocketed free-tailed bat may also occur and there are several bats considered "special animals" by CDFW such as hoary bat and Mexican free-tailed bat.

Bat life histories vary widely. Some species hibernate during winter or migrate to warmer areas. During the breeding season, bats generally roost during the day, either alone or in communal roost sites, depending on species. Some species feed mainly over open water where insect production is especially high, but others forage over open shrublands. The decline of bat populations is often due to roost site disturbance, loss of foraging habitat, and loss of roost sites. Activities that have been documented to impact bats include livestock grazing, vegetation treatments, and water reclamation that could lead to loss of a water source or riparian habitat.

Although the risk is low, if present in highway or other structures direct impacts to bats could occur from increased noise from heavy equipment, human presence, and exposure to fugitive dust should they elect to day roost near the project area. Indirect effects could include increased traffic, dust, and human presence in the Project area.

The most likely risk to bats is during crepuscular and nighttime periods when work is conducted with the use of lights. Nighttime lighting could attract insects and pose a risk to bats from construction activities. In addition, bats that forage near the ground, such as the pallid bat, would also be subject to the risk of collision by vehicles driving at dusk, dawn, or during night work. There is some risk of encountering migrant bats or bats that may be attracted to night lighting. Other onsite practices that increase available water, such as mirror washing, dust control, and leaks/spills when filling water

trucks may attract insects, in turn attracting bats to the site. Increased vehicle presence on access roads and the I-15 freeway may also adversely impact bats. Bats are known to collide with stationary objects, such as windows and television towers; and of these collisions, many involved illuminated objects that should have been detected by vision, if not by echolocation (Orbach and Fenton, 2010). Bats do not maneuver solely using echolocation, in fact, some bats have very good eyesight, such as California leaf-nosed bat (*Macrotus californicus*), a species that feeds by gleaning insects, and therefore would need to clearly see them against foliage to eat them. There are several species of bats that may forage at the site that also feed by gleaning, such as the pallid bat. While bat vision is adapted for long-distance use, and even exceeds echolocation ranges (Suthers 1970), the short-range visual capability of bats is poorly understood (Orbach and Fenton, 2010).

Roosting bats are not expected to occur, and the site does not support suitable habitat such as caves or other structures for maternity colonies and hibernacula. However, pallid bats have been observed using burrows within creosote bush scrub (Brown-Berry Consulting 2012) to some degree.

To reduce impacts staff recommend implementation of general conditions for sensitive species avoidance and minimization including COC **BIO-1** through **BIO-4** (Designated Biologist Selection and Qualifications, Designated Biologists Duties, Biological Monitor Selection, and Designated Biologist and Biological Monitor Authority), **BIO-5** (Worker Environmental Awareness Program [WEAP]), and **BIO-7** (General Impact and Avoidance Measures). These conditions would be required to include information regarding the detection of these species and provide prescriptive measures should bats be detected or injured during construction. They also include specific conditions to search for and avoid nesting or roosting habitat in the unlikely event that bats should be detected during construction. To reduce impacts from exposure to hazardous materials and improper herbicide use staff recommended COCs **HAZ-1** and **WORKER SAFETY-1**. Impacts from fugitive dust would be mitigated by implementation of staff's proposed COC **AQ-SC3** which include watering roads and or stabilizing them with soil binders and COC **AQ-SC4** would require a qualified dust monitor during dust producing activities and require remedial measures if fugitive dust exceeds authorized limits. The implementation of these measures would reduce impacts to bats to less than significant.

Non-Jurisdictional Project Components

Network upgrades at the existing Marketplace and Adelanto substations are not expected to impact sensitive bats because the upgrades are confined to existing developed substation footprints. Although it is possible bats could periodically roost in project components, LADWP implements standard environmental measures during the construction and operation of their facilities. Therefore, there would be no impacts to bats resulting from network upgrades.

Operation

Less Than Significant with Mitigation. Based on the analysis below, the operations associated with the proposed project would not substantially adversely affect common or special-status bats, either directly or through habitat modification, and impacts would be less than significant with the implementation of staff's proposed COCs **BIO-1** through **BIO-5, BIO-7, BIO-19, AQ-SC3, AQ-SC4, HAZ-1, HAZ-9, WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-6, WORKER SAFETY-7**, and **WORKER SAFETY-10**.

Jurisdictional Project Components

Direct and indirect impacts associated with operation activities would be substantially reduced relative to initial construction activities. However, the risk associated with collisions with the new gen-tie line would increase during operations. Although studies have shown that bats are more susceptible to collisions with wind turbines and infrequently collide with stationary structures (WEST 2020), dead or injured bats have been found during bird mortality searches at transmission and distribution powerline corridors (Manville 2016).

There is no strong evidence that bats frequently collide with solar panels, but there are documented concerns and some emerging research suggesting potential risks. In a review of fatality studies at southern California industrial scale PV sites Smallwood (2022) found that bat fatalities were low and averaged about 0.06 bats per MW year. However, this study notes that detection rates and sampling efforts need to be updated and current methods likely underestimate the loss. Known bat remains at PV facilities include pallid bats, Townsend's big-eared bats, western mastiff bats, and Mexican free-tailed bats (Smallwood 2022) so it is possible the project could result in mortality to small numbers of special status bats. The Renewable Energy Wildlife Institute (REWI) and USGS (2023) highlight that most monitoring focuses on birds, and bat collision data are sparse. These organizations call for more research on whether bats perceive solar panels as water (similar to the "lake effect" for birds discussed above) or open flight corridors.

The most likely effect of large-scale solar development is the loss of foraging habitat for desert bats(Tinsley et al. 2023). Although this study was conducted in the United Kingdom the study showed that bat activity is significantly lower at solar farms compared to control sites. Six of eight species evaluated in that study had reduced activity, likely due to habitat fragmentation and altered flight paths caused by solar arrays (ibid).

Bat mortality could also occur if individuals became trapped in other Project equipment or infrastructure. It is anticipated that very few bat fatalities would occur during the life of the project based on the very low bat fatalities discovered at regional projects. Bats may also be attracted to the project area to hunt for insects around facility lighting. This could increase the risk of bat mortality, especially for bats that forage on or near the ground. Similarly, bats could start day roosting or find cavities in the facility or

under the solar arrays. Staff has proposed COC **BIO-19** (Bird and Bat Conservation Plan), which would require post-construction monitoring and adaptive management to identify and implement measures to reduce levels of bat mortality or injury attributable to project operations. To further reduce impacts the project owner would implement the same COCs for project construction, including **BIO-1** through **BIO-5, BIO-7, AQ-SC3, AQ-SC4, HAZ-1**, and **WORKER SAFETY-1**. This would reduce the impact of special status and common bats to less than significant levels and the acquisition of mitigation lands would preserve important foraging habitat for some species of bats.

Thermal Runaway and BESS Fires. The risk to bats of thermal runaway is extremely low but could affect bats in other areas or those who forage on contaminated insects. Should a fire occur potential impacts to bats would be similar to those described for other mammals and birds and could include risks from chemical exposure, smoke inhalation, soil and water contamination, mortality, and habitat degradation.

To reduce these impacts the project owner would implement staff's proposed COCs **WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-6, WORKER SAFETY-7, WORKER SAFETY-10**, and **HAZ-9**. COC **BIO-11** (Post BESS Fire Monitoring and Management Plan) includes soil testing and remedial actions that would be required if sensitive species habitat is contaminated due to a BESS fire. With the implementation of these proposed COCs impacts would be reduced to less than significant levels and would provide a mechanism to mitigate harm in the unlikely event of a BESS fire.

Non-Jurisdictional Project Components

Operational impacts are not anticipated as no ground disturbing activity is proposed and work would be confined to developed facilities. Although bats could occur at these facilities LADWP currently implements standard environmental measures to protect sensitive plants and wildlife. Therefore, there would be no impact to bats resulting from network upgrades.

c. Would the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Construction

Less Than Significant with Mitigation. Based on the analysis below, the proposed project would not substantially affect state and federally protected wetland and non-wetland waters, and impacts would be less than significant with the implementation of staff's proposed COCs **BIO-1** through **BIO-26, AQ-SC3, AQ-SC4, HAZ-1, HAZ-6, HAZ-7, HAZ-8, WATER-1** through **WATER-3**, and **WORKER SAFETY-1**.

Jurisdictional Project Components

The proposed project is located on a broad alluvial fan at the intersection of two watersheds including the south and north Soda Mountains. Because this area supports only ephemeral drainages and the area drains to an internally dry lakebed fully within one state, federal waters under the jurisdiction of the U.S. Army Corps of Engineers (USACE) are not present. The applicant documented numerous features within the project area that meet the jurisdictional definitions of non-wetland waters of the state under the Lahontan Regional Water Quality Control Board (LRWQCB) and are considered streambeds under CDFW regulations. In total, the applicant identified 213.55 acres of non-wetland waters of the state and 366.24 acres of CDFW streambed within the project area. Based on site visits conducted of the project area, CEC staff consider the amount of non-wetland waters of the state and CDFW streambeds mapped by the applicant are underestimated and do not accurately reflect the distribution of these features in the project area. Staff are currently collaborating with the applicant to update the waters and streambed data which will be available after the publication of the staff assessment. The revised information would be included in the updated staff assessment and would not change the significance conclusions presented in this document but would be used to ensure that adequate compensatory mitigation lands are acquired to reduce impacts to less than significant once the final design has been completed.

Direct impacts to state and CDFW waters could include the removal of native vegetation, the discharge of fill, degradation of water quality, and increased erosion and sediment transport. Indirect impacts could include alterations to the existing topographical and hydrological conditions and the introduction of non-native, invasive plant species.

The applicant has indicated the permanent impacts would occur at locations such as the sub and switching stations, the BESS, footings, and roads, while temporary impacts would include the areas beneath the solar arrays and areas temporarily disturbed during construction. The applicant has proposed the use of low impact construction techniques for the arrays that would drive and crush vegetation and likely preserve some habitat value in the solar arrays after construction. In addition, they have proposed to use an advanced technology terrain-following solar tracker system (such as the Nextracker NX Horizon-XTR-0.75 10-inch tracker system, Nevados All Terrain Tracker system, or other similar system) that reduces grading under the solar field (RE 2025cc).

Staff agree the use of this technique would reduce physical disturbance to the channels compared to mass grading and it is likely that preserving native vegetation communities beneath and around solar arrays would be expected to provide residual habitat value for small mammals, reptiles, and insects by maintaining soil stability, native seedbanks, and providing some structural cover and refugia. It would also reduce the risk of off-site sediment transport. However, staff notes that the construction of the facility includes a series of three-foot berms that would avulse channels and effectively block storm flows

through the arrays post construction (see **Figures 5.2-3** and **5.2-7**). The placement of these berms would result in the disruption of hydrology, sediment and nutrient transport, and wildlife habitat.

Blocking the small drainages with the perimeter berms would result in a disruption of stream hydrology during storm events which would include a loss of downstream connectivity, reduced ground water recharge to areas of disrupted flow, and the modification of nutrient cycling, sediment transport, and the distribution of seeds and other nutrients that are typically washed downstream during larger rain events. In upstream areas sediment deposition would build up raising bed levels which would likely result in new channel formation or erosion of the existing berms overtime.

The importance of intermittent and ephemeral streams to wildlife in arid environments is well known (Levick et al. 2008). Ephemeral washes similar to those that are present along the project's gen-tie line and within the solar arrays provide higher soil moisture and unique habitat that is distinct from the surrounding uplands providing more continuous vegetation cover and microtopographic diversity than the surrounding uplands. This difference is often observed during periods of rainfall or when seasonal wildflowers are present. Ephemeral and intermittent streams in the arid west provide important habitat for wildlife and are responsible for much of the biotic diversity (Levick et al. 2008). They have higher moisture content and provide shade and cooler temperatures within the channel. In cases where the habitat is distinct in species composition, structure, or density, wash communities provide habitat values not available in the adjacent uplands. Riparian and wash dependent vegetation along desert washes drive food webs, provide seeds for regeneration, habitat for wildlife, access to water, and create cooler, more hospitable microclimatic conditions essential for a number of plant and animal species. Baxter (1988) noted that washes, because of their higher diversity plant communities, are probably important foraging locations for desert tortoise; in smaller washes, there is greater cover and diversity of spring annuals, providing important food sources.

Disconnected channels lose their hydrologic function, leading to soil compaction, reduced infiltration, and altered microbial communities (Perkins et al,. 2018). Staff notes this condition is currently present for many of the drainages that occur in areas downstream of I-15. In these locations, the highway has avulsed the stream channels which has degraded some of the existing channels to some degree. Large channels have developed where culverts convey storm flows under the highway. This condition does not exist for the western portion of the project where the placement of berms would result in an ecological reduction in the functions and services of those systems.

Construction of the proposed project has the potential to result in permanent and temporary impacts on jurisdictional waters. The applicant has indicated that the project would result in 2.72 acres of permanent and 134.62 acres of temporary impacts to LRWQCB waters and 4.49 acres of permanent and 215.94 acres of temporary impacts to CDFW streambeds. Staff notes that these impact calculations are currently in dispute and that the applicant is preparing an updated delineation to resolve questions raised

by staff. For the purposes of this document these values are being considered but are expected to change pending verification of field data. It is expected that the total acreage of state and CDFW jurisdictional drainages will change. Although the total acreages may be revised it would not alter the conclusions of significance presented in this staff assessment.

These impacts would be considered significant and require mitigation to replace lost functional values. For this analysis staff considers all impacts to jurisdictional features to result in permanent habitat loss from the placement of physical structures, temporary detention basins, or roads to lose all functional ecological value and be effectively lost to the environment and the species that depend on those features. Staff consider areas subject to temporary disturbance or that would be preserved to some degree under the arrays to lose partial ecological function depending on their location and whether they receive flows from upstream areas. The applicant has proposed to mitigate all permanent impacts at a 1:1 ratio and as not proposed mitigation for temporary impacts at this time. However, 1:1 mitigation ratio (one acre replaced for one acre impacted) is widely recognized as insufficient to replace lost habitat or ecological functions for several reasons. Some of these include functional loss of habitat that is not created by replacing it with existing lands and the temporal loss of habitat values.

Staff has developed the following mitigation metrics that are proposed to reduce impacts from the proposed project to less than significant levels and comport with CDFW requirements. This data was evaluated by overlaying project features on the applicant's jurisdictional data. The rational for these ratios relate to the ability of the drainage to provide ecological functions after construction. Higher ratios correspond to greater and irreversible impacts on hydrology, stream function and habitat or ecological value.

- 3:1 ratio for permanent impacts that result in the loss of ecological value to plants and wildlife and remove the stream channel from the system. These features include all permanent structures (BESS, Switching and Substation, berms, and ancillary buildings, well footprints), gen-tie and array foundations, fencing, any areas maintained free from vegetation, and all access roads including the relocation of Rasor Road. There are approximately 21.75 acres that meet these criteria and at the proposed 3:1 ratio 65.25 acres would be required to offset these impacts.
    - Rational for ratio: Permanent loss of ecological value. These areas (BESS, substations, roads, fenced zones) eliminate stream channels and vegetation entirely, removing infiltration zones and wildlife corridors. They result in a complete loss of hydrologic connectivity and function and do not provide residual habitat for plants or wildlife.
- 1.5:1 ratio for any areas under the arrays that maintain unaltered hydrology and areas subject to temporary disturbance between the arrays. This includes South Array 1 which receives flows from the side of the project that does not contain berms. There are 205.02 acres that meet these criteria. At the proposed 1.5:1 ratio 307.53 acres would be required to offset these impacts.

  - Rationale for ratio. Hydrology maintained and partial ecological function for some species. These areas would maintain largely natural flow paths, allowing infiltration and supporting vegetation under panels. Native vegetation would provide residual habitat form disturbance tolerant species.
- 1:1 ratio for temporary impacts along the gen-tie alignment that can be re-established following construction. There are 4.12 acres that meet these criteria. At the proposed 1:1 ratio 4.12 acres would be required to offset these impacts.
  - Rationale for ratio. Hydrology maintained and ecological function for most species would be retained in active stream channels restored following construction.
- No mitigation ratio would be required for temporary impacts to drainages that cross existing access roads provided they do not exceed the existing road prism and do not alter downstream hydrology.
- The total mitigation requirement to reduce impacts to jurisdictional waters is 376.9 acres. However, staff expect these numbers to be verified pending the completion of the updated jurisdictional delineation and completion of final designs.

To reduce impacts from the project the applicant has proposed a series of measures to delineate and avoid drainages where possible, implement best management practices during construction, drive and crush vegetation and drainages where possible, and provide compensatory mitigation to offset habitat loss. Staff has also coordinated with CDFW to evaluate the loss of habitat and ecological functions and developed a mitigation strategy to reduce project impacts to less than significant.

This includes the implementation of **BIO-25** (Lake and Streambed Equivalency Conditions) which was drafted in coordination with the CDFW to meet in-lieu permitting requirements. This condition includes measures that are consistent with Administrative, Avoidance and Minimization requirements that are included in a typical CDFW Lake and Streambed permit. These conditions would address the construction of the Project and require the acquisition of compensatory mitigation lands at the prescribed ratios. In addition, impacts to jurisdictional features and their associated resources are protected by staffs recommended COCs required to protect biological resources and water quality. These include proposed COCs **BIO-1** through **BIO-24**, and **BIO-25**.

In addition, proposed COCs **WATER-1, WATER-2, WATER-3, WATER-9, AQ SC3** and **AQ-SC4, HAZ-1, HAZ-6, HAZ-7**, and **HAZ-8**, and **WORKER SAFETY-1** would be required. These measures include pre-construction surveys, monitoring, habitat restoration, weed and invasive species control, storm water management, worker training, dust control, spill containment and reporting, verification of WDR permit requirements, and fire safety measures. The implementation of the SWPPP would also ensure that the development of the site would not cause substantial degradation in the quality, or an increase in the rate or volume, of stormwater runoff from the site during construction. Staff recommend COC **WATER-1** to ensure the project complies with the Construction General Permit. A project operations Drainage, Erosion, and Sedimentation

Control Plan (DESCP) should be prepared to monitor and manage both onsite and offsite stormwater events per proposed COC **WATER-2**. Impacts from the construction of the manufactured channels would be reduced through the implementation of **WATER-3** which requires a Channel Maintenance Plan. To reduce impacts from the loss or degradation of existing hydrology to less than significant staff recommend COC **WATER-9** which would require the development of a FGSD Plan prior to project construction and concurrent with final engineering. The FGSD Plan shall incorporate fluvial geomorphic design principles to preserve and create stable, self-sustaining stream channels and floodplains that maintain and/or mimic natural hydrologic and sediment transport processes in the project area.

To off-set impacts to jurisdictional waters staff recommends COC **BIO-25** (Lake and Streambed Equivalency Conditions) which was drafted in coordination with the CDFW to meet in-lieu permitting requirements. This condition includes measures that are consistent with Administrative, Avoidance and Minimization requirements that are included in a typical CDFW Lake and Streambed permit. Proposed COC **BIO-26** (Habitat Management Land Acquisition for Permanent and Temporary Impacts to State Waters) would offset the permanent loss of and degradation to existing streambeds. However, staff's recommended COCs **BIO-16** and **BIO-21** requires the acquisition of mitigation lands for desert tortoise and western burrowing owl. Staff is allowing the nesting of mitigation therefore it is likely that impacts to jurisdictional features may be mitigated partially or fully through the acquisition of these lands. With the implementation of these measures impacts on jurisdictional waters would be reduced to less than significant and meet CDFW regulatory requirements.

Non-Jurisdictional Project Components

Network upgrades at the existing Marketplace and Adelanto substations are not expected to impact State or federal jurisdictional waters because the upgrades are confined to existing developed substation footprints. Impacts are not anticipated as no ground disturbing activity is proposed. Therefore, there would be no impact to jurisdictional waters resulting from network upgrades.

Operation

Less Than Significant with Mitigation. Based on the analysis below, the operations associated with the proposed project would not substantially adversely affect state and federally protected wetland and non-wetland waters, and impacts would be less than significant with the implementation of staff's proposed COCs **BIO-11, HAZ-9, WATER-1** through **WATER-3, WATER-9, WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-6, WORKER SAFETY-7,** and **WORKER SAFETY-10**.

Jurisdictional Project Components

Direct and indirect impacts associated with operational activities would be substantially reduced relative to initial construction activities. The most likely activity that would

result in direct and or indirect impacts to jurisdictional features would be during routine O&M activities that occur after storms.

As discussed above under construction related impacts, operation of the project would continue to attenuate most of the stream flow through the solar arrays except for portions of Array 3 where berms have not been proposed. These earthen and rip rap berms would be placed just outside the perimeter fencing in many locations. These berms would divert flow around the project area or towards the numerous storm water basins and prevent nutrients, seeds, and surface water from reaching many of the drainages within the solar arrays. Although these features would still receive water during precipitation events they would lose function to some degree. Conversely, during rain events water would be conveyed from the surface of the solar panels to concentrated areas below the arrays which could increase plant vigor in those areas. The concentrated water could also increase the risk for the establishment of weeds.

Berms that direct water to other areas could result in new channel formation or damage to the existing berms. Berms could also result in downstream impacts to areas off the project area particularly west of South Array 3. However, large storms are expected to maintain sediment flows through this area to some degree in the large channels. The loss of hydrology and degradation of jurisdictional features would be considered a significant impact. The implementation of the same COCs including **WATER-1** to ensure the project complies with the Construction General Permit. A Drainage, Erosion, and Sedimentation Control Plan (DESCP) for project operation should be prepared to monitor and manage both onsite and offsite stormwater events per proposed COC **WATER-2**. Impacts from the construction of the manufactured channels would be reduced through the implementation of **WATER-3** which requires a Channel Maintenance Plan for the construction of the project would reduce impacts these jurisdictional waters to less than significant and meet CDFW requirements. COC **WATER-9** requires the development of a FGSD Plan prior to project construction and concurrent with final engineering.

Thermal Runaway and BESS Fires. As described in **Section 5.7, Hazards, Hazardous Materials/Waste, and Wildfire** the risk of thermal runaway or BESS fire is low and considering the infrequent, irregular, and unplanned nature of such events and the short exposure duration, the potential for adverse impacts to jurisdictional features would be a very low probability event. Although the risk is low during operation of the project, it is possible that the BESS system could be subject to thermal runaway and result in a battery fire. Potential impacts from a BESS fire on jurisdictional features would be comparable to those described above for sensitive vegetation communities, including risks from chemical exposure, soil contamination, and habitat degradation.

To reduce these impacts the project owner would implement staff's proposed COCs **WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-6, WORKER SAFETY-7, WORKER SAFETY-10**, and **HAZ-9**. COC **BIO-11** (Post BESS Fire Monitoring and Management Plan) includes soil testing and remedial actions that would be required if sensitive species habitat is contaminated due to a BESS fire. With the

implementation of these proposed COCs impacts would be reduced to less than significant levels and would provide a mechanism to mitigate damage to streambeds in the unlikely event of a BESS fire.

Non-Jurisdictional Project Components

Operational impacts are not anticipated as no ground disturbing activity is proposed and work would be confined to developed facilities. Therefore, there would be no impact to jurisdictional waters resulting from network upgrades.

d. Would the project 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 wildlife nursery sites?

Construction

Significant and Unavoidable. Based on the analysis below, the proposed project would substantially affect movement of desert bighorn sheep. Because the proposed project is likely to displace desert bighorn sheep and substantially inhibit their movement on a local and regional scale, impacts would be significant and unavoidable even with the application of staff's proposed COCs and the applicants proposed mitigation measures.

Jurisdictional Project Components

The project area consists of a relatively flat desert scrubland supporting open habitats dominated by creosote bush scrub. Numerous ephemeral drainages flow across the site where they coalesce into larger drainages that flow to the north and south respectively. The proposed project area does not support essential nursery areas for common or sensitive wildlife. As noted by the applicant under baseline conditions the project area provides unrestricted wildlife movement, as there are no fences or other obstructions to wildlife passage on a local scale (RE 2025s). However, movement for many species is inhibited or blocked by I-15 except for species that can use the existing underpasses that occur under the highway. Passage under the Interstate is provided by six storm drain culverts. Most of these are too small to support movement by desert bighorn sheep but are likely used by desert kit fox, American badger, coyote, and possibly desert tortoise.

For most species the construction of the proposed project is not likely to pose a substantial risk to movement in the region. Construction of the project would preserve passage under the highways for smaller species, and the placement of fencing would reduce the risk of animals straying onto the highway. Wildland habitat would persist west of the project area at the base of the south Soda Mountains.

For large mammals including desert bighorn sheep construction of the proposed project is expected to result in significant and unavoidable impacts by displacing sheep from regionally important habitat and potentially disrupting use of the planned wildlife

crossing that would be constructed north of the project area by Zzyzx Road. Regionally, the Soda Mountains are a critical ecological zone for wildlife movement and habitat connectivity. The region serves as a natural corridor linking the Mojave National Preserve to the south with the Death Valley and Clark Mountain areas to the north. This connectivity is essential for wide-ranging species such as desert bighorn sheep, which rely on seasonal movement between habitat patches for access to forage, water, and breeding grounds.

To address long-standing fragmentation caused by I-15, the Brightline West High-Speed Rail Project, in partnership with California Department of Transportation (Caltrans) and CDFW, is constructing three major wildlife overcrossings. One of these crossings is located just north of the project area and is specifically designed to facilitate safe passage for desert wildlife, especially bighorn sheep, across both the highway and the future rail corridor. The high-speed rail project also includes upgrades to over 600 existing culverts and installation of desert tortoise exclusion fencing, enhancing permeability across the landscape.

Aiello and Epp (2023) state that due to construction of the proposed project, desert bighorn sheep could permanently avoid habitat that could lead to the loss of the Soda-Cady Mountains movement corridor, increase the risk of local extinction for the Soda Mountain herd, reduce lost recreational activities, and render the public funds dedicated to the planned I-15 wildlife overpass for desert bighorn sheep (wildlife crossing) wasted. CDFW also noted that the project has the potential to displace desert bighorn sheep from historic movement corridors and undermine the effort to re-introduce desert bighorn sheep to the north Soda Mountains and to the broader region. The BLM noted in the 2016 EIS that this potentially restorable corridor was the only one among those identified that is short enough to connect populations across I-15 within the estimated maximum dispersal range of an ewe (Epps et al., 2013).

Non-Jurisdictional Project Components

Network upgrades at the existing Marketplace and Adelanto substations are not expected to impact any wildlife nursery sites or important movement corridors because the upgrades are confined to existing developed substation footprints. Therefore, there would be no impact to movement corridors resulting from network upgrades.

Operation

Significant and Unavoidable. Based on the analysis below, the proposed project would substantially affect movement of desert bighorn sheep. Although the implementation of staff's proposed COCs **BIO-1** through **BIO-26, HAZ-1, HAZ-9, WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-6, WORKER SAFETY-7**, and **WORKER SAFETY-10** would reduce impacts associated with wildlife movement for common and other special-status species, the proposed project would continue to potentially displace desert bighorn sheep and substantially inhibit their movement on a local and regional scale during operations. Therefore, impacts would be considered significant and

unavoidable even with the application of staff's proposed COCs and the applicants proposed mitigation measures.

Jurisdictional Project Components

Direct and indirect impacts associated with operational activities would be substantially reduced relative to initial construction activities. However, ongoing O&M activities coupled with the placement of the project in an essential foraging and movement corridor for desert bighorn sheep has the potential to permanently displace desert bighorn sheep from important foraging habitat and restrict use of the planned wildlife crossing over I-15 located near Zzyzx Road. This has the potential to result in herd level impacts that decrease fitness, reduce genetic diversity, and could compromise the persistence of the herd in this location. Therefore, staff conclude that impacts on desert bighorn sheep movement would be considered significant and unavoidable even with staff's proposed COCs.

Impacts to other species of wildlife would be considered adverse but less than significant with the implementation of staff's recommended COCs including general conditions for sensitive species avoidance and minimization including COC **BIO-1** through **BIO-26**. These conditions include prescriptive measures to avoid and minimize impacts to wildlife, include raised fencing that allow desert tortoise and other smaller wildlife to gain access between the arrays while preventing passage of desert bighorn sheep, include provisions for the placement of desert tortoise enclosures along perimeter fencing, and the creation of artificial burrows for burrowing owl within targeted areas of the facility. To reduce impacts from exposure to hazardous materials and improper herbicide use staff recommend COCs **HAZ-1** and **WORKER SAFETY-1**.

Thermal Runaway and BESS Fires. The risk to movement of desert bighorn sheep and other species could be compounded should a BESS fire occur. Potential impacts would be similar to those described for other mammals and birds and could include risks from chemical exposure, smoke inhalation, soil and water contamination, mortality, and habitat degradation. Human disturbance and smoke could displace sheep and or inhibit movement across important dispersal corridors.

To reduce these impacts the project owner would implement staff's recommended COCs **WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-6, WORKER SAFETY-7, WORKER SAFETY-10**, and **HAZ-9**. COC **BIO-11** (Post BESS Fire Monitoring and Management Plan). With the implementation of these proposed COCs impacts would be reduced to less than significant levels for wildlife but could remain significant and unavoidable to desert bighorn sheep.

Non-Jurisdictional Project Components

Operational impacts are not anticipated as no ground disturbing activity is proposed and work would be confined to developed facilities. Therefore, there would be no impact resulting from network upgrades.

e. Would the project conflict with any federal, state, or local plans, policies, or regulations protecting biological resources?

Construction and Operation

Significant and Unavoidable. Except for an offsite well located in the community of Baker in San Bernardino County the proposed project is located on federal lands managed by the BLM. The proposed project would not conflict with any local plans, policies, and regulations protecting biological resources. As summarized in **Table 5.2-7,** the proposed project would be consistent with applicable federal plans, policies, and regulations during construction and operations. However, the proposed project would not be consistent with all state plans, policies, and regulations identified in **Table 5.2-7**, specifically Fish and Game Code §§ 3511, 4700, 5050, and 5515, which require prohibiting take of species designated as fully protected. Because the proposed project would result in significant and unavoidable impacts to desert bighorn sheep (see **Section 5.2.2.2**), the proposed project would not be consistent with the applicable Fish and Game Code sections and impacts associated with consistency with state plans, policies, and regulations would be significant and unavoidable.

Jurisdictional Project Components

Table **5.2-7** provides staff's determination of consistency with all applicable federal and state plans, policies, and regulations related to biological resources. Table **5.2-7** also includes any proposed Conditions of Certification, where applicable, to ensure the project would not conflict with any federal or state plans, policies, and regulations. Except for one existing offsite well located in the community of Baker in San Bernardino County the proposed project is entirely on federal lands managed by the BLM. The existing well is in a previously disturbed area and no ground-disturbing activities or permanent modifications would be conducted at this location. As such, no local plans, policies, and regulations would apply to the project.

TABLE 5.2-7 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS

Applicable Plans, Policies, and Regulations	Consistency and Basis For Determination
Federal	
Federal Endangered Species Act (16 USC §§ 1531 et seq. and 50 CFR part 17.1 et seq.)	
Designates and protects federally threatened and endangered plants and animals and their critical habitat. Applicants for projects that could result in adverse impacts on any federally listed species are required to mitigate potential impacts in consultation with USFWS.	**Yes.** Two federally listed species, including monarch butterfly (FP-T) and desert tortoise (FT) have been included for analysis within this report. USFWS has issued a Biological Opinion (USFWS 2016) which contains conditions that would be implemented for the proposed project. Additionally, the proposed project would include COCs **BIO-1** through **BIO-9, BIO-11, BIO-13, BIO-15, BIO-16, AQ-SC3, AQ-SC4, HAZ-9, WATER-1, WATER-2, WATER-3, WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-6, WORKER SAFETY-7,** and **WORKER**

TABLE 5.2-7 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS

Applicable Plans, Policies, and Regulations	Consistency and Basis For Determination
	SAFETY-10 to ensure consistency with the federal ESA.
Bald and Golden Eagle Protection Act (16 USC §§ 668 to 668c)	
Provides for the protection of the bald and golden eagle by prohibiting, except under certain specified conditions, the take, possession, and commerce of such birds. The 1972 amendments increased penalties for violating provisions of the Act or regulations issued pursuant thereto and strengthened other enforcement measures.	**Yes.** The proposed project would include COCs **BIO-11, BIO-18, BIO-19, HAZ-9, WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-6, WORKER SAFETY-7,** and **WORKER SAFETY-10** to protect golden eagles and ensure consistency with the BGEPA.
Migratory Bird Treaty Act (16 USC §§ 703 to 711)	
Makes it unlawful to take or possess any migratory nongame bird (or any part of such a migratory nongame bird as designated in the Act.	**Yes.** The proposed project would include COCs **BIO-1** through **BIO-5, BIO-7, BIO-8, BIO-9, BIO-11, BIO-17, BIO-19, AQ-SC3, AQ-SC4, HAZ-1, HAZ-9, WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-6, WORKER SAFETY-7,** and **WORKER SAFETY-10** to reduce impacts to resident and migratory birds and ensure consistency with the MBTA.
Desert Renewable Energy Conservation Plan	
In 2016, the BLM adopted the Desert Renewable Energy Conservation Plan (DRECP) Land Use Plan Amendment to guide renewable energy development across 10.8 million acres of southern California desert lands. The amendment designates areas for development, recreation, conservation, and general public use, with most projects occurring on General Public Lands and some infrastructure crossing sensitive Areas of Critical Environmental Concern. To balance energy generation with environmental protection, the plan includes over 200 Conservation and Management Actions that set requirements for siting, design, construction, operations, and decommissioning, ensuring renewable energy projects avoid, minimize, or offset impacts depending on land type and local resources.	**Yes.** Ten species that are covered under the DRECP, including desert tortoise, Mojave fringe-toed lizard, golden eagle, Swainson's hawk, western burrowing owl, Bendire's thrasher, tricolored blackbird, desert bighorn sheep, California leaf-nosed bat, and pallid bat, are either present or have the potential to occur within or adjacent to the project area. The proposed project would include COCs **BIO-1** through **BIO-26, AQ-SC3, AQ-SC4, HAZ-1, HAZ-9, WATER-1** through **WATER-3, WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-6, WORKER SAFETY-7,** and **WORKER SAFETY-10** to ensure consistency with species-specific CMAs. The implementation of these COCs would also ensure consistency with LUPA CMAs developed for general biological resources and conservation throughout the DRECP plan area, along with Area of Critical Environmental Concern (ACEC), Ecological and Cultural Conservation (CONS), and General Public Land (GPL) CMAs developed for those specific land designations which occur within the project area.
West-Wide Energy Corridor Plan	
The West-Wide Energy Corridor Plan is a federal initiative to designate and manage energy transmission corridors across 11 western states, including California. Its goal is to streamline siting	**Yes.** The plan covers species that are federally listed under the ESA within the plan area. Two federally listed species, including monarch butterfly (FP-T) and desert tortoise (FT) have

TABLE 5.2-7 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS

Applicable Plans, Policies, and Regulations	Consistency and Basis For Determination
for electricity, oil, and gas infrastructure while minimizing environmental impacts. The plan identifies preferred routes on public lands to reduce habitat fragmentation and conflicts with sensitive biological resources.	been included for analysis within this report. The proposed project would include COCs **BIO-1** through **BIO-9, BIO-11, BIO-13, BIO-15, BIO-16, AQ-SC3, AQ-SC4, HAZ-9, WATER-1, WATER-2, WATER-3, WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-6, WORKER SAFETY-7**, and **WORKER SAFETY-10** to ensure consistency with the West-Wide Energy Corridor Plan.
Noxious Weed Act of 1974 (7 U.S.C. §2801 et seq.)	
The Noxious Weed Act created a national framework to control harmful non-native plants, empowering the Secretary of Agriculture to regulate their movement, enforce quarantines, and manage them on federal lands.	**Yes.** The proposed project includes COCs **BIO-8, BIO-9**, and **BIO-10** to minimize the introduction and spread of noxious weeds and ensure consistency with the Noxious Weed Act.
Executive Order 13112	
Executive Order 13112 (1999) created the National Invasive Species Council, directing federal agencies to prevent, monitor, and control invasive species while coordinating efforts across departments and stakeholders.	**Yes.** The proposed project includes COCs **BIO-8, BIO-9**, and **BIO-10** to minimize the introduction and spread of invasive species and ensure consistency with Executive Order 13112.
Clean Water Act sections 401 and 404 (33 USC §§ 1251 to 1376)	
Requires the permitting and monitoring of all discharges to surface water bodies. Section 404 requires a permit from the USACE for a discharge of dredged or fill materials into waters of the U.S., including wetlands. Section 401 requires a permit from a RWQCB for the discharge of pollutants. By federal law, every applicant for a federal permit or license for an activity that may result in a discharge into a California water body, including wetlands, must request state certification that the proposed activity will not violate state and federal water quality standards.	**Yes.** The proposed project area does not support any federal wetland or non-wetland waters and no impacts would occur, ensuring consistency with Section 404 of the CWA. The proposed project includes COCs **BIO-25** and **BIO-26** to ensure consistency with Section 404 of the CWA.
State	
California Endangered Species Act (Fish and G. Code §§ 2050 to 2098)	
Species listed under this act cannon be "taken" or harmed, except under specific permit.	**Yes.** Several state-listed species, including Crotch's bumble bee, desert tortoise, western burrowing owl, and mountain lion are known to be present or have the potential to occur within or adjacent to the project area. The applicant would seek the appropriate take coverage through in-lieu permitting. Additionally, the proposed project includes COCs **BIO-1** through **BIO-11, BIO-13, BIO-14, BIO-17, BIO-19, BIO-20, BIO-21, BIO-23, AQ-SC3, AQ-SC4, HAZ-1, HAZ-6, HAZ-7, HAZ-9, WATER-1** through **WATER-3, WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-6, WORKER SAFETY-7,** and

TABLE 5.2-7 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS

Applicable Plans, Policies, and Regulations	Consistency and Basis For Determination
	WORKER SAFETY-10 would ensure consistency with CESA.
Fully Protected Species (Fish and G. Code §§ 3511, 4700, 5050, and 5515)	
Lists animals species that are fully protected in California and states that these species may not be "taken" or possessed at any time and no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected species. However, California Senate Bill 147 (SB 147), passed in July 2023, authorizes CDFW to issue permits for the incidental take of fully protected species for certain projects, including renewable energy.	**No.** Three species designated as fully protected under the applicable CFGC sections, including golden eagle, desert bighorn sheep, and southern California ringtail are present or have some potential to occur within the project area. The proposed project includes COCs **BIO-1** through **BIO-9, BIO-11, BIO-18, BIO-19, BIO-23, BIO-24, AQ-SC3, AQ-SC4, HAZ-1, HAZ-9, WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-6, WORKER SAFETY-7,** and **WORKER SAFETY-10** to reduce impacts to less than significant for fully protected species. However, as described in Section 5.2.2.2, with the implementation of these COCs impacts to desert bighorn sheep individuals, habitat, and movement would remain significant and unavoidable and inconsistent with the applicable CFGC sections.
Migratory Birds (Fish and G. Code §§ 3503, 3503.5, 3513, and 3800)	
Makes it unlawful to take, possess, or destroy any birds of prey or to take, possess, or destroy the nest or eggs of any migratory bird.	**Yes.** The proposed project would include COCs **BIO-1** through **BIO-5, BIO-7, BIO-8, BIO-9, BIO-11, BIO-17, BIO-19, AQ-SC3, AQ-SC4, HAZ-1, HAZ-9, WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-6, WORKER SAFETY-7,** and **WORKER SAFETY-10** to reduce impacts to resident and migratory birds and ensure consistency with applicable sections of the CFGC.
Furbearing Mammals (Fish and G. Code §251.1 and Cal. Code Regs., tit. 14 §460)	
Contains regulations for taking furbearing mammals, including prohibiting the harassment or unapproved take of furbearing mammals, including fisher, American badger, Sierra Nevada Mountain beaver, Pacific marten, and Sierra red fox. Title 14 of the CCR prohibits take of desert kit fox at any time.	**Yes.** American badger and desert kit fox are known to occur in the project area. The proposed project would include COCs **BIO-1** through **BIO-5, BIO-7, BIO-8, BIO-9, BIO-11, BIO-16, BIO-20, BIO-21, BIO-22, AQ-SC3, AQ-SC4, HAZ-1, HAZ-9, WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-6, WORKER SAFETY-7,** and **WORKER SAFETY-10** to reduce or avoid impacts to these species and ensure compliance with the applicable sections of the California Fish and Game Code and the California Code of Regulations.
Native Plant Protection Act (Fish and G. Code §§ 1900 et seq.)	
Designates state rare and endangered plants and provides specific protection measures for identified populations. The Act also prohibits the take of rare and endangered native plants with exceptions for agricultural and nursery operations, emergencies,	**Yes.** The proposed project would not impact any state rare and endangered plants ensuring consistency with the applicable California Fish and Game Code sections.

TABLE 5.2-7 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS	
Applicable Plans, Policies, and Regulations	**Consistency and Basis For Determination**
or in proper coordination with CDFW under specific circumstances.	
California Desert Native Plants Act (California Food and Agriculture Code §§ 80001 – 80201)	
The California Desert Native Plant Act protects native desert plants by prohibiting harvest, transport, sale, or possession without a permit. It covers all Burseraceae species (e.g., elephant tree, saguaro cactus, barrel cactus, Panamint dudleya), all other cacti (Cactaceae), all agave (Agavaceae), ocotillo and candlewood (Fouquieriaceae), all Prosopis and Cercidium species, plus catclaw (*Acacia greggii*), desert-holly (*Atriplex hymenelytra*), smoke tree *(Dalea spinosa*), and desert ironwood (*Olneya tesota*).	**Yes.** The project area is located entirely on federal lands with the exception of a single well location near Baker. No ground-disturbance would occur outside of federal lands, so the California Desert Native Plants Act does not apply. Nonetheless, the proposed project includes COC **BIO-13** to reduce impacts to native cacti species.
Porter-Cologne Water Quality Control Act (California Water Code Division 7)	
Directs responsibility to RWQCBs for granting Waste Discharge Requirements (WDRs) or National Pollutant Discharge Elimination System (NPDES) permits for discharges to waters of the state. The Act also establishes water quality objectives to protect the beneficial uses of surface and groundwater resources.	**Yes.** The proposed project includes COCs **BIO-25** and **BIO-26** to ensure consistency with the Porter-Cologne Act.
California Lake and Streambed Alteration Notification/Agreement (Fish and G. Code §1602)	
Prohibits alteration of any water body meeting the CDFW jurisdictional requirements of the California Fish and Game Code without the appropriate permits.	**Yes.** The proposed project would include staff's proposed COCs **BIO-25** and **BIO-26**, which would contain all requirements typically included in a CDFW Lake and Streambed Alteration Agreement. CEC would use in-lieu permitting authority for Lake and Streambed Alteration Agreement coverage.

Non-Jurisdictional Project Components

Network upgrades at the existing Marketplace and Adelanto substations are not expected to conflict with any local, state, or federal plans, policies, and regulations protecting biological resources because the upgrades are confined to existing developed substation footprints. Therefore, there would be no impact resulting from network upgrades.

f. Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Communities Conservation Plan, or other approved local, regional, or state habitat conservation plan?

Construction

Less Than Significant with Mitigation Incorporated. Based on the analysis below, the proposed project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Communities Conservation Plan, or other approved local, regional, or state habitat conservation plan, and impacts would be less than significant with the implementation of staff's proposed COCs **BIO-1** through **BIO-26**.

Jurisdictional Project Components

The proposed project is located within the DRECP planning area. In addition, the proposed 500 kilovolt (kV) gen-tie and switching station would be located within the Soda Mountains Expansion ACEC. The Soda Mountains Expansion ACEC abuts the northern edge of I-15 and encompasses 16,720 acres between I-15 and the Soda Mountain Wilderness Study area (RE 2024aa). Per the DRECP LUPA, transmission is an allowable use in an ACEC. However, project activities within an ACEC are required to implement CMAs and ACEC management prescriptions that are designed to protect sensitive resources. Disturbance within each ACEC in the DRECP is limited to a specified percentage of the total ACEC area, as described in CMA ACEC-DIST-1; for the Soda Mountain Expansion ACEC the disturbance is capped at 1% (ibid). The project is consistent with that described in the existing BLM project ROD, and therefore the project would not need to conform to the Conservation and Management Actions outlined in the DRECP that would otherwise apply to activities within this ACEC.

Based on information provided by the applicant construction and operation of the project gen-tie would impact up to 36 acres or 0.22% of the Soda Mountains Expansion ACEC which would be allowable under the existing plan. In addition, the implementation of staff's proposed COCs including **BIO-1** through **BIO-26** would reduce impacts to sensitive plants and wildlife and reduce impacts to less than significant level. The BLM will address additional measures through NEPA and its authorization terms.

There are no other federal, state, or local designated conservation areas within or directly adjacent to the project area (RE 2024aa).

Non-Jurisdictional Project Components

Operation of the existing Marketplace and Adelanto substations are not expected to conflict with any Habitat Conservation Plan, Natural Communities Conservation Plan, or other approved local, regional, or state habitat conservation plan because the upgrades are confined to existing developed substation footprints. Therefore, there would be no impact resulting from network upgrades.

Operation

No Impact. Based on the analysis below, the operations associated with the proposed project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Communities Conservation Plan, or other approved local, regional, or state habitat conservation plan, and there would be no impact.

Jurisdictional Project Components

The operation of the proposed project would not conflict with any Habitat Conservation Plan, Natural Communities Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Non-Jurisdictional Project Components

Operational impacts are not anticipated as no ground disturbing activity is proposed and work would be confined to developed facilities. Therefore, there would be no impact resulting from network upgrades.

5.2.2.3 Cumulative Impacts

Construction

Significant and Unavoidable. Based on the analysis below, the proposed project would contribute to substantial cumulative affect associated with movement of desert bighorn sheep. Because the proposed project is likely to displace desert bighorn sheep and, when combined with other planned projects within the geographic scope defined for cumulative impacts in **Section 5.2.1.2**, would substantially inhibit their movement on a local and regional scale, cumulative impacts would be significant and unavoidable even with the application of staff's proposed COCs and the applicants proposed mitigation measures.

Jurisdictional Project Components

During construction of the proposed project, cumulative impacts to biological resources would primarily result from temporary disturbance, noise, and increased human activity. These effects, when combined with other regional projects such as Brightline West, transmission line upgrades, and other planned developments, would create overlapping periods of disturbance across the Mojave Desert I-15 corridor. For most species, including desert tortoise and nesting birds, these impacts would be mitigated through measures such as preconstruction surveys, exclusion fencing, and timing restrictions, reducing cumulative effects to less than significant. However, for desert bighorn sheep, construction activities would exacerbate stress and displacement in a critical movement corridor near Soda Mountain. Even though construction-related disturbance is temporary, the cumulative effect of simultaneous or sequential construction projects in the general region would significantly reduce habitat permeability during key seasonal movement periods. This short-term fragmentation, combined with noise and human presence, would contribute to a cumulative impact that is considered significant and unavoidable for desert bighorn sheep during construction.

Non-Jurisdictional Project Components

Network upgrades at the existing Marketplace and Adelanto substations are not expected to significantly contribute to cumulative impacts when combined with the projects considered for this analysis. Impacts associated with these upgrades would not

result in ground-disturbing activities and relatively negligible increases in noise and human presence compared to current conditions.

Operation

Significant and Unavoidable. Based on the analysis below, the proposed project continue to displace desert bighorn sheep and inhibit local and regional movement during operations. When combined with other planned projects in the geographic scope for cumulative impacts defined in **Section 5.2.1.2**, cumulative impacts would be significant and unavoidable even with the application of staff's proposed COCs and the applicants proposed mitigation measures.

Jurisdictional Project Components

Once operational, the proposed project would introduce permanent barriers to movement within the Soda Mountains corridor. The solar facility's footprint, fencing, and associated infrastructure would eliminate habitat and create a physical and visual obstruction that cannot be fully mitigated. Other project in the region, such as Brightline West and the Barstow International Gateway Specific Plan, also contribute to long-term habitat fragmentation, but include mitigation measures like wildlife crossings and conservation planning that reduce their individual impacts to less than significant. Despite these efforts, the cumulative effect of permanent infrastructure within the corridor remains significant and unavoidable for desert bighorn sheep because the proposed project occupies a critical linkage area essential for genetic exchange between mountain ranges. For other biological resources, cumulative operational impacts would be less than significant with mitigation, as habitat restoration, wildlife crossings, and compensatory measures implemented by multiple projects offset localized losses. Overall, while most species benefit from regional mitigation strategies, the cumulative operational impact on desert bighorn sheep persists as significant and unavoidable due to irreversible connectivity loss for the Soda Mountain population.

Non-Jurisdictional Project Components

Cumulative impacts associated with upgrades at the Marketplace and Adelanto substations are not anticipated since any subsequent operational activities would be confined to existing facilities. Any impacts resulting from increased noise or human presence would not be cumulatively significant since these would be considered negligible relative to current conditions. Therefore, there would be no impact OR impacts would be less than significant.

5.2.3 Conclusions and Recommendations

As discussed in section 5.2.2, the construction and operation of the proposed project would result in less than significant impacts with mitigation on sensitive plants and most species of wildlife. For the proposed project, impacts to desert bighorn sheep would be significant and unavoidable even with staff's proposed COCs. There is no feasible mitigation, other than implementing a 0.25-mile buffer from the 10% slope line

identified in Alternative 2, that would reduce impacts to less than significant under CEQA and minimize and fully mitigate impacts as required under CESA.

5.2.4 Proposed Conditions of Certification

The following proposed conditions of certification include measures to mitigate environmental impacts.

Unless otherwise indicated, monitoring plans and survey results, and other reports as required below shall be submitted for review and approval of the CPM prior to implementation. The CPM may return the document to the project owner with comments for revision if the document does not meet the objectives and requirements as outlined below pursuant to each COC.

BIO-1 Designated Biologist Selection The project owner shall assign at least one Designated Biologist to the project (multiple personnel may be required to ensure compliance with conditions of certification). The project owner shall submit the resume of the proposed Designated Biologist, with at least three references and contact information, to the California Energy Commission (CEC) Compliance Project Manager (CPM) for review and 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 three years 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.

For work related to Crotch's bumble bee, desert tortoise, desert bighorn sheep and/or burrowing owl, the above qualifications shall also apply. In addition, the Designated Biologist(s) must meet the following minimum qualifications:

1. Knowledgeable in the biology and natural history of Crotch's bumble bee, desert tortoise, desert bighorn sheep and/or burrowing owl, exclusion and/or monitoring techniques as applicable, construction and operational impact monitoring;
2. Demonstrable experience implementing exclusion and/or monitoring techniques and construction and operational impact monitoring for Crotch's

bumble bee or burrowing owl, or both Crotch's bumble bee, desert tortoise, desert bighorn sheep and/or burrowing owl;

3. Demonstrable experience implementing conditions of a CDFW Incidental Take Permit or acting as a Designated Biologist, or other experience implementing a CDFW Incidental Take Permit as a Biological Monitor.

Verification: The project owner shall submit to the CPM resumes and any other relevant documentation for Designated Biologist(s) review and approval at least 90 days prior to the start of site mobilization and/or construction-related ground disturbance activities. If multiple Designated Biologists are necessary, the project owner shall appoint a lead Designated Biologist. No site mobilization or construction related activities shall commence until a Designated Biologist has been approved by the CPM.

If a Designated Biologist needs to be replaced, the specified information regarding 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.

BIO-2 Designated Biologist Duties The project owner shall ensure that the Designated Biologist performs the following during any site (or related facilities) mobilization, ground disturbance, grading, construction, operation, and decommissioning activities. The project owner may request approval from the CPM to terminate the Designated Biologist's function during plant operation in writing and provide justification of the request. However, the project owner shall appoint a replacement Designated Biologist at any time as directed by the CPM and will ensure the same duties are performed during closure activities.

If no Designated Biologist is available at any time during the life of the project (including operation phase) and the CPM determines that project-related actions may affect biological resources, the CPM may direct the project owner to assign a replacement Designated Biologist, for short-term or long-term monitoring and reporting. The Designated Biologist may be assisted by the approved Biological Monitor(s) but remains the primary 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 resource conditions of certification;
2. Ensure that all conditions of certification are met and that all reporting standards for each COC are completed and submitted to the CPM and any other regulatory agencies in compliance with specified timelines.

3. Consult on the preparation of the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) to be submitted by the project owner;
4. Be available to supervise other biological resource staff, 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;
5. Ensure that all sensitive biological resource areas are flagged, delineated, or marked, and inspect these areas at appropriate intervals for compliance with regulatory terms and conditions;
6. Notify the CPM, BLM, USFWS, and CDFW of any observation of an unanticipated sensitive biological resource(s) encountered during all phases of the project. Unanticipated resources include sensitive species not addressed in the environmental document because of a perceived low potential to occur, species that are known to occur but have been proposed as a candidate for state or federal listing after the approval of the project, and common species whose range is unexpected in the project area. Notifications shall occur immediately and no later than the following morning, or Monday morning in the case of a weekend, or the next business day in the case of a state or federal holiday. The initial notification shall be followed by a formal written notification submitted to the CPM, BLM, USFWS, and CDFW within 48 hours of the observation.
7. Inspect or direct the site personnel how to inspect active construction areas where animals may have become trapped prior to construction commencing each day. Inspect or direct the site personnel how to inspect the installation of structures that prevent entrapment or allow escape during periods of construction inactivity. If site personnel perform these inspections, then they shall be trained by the Designated Biologist and the name of the personnel and date of training shall be included in a log in the Monthly Compliance Report.
8. Periodically inspect areas with high vehicle activity (e.g., parking lots, staging areas, and access roads) for animals in harm's way. Inspect soil or spoil stockpiles and dust abatement watering for compliance with **BIO-7**. Inspect erosion control materials (e.g., hay bales) to confirm weed-free certification. Inspect weed infestations and monitor eradication measures to determine success. Inspect trash receptacles, monitor site personnel compliance with trash handling, pet prohibitions, and all other WEAP components (**BIO-5**);
9. Ensure the implementation of the post construction conditions of certification;
10. Notify the project owner and the CPM, BLM, USFWS, and CDFW directly per the requirements of **BIO-4** of any non-compliance with any biological resources conditions of certification during all phases of the project. Notifications shall occur immediately and no later than the following morning,

or Monday morning in the case of a weekend, or the next business day in the case of a state or federal holiday. The initial notification shall be followed by a formal written notification submitted to the CPM, BLM, USFWS, and CDFW within 48 hours of the non-compliance incident.

11. Notify the project owner, the CPM, BLM, USFWS and CDFW directly of any special-status species injury or mortality (notifications for Crotch's bumble bee, desert tortoise, desert bighorn sheep, and burrowing owl, are addressed per **BIO-14, BIO-15, BIO-20** and **BIO-24**) Notifications shall occur immediately and no later than the following morning, or Monday morning in the case of a weekend, or the next business day in the case of a state or federal holiday. The initial notification shall be followed by a formal written notification submitted to the CPM, BLM, USFWS and CDFW as applicable by within 48 hours of the observation.
12. Respond directly to inquiries of the CPM regarding biological resource issues by phone, email, or other correspondence;
13. 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 and the Annual Compliance Report;
14. Train the Biological Monitors as appropriate, and ensure their familiarity with the BRMIMP, Worker Environmental Awareness Program (WEAP) training, and all permits; and
15. Maintain the ability to be in regular, direct communication with the CPM and representatives of BLM, CDFW, and USFWS, 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 Reports to the CPM copies of all written reports and summaries that document construction activities that have the potential to affect biological resources. The Designated Biologist's written records will be made available for the CPM's inspection on request at any time during normal business hours. During project operation, the Designated Biologist (s) shall submit record summaries in the Annual Compliance Reports unless their duties cease, as approved by the CPM.

BIO-3 Biological Monitor Selection The project owner's CPM-approved Designated Biologist shall submit the resume, at least three references, and contact information of the proposed Biological Monitor(s) to the CPM for review and approval and the BLM, USFWS, and CDFW for review and comment. 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 review and approval at least 30 days prior to the start of any site mobilization

activities. Within 10 days of completion of training, the Designated Biologist shall submit a written statement to CPM confirming that individual Biological Monitor(s) have been trained including the date when training was completed. If additional biological monitors are needed during construction or for species specific surveys, the specified information shall be submitted to the CPM for approval at least 10 days prior to their first day of monitoring activities.

BIO-4 Designated Biologist and Biological Monitor Authority 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 resource conditions of certification.

1. 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 and/or Biological Monitor. The Designated Biologist shall:
2. 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;
3. Inform the project owner and the construction/operation manager when to resume activities;
4. The Designated Biologist or Biological Monitor shall notify the project owner and the CPM of any work stoppage of site mobilization, ground disturbance, grading, construction, and operation activities and associated non-compliance incidents; notifications shall occur immediately and no later than the following morning, or Monday morning in the case of a weekend, or the next business day in the case of a state or federal holiday;
5. Notify and advise the CPM of any corrective actions that have been taken or would be instituted as a result of the work stoppage; and
6. The CPM, in coordination with BLM, USFWS, and CDFW, as appropriate, will determine if corrective action has been effective and will direct the project owner to take further corrective action as needed.
7. 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, or the next business day in the event of a state or federal holiday) 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 within one (1) working day of initiating the corrective action.

BIO-5 Worker Environmental Awareness Program (WEAP) The project owner shall develop and implement a project-specific Worker Environmental Awareness Program (WEAP) and shall submit the draft WEAP for review and approval from the CPM and BLM, USFWS, and CDFW for review and comment. The WEAP shall be administered to all onsite personnel who will enter the project area including but not limited surveyors, construction engineers, employees, contractors, contractor's employees, supervisors, inspectors, subcontractors (but excluding delivery personnel), biologists, cultural, tribal, and paleontological monitors. An abbreviated WEAP (WEAP Light) can be provided to vendors, such as delivery personnel (e.g., building materials, concrete, heavy equipment, etc.), who periodically enter the project area and are limited to areas such as existing access roads and/or lay down areas. The WEAP Light shall also be submitted for review and approval from the CPM. The WEAP shall be implemented during site mobilization, vegetation clearing, preconstruction, construction, commissioning, operation, non-operation, and closure. All workers must complete the WEAP prior to commencing work on the project. The WEAP and the WEAP Light may be recorded for later electronic viewing by new workers who begin work after the initial presentations.

The WEAP shall:

1. Be developed by or in consultation with the Designated Biologist (See **BIO-1**) and consist of an on-site or training center presentation in which supporting written material and electronic media in English, as well as Spanish or other languages, as applicable, including photographs of protected species and their habitat, is made available to all participants;
2. Identify the lead agencies, provide an overview of the conditions of certifications, other regulatory permit requirements, and applicable plans, policies and regulations that must be complied with and the ramifications of non-compliance which may include fines, imprisonment, work stoppages, or loss of employment depending on the violation;
3. Identify the roles of environmental staff and define communication protocols and chain of command between environmental and construction staff. Define what actions monitors can approve such as stopping work under specific circumstances, providing guidance to comply with conditions, conducting surveys, and what actions monitors cannot approve such as directing work, expanding work areas from approved limits, changing conditions of certification requirements, or approving variances to permit conditions. Identify key field contacts and ensure that this information is posted in all break areas;

4. Provide examples of environmental signage and flagging that would be used to delineate work limits; areas for avoidance, state and or federal drainages, or other protected areas, evacuation routes, and approved staging areas;
5. Discuss the locations and types of sensitive biological resources on the Project area and adjacent areas, and explain the reasons for protecting these resources; provide information to participants that no snakes or other wildlife shall be intentionally harmed (unless posing a reasonable and immediate threat to humans);
6. Describe standard environmental commitments and best management practices that apply to the project including but not limited to: storing trash in closed receptables and removing weekly to prevent attracting animals, capping pipes and other cavities that could be used by birds and small mammals; collecting and removing the carcasses of dead animals; limiting work to daytime hours, limiting work during periods of high rainfall, preventing vehicles and equipment from operating within a stream unless specifically authorized by other permits or conditions of certification; restricting smoking to designated areas; storing chemicals and fuel in designated areas; spill prevention measures; and reporting requirements.
7. Identify project vehicle speeds on paved and unpaved access roads and discuss trash management for vehicles parking or staging on Rasor Road, Zzyzx Road, or other non-project BLM roads;
8. Place special emphasis on the protection of nesting birds, species of special concern and listed species including pictures and information on physical characteristics, distribution, behavior, ecology, sensitivity to human activities, legal protection, penalties for violations, reporting requirements, and protection measures;
9. Identify prescriptive measures for disinfecting boots to prevent contamination to desert bighorn sheep, the prohibition of domestic animals including pets such as dogs (excluding service dogs that the owner can provide documentation documenting their specific need);
10. Provide pictures of the sensitive plants and wildlife known to occur in the project area, including Crotch's bumble bee, desert tortoise, Mojave fringe-toes lizards, Bendire's and LeContes thrashers, golden eagles, burrowing owl, loggerhead shrike, Desert bighorn sheep, American badger, desert kit fox, ringtail, and other sensitive plants and wildlife. Provide information on sensitivity to human activities, legal protection, reporting requirements, and how to identify construction avoidance zones for these species as marked by flagging, staking, or other means, as described above;
11. Provide an overview for all personnel of the risk of potential impacts to small mammals, desert bighorn sheep, birds, desert tortoise, and other reptiles from vehicle strikes on all project roads (paved and unpaved) during

construction, operations, closure phases, reporting requirements, and protection measures;

12. Describe the risk of wildfires in desert communities and the measures that will be taken to reduce these risks such as avoiding parking in tall vegetation, limits to where workers can smoke; the locations of fire safety equipment, contact information and the procedure should a wildfire be ignited, required tools for each piece of equipment such as a shovel, Pulaski, and fire extinguisher, restrictions on welding and controlled detonations, use of the Project Activity Level (PAL) system that describes what activities can occur based on specific weather conditions including Red Flag days;
13. Provide an overview of potential impacts to avian and bat species from collisions with generation tie-line, solar panels, and other features associated with the operations phase, reporting requirements, and protection measures;
14. Identify whom to contact if there are further comments and questions about the material discussed in the program; and
15. Include a training acknowledgment form to be signed by each worker indicating that they received training and shall abide by the guidelines. A small wallet card or pamphlet with key contacts and resource information shall be prepared and provided after the training. A hard hat sticker shall also be provided to each worker to demonstrate to the monitors that they have participated in the training.
16. The WEAP Light shall include a summary of the items above as they relate to the limited areas that vendors need to access such as existing access roads and/or lay down areas.

The specific program can be administered by a competent individual(s) acceptable to the Designated Biologist and documented within the Monthly Compliance Reports.

Verification: At least 75 days prior to start of site mobilization the project owner shall provide to the CPM for review and approval 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. At least 10 days prior to site mobilization the project owner shall submit the approved final WEAP and implement the training for all workers.

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. Training acknowledgement forms signed during construction shall be kept on file by the project owner for at least 6 months after the start of commercial operation.

Throughout the life of the project, the WEAP shall be repeated annually for permanent operational employees, and shall be routinely administered within 1 week of arrival to any new construction personnel, foremen, contractors, subcontractors, and other personnel potentially working within the project area. Training acknowledgement forms shall be maintained by the project owner and shall be made available to the CPM upon request. Workers shall receive and be required to visibly display a hard-hat sticker or certificate that they have completed the training.

During Project operation, signed statements for operational personnel shall be kept on file for 6 months following the termination of an individual's employment.

BIO-6 Biological Resources Mitigation Implementation and Monitoring Plan

The project owner, with the assistance of the Designated Biologist, shall develop a Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP). The project owner shall provide the draft BRMIMP to the CPM for review and approval. No site mobilization or construction activities may occur prior to approval of the final BRMIMP by the CPM. Under no circumstances shall ground disturbance proceed without implementation of all applicable permit conditions.

The BRMIMP shall be prepared in consultation with the Designated Biologist and shall include the following:

1. All biological resources mitigation, monitoring, and compliance measures proposed and agreed to by the project owner;
2. All biological resources conditions of certification identified as necessary to avoid or mitigate impacts;
3. All biological resource mitigation, monitoring, and compliance measures required in state or federal agency terms and conditions, such as those provided in the USFWS Biological Opinion, BLM Record of Decision, National Pollution Discharge Elimination System (NPDES) Construction Activities Stormwater General Permit and Waste Discharge Certification;
4. A discussion of all sensitive biological resources that could be impacted by project area mobilization, construction, operation, and decommissioning;
5. A detailed description of measures that shall be taken to avoid or mitigate impacts on each special-status species potentially impacted by construction and operation, including remedial actions;
6. All required mitigation measures for each sensitive biological resource;
7. All locations on a map, at an approved scale (typically 1:6,000 or other scale with CPM approval), of special-status biological resource areas subject to disturbance and areas requiring temporary protection and avoidance during construction and operation;

8. Aerial photographs, at an approved scale (typically 1:6,000 or other scale with CPM approval), 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. The aerial photographs shall include a reference map that shows the aerial map location in reference to the project area, reference key on each aerial, and displays the project boundary. Provide planned timing of aerial photography and a description of why times were chosen;
9. Provide a final accounting of the before/after whole acreages and a determination of whether more or less habitat compensation is necessary;
10. All measures that shall be taken to avoid or mitigate temporary disturbances from construction activities;
11. Duration for each type of monitoring and a description of monitoring methodologies and frequency;
12. Performance standards to be used to help decide if/when proposed mitigation is or is not successful;
13. All performance standards and remedial measures to be implemented if performance standards are not met;
14. A process for proposing plan modifications to the CPM and appropriate agencies for review and approval;
15. All final versions of required plans including WEAP, Vegetation Management Plan, Weed Control Plan, Invasive Species Management Plan, Nesting Bird Management Plan, Desert Tortoise Translocation Plan, Western Burrowing Owl Relocation Plan, Desert Kit Fox and American Badger Relocation Plan, and all other individual biological mitigation and/or monitoring plans associated with the project shall be included as attachments; and
16. A requirement to submit any sightings of any special-status species that are observed on or in proximity to the project area, or during project surveys, to the California Natural Diversity Database (CNDDB), per CDFW requirements.

Verification: The project owner shall submit the draft BRMIMP to the CPM for review and approval at least 45 days prior to start of any site mobilization. The project owner shall provide the final BRMIMP to the CPM at least 10 days prior to start of any site mobilization.

If any federal permits have not yet been received when the final BRMIMP is submitted, these permits shall be submitted to the CPM within 5 days of their receipt, and the BRMIMP shall be revised or supplemented to reflect the permit condition(s). The project owner shall submit to the CPM, BLM, USFWS, and CDFW the revised or supplemented BRMIMP within 10 days following the project owner's receipt of any additional federal permits. Any changes to the approved BRMIMP shall be submitted to the CPM at least 10 days prior to implementation

and must be approved by the CPM in consultation with BLM, USFWS, and CDFW prior to implementation.

Implementation of BRMIMP measures shall be reported in the Monthly Compliance Reports by the Designated Biologist (e.g., survey results, construction activities that were monitored, non-compliance incidences and resolution, species observed, etc.). 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 which items of the BRMIMP have been completed, a summary of all CPM-approved modifications to mitigation measures made during the project's site mobilization and construction activities, and which mitigation and monitoring items are still outstanding.

To verify that the extent of construction disturbance does not exceed that described in these conditions, the project owner shall submit aerial photographs, at an approved scale, taken before and after construction to the CPM and CDFW. The first set of aerial photographs shall reflect site conditions prior to any preconstruction site mobilization and construction activities and shall be submitted prior to initiation of such activities. The second set of aerial photographs shall be taken subsequent to completion of construction and shall be submitted to the CPM for review and approval, and CDFW for review and comment, no later than 30 days after completion of construction. The project owner shall also provide a final accounting in whole acres of vegetation communities/cover types present before and after construction no later than 30 days after completion of construction. Construction acreages shall be rounded to the nearest acre. The project owner shall also provide GIS shapefiles of all pre- and post-disturbance areas no later than 30 days after completion of construction.

BIO-7 General Impact Avoidance and Minimization Measures The project owner shall ensure implementation of the following measures during site mobilization, construction, operation, and closure to manage their project area and related facilities in a manner to avoid or minimize impacts to biological resources:

1. Limit Disturbance Areas. The boundaries of all temporary and permanent disturbance areas (including staging areas, access roads generation tie-line pole locations, etc.) shall be delineated with stakes and flagging prior to any site mobilization, vegetation clearing, ground disturbance, or construction activities in consultation with the Designated Biologist. All construction sites, laydown areas, and parking locations, except for the gen-tie alignment, shall be fenced to prevent potential access to the site by desert tortoise. Fencing shall not be required around generation tie-line line pole locations, however full-time biological monitoring would be required for work in any unfenced areas. Any deviations of the fencing requirements shall be approved by the CPM. Spoils shall be stockpiled away from the edges of drainages and

stabilized to ensure sediment laded water does not enter the drainage. All disturbances, vehicles, and equipment shall be confined to the flagged areas.

2. Minimize Road Impacts. New and existing roads that are planned for construction, widening, or other improvements shall not extend beyond the flagged impact area as described above. All vehicles passing or turning around would do so within the planned impact area or in previously disturbed areas. Where new access is required outside of existing roads or the construction zone, the route shall be clearly marked (i.e., flagged and/or staked) prior to the onset of construction.
3. Minimize Traffic Impacts. Vehicular traffic during project area mobilization, construction and operation shall be confined to existing routes of travel to and from the project area, and cross-country vehicle and equipment use outside designated work areas shall be prohibited. No vehicle shall exceed 10 miles per hour on unpaved areas within the project area that have not been fenced and cleared of desert tortoise. The speed limit shall not exceed 25 miles per hour within fenced portions of the project area. Project vehicles shall abide by posted speed limits on paved public roads outside the project area.
4. Inspect Pipes and Trenches. At the end of each workday, the Designated Biologist, Biological Monitor, and/or site personnel (approved and trained by the Designated Biologist, as described under **BIO-2**) shall ensure that all potential wildlife pitfalls (trenches, bores, and other excavations) have been backfilled. If site personnel are inspecting trenches, bores, and other excavations and wildlife is trapped, they shall immediately notify the Designated Biologist and/or Biological Monitor. If backfilling is not feasible, all trenches, bores, and other excavations shall be covered to prevent wildlife entrapment or sloped at a 3:1 ratio at the ends to provide wildlife escape ramps. Should wildlife become trapped, the Designated Biologist or Biological Monitor shall remove and relocate the animal to a safe location. Any wildlife encountered during construction shall be allowed to leave the construction area unharmed.
5. Prevent Wildlife Entrapment. All pipes, tubes, ducting, or other cavities shall be capped to prevent wildlife entrapment. Portable toilets shall require vent pipes to be screened to prevent cavity using birds or bats from becoming trapped in the pipe.
6. Retention Basin Management Plan. The project owner shall submit a Retention Basin Management Plan to the CPM for review and approval, in consultation with CDFW, prior to construction of any of the proposed retention basins (i.e., storm water basins). The Plan shall include information on how wildlife entrapment shall be minimized at the basins and during periodic operation and maintenance activities. This shall include the number and location of wildlife escape ramps or a description of how the facility will maintain natural vegetation on the banks, inspection and reporting

procedures, annual reporting of the number and type of species entrapped, injured, or killed.

If any state or federally listed species are found to be injured or killed as a result of retention basin operations, the project owner shall notify the CPM, BLM, USFWS, and CDFW and shall implement appropriate remedial actions as directed by the CPM, in consultation with CDFW. The Plan shall outline potential remedial measures, including the addition of fencing to exclude wildlife, installation of wildlife deterrents, operational changes, or habitat protection actions, subject to CPM review and approval.

7. Unexpected Wildlife. The Designated Biologist or Biological Monitor shall ensure that any unexpected special-status wildlife species such as desert tortoise, burrowing owl, desert kit fox, or other species are fully avoided during construction. Should an unexpected wildlife species be detected a non-disturbance buffer shall be implemented based on the species ecology or species-specific condition of certification, and work shall be suspended in that area until the animal leaves on its own volition or moved by the Designated Biologist consistent with existing permit conditions. Any observations of unexpected wildlife must be reported consistent with the notification requirements provided in **BIO-2**, Item 6.

8. Bat Roost Protection and Mitigation

   a. Active Bat Maternity or Hibernacula. If active maternity roosts or hibernacula are found during surveys by an approved bat biologist, submitted for approval under **BIO-3**, the structure, burrow, or feature occupied by the roost shall be avoided (i.e., not removed) until the young have matured or the hibernacula period is over. When an active maternity roost or hibernacula is present within 500 feet of a construction site an approved bat biologist shall conduct an initial assessment of the roost's response to construction activities including controlled detonations and recommend buffer expansion if there are signs of disturbance from the roost. The buffer may be adjusted based on site conditions, topography, type of work activity, or other ecological evidence, with the approval of the CPM.

   b. Avoid Removing or Disturbing Bat Roosts. Active bat roosts shall not be disturbed and shall be provided a minimum buffer of 300 feet where pre-existing disturbance is moderate or 500 feet where preexisting disturbance is minimal. Moderate disturbance may include areas subject to regular human activity or traffic noise up to 60 dBA and limited artificial lighting. Minimal disturbance refers to areas with little or no recent human activity, low ambient noise levels (typically below 45 dBA), no artificial lighting, and a generally undisturbed natural setting. All buffer distances and need for monitoring active maternity roosts or hibernacula shall be approved by the CPM.

If suitable roost sites are to be removed, or otherwise impacted by the project, the approved bat biologist shall conduct targeted roost surveys of all identified sites. A minimum of two separate survey visits shall be conducted at each potential roost site, unless fewer surveys are approved by the CPM. Surveys shall be timed to capture variation in bat use and environmental conditions. If initial results are inconclusive or as recommended by the bat biologist, additional survey visits may be required by the CPM.

c. Roost Site Removal. A qualified bat biologist shall survey potential roost sites prior to their disturbance or removal, per Item 8b. Any structures (natural or artificial) that show evidence of significant bat use within the past year should be retained whenever feasible. If such a structure must be removed or disturbed, the project owner shall create alternative roost sites in coordination with the CPM and CDFW. If removal or disturbance of trees or other identified roost sites cannot be avoided, removal of active roost sites shall be conducted outside the maternity season to avoid mortality of maternity colonies.

9. Prepare a Wildlife Protection and Relocation Plan. The project owner, in coordination with the Designated Biologist, shall prepare a Wildlife Protection and Relocation Plan (WPRP) to provide guidance and protocols when avoiding or handling common and sensitive species that are located within the project area. The WPRP shall include measures for handling rattlesnakes or other snakes found in or near work areas and access roads and provide these guidelines to all Biological Monitors, safety staff, and other personnel. Killing or harming rattlesnakes or other wildlife is not authorized, unless there is an immediate and unavoidable threat to human safety and relocation is not feasible. The WPRP shall include methods to salvage or relocate common and sensitive wildlife during ground disturbance activities including clearing, grubbing, and grading operations when feasible to off-site habitat or out of harm's way. Specific plans for the handling of desert tortoise, burrowing owl, American badger, and desert kit fox are including in COCs **BIO-15**, **BIO-20**, and **BIO-22**. The species shall be salvaged or relocated when conditions will not jeopardize the health and safety of the Designated Biologist or Biological Monitor;

10. Minimize Lighting Impacts. To minimize adverse effects of artificial light on wildlife, exterior lighting fixtures associated with project construction shall be downward facing, fully shielded, and designed and installed to minimize backscatter, reflection, minimize skyward illumination, minimize spillover onto adjacent wildlife habitat. Lights used shall be lower on the light spectrum (lower Kelvins with fewer short-wavelength blue light emissions);

11. Use Non-toxic Soil Binders. Soil bonding and weighting agents used on unpaved surfaces shall be non-toxic to wildlife and plants and shall be approved by the CPM prior to use;

12. Minimize Impacts from Pest Control. Anticoagulants shall not be used for rodent control. Pre-emergent and other herbicides with documented residual toxicity shall not be used. Herbicides shall be applied in conformance with federal, State, and local laws and according to the guidelines for wildlife-safe use of herbicides in **BIO-9** (Integrated Weed Management Plan);
13. Minimize Standing Water. Water applied to dirt roads and construction areas (trenches or spoil piles) for dust abatement shall use the minimal amount needed to meet safety and air quality standards to prevent the formation of puddles, which could attract predators of special-status species to construction sites. During construction, site personnel shall patrol these areas to ensure water does not puddle and attract ravens and other wildlife to the site, and shall take appropriate action to reduce water application rates where necessary;
14. Handling of Road-killed Animals. Report all inadvertent deaths of special-status species to the appropriate project representative, including roadkill. Species name, identifiable physical characteristics of the animal (sex, age class, length, weight), and other pertinent information shall be noted and reported in the Monthly Compliance Reports. During construction, injured or dead animals detected by personnel in the project area shall be reported immediately to the Designated Biologist and/or Biological Monitor, who shall remove the carcass or injured animal promptly. During operations, the Environmental Compliance Monitor for the project owner shall be notified and they shall contact the Designated Biologist and/or Biological Monitor for further instructions. The Designated Biologist shall notify the project owner, the CPM, and CDFW directly of any special-status species injury or mortality. Notifications shall occur immediately and no later than the following morning, or Monday morning in the case of a weekend, or the next business day in the case of a state or federal holiday per **BIO-2**. Additionally, the Designated Biologist shall contact the CPM, BLM, CDFW and/or USFWS within 1 working day of receipt of the carcass for guidance on disposal or storage of the carcass. The project owner shall follow instructions that are provided by the appropriate agency contact. The veterinary fees for the treatment of injured wildlife shall be covered by the project owner for project-related injuries or wildlife found injured on the project area.
15. Minimize Spills of Hazardous Materials. All vehicles and equipment shall be maintained in proper working conditions to minimize the potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials or wastes. The Designated Biologist and/or Biological Monitor shall be informed immediately of any hazardous spills. Any on-site servicing of vehicles or construction equipment shall take place only at a designated area approved by the Designated Biologist. Service/maintenance vehicles shall carry a bucket and pads to absorb leaks or spills;

16. Remove Trash Weekly. During construction all trash and food-related waste including micro-trash shall be placed in secure, self-closing containers to prevent access by wildlife and removed weekly or more frequently from the site. Workers shall not feed wildlife or bring pets to the project area;
17. No Firearms. Except for law enforcement or security personnel, no workers or visitors to the site shall bring firearms or weapons to the project area;
18. Avoid Use of Toxic Substances. Soil bonding and weighting agents used on unpaved surfaces shall be non-toxic to wildlife and plants;
19. Minimize Disturbance Areas. Limit the size of any vegetation and/or ground disturbance to the minimum area needed for safe completion of project activities, and limit ingress and egress to defined routes;
20. Weed and Monofilament Free Wattles. Use only weed-free straw, hay bales, and seed for erosion control and sediment barrier installations. Monofilament plastic shall not be used for erosion control. In addition, non-native species shall not be used in landscaping plans and erosion control;
21. Conform to APLIC Guidelines. The generation tie-line and all associated components shall be designed, installed, and maintained in accordance with the Avian Power Line Interaction Committee's (APLIC's) *Suggested Practices for Avian Protection on Power Lines* (APLIC 2006) and *Reducing Avian Collisions with Power Lines* (APLIC 2012), or most recent APLIC guidance, to reduce the likelihood of large bird electrocutions and collisions;
22. Aviation Lighting. If required, to the extent feasible, any aviation warning lighting shall employ only strobed, strobe-like or blinking incandescent or LED lights, preferably with all lights illuminating simultaneously. Minimum intensity, maximum "off-phased" dual strobes are preferred, and no steady burning lights (e.g., L-810s) shall be used;
23. Herbicide Use. During construction and operation, the project owner shall conduct pesticide management in accordance with standard BMPs. The BMPs shall include non-point source pollution control measures. The project owner shall use a licensed herbicide applicator and obtain recommendations for herbicide use from a licensed Pest Control Advisor. Herbicide applications must follow EPA label instructions. Minimize use of rodenticides and herbicides in the project area and prohibit the use of chemicals and pesticides known to cause harm to non-target plants and wildlife. The project owner shall only use pesticides for which a "no effect" determination has been issued by the EPA's Endangered Species Protection Program for any species likely to occur within the project area, per **BIO-13** if rodent control must be conducted, zinc phosphide or an equivalent product shall be used; and
24. Minimize Stormwater Impacts. Standard best management practices (BMPs) from the project Storm Water Pollution Prevention Plan shall be implemented during all phases of the project (construction, operation, and decommissioning) where storm water run-off from the site could enter

adjacent drainages. Sediment and other flow-restricting materials shall be moved to a location where they shall not be washed back into the jurisdictional waters. All disturbed soils within the project area shall be stabilized to reduce erosion potential, both during and following construction.

25. Bird-Safe/Bat-Safe Photovoltaic (PV) Panels. Photovoltaic (PV) panels installed on the project site shall, if feasible, include a light-colored, ultraviolet (UV)-reflective, or otherwise non-polarizing outline, frame, grid, or border. These features have been shown to significantly reduce the attraction of aquatic insects to panel surfaces, thereby decreasing the likelihood of attracting insectivorous birds and/or bats. This measure aims to mitigate avian and bat mortality by minimizing collisions with panel faces.

Verification: All general impact avoidance and minimization measures shall be included in the BRMIMP and implemented. Implementation of the measures shall be reported by Designated Biologist in the Monthly Compliance Reports during construction and reported in Annual Compliance Reports during operation, including but not limited to the requirements cited above and in **BIO-2**.

The project owner shall submit the draft Reservoir Management Plan to the CPM for review and comment, in coordination with CDFW, at least 45 days prior to the start of any construction-related activities associated with the reservoir. The project owner shall provide the final Reservoir Management Plan to the CPM at least 10 days prior to any construction-related activities associated with the reservoir.

The project owner shall submit the draft WPRP to the CPM for review and comment at least 45 days prior to the start of project area mobilization. The project owner shall provide the final WPRP to the CPM at least 10 days prior to project area mobilization.

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.

BIO-8 Vegetation Management Plan The project owner shall develop a Vegetation Management Plan (VMP). The VMP shall contain the requirements to stabilize temporarily disturbed areas, including proposed stabilization measures, seed mixes, schedules, success criteria, reporting requirements, and any remediation activities. No site mobilization or construction activities may occur prior to approval of the final VMP by the CPM.

The VMP shall be developed by a qualified botanist or restoration ecologist approved by the CPM. The Plan shall identify all areas of permanent and temporary impacts and describe how temporarily disturbed areas in desert areas shall be stabilized to prevent the establishment and spread of invasive species.

Invasive weeds are defined as Cal-IPC High or Moderate species except where allowances for annual grasses as described below.

The Plan shall specify success criteria and materials and methods for site preparation, reseeding, maintaining, and monitoring revegetated areas in the following categories.

1. The goal of revegetation on these sites shall be to stabilize disturbed areas consistent with BLM requirements and prevent the establishment of Cal-IPC High or Moderate species that could colonize adjacent habitats. Permanent and temporary impacts to habitat that supports desert tortoise and burrowing owl shall be off-set through compensatory mitigation (**BIO-16** and **BIO-21**);
2. At a minimum, all temporary disturbed areas shall be recontoured, scarified, and stabilized with a seed mix consisting of local natives, including grasses and wildflowers preferred by Crotch's bumble bee, and shrubs.

At a minimum the VMP shall include but not be limited to the following requirements.

1. Site Maps. The Plan shall include the types and acreages of habitats to be restored. These areas shall be identified on maps with sufficient detail for a desktop review and provided as GIS files. The Plan shall provide drawings and or schematics outlining the location of seeding and or plantings.
2. Revegetation Methods. Describe the methods of active revegetation to be used depending on site location and habitat Active revegetation is defined as any area that receives seed or container plants, irrigation (if proposed), weeding, and monitoring.
    a. The methods shall include any proposed site preparation such as topsoil salvage, re-contouring, decompaction, pre-installation weeding, or other proposed methods.
3. Topsoil Salvage Requirements. Topsoil and the seed bank it contains, shall be conserved on areas where soil is excavated to the degree possible based on the five-year construction timeframe, or alternate timeframe as approved by the CPM. Topsoil salvage shall occur provided the area does not support any Cal-IPC Rank Moderate or High with the exception of Brome and Mediterranean grasses. Topsoil and biotic crust salvage shall be completed for the top 3" of topsoil and the top 0.25" for soil crusts. (See methods identified in COC **BIO-12** below) Salvage shall be accomplished by:
    a. Woody material such as creosote bush or paloverde shall be removed from the soil surface and piled in an area that will be out of the way during construction. The upper 6 to 8 inches of soil, where present, shall be scraped from the disturbance footprint and piled into a windrow in an area that shall not be disturbed during construction.
    b. Topsoil stockpiles shall be clearly marked for avoidance.

c. Windrows shall be immediately protected from wind and rain erosion by covering them or hydro-mulching. Erosion protection shall be renewed as needed.

d. Salvaged topsoil shall be respread on areas that shall be revegetated following construction. Salvaged topsoil versus subsoil shall be used for this purpose unless the location is identified as weed infested using the methods outlined in **BIO-9**.

4. Seed Mix and Application. Describe the proposed seed mix, quality control requirements, and application methods such as hydroseeding, broadcast seeding, imprinting, use of container plants, cuttings, or other treatments.

   a. The proposed seed mix shall be acquired from local sources unless approved by the CPM, in consultation with BLM and CDFW.

   b. Describe the timing of the seed application and measures to ensure that hydroseeding equipment has been cleaned prior to use on the project area.

   c. The methods shall describe any proposed use of slurry binders, soil stabilizers, or use of mycorrhizal fungi.

   d. Describe the proposed timing of the seeding and other revegetation efforts such as container plantings, cuttings, or other methods.

   e. It is recommended that coarse woody debris be strategically placed across the revegetation areas to foster the development of micro habitats for plants and wildlife.

5. Success Criteria. The VMP shall include success criteria and percent cover for each of the proposed temporarily disturbed areas. Prior to initial ground disturbance of any areas that would be treated, the restoration ecologist shall develop a baseline goal for treatment including the percentage cover and type of weeds and the grass and forb cover. The goal of the VMP is to prevent the establishment of high-priority invasive weeds that are considered controllable (i.e. species that can be effectively suppressed or eliminated through standard management practices) such as Russian thistle (*Salsola tragus*) and Sahara mustard (*Brassica tournefortii*).

   a. After 2 years at least 80% of the species observed within the temporarily disturbed areas shall be native species that naturally occur in desert scrub habitats. After 5 years upland areas shall be dominated by native annuals, forbs, and low growing perennials with a total cover of 60 percent. Cover of high-priority invasive species rated by Cal-IPC High or Moderate species shall not exceed 5 percent total cover with the exception of brome grasses (*Bromus* spp.) or Mediterranean grass (*Schismus barbatus*), which shall be managed to the extent feasible to control spread.

6. Implementation Schedule. The VMP shall include a defined implementation schedule and plan including any revegetation activities including conducting

biological or cultural resources clearance surveys, avian monitoring, or other license requirements; ensuring soil conditions are prepared for treatment, and the implementation of any required erosion control devices.

7. Site Preparation. All work areas shall be clearly delineated prior to revegetation work; and this shall include any soil preparation measures, including locations of recontouring, de-compacting, imprinting, or other treatments; details for topsoil storage, as applicable; plant material collection and acquisition guidelines, plants from the project area, as well as obtaining replacement plants from outside the project area (sources for plant materials shall be limited to locally occurring native species from the local area if needed); a plan drawing or schematic depicting the temporary disturbance areas described above; time of year that the planting or seeding shall occur and the methodology of the planting; a description of the irrigation, if used; success criteria; a monitoring program to measure the success criteria, commensurate with the Plan's goals and contingency measures for failed revegetation efforts not meeting success criteria.
8. Plant Acquisition. Plant acquisition shall be limited to locally collected seed, and cuttings if used, unless approved by the CPM, in consultation with the BLM and CDFW.
9. Final Site Grading and Seeding. The VMP shall include proposed plans for final site grading and seeding, developed in consideration of site-specific conditions and subject to approval by the CPM. At final grade, the last few inches shall not be compacted to more than 75 percent to facilitate penetration by plant roots, unless otherwise approved by the CPM based on soil type and site conditions. Salvaged topsoil shall be spread over the finish grade, which shall retain surface roughness, such as small ridges, where appropriate to enhance seedling wind protection and moisture collection from rain and fog.
    a. Hydroseed or drill seeding with soil stabilization seed mixture shall be applied between October 1 and mid-November, unless alternate timing is approved by the CPM and BLM. The hydroseed or drill seed mix shall contain a mulch and binder to retard wind erosion by providing a crust over the soil surface. Native plant seeds shall be added to the hydroseed mixture or hand broadcasted onto the site just prior to hydroseeding. Care shall be taken to avoid premature germination of native species caused by prolonged immersion in the hydroseeding equipment.
    b. On slopes such as the detention basins or manufactured drainage channels, the project owner shall augment the erosion control seed mixture with seed of species native to the region, based on seed availability and habitat conditions. Seed mixtures appropriate for desert habitats shall be developed using native species sourced from the region and shall be approved by the CPM and BLM in consultation with the CDFW. The VMP shall include details of seed sources, application

methods, and any proposed deviations from these guidelines with supporting rationale.

10. Maintenance and Monitoring. The revegetation areas shall be monitored and maintained for a minimum of 5 years by a qualified botanist or restoration ecologist. At the end of the five-year monitoring period the qualified botanist or restoration ecologist in consultation with the Designated Biologist shall prepare a final monitoring report detailing the success of the revegetation efforts and shall provide recommendations, if needed. This final monitoring report shall be submitted to the CPM for review and approval. After the initial 5-year monitoring period, the CPM shall determine if additional monitoring or remedial actions are required.

    a. Invasive weed management shall be started within 3 months of planting or seeding, or earlier if weeds have begun to flower, unless alternate timeframe is approved by the CPM. Weeding shall proceed as frequently as necessary to prevent weeds from spreading off the project area into the adjacent area and to prevent seed set. An effort shall be made to cut weeds before they develop seeds to minimize the spread of invasive weeds. Any new Cal IPC High or Moderate species weed species not currently present in the project area prior to construction shall be eradicated (see **BIO-8** and **BIO-9**).

11. Reporting. Quarterly and annual revegetation status reports shall include a map of all areas planted or managed, percent weed cover, status of revegetation efforts including percent native cover and survivorship, and any remedial actions taken.

Verification: The project owner shall submit the draft VMP to the CPM and BLM for review and approval at least 75 days prior to start of any site mobilization. The project owner shall provide the final VMP to the CPM, BLM, and CDFW at least 7 days prior to start of any site mobilization. Any changes to the approved VMP must be reviewed and approved by the CPM, in coordination with the BLM. Quarterly, annual, and final revegetation status reports shall be submitted to the CPM for review and approval no more than 30 days after each reporting period.

BIO-9 Integrated Weed Management Plan The project owner shall develop an Integrated Weed Management Plan (IWMP). The IWMP shall be prepared in consultation with the Designated Biologist and shall include accurate and up-to-date maps depicting the location of weed occurrences across the project area and generation-tie line alignment. The IWMP shall be consistent with BLM's Record of Decision for Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States and the 2008-2012 National Invasive Species Management Plan. The IWMP shall be submitted to the CPM and BLM for review and approval. The IWMP shall contain all required measures to identify, control, and manage existing and potential weed infestations on the project area. No site mobilization, ground disturbance, or construction activities may occur prior to approval of the

final IWMP by the CPM and BLM. The IWMP shall be implemented prior to any site mobilization, and during the construction, operation, and decommissioning phases of the project.

1. Weed Definition. The IWMP shall describe the methods of preventing or controlling the introduction or spread of weeds or new weed infestations. For the purposes of the IWMP, "weeds" shall include all plants designated as noxious weeds or pest plants by the California Department of Food and Agriculture (CDFA), including those listed in Title 3, California Code of Regulations Section 4500 or assigned a CDFA pest rating of A, B, or Q, or the agencies most recent ranking system. Weeds shall also include any other non-native plant species ranked in the *California Invasive Plant Inventory* by the California Invasive Plant Council (Cal-IPC) or its most recent ranking system.
2. Weed Risk Assessment. The IWMP shall provide an assessment of the project's potential to spread invasive non-native weeds rated Cal IPC High or Moderate species into new areas, or to introduce new non-native invasive weeds into the project area. This IWMP must list known and potential non-native and invasive weeds occurring on the project area and in the project region and identify threat rankings, including Cal-IPC and CDFA, and potential consequences of project-related occurrence or spread for each species.

   This assessment shall include, but is not limited to, weeds that (1) are currently ranked as having a high or moderate for ecological impact in the California Invasive Plant Inventory maintained by the Cal-IPC (Cal-IPC 2025), (2) aid and promote the spread of wildfires, and (3) have the potential to displace native vegetation communities.
3. Success Criteria. The IWMP shall identify goals for control of each species (e.g., eradication, suppression, or containment) likely to be found within the project area. The goals shall include the following success criteria:
   - With the exception of brome and Mediterranean grasses which are ubiquitous in the project area, all plant species with rates of dispersal and establishment listed as "High" or "Moderate" on the California Invasive Plant Inventory shall have documented absence, or have been removed from the site for at least three years, for the CPM to deem the site control successful.
   - The site shall not contain more than 5% exotic plant species rated by Cal-IPC as High or Moderate for the CPM to deem the site control successful.

The IWMP shall include the following measures to guide weed inventory, prevention, control, and monitoring activities:

1. The project owner shall inventory the entire project area, covering all areas subject to ground-disturbing activity, including, but not limited to, construction work sites, staging areas, and any potential new or improved

access roads. Weed occurrences shall be mapped and described according to species, density, and area covered. The map shall be updated at least once per year during the construction phase.

2. Weed infestations identified in the pre-construction weed inventory shall be evaluated to identify potential for project-related spread. The IWMP shall identify any infestations to be controlled or eradicated prior to start of project construction, or other site-specific weed management requirements (e.g., avoidance of soil transport and site-specific vehicle washing where threat or spread potential is high).
3. The CPM and BLM shall be notified via email within 30 days if any weed species detected on the project area has not been previously recorded in San Bernardino County, based on available records from the BLM, CDFA, the Cal-IPC, the Calflora Database, or other relevant regional floristic data sources.
4. Control and follow-up monitoring of pre-construction weed treatment sites shall follow methods identified in appropriate sections of the IWMP. The monitoring section shall also describe methods for post-eradication monitoring to evaluate success of control efforts and any need for follow-up control.
5. The IWMP shall specify methods to minimize potential transport of weed seeds onto the project area, or from one section of the project area to another. The project area may be divided into "weed zones," based on known presence or likelihood of invasive species in specific areas. The IWMP shall specify inspection procedures for construction materials and equipment entering the project area. Vehicles and equipment shall be inspected and cleaned at entry points to specified portions of the project area, and prior to leaving work sites where weed occurrences must be contained locally.
6. The IWMP shall include prevention measures based on Prevention Best Management Practices for Transportation and Utility Corridors (https://www.cal-ipc.org/resources/library/publications/tuc/) and Cal-IPC's Preventing the Spread of Invasive Plants: Best Management Practices for Land Managers (https://www.cal-ipc.org/resources/library/publications/landmanagers/) or most recent guidance and shall be consistent with BLM's Record of Decision for Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States and the 2008-2012 National Invasive Species Management Plan.
7. Construction equipment shall be cleaned of dirt and mud that could contain weed seeds, roots, or rhizomes. Equipment shall be inspected to ensure it is free of any dirt or mud that could contain weed seeds, and the tracks, outriggers, tires, and undercarriages shall be thoroughly washed, as needed. Special attention shall be given to axles, frame, cross members, motor mounts, underneath steps, running boards, and front bumper/brush guard assemblies. Other construction vehicles (e.g., pick-up trucks) that frequently

enter and exit the site shall be inspected and washed on an as-needed basis. Tools (e.g. chainsaws, hand clippers, pruners, etc.) shall also be cleaned of dirt and mud before entering project work areas.

8. All vehicles shall be washed off-site when possible. If off-site washing is infeasible, on-site cleaning stations shall be set up at designated locations to clean equipment before it enters the work area. Wash stations shall be located away from native habitat or special-status species occurrences. Wastewater from cleaning stations shall not be allowed to run off the cleaning station site. A daily log shall be maintained for all vehicle and equipment washing activities stating the location, date and time, types of equipment, methods used, and personnel present.
9. Erosion control materials (e.g., straw wattles, hay bales) shall be certified free of weed seed before they are brought onto the site. The IWMP shall prohibit on-site storage or disposal of mulch or green waste that may contain weed material. Mulch or green waste shall be removed from the site in a covered vehicle to prevent seed dispersal and transported to a licensed landfill or composting facility.
10. The IWMP shall specify guidelines for any soil, sand, gravel, mulch, or fill material that will be imported into the project area, transported from site to site within the project area, or transported from the project area to an off-site location, to prevent the introduction or spread of weeds to or from the project area.
11. The IWMP shall specify methods to survey for weeds during construction and operation; and shall identify the botanists responsible for weed monitoring and identification. The botanists shall be approved pursuant to **BIO-1** and/or **BIO-3**. The IWMP shall include a monitoring schedule to ensure timely detection and immediate control of weed infestations to prevent further spread. Surveying and monitoring for weed infestations shall occur at least two times per year, to coincide with the early detection period for early season and late season weeds (i.e., species germinating in winter and flowering in late winter or spring, and species germinating later in the season and flowering in summer or fall).
12. The IWMP shall include methods for marking invasive weeds on the project area and for recording and communicating these locations to weed control personnel. The map of weed locations (referenced above under Item 1) shall be updated at least annually and provided to the CPM in both Arc-GIS - compatible digital format (e.g. shapefiles) and PDF map format.
13. The IWMP shall specify manual and chemical weed control methods to be employed. The IWMP shall include only weed control measures with a demonstrated record of effectiveness for target weeds, based on the best available information, including relevant agency guidance, peer-reviewed studies, and documented control successes for the target species. The plan

shall describe methods for promptly scheduling and implementing control activity when any weed infestation is present, to ensure timely and effective weed control. Weed infestations shall be controlled or eradicated within 10 days upon detection, and prior to seed production, to prevent further spread. If detected after seed production, measures shall be taken to prevent further spread, including containment, seed removal, and increased monitoring.

14. All proposed weed control methods must minimize the extent of any disturbance to native vegetation, limit ingress and egress to defined routes, and avoid damage from herbicide use or other control methods to any environmentally sensitive areas identified within or adjacent to the project area. Herbicide use must comply with the following restrictions unless approved by the CPM and BLM in consultation with CDFW.
    a. Herbicide applicators must follow the best management practices described by the Guidance to Protect Habitat from Pesticide Contamination published by the Xerces Society for Invertebrate Conservation or most recent guidance;
    b. Herbicides marked with the U.S. Environmental Protection Agency's bee hazard icon shall be avoided;
    c. Herbicides shall not be sprayed onto any native flowering plant, with special care to avoid special status plants and foraging species used by bumble bees.
    d. Only herbicides with a short residual toxicity to bees shall be used. Pesticide toxicity shall be verified using UC Agriculture and Natural Resource's Bee Precaution Database, or equivalent current resource.
    e. Targeted application methods shall be used instead of broadcast spraying whenever feasible.
    f. All herbicide application must be conducted by a Licensed and Certified Pesticide Applicator, licensed by the California Department of Pesticide Regulation (CDPR), and shall be applied as directed by the manufacturer and all applicable federal, state, and local regulations.
15. Weed infestations shall be treated at least annually until eradication, suppression, or containment goals are met. For an infestation to be considered eradicated, no new seedlings or resprouts shall be observed for three (3) consecutive, normal rainfall years. Upon approval by the CPM and BLM, weed control efforts may be discontinued for that site.
16. Manual control shall include well-timed removal of weeds or their seed heads with hand tools. Removed seed heads and plants shall be disposed of in accordance with guidelines from the BLM if such guidelines are available. If no guidelines are available, all materials shall be sealed in bags and transported to a licensed green-waste or composting facility to prevent seed dispersal.

17. The IWMP shall include specific plans for any herbicide use based on known locations. The plan shall indicate where herbicides will be used, which herbicides will be used and specify techniques to be used to avoid drift or residual toxicity to native vegetation or special-status plants and wildlife. An updated herbicide work plan shall be developed based on the results of ongoing weed surveys and submitted annually with the annual monitoring report and updated weed location maps.
18. Herbicides shall not be applied during or within 72 hours of predicted rain. Only water-safe herbicides shall be used in drainage areas or within channels (engineered or not) where they could run off into downstream areas. Herbicides shall not be applied when wind velocities exceed six (6) mph. All herbicide applications shall follow U.S. Environmental Protection Agency label instructions and shall be in accordance with federal, state, and local laws and regulations. Any herbicide proposed for usage must be approved in advance by the CPM and use shall not conflict with **BIO-8**.
19. The IWMP shall specify a reporting schedule, with no less than one report submitted annually, and shall define the contents of each report and reports shall be submitted by the project owner to document weed control activities, including treatment methods, locations, dates, monitoring results, and effectiveness of control measures.

Verification: The project owner shall submit the draft IWMP to the CPM and BLM for review and approval at least 60 days prior to start of any pre-construction site mobilization activities. The project owner shall provide the final IWMP to the CPM, BLM, and CDFW at least 7 days prior to the start of any site mobilization. Any changes to the approved IWMP must be approved by the CPM and BLM. The annual report shall be submitted within 30 days of completion of the late season surveys.

BIO-10 Invasive Species Management Plan The project owner shall develop and implement an Invasive Species Management Plan (ISMP). The ISMP shall be prepared in consultation with the Designated Biologist and shall include an education program (see **BIO-5**) to describe the risk that invasive species pose to native wildlife and the control methods required during pre-construction site mobilization, and during the construction, operation, and decommissioning phases of the project. The ISMP shall be submitted to the CPM and BLM for review and approval. The ISMP shall include the following:

1. Invasive Species Education Program. The program shall consist of a presentation by the Designated Biologist(s)or Biological Monitor(s)that includes a discussion of the invasive species currently present within the project area as well as those that may pose a threat to or have the potential to invade the project area or have the potential to reach Soda Lake. The discussion shall include a physical description of each species and information regarding their habitat preferences, local and statewide distribution, modes of

dispersal, and ecological impacts. The program shall also include a discussion of best management practices (BMPs) to be implemented at the project area to avoid the introduction and spread of invasive species into and out of the project area. The program shall provide interpretation for non-English speaking workers. The presentation may be recorded for later electronic viewing by new workers who begin work after the initial presentations. The program shall be repeated annually for the life of the project. Copies of program materials shall be maintained at the project area for workers to reference as needed. The program shall be included as part of the WEAP training and implemented, as required under **BIO-5**.

2. Invasive Species. The ISMP shall describe the best management practices (BMPs) that prevent the introduction, transfer, and spread of invasive species, including plants, animals (non-native ants, invertebrates, and microbes (e.g., algae, fungi, parasites, bacteria, etc.), from one project area and/or waterbody to another. If decontamination is not done on site, transport contaminated equipment in sealed plastic bags and keep separate from clean gear. For locations known to be infested with invasive species, use dedicated equipment that is only used in infested waters and store this equipment separately. Prevention BMPs and guidelines for invasive plants are available California Invasive Plant Council's website at: https://www.cal-ipc.org/solutions/prevention/ and for invasive mussels and aquatic species are available at the Stop Aquatic Hitchhikers website: https://stopaquatichitchhikers.org/ or most recent guidance. These measures shall be adapted to conform when working in desert areas without connectivity to intermittent or perennial water sources.
3. Inspection of Project Equipment. Inspect all vehicles, tools, boots, and other project-related equipment and remove all visible soil or mud, plant materials, and animal remnants. All water must be drained from equipment prior to entering and exiting the project area and/or between each use in different waterbodies.
4. Decontamination of Project Equipment. All tools, waders and boots, and other equipment that will enter the project area and/or between each use in different waterbodies, shall be decontaminated to avoid the introduction and transfer of organisms between waterbodies. Decontamination methods and protocols shall be outlined in the ISMP and may include techniques to clean gear and equipment such as thorough drying, hot water treatment, freezing, or other scientifically supported practices. All equipment must be thoroughly cleaned prior to decontamination, with particular attention paid to areas where organisms may be trapped (e.g., seams, laces, net corners, etc.). Repeat decontamination shall be required if the equipment/clothing is removed from the site, used within a different waterbody, and returned to the project area or different waterbody. Methods shall follow current best management practices as outlined in the CDFW Aquatic Invasive Species Decontamination Protocol or most current guidance. Decontamination

measures can be adapted based on site-specific conditions when working in desert areas without connectivity to intermittent or perennial water sources. Decontamination measures shall ensure that terrestrial arthropods such as Argentine ants do not invade adjacent desert lands.

5. Decontamination of Vehicles and Equipment. Vehicles and other project-related equipment too large to immerse in a hot water bath shall be decontaminated by using effective methods designed to eliminate potential biological contaminants. This may include using pressurized hot water, flushing of internal systems, and thorough draining and drying. Methods shall follow current best management practices as outlined in the CDFW Aquatic Invasive Species Decontamination Protocol or most current guidance. Decontamination procedures can be adapted to conform when working in desert areas without connectivity to intermittent or perennial water sources. Decontamination measures shall ensure that terrestrial arthropods such as Argentine ants do not invade adjacent desert lands.
6. Decontamination Sites. The project owner shall identify a decontamination site approved by the CPM. The project owner shall ensure the decontamination of vehicles and other project-related gear and equipment is located in a designated location where runoff can be contained and not allowed to pass into CDFW-jurisdictional areas and other sensitive habitat. Preferably this will consist of an off-site location such as a construction yard or other approved vehicle washing location. Rinse water shall be disposed of at least 100 feet from any surface water.
7. Notification of Invasive Species. If an invasive species not previously known to occur within the project area is discovered during project activities the project owner or Designated Biologist shall notify the CPM, BLM, and CDFW within 24-hours, or by Monday if during the weekend, or by the next business day if during a state or federal holiday. The report shall include photos and a completed Suspect Invasive Species Report (available online at: https://wildlife.ca.gov/Conservation/Invasives/Report). In addition, the project owner or Designated Biologist shall provide an email to the Invasive Species Program at: invasives@wildlife.ca.gov or current CDFW email for reporting. Notification may also be provided by calling (866) 440-9530 or current CDFW phone number for reporting. Upon receiving guidance from the CPM, in coordination with CDFW, the project owner will take further action, as appropriate to the species.

Verification: The project owner shall submit the draft ISMP to the CPM and BLM for review and approval at least 75 days prior to the start of any site mobilization activities. The project owner shall provide the final ISMP to the CPM at least 7 days prior to start of any site mobilization. No site mobilization, ground disturbance, or construction activities may occur prior to approval of the final ISMP by the CPM.

BIO-11 Post BESS Fire Monitoring and Management Plan The project owner shall develop a Post BESS Fire Monitoring and Management Plan (PBFMMP). The project owner shall provide the draft PBFMMP to the CPM for review and approval. No site mobilization or construction activities may occur prior to approval of the final PBFMMP by the CPM. The PBFMMP shall be prepared in consultation with the Designated Biologist and shall include the following:

1. Baseline Data. The development of pre-operation sediment sampling locations within a two-mile radius of the BESS. The sampling shall include a test for the expected post fire constituents. In addition, known seeps and springs within a five-mile radius that could be used by desert bighorn sheep shall be sampled for water quality and chemical constituents. Identify locations along the major drainages downstream of the project area where chemicals could become concentrated after rainfall;
2. Toxicity Thresholds. Identify the thresholds for toxicity for each chemical constituent to vegetation and wildlife;
3. Post Fire Monitoring. Include post fire monitoring requirements including an initial assessment within 2-weeks of the fire and a program of quarterly testing for the first year then annually for 3-5 years if battery-related contaminants (HF, heavy metals) are detected above threshold levels in water or sediment. Conduct additional monitoring if invasive species spread or species decline or patterns of habitat use are detected;
4. Species Specific Monitoring. Describe post fire monitoring to evaluate potential impacts to sensitive vegetation and wildlife. Evaluate burn severity and chemical contamination; track vegetation recovery and if there are any increases in non-native vegetation; document species presence and health post fire include observations of changes in nesting behavior or use of habitat; assess soil erosion and soil stability in any areas subject to remediation. Conduct surveys for desert tortoise and burrowing owls and include health checks for desert tortoise where possible and provide veterinarian care for injured wildlife. Review bighorn sheep telemetry data to identify is bighorn sheep are using the area differently after a BESS fire;
5. Habitat Recovery Metrics and Decontamination Methods. Provide a detailed description of the measures and metrics that would be used to assess health impacts to plants and wildlife, evaluate impacts to important foraging habitat and what decontamination methods shall be taken to avoid or mitigate impacts on each special-status species potentially impacted by a BESS fire. Include methods to contain storm and firefighting waste water;
6. Restoration and Adaptive Management. Identify methods for post fire restoration if needed including the acquisition of additional habitat at a 1:1 ratio should soils be contaminated above threshold limits and or become unavailable to wildlife after the fire. Include methods for collaborating with the BLM, CDFW, USFWS, and CPM during these activities; and

7. Reporting. Identify all pre-fire testing locations on a map, at an approved scale (typically 1:6,000 or other scale with CPM approval). Identify post fire plume direction(s) and areas where soil testing indicates chemical constituents above baseline and at or above toxicity levels. Provide a detailed report of remedial actions taken during and post fire of all monitoring and restoration activities. Include the results of field surveys, animal health assessments, and observations of damaged vegetation or other fire related factors.

Verification: The project owner shall submit the draft PBFMMP to the CPM for review and approval at least 45 days prior to start of the delivery of any BESS battery components. The project owner shall provide the final PBFMMP to the CPM at least 10 days prior to start of the delivery of any BESS battery components.

BIO-12 Special-Status Plant Avoidance and Minimization Measures The Designated Biologist and/or Biological Monitor(s) shall conduct floristic pre-construction surveys for special-status plants. Surveys shall be conducted with the appropriate protocols approved by the CPM during the appropriate season in all suitable habitat within the project disturbance areas and access roads and within 100 feet of disturbance areas, where accessible. Surveys shall be conducted by qualified botanists or biologists approved by the CPM, pursuant to **BIO-1** and/or **BIO-3**.

The field surveys and reporting shall conform to current CDFW botanical field survey protocol (CDFW 2018) or more recent updates. With respect to areas potentially directly disturbed during the construction of the generation tie-line, protocol surveys conforming to the current CDFW botanical field survey protocol (CDFW 2018) are required for areas that have not previously been surveyed by the project owner to date. During each year of construction, and prior to site mobilization and ground disturbance, the project owner shall identify proposed survey areas to the CPM for review and approval prior to initiating annual botanical surveys. The survey plan shall identify proposed survey areas and the rationale for any areas not proposed for surveys. The survey plan shall include maps, at an approved scale, clearly defining each proposed survey area.

Any special-status plant species (including state and federally listed threatened or endangered species, candidates for listing, and all CRPR 1A, 1B, 2, 3, and 4 ranked species) detected shall be documented in the pre-construction survey reports. The results shall be submitted to CPM, CDFW, and USFWS (should federally listed plants be discovered) for review. The reports shall describe any conditions that may have prevented target species from being located or identified, even if they are present as dormant seeds or below-ground root stock (e.g., poor rainfall, disturbance, or wildfire). In some cases, follow-up surveys may be necessary to adequately evaluate impacts. Pre-construction field survey reports shall include maps, at an approved scale, showing locations of survey areas, reference populations, and special-status plants.

The results of these surveys will inform the implementation of appropriate avoidance and minimization measures, as outlined below:

1. Avoidance. Where feasible, any special status plant shall be protected by establishment of a minimum 50-foot non-disturbance buffer. The buffer area shall be clearly staked, flagged, and signed for avoidance prior to the beginning of site mobilization and maintained throughout the construction phase. For tree or shrub species, the buffer shall be no less than twice the drip line (i.e., two times the distance from the trunk to the canopy edge) to protect and preserve the root systems. The buffer zone shall be of sufficient size to prevent direct or indirect disturbance to the plants from site mobilization and construction activities, erosion, inundation, or dust.

   The final buffer distance shall be determined by a qualified biologist or botanist, approved under **BIO-1** and/or **BIO-3,** based upon the proposed use of the immediately adjacent areas and the plant's ecological requirements (e.g., sunlight, moisture, shade tolerance, water availability, edaphic physical and chemical characteristics).

   If a smaller buffer is necessary due to other site-specific constraints, the project owner, in coordination with the Designated Biologist or qualified botanist shall develop and implement site-specific protection measures, such as monitoring, to avoid the impacts to the species, if possible. The measure shall be subject to approval from the CPM and BLM, in consultation with CDFW. Such measures may include placing decking or pads above dormant species to prevent their loss and limit soil compaction.

2. Compensatory Mitigation. If avoidance of special status plants is not feasible, the project owner shall mitigate impacts to any state or federally listed plants that are subject to disturbance from project activities. Should a State listed plant be subject to disturbance the project owner would be required to implement standard categories of mitigation applicable for take coverage through CESA which includes seed salvage, propagation, and the preservation of lands occupied by the species. The measures shall be subject to approval from the CPM and BLM, in consultation with CDFW and or USFWS. In addition, the project owner shall provide compensatory mitigation for CRPR 1 or 2 ranked species if project activities result in the loss of more than 10 percent of a defined occurrence due to direct or indirect impacts to soils, vegetation, or water transport that could affect the species' viability.

   An occurrence, or local population, shall be defined as the number of individuals occurring on the project area or all plants within a 0.25-mile buffer.

   - For perennial species, percent avoidance shall be based on population size or number of individuals avoided.

- For annuals, avoidance shall be based on occupied habitat, which includes habitat containing the species' micro-habitat preferences (e.g., such as "soil types and moist depressions").

Occupied habitat shall be calculated on both the project area and compensation lands as including each special status plant occurrence and a surrounding 100-foot buffer area to account for seed bank.

The project owner shall provide compensation lands at the following minimum ratios:

- 3:1 for any state or federally listed plants and CRPR 1 or 2 ranked species
- 2:1 ratio for CRPR 1 or 2 ranked species

3. Compensatory Mitigation by Acquisition. The requirements for the acquisition, initial protection and habitat improvement, and long-term maintenance and management of special-status plant compensation lands shall include the following:

   Selection Criteria for Acquisition Lands. The compensation lands selected for acquisition may include any of the following three categories:

   a. Occupied Habitat, No Habitat Threats. The compensation lands selected for acquisition shall be occupied by the target plant population and shall be characterized by site integrity and habitat quality that are required to support the target species and shall be of equal or better habitat quality than that of the affected occurrence. The occurrence of the target special-status plant on the proposed acquisition lands should be viable, stable, or increasing (in size and reproduction).

   b. Occupied Habitat, Habitat Threats. Occupied compensation lands characterized by habitat threats may also be acquired if the population could be reasonably expected to recover with habitat restoration efforts (e.g., OHV or grazing exclusion, or removal of invasive non-native plants) and is accompanied by a Habitat Enhancement/Restoration Plan.

   c. Unoccupied but Adjacent. The project owner may also acquire habitat for which occupancy by the target species has not been documented, if the proposed acquisition lands are adjacent to occupied habitat. The project owner shall provide evidence that acquisitions of such unoccupied lands would improve the defensibility and long-term sustainability of the occupied habitat by providing a protective buffer around the occurrence and by enhancing connectivity with undisturbed habitat. This acquisition may include habitat restoration efforts where appropriate, particularly when these restoration efforts will benefit adjacent habitat that is occupied by the target species.

4. Review and Approval of Compensation Lands Prior to Acquisition. The project owner shall submit a formal acquisition proposal to the CPM and BLM

describing the parcel(s) intended for purchase. This acquisition proposal shall discuss the suitability of the proposed parcel(s) as compensation lands for special-status plants in relation to the criteria listed above and must be approved by the CPM, in coordination with BLM, CDFW and/or USFWS.

5. Compensation Lands Management Plan. The project owner shall prepare a management plan for the compensation lands in consultation with the entity that will be managing the lands. The objective of the management plan shall be to support and enhance the long-term viability of the target special-status plant occurrences. The Compensation Lands Management Plan shall be submitted for review and approval to the CPM and BLM, in coordination with the CDFW and/or USFWS.
6. Integrating Special-Status Plant Mitigation with Other Mitigation lands. If all or any portion of the acquired compensation lands desert tortoise, burrowing owl, waters of the state, or other required compensation lands meets the criteria above for special-status plant compensation lands, the portion of the other species or habitat compensation lands that meets any of the criteria above may be used to fulfill that portion of the obligation for special-status plant mitigation.
7. Compensation Lands Acquisition Requirements. The project owner shall comply with the following requirements relating to acquisition of the compensation lands after the CPM and BLM, has approved the proposed compensation lands:
    a. Preliminary Report. The project owner, or an approved third party, shall provide a recent preliminary title report, initial hazardous materials survey report, biological analysis, and other necessary or requested documents for the proposed compensation land to the CPM and CDFW. All documents conveying or conserving compensation lands and all conditions of title are subject to review and approval by the CPM. For conveyances to the State, approval may also be required from the California Department of General Services and the Wildlife Conservation Board.
    b. Title/Conveyance. The project owner shall acquire and transfer fee title to the compensation lands, a conservation easement over the lands, or both fee title and conservation easement, as required by the CPM. Any transfer of a conservation easement or fee title shall be to CDFW if accepted by CDFW, a non-profit organization qualified to hold title to and manage compensation lands (pursuant to California Government Code section 65965), or to BLM or other public agency approved by the CPM. If an approved non-profit organization holds fee title to the compensation lands, a conservation easement shall be recorded in favor of CDFW or another entity approved by the CPM. If an entity other than CDFW holds a conservation easement over the compensation lands, the CPM may require that CDFW or another entity approved by the CPM, in consultation with CDFW, be named a third-party beneficiary of the conservation

easement. The project owner shall obtain approval of the CPM of the terms of any transfer of fee title or conservation easement to the compensation lands.

c. Initial Protection and Habitat Improvement. The project owner shall fund activities that the CPM requires for the initial protection and habitat improvement of the compensation lands. These activities will vary depending on the condition and location of the land acquired, but may include trash removal, construction and repair of fences, invasive plant removal, and similar measures to protect habitat and improve habitat quality on the compensation lands.

   The habitat improvement funds may be held and expended by a qualified non-profit organization, CDFW or another public agency, provided that the entity is qualified to manage compensation lands (pursuant to California Government Code section 65965) and is authorized to participate in implementing the required activities on the compensation lands, upon approval of the CPM, in consultation with CDFW.

   If CDFW accepts fee title to the compensation lands, the project owner shall provide the habitat improvement fund directly to CDFW or its designee.

d. Property Analysis Record. Upon identification of the compensation lands, the project owner shall conduct a Property Analysis Record (PAR) or PAR-like analysis to establish the appropriate amount of the long-term maintenance and management fund to pay the in-perpetuity management of the compensation lands. The PAR or PAR-like analysis must be approved by the CPM before it can be used to establish funding levels or management activities for the compensation lands.

e. Long-term Maintenance and Management Funding. The project owner shall deposit a capital long-term maintenance and management fee in a dedicated interest-bearing account held by governmental entity, special district, or nonprofit organization or other CPM approved entity, in the amount determined through the Property Analysis Record (PAR) or PAR-like analysis conducted for the compensation lands.

   The CPM, in consultation with CDFW, may designate another non-profit organization to hold the non-refundable, long-term maintenance and management fee if the organization is qualified to manage the compensation lands in perpetuity.

   If CDFW takes fee title to the compensation lands, CDFW shall determine whether it will hold the long-term management fee in the special deposit fund or designate another entity to manage the long-term maintenance and management fee under CDFW oversight.

In addition to the costs listed above under Items a-d, the project owner shall be responsible for all other costs related to acquisition of compensation lands and conservation easements, including but not limited to: title and document review costs incurred from other state agency reviews, overhead related to providing compensation lands to CDFW or an approved third party, escrow fees or costs, environmental contaminants clearance, and other site cleanup measures**.**

f. Mitigation Security. The project owner shall provide financial assurances to the CPM to guarantee that an adequate level of funding is available to implement any of the mitigation measures required by this condition that are not completed prior to the start of site mobilization and ground-disturbing activities.

Financial assurances shall be provided to the CPM, and copy to the CDFW, in the form of an irrevocable letter of credit, a pledged savings account or another form of security ("Security") approved by the CPM. The actual costs to comply with this condition will vary depending on the actual costs of acquiring compensation habitat, the costs of initially improving the habitat, and the actual costs of long-term management as determined by a PAR report.

Prior to submitting the evidence of Security, the project owner shall obtain the CPM's approval of the form of the Security. The CPM may draw on the Security or approve of the security beneficiary to draw on the security, if the CPM determines the project owner has failed to comply with the requirements specified in this condition. Funds from the Security may solely be used for implementation of the requirements of this condition.

Use of the Security by the CPM or other approved entity does not relieve the project owner of its obligations under this condition if the Security is insufficient to fully cover required measures. Any unused portion of Security shall be returned to the project owner, in whole or in part, upon successful completion of the associated requirements in this condition.

8. Monitoring. Annual monitoring and documentation of salvaged plants shall include, but not be limited to, details of plants salvaged, stored, and transplanted (salvage and transplanting locations, species, number, size, condition, etc.); adaptive management efforts implemented (date, location, type of treatment, results, etc.); and evaluation of success of transplantation. Transplanted species may not be placed in areas subject to future land disturbance and must be protected by a conservation easement or restricted covenant that prohibits disturbance and ensures conservation of the site in perpetuity. Conservation lands would be acquired consistent with the specifications identified above under Section b. Title /Conveyance. Annual monitoring shall occur for a minimum of three years post-relocation to ensure the plants become established and are not at risk from weeds or other

impacts, unless approved by the CPM. The results of annual monitoring shall be reported in an Annual Monitoring Report specific to salvaged of propagated plants for a minimum of three years. Additional monitoring may be necessary if determined upon review of the annual reports by the CPM that the success criteria are not met. Success criteria shall include maintaining habitat occupied by the impacted species at the identified ratios and number of plants for any occupied habitat affected by the project.

9. Propagation and Relocation Strategy. If salvage and relocation is not believed to be feasible for special-status plants, then the project owner shall consult with California Botanic Garden, BLM, or another qualified entity, to develop an appropriate propagation and relocation strategy, based on the life history of the species affected. The Special-Status Plant Propagation and Relocation Plan shall include at minimum: (a) collection and salvage measures for plant materials (e.g., cuttings), seed, or seed banks, to maximize success likelihood; (b) details regarding storage of plant, plant materials, or seed banks; (c) location of the proposed propagation facility, and proposed methods; (d) time of year that the salvage and other practices will occur; (e) success criteria; and (f) a detailed monitoring program, commensurate with the plan's goals. The draft Special-Status Plant Propagation and Relocation Plan shall be submitted to the CPM and BLM for review and approval and to the CDFW for review and comment. The final plan approved by the CPM shall be submitted prior to any salvage or relocation.

Verification: The project owner shall submit the proposed annual survey plan 45 days prior to commencing the surveys to the CPM for review and approval. The project owner shall submit the results of each annual survey to the CPM for review and approval no more than 45 days after the completion of the surveys.

Should mitigation be required the project owner shall submit the Habitat Enhancement/Restoration Plan, Formal Acquisition Proposal, Compensation Lands Management Plan, Recent Preliminary Title Report, and Property Analysis Record (PAR) and Security to the CPM for review and approval and the CDFW/USFWS if applicable for review and comment no later than 45 days prior to construction. If plant propagation is proposed as mitigation the project owner shall submit the Special-Status Plant Propagation and Relocation Plan to the CPM for review and approval and the CDFW/USFWS if applicable for review and comment no later than 45 days prior to construction

The project owner shall submit the Annual Monitoring Reports to the CPM for review and approval no more than 30 days after each reporting period.

BIO-13 Vegetation Resources Management Plan The project owner shall develop and implement a Vegetation Resources Management Plan (VRMP). The VRMP shall be prepared in consultation with the Designated Biologist and shall include an education program (see **BIO-5**) to describe why topsoil, biotic crusts, specific

trees such as palo verde, and succulents are salvaged and should be avoided to the greatest extent possible during construction. The VRMP shall include all propose salvage techniques and shall be submitted to the CPM and BLM for review and approval. The VRMP shall include the following:

1. Soil Baseline Characterization. The VRMP shall describe the soil characteristics of temporary disturbance areas and define what constitutes a biotic crust. The soil characterization shall include:
    a. Profile description of three representative pedons. (A pedon is the smallest three-dimensional sampling unit displaying the full range of characteristics of a particular soil and typically occupies an area ranging from about 1 to 10 square yards.)
    b. Characterization of surface application (desert pavement or biological soil crust present).
    c. Identification of biological soil crust organisms (cyanobacteria, mosses, lichens, liverworts).
    d. Documentation of soil macro-invertebrates (i.e., presence of ants, termites, and other significant macro-invertebrates).
2. Provide laboratory data for bulk density; soil fertility and organic matter content including total carbon and nitrogen content, and soil compaction levels along with references to generally accepted methods for making these determinations.
3. Topsoil Salvage. The project owner shall salvage the top 3 inches of soil from graded areas and collect upper 0.25 inch separately for biological crust. Stockpile soil dry, ≤ 4 ft deep, and manage to maintain viability. Use stockpiles to grow native plants for seed production and maintain soil biota. The vegetation in place at or immediately before topsoil collection shall be healthy native vegetation with less than 15% absolute cover of exotic weed growth. Soil occupied by vegetation of high plant diversity shall be given priority over soil occupied by low-diversity native vegetation. Soil may be collected with a front loader, bulldozer, or scraper and transported to storage areas by front loader, dump truck, or scraper. The equipment transporting the soil may not travel across the stockpile more than the minimum number of times required to build the soil to its intended depth. The depth of the stockpiles shall not exceed 4 feet in the case of sandy loam or loamy sandy soils. Topsoil stockpiles shall be kept dry and covered if no vegetation is introduced. If native vegetation is grown on the stockpiles to increase seeds and soil organisms, no cover is required. Artificial watering may be provided at the project owner's option. Stockpiled topsoil shall be used to grow native plant species for the purpose of producing native seeds and building beneficial microorganisms in the soil volume. All native plant species encountered in the vegetation surveys shall be included in the growing

rotation on the stockpiles. The size of the stockpile area must be sufficient for the safe propagation of cacti.

4. Biological Soil Crust Characterization and Preservation. Biological soil crust is defined here as a mixture of organisms that occupy and protect the surface of the soil in most desert ecosystems. The organisms often include filamentous and non-filamentous cyanobacteria, mosses, lichens, liverworts, and fungi. Biological soil crust shall be preserved by collecting the upper 0.25 inch of topsoil from areas to be graded. The project owner shall collect from specific areas known to contain biological crust organisms or collect upper soil from the entire area to be graded. Collections shall emphasize filamentous cyanobacteria, but other cyanobacteria, mosses, lichens, and liverworts are also considered valuable contributors to biological soil crust and important in protecting against erosion and reducing weed invasion, and shall be collected as a secondary priority. Soil surface crust shall be air dried and stored dry in a shaded location in containers that allow air movement, such as loose-weave fabric bags. In no case may the stored crust be subject to wetting or direct sunlight during storage. All containers shall be clearly labeled with date and location of original collection; name and contact information of persons responsible for identifying suitable material to collect; and the persons who collected, stored, and maintained collections. Biological soil crust shall be re-applied at the time of replanting by crumbling the stored material and broadcasting it on the surface of the soil. Approximately 10% of the stored material shall be broadcast on topsoil storage areas among plants being grown for seed and soil microorganisms. When the growing cycle progresses to new planting, the soil supporting biological crust shall be collected and stored by the same methods prescribed for collections from the original soil, in clearly labeled bags or other suitable containers.
5. Succulent Transplant. The project owner shall salvage succulent plants located in areas to be dragged, rolled, or spot graded, or above mowing height. These plants shall be salvaged and transplanted into a nursery area. The Succulent Transplant portion of the Vegetation Resources Management Plan shall include, at a minimum:
    a. The location of target plants on the project area;
    b. Criteria for determining which individual plants are appropriate for salvage;
    c. The proposed methods for salvage, propagation, transport, and planting;
    d. Procedures for identifying target species during preconstruction clearance surveys;
    e. Considerations for storing salvaged plants or pre-planting requirements; and
    f. Suggested transplantation sites.

6. Transplanted Cacti. Succulents to be transplanted into the nursery area shall be placed in their same compass orientation as they were in their original location. The salvaged plants also shall be kept in long-term soil stockpiles, along with natives grown on the stockpiles, to keep the soil biota fresh.

Succulent transplants done during preparation of the project area shall be fully documented and serve as trials of methods to be used during plant salvage on the project area. Records shall be maintained for each transplanted specimen including species; height; number of branches or pads as appropriate; donor location by UTM coordinates; methods used to remove, transport, and store the plant; period of temporary storage; location; facility description; planting medium used for storage; and frequency of watering during storage. Records shall be kept at the time of planting at the storage area, and quarterly thereafter during storage until such time as each plant is placed in the field or dies. Transplanted individuals shall be maintained for 3 years, including removal of invasive species and irrigation (if necessary), as well as monitored for 3 years to determine the percentage of surviving plants each year and to adjust maintenance activities using an adaptive management approach.

Verification: The project owner shall submit the proposed VRMP no later than 45 days prior to commencing the surveys to the CPM for review and approval. The project owner shall provide the final VRMP to the CPM at least 10 days prior to start of mobilization.

BIO-14 Crotch's Bumble Bee Impact Avoidance, Minimization, and Mitigation Measures To avoid take of the Crotch's bumble bee, the Designated Biologist and/or Biological Monitor(s) shall conduct protocol pre-construction surveys and monitoring for Crotch's bumble bee.

1. Pre-construction Surveys and Monitoring. Surveys shall be conducted by a qualified entomologist(s) or biologist(s) familiar with the life history and ecology of Crotch's bumble bee. All proposed surveyors shall be approved by the CPM, in coordination with the CDFW, pursuant to **BIO-1** and/or **BIO-3**. Surveys shall cover all project work areas, including staging and parking areas, plus a 100-foot buffer, where accessible to account for ground borne vibration, unless a smaller buffer is approved by the CPM. Surveys shall follow the non-invasive protocols established by CDFW in "Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species" or more recent CDFW-approved methods, as available (CDFW 2023a). The surveys shall be conducted between 7:00 AM and 6:00 PM (Pacific Time) on sunny days between 55-and 95-degrees Fahrenheit with sustained wind speeds measuring less than 10 miles per hour. Any variances to the Survey Protocol, including variances to survey temperatures or timing, shall be submitted to the CPM for review and approval prior to implementation.

If initial ground disturbing construction activities, including site mobilization occur during the Colony Active Period (February 1 to September 30), the CPM-approved Designated Biologist(s) and/or Biological Monitor(s) shall search for Crotch's bumble bee throughout the area planned for project activities plus a 100-foot buffer. Survey efforts for each area shall include at least two visual surveys consisting of meandering transects occurring no more than 10 days prior to the start of ground and vegetation disturbing activities in that area. The CPM approved Designated Biologist(s) and/or Biological Monitor(s) shall conduct the surveys at least four days apart, with the second survey occurring within two days prior to starting ground and/or vegetation removal activities in that area. The survey duration shall be appropriate to the size of the area planned for project activities plus 100 feet based on the metric of a minimum of one person-hour of searching per three acres of suitable habitat.

If ground disturbing activities are halted for longer than three days within a work area supporting suitable habitat during the Colony Active Period defined as the Queen Flight Season (February 1 through March 31), the CPM-approved Designated Biologist(s) and/or Biological Monitor(s) shall perform a minimum of one additional survey in the work area prior to reinitiating project activities in the work area.

The CPM approved Designated Biologist(s) and/or Biological Monitor(s) shall be on-site during all initial ground disturbing site mobilization and/or construction activities in any given work area to visually monitor for Crotch's bumble bee and to detect flight activity. Visual sweeps of each work area shall occur prior to beginning daily project activities, and a minimum of three times throughout the workday, unless alternate timing is approved by the CPM.

2. Nest Detection. If a Crotch's bumble bee nest is detected during project surveys or any project activities, the project owner shall implement a 100-foot non-disturbance buffer and avoid working in the area until the end of the flight season after the nest has senesced and the queen has left to start a new colony. The 100-foot non-disturbance buffer can be adjusted based on the location of the nest and proposed activity with the approval of the CMP and coordination with CDFW.

   To determine if a nest has senesced, the CPM-approved Designated Biologist(s) and/or Biological Monitor(s) shall monitor the nest for senescence in late summer and fall (September-October). Nest senescence can typically be denoted after the presence of reproductives (gynes and males) are observed. Nests shall be monitored for a minimum of one hour per day for three consecutive days during optimal weather conditions (i.e., from 7:00 AM to 6:00 PM, low wind, and low cloud cover conditions, etc.). If there has been no nest activity after the above conditions are met, or the nest has been

relocated, the no disturbance buffer may be removed upon approval of the CPM.

If any overwintering Crotch's bumble bee are found during ground and/or vegetation disturbing activities, including site mobilization or construction activities, or during operation of the project, the project owner, in consultation with the CPM-approved Designated Biologist(s) and/or Biological Monitor(s) shall immediately stop and prohibit all ground disturbing activities within 100 feet of the queen and/or hibernaculum. The project owner shall delineate the 100-foot buffer and notify all workers not to enter the environmentally sensitive area. This buffer may be adjusted with the approval of the CPM based on project activities and potential to disturb the nest.

If an overwintering queen is exposed, the CPM approved Designated Biologist(s) shall attempt to salvage the animal and place it in a protected area pending coordination with the CPM and CDFW.

3. Document Crotch's Bumble Bee Observations. Survey data shall be submitted to the CNDDB and shall include specifying the type of observation (e.g. individual bee or nest), type of vegetation cover, slope, aspect, GPS location, distance to foraging location (if known), and any other relevant conditions noted. Negative survey results shall also be reported to the CNDDB.
4. Pre-Construction Survey Reporting. The project owner shall provide the Colony Active Period Season - Pre-Construction Survey results or Overwintering Survey Results (to the CPM no more than ten days prior to initiating or resuming if initial disturbance not complete) project activities in each work area, unless alternate timing is approved by the CPM. The CPM-approved Designated Biologist(s) and/or Biological Monitor(s) shall notify the CPM if an overwintering individual and/or nest is observed within 100-feet of the project area during site mobilization, construction, or operation.

   Pre-construction surveys and observational submittals shall include a Keyhole Markup Language (KML) map, or KML-Zipped (KMZ) map, and Geographic Information System (GIS) shapefiles of all Crotch's bumble bee detections and/or nests found during survey efforts or during any incidental observations, and photographs of the individual or nest. The map shall include an outline of the project area, and any distinct work area(s) surveyed within the project area, title, north arrow, scale bar, and legend.

Verification: The project owner shall submit the results of each survey to the CPM for review and approval and to the CDFW for review and comment no more than 45 days after the completion of the surveys. The project owner shall submit information describing the findings of the bumble bee surveys and implementation of any avoidance measures in the Monthly Compliance Report (per **BIO-6**) and the Annual Compliance Report, during operation, to the CPM.

BIO-15 Desert Tortoise Impact Avoidance, Minimization, and Mitigation Measures The project owner shall implement the following measures to avoid, minimize and offset impacts to desert tortoise during site mobilization, construction, and operation:

1. Desert Tortoise Translocation Plan. The Designated Biologist(s) shall prepare and implement a Desert Tortoise Translocation Plan (DTTP) 30 Calendar days prior to start of Covered Activities. Covered Activities are not authorized to start until DTTP is approved in writing by the CPM in consultation with the BLM, USFWS, and CDFW. The DTTP shall follow the most current guidelines provided by USFWS and CDFW regarding desert tortoise translocation. It shall include methods of burrow excavation, nest and egg handling procedures, safe handling guidelines for capture and relocation, temperature constraints, avoiding the transmission of diseases or parasites, disease testing, radio tagging, transportation procedures, artificial burrow construction and shelter placement along the perimeter fence line. Where guidance differs between BLM, USFWS and CDFW, the project owner shall apply the most restrictive condition and seek written direction from the CPM in coordination with the USFSW, BLM, and CDFW on how to reconcile the differences.
2. Raven Management and Reporting Plan. The Designated Biologist shall prepare and implement a Raven Management and Reporting Plan (Raven Plan) consistent with CDFW and USFWS raven management guidelines. The purpose of the Raven Plan shall be to minimize project-related predator subsidies (e.g. common ravens and coyotes) and prevent any increases in raven numbers or activity within desert tortoise habitat during construction and operation phases. The Plan shall address all project components and their potential effects on raven numbers and activity. The Raven Plan shall be reviewed and approved by CPM, in coordination with the CDFW and USFWS, prior to the start of site mobilization activities. The Raven Plan shall:
    a. Identify all potential project activities as well as structures, components, and other features that could provide predator subsidies or attractants. This includes but is not limited to: improperly managed food waste; road-killed animals; water storage facilities; pooled water from leaks, dust control, or wastewater; debris from brush and other vegetation clearing; as well perch or nest sites on project facilities and other infrastructure. As required by **BIO-7**, Item 18, all trash and food waste will be disposed of in secure, self-closing bins to prevent access by wildlife.
    b. Describe specific management practices to avoid or minimize conditions that might increase raven numbers and predatory activities. This includes the following:
        i. Collect and dispose of animals killed on the site or project access roads to reduce food subsidies;
        ii. Water used for the project shall be applied to avoid puddling;

iii. Inactive common raven nests will be removed in accordance with USFWS guidelines. If re-nesting occurs, further measures will be coordinated with the CPM, in coordination with CDFW and USFWS; and

iv. Active nests will be reported to CPM, CDFW, and USFWS for consideration of egg-oiling or other authorized management measures.

c. The Designated Biologist and/or Biological Monitor shall oversee implementation of the Raven Plan.

d. The project owner shall contribute to the USFWS Regional Raven Management Program by making a one-time payment of $105 per acre of long-term or permanent project disturbance.

3. Desert Tortoise Fencing. The project owner shall install desert tortoise exclusion fencing around the project area, laydown, staging and parking areas. Exclusion fence specifications shall be approved by the CPM and be consistent with those described in the most recent Desert Tortoise Field Manual or more current guidance provided by BLM, CDFW and USFWS. Fencing shall not be required to conduct work at or along the generation-tie line corridor but would be required around tower work areas and the switching station site.

4. Desert Tortoise Pre-construction Clearance Surveys. After the completion of fencing installation, the Designated Biologist(s) and/or Biological Monitor(s) shall conduct 5-meter clearance sweeps of the project area prior to site mobilization. Follow-up surveys shall also be conducted within fourteen (14) days preceding additional construction after a gap in significant construction activities of 60 calendar days or more. Surveys shall include 100 percent of the area disturbed and a surrounding buffer of 100 feet. A map of proposed survey areas shall be provided to the CPM for review and approval, and the BLM, CDFW and USFWS, for review and comment prior to initiating the surveys. Pre-construction clearance surveys shall be completed using perpendicular survey routes within the Project Area. Pre-construction clearance surveys cannot be simultaneously combined with other clearance surveys conducted for other species while using the same personnel. Covered Activities cannot start until two (2) negative results from consecutive surveys using perpendicular survey routes for desert tortoise are documented.

   New clearance surveys shall be conducted if the desert tortoise fence is breached (e.g., large gaps, torn fencing, or cavities that could allow desert tortoises to enter the site) for more than 24 hours. Clearance surveys shall be conducted for all linear facilities prior to any ground disturbance. In addition, surveys shall be conducted one week prior to any ground disturbance and within 24 hours of beginning work in suitable habitat. Methods for clearance surveys and exclusion fence specifications shall be consistent with those described in the most recent *Desert Tortoise Field Manual* or more current guidance provided by CDFW and/or USFWS. Any potential burrows, sign, or

tortoises shall be noted, recorded using a precision GPS device, and identified on project maps submitted to the CPM.

The Biological Monitor(s) and/or Authorized Biologist(s) shall record all potential desert tortoise and burrows within the pre-construction clearance survey area, using global positioning system (GPS) technology. The Authorized Biologist(s) and/or Biological Monitor(s) shall provide the results of the pre-construction clearance survey (including all information of the USFWS Protocol data sheet) to the CPM, BLM, USFWS, and CDFW within 10 Calendar days of completing the surveys. The use of specialized equipment (e.g., fiber optics) may be necessary to thoroughly inspect all burrows in preparation for collapsing them.

Twenty-four hours prior to the start of any Covered Activities, except for areas already cleared within installation of desert tortoise exclusion fencing, the DT Authorized Biologist(s) and/or Biological Monitor shall conduct a final clearance survey of Project Area. The use of specialized equipment (e.g., fiber optics) may be necessary to thoroughly inspect all burrows in preparation for collapsing them.

5. If Desert Tortoise Detected. If adult or juvenile desert tortoises or potentially active burrows are detected during the pre-clearance surveys the Designated Biologist and/or Biological Monitor(s) shall contact the CPM, CDFW, and USFWS immediately for guidance. No work shall occur within 200-feet of any potential burrow or desert tortoise pending coordination with the CPM, CDFW, and USFWS. Handling of desert tortoise shall not be allowed pending the completion of appropriate take authorization from the CEC, in coordination with CDFW, and USFWS, per Item 4.
6. Supplemental Mitigation for Desert Tortoise. If a desert tortoise is detected during the surveys, construction, or operation all work within 300 feet of the desert tortoise shall immediately stop and the observation shall be immediately reported to the Authorized Biologist(s). Covered Activities shall not resume until the Authorized Biologist(s) and/or Biological Monitor(s) has verified the desert tortoise has left the project area or an Authorized Biologist(s) approved under this COC relocates the desert tortoise as described in the Desert Tortoise Translocation Plan. The Designated Biologist shall notify CPM, BLM, USFWS, and CDFW of any desert tortoise observations within the project area within 24 hours. Notification and the written report shall include the date, location, and circumstances of the observation, the name of the Designated Biologist that relocated the individual, pictures, map and shapefiles with the location (including GPS coordinates) where the individual was moved as specified in the DTTP.
7. Excavation of Desert Tortoise Burrows. All potential desert tortoise burrows shall be investigated by fiber optic systems, excavated, and backfilled prior to construction. Only Authorized Biologist(s) and Biological Monitor(s) approved

by CPM, BLM, USFWS, and CDFW are authorized to conduct burrow excavation. Excavation of burrows shall follow the methods described the USFWS Field Manual and the DTTP.

8. Desert Tortoise Translocation. The Designated Biologist shall translocate all desert tortoise to the approved translocation areas identified in the approved DTTP. The DTTP shall follow the most current guidelines provided by USFWS and CDFW regarding desert tortoise translocation. Where guidance differs between the USFWS and CDFW, verbal and/or written direction provided by CPM in consultation with the CDFW always controls. CDFW notes that the list of items below are the most common examples of the differences between CDFW and USFWS guidelines. These shall be included in the DTTP along with the most recent USFWS translocation guidelines:
   a. Translocated tortoises are tortoises removed from the Project Area and/or have a radio transmitter attached.
   b. The Authorized Biologist shall determine when the creation of artificial burrows is needed.
   c. Ambient air temperature guidelines shall be followed as specified in this COC.
   d. Tortoises <100 millimeters (mm) midline carapace length (MCL) shall be released immediately without being held, transmittered, or blood drawn for disease testing as long as the temperature requirements are met.
   e. CDFW does not authorize the release of tortoises that test positive for disease even if it does not show outward signs of the disease. If a tortoise tests positive for disease it is the responsibility of the Permittee to locate a CDFW approved facility to place the tortoise in. Any exception to this determination will need to be approved in writing by CDFW on a case-by-case basis.
9. Disease testing shall not be done between November 1 and May 14. If a tortoise >100 mm MCL is found between November 1 and May 14 or earlier with written approval from CDFW the tortoise shall be held in quarantine facilities and shall remain in quarantine until tested twice (once in the spring and once in the fall). If the tortoise tests negative for disease, it can be released in accordance with the approved DTTP. Blood draw samples for *Mycoplasma agassizii* and *Mycoplasma testudineum* shall determine if a tortoise is negative or positive for disease. A combination of results from blood testing and visual inspection will be used to determine the health of a tortoise. Blood draw samples will be sent to: Dr. Mary Brown, University of Florida Mycoplasma Laboratory, 2015 SW Archer Road, Room V2-234, Gainesville Florida 32608, or other facility approved by CDFW. CDFW uses enzyme-linked immune assay (ELISA) test results to determine if a tortoise is positive for disease. The ELISA tests will be used to test for exposure to herpes virus (*Mycoplasma agassizii and Mycoplasma testudiuneum*).

a. If a tortoise tests positive for or is suspected of disease, then the tortoise will be tested twice for disease (once in the spring after May 15 to and once in the fall). To determine results of blood testing use the most current guidelines provided by the University of Florida Mycoplasma Laboratory Department of Infectious Diseases and Pathology. The University of Florida Mycoplasma Laboratory Department of Infectious Diseases & Pathology 2013 criteria for classifying *Mycoplasma agassizii* and *Mycoplasma testudineum* is a titer <32 is negative, a titer > 64 is positive, and a titer of 32 is suspect (retesting in 6 weeks) or most current guidelines. All sample forms shall come from the University of Florida's guidance.

b. The DTTP shall include a requirement that all translocated tortoises regardless of size be included in the translocation numbers and all reports.

c. The DTTP shall propose one recipient site. Recipient sites shall have the vegetative structure to support all life stages of desert tortoises. In addition to the USFWS Field Manual guidelines the DTTP shall also include identifying the known threats or potential causes of population decline, how potential threats have been or would be addressed, complete physical examination and health assessments with sample collection, age-structure and sex ratios, protocol level surveys, vegetation classification and quality of habitat. The DTTP shall detail which characteristics are to be used to decide if a recipient site is similar enough to a Project Area including burrow aspects, and recovery needs such as habitat restoration and/or predator control.

d. All tortoises >100 mm MCL removed off the Project Area shall be fitted with a transmitter and monitored for 5 years post translocation.

e. Recipient sites shall be a minimum of 4 miles (6.5 kilometers) away from highway/road right-of-way that does not include desert tortoise fencing.

f. All tortoise burrows within the Project Area shall be excavated following procedures outlined in the U. S. Fish and Wildlife Service Desert Tortoise Field Manual.

g. Creation of artificial burrows, as well as translocation of tortoises and eggs shall only occur on land(s) (including Bureau of Land Management), when written authorization has been obtained from the landowner prior to the start of Covered Activities. The written permission from the landowner shall be included in the DTTP and the DTTP shall not be approved by CDFW until authorization is provided in writing. If creation of artificial burrows or translocation of tortoise or eggs is proposed to take place on private lands then in addition to written approval required above, some form of protection for the land such as a conservation easement shall be in place prior to translocation occurring.

h. Cleaning and Disinfection Protocol. Trifectant and Rescue Ready to Use One Step Disinfectant Cleaner are the only products authorized under this ITP and its associated DTTP to be used as a disinfectant. These products are not authorized to be applied using a spray bottle or other spray methods.

i. Cleaning and Disinfection Protocol shall include the following:

ii. Remove all grossly visible debris.

iii. Wash the area or item with water and mild detergent.

iv. Thoroughly rinse the cleaned area to remove any detergent residue.

v. Allow the area to dry completely.

vi. Apply disinfectant mixture.

vii. Allow the full disinfectant product recommended contact time.

viii. Thoroughly rinse away any residual disinfectant and allow the area or item to air dry.

10. Ambient Air Temperatures. During all handling procedures, desert tortoise shall be treated in a manner to ensure that they do not overheat or exhibit signs of overheating (e.g., gaping, foaming at the mouth, etc.), or are placed in a situation where they cannot maintain surface and core temperatures necessary to their well-being. Tortoises shall be kept shaded at all times until it is safe to release them. For the purposes of this permit, ambient air temperature shall be measured in the shade, protected from wind, at a height of 5 centimeters above the ground surface. For all Covered Activities no desert tortoise shall be captured, moved, transported, released, or purposefully caused to leave its burrow for whatever reason when the ambient air temperature is above 95° Fahrenheit (F) (35° Celsius (C)). No desert tortoise shall be captured if the ambient air temperature is anticipated to exceed 95° F (35° C) before handling or processing can be completed. If the ambient air temperature exceeds 95° F (35° C) during handling or processing, desert tortoises shall be kept shaded in an environment that does not exceed 95° F (35° C), and not released until ambient air temperature declines to below 95°F (35°C). Desert tortoises moved during the less active season (June 1 to August 31 and November 1 to March 31) shall be monitored by the DT Authorized Biologist(s) for at least two days after placement in the new burrows to ensure their safety. During relocation, the DT Authorized Biologist(s) may hold a captured desert tortoise overnight and move them the following morning within these temperature constraints.

11. Desert Tortoise Rehydration. If a desert tortoise voids its bladder as a result of being handled, the Authorized Biologist(s) shall rehydrate the animal(s). The Authorized Biologist(s) shall rehydrate the desert tortoise at the location where the animal(s) was or were captured, or the location where the animal(s) is or will be released. The Authorized Biologist(s) shall rehydrate

the desert tortoise by placing it in a tub with a clean plastic disposable liner. The Authorized Biologist(s) shall add water to the lined tub while ensuring that the water level is not higher than the lower jaw of the animal. The Authorized Biologist(s) shall rehydrate each desert tortoise individually for a minimum of 10 to 20 minutes. The DT Authorized Biologist(s) shall place the lined tub in a quiet protected area during rehydration.

12. Desert Tortoise Handling Records. The DT Authorized Biologist(s) and/or Biological Monitor(s) shall maintain a record of all desert tortoises handled. This information shall include: (1) the locations (narrative and maps) and dates of observation, including whether the individual(s) was found above ground or in a burrow; (2) ambient temperature when handled and released; (3) general condition and health of the individual(s), including injuries, state of healing, and whether the individual(s) voided its bladders; (4) identified diagnostic markings (i.e., identification numbers or marked marginal scutes); (5) location moved from and location moved to (using GPS technology), including information on any burrow (natural or artificial) utilized; (6) whether any eggs were discovered and relocated; (7) digital photographs of any desert tortoise and eggs handled; and (8) results of ongoing monitoring. The Designated Representative(s) shall provide the CPM, BLM, USFWS, and CDFW with the information listed above submitted in the quarterly reports during construction.

13. Desert Tortoise Guards. The design of desert tortoise guards shall include exit ramps, cleanouts, and temporary shelters or guards along the fence line. Guards shall be installed along the fence line of the project and designed to prevent entrapment with the proposed perimeter berms. Guard locations and design shall be provided to the CPM for approval and the BLM, USFWS, and CDFW for review and comment prior to starting Covered Activities.

14. Permanent Security Fencing with Attached Desert Tortoise Fencing. The permanent desert tortoise exclusion fencing shall be attached to the 6-foot-high standard chain link security fencing. This fencing shall be installed around the array fields, operation and maintenance facilities, warehouses, substations, switchyard, and interconnection facilities and will remain in place during operations except it may be removed in places where wildlife-friendly fencing may be implemented over a portion of the facility site. The fence shall be constructed according to Chapter 8 of the USFWS Field Manual, but if any tortoises <100mm MCL are translocated within 500 meters of the Project area, tortoise fencing shall be 16 gauge or heavier galvanized after welded wire with mesh opening of ½ inch horizontal by ½ inch vertical. The fence shall include the installation of shade structures along the outer fence perimeter placed at regular intervals. To prevent potential access at site access points, all gates would be installed with desert tortoise exclusion fencing affixed along the bottom portion of the gate structure. The fencing shall be constructed to allow desert kit fox access to the solar arrays while excluding desert tortoise. The fencing must be placed in a way to ensure that

desert tortoises do not get trapped between the fence line and the perimeter berms.

15. Permanent Security Fence Maintenance Inspection. The DT Authorized Biologist(s) and/or Biological Monitor(s) shall inspect the tortoise fencing during the Covered Activities, at the end of each workday during the construction period, monthly during O&M, and during major rainfall and high wind events within 24 hours to ensure desert tortoise is prohibited from entering the Project Area. If the fence is compromised, repairs shall be completed immediately, and clearance protocol level surveys shall be conducted as described in Section 4.
16. Vehicle Inspection. Workers shall inspect for desert tortoises under vehicles and equipment before the vehicles and equipment are moved. If a desert tortoise is present, the worker shall contact the DT Authorized Biologists(s) and/or Biological Monitor and wait for the tortoise to move unimpeded to a safe location or the DT Authorized Biologist(s) shall relocate the tortoise as described in the DTTP before moving vehicles and equipment.
17. Staging Area and Parking Area. The project owner shall enclose all staging and parking areas with desert tortoise exclusion fencing. All parked vehicles and equipment shall be inspected prior to being moved. If a desert tortoise is found within a staging or parking area the worker shall immediately contact the Authorized Biologist(s) and/or Biological Monitor. A designated biologist shall relocate the desert tortoise in accordance with the DTTP.
18. Raven Management and Reporting Plan. The Designated Biologist shall prepare and implement a Raven Management and Reporting Plan (Raven Plan) consistent with CDFW and USFWS raven management guidelines. The purpose of the Raven Plan shall be to minimize project-related predator subsidies (e.g. common ravens and coyotes) and prevent any increases in raven numbers or activity within desert tortoise habitat during construction and operation phases. The Plan shall address all project components and their potential effects on raven numbers and activity. The Raven Plan shall be reviewed and approved by CPM, in coordination with the CDFW and USFWS, prior to the start of site mobilization activities. The Raven Plan shall:

    a. Identify all potential project activities as well as structures, components, and other features that could provide predator subsidies or attractants. This includes but is not limited to: improperly managed food waste; road-killed animals; water storage facilities; pooled water from leaks, dust control, or wastewater; debris from brush and other vegetation clearing; as well perch or nest sites on project facilities and other infrastructure. As required by **BIO-7**, Item 18, all trash and food waste will be disposed of in secure, self-closing bins to prevent access by wildlife.

b. Describe specific management practices to avoid or minimize conditions that might increase raven numbers and predatory activities. This includes the following:

   i. Collect and dispose of animals killed on the site or project access roads to reduce food subsidies;

   ii. Water used for the project shall be applied to avoid puddling;

   iii. Inactive common raven nests will be removed in accordance with USFWS guidelines. If re-nesting occurs, further measures will be coordinated with the CPM, in coordination with CDFW and USFWS; and

   iv. Active nests will be reported to CPM, CDFW, and USFWS for consideration of egg-oiling or other authorized management measures.

c. The Designated Biologist and/or Biological Monitor shall oversee implementation of the Raven Plan.

d. The project owner shall contribute to the USFWS Regional Raven Management Program by making a one-time payment of $105 per acre of long-term or permanent project disturbance. Based on this calculation the Permittee shall provide a one-time payment at $105.00/acre for 1543.46 acres at $162,063.30 to the REAT account established with NFWF's Raven Management Plan fund. A minimum of 15 days prior to the start of Covered Activities these funds shall be provided to NFWF using appropriate deposit document and proof of paying this fee shall be provided to the CPM and CDFW within 24 hours after the funds have been provided to NFWF.

19. Erosion Control Materials. To minimize the risk of ensnaring and strangling desert tortoise and other wildlife, the project owner shall not use erosion control materials containing synthetic (e.g., plastic or nylon) monofilament netting. Geotextiles, fiber rolls, and other erosion control measures shall be made of loose-weave mesh, such as jute, coconut (coir) fiber, or other products without welded weaves. The project owner shall use erosion control materials composed entirely of natural-fiber biodegradable materials. Plastic "photodegradable" erosion control materials shall not be used.

20. Full-Time Monitoring. An Authorized Biologist(s) and/or Biological Monitor(s) shall be present during all project activities that occur outside a permanent fenced area during the construction period. The Authorized Biologist(s) and/or Biological Monitor(s) shall conduct compliance inspections a minimum of three times a day (once during the onset of the day's work, once mid-day, and once at the conclusion of that day's work) during construction within the fenced area. The Authorized Biologist(s) and/or Biological Monitor(s) shall conduct compliance inspections to: minimize incidental take of the desert tortoise; prevent unlawful take of species; check for compliance with all measures of this COC; check all exclusion zones; and ensure that signs, stakes, and fencing are intact, and that project activities are only occurring in

the project area. The Designated Representative or Authorized Biologist shall prepare daily written observation and inspection records summarizing oversight activities and compliance inspections, observations of desert tortoise and their sign, survey results, and monitoring activities required by this COC. During the operations and maintenance period of the project, an Authorized Biologist(s) shall be on-site to address any compliance-related issues.

21. Monitoring During Operation and Maintenance. Once all construction is complete any work being performed outside the exclusionary fencing shall have an Authorized Biologist(s) and/or Biological Monitor(s) on-site to monitor any ground-disturbing activities such as fence or berm repairs and during perimeter fence inspections for the term of this COC.
22. Desert Tortoise Injury. If a desert tortoise is injured as a result of project-related activities, the DT Authorized Biologist shall immediately take it to a CPM and CDFW approved wildlife rehabilitation or veterinary facility. The [project owner shall identify the facility before commencing site mobilization and shall bear any costs associated with the care or treatment of such injured desert tortoise. The project owner shall notify CPM, BLM, USFWS, and CDFW of the injury immediately by telephone and e-mail followed by a written incident report within 48 hours. The notification shall include the name of the facility where the animal was taken.
23. Reporting. A report documenting survey results, including surveyor name(s), date(s) of survey, location (with maps), weather conditions, and any observations or detections of desert tortoise or their sign will be prepared and submitted to the CPM, CDFW, and USFWS. In addition, a monitoring report that includes the location, description, and duration of the activities, any observations or detections of desert tortoise found during the surveys or project activities, and any relocation efforts will be provided during monthly and annual compliance reporting.
24. CNDDB Observations. The Authorized Biologist shall submit all observations of desert tortoises to CDFW's California Natural Diversity Database (CNDDB) within 60 calendar days of the observation and the Authorized Biologist shall include copies of the submitted forms with the next Quarterly Compliance Report.

Verification: The project owner shall submit a Desert Tortoise Translocation Plan (DTTP) 30 days prior to start of Covered Activities to the CPM for review and approval in consultation with the BLM, USFWS, and CDFW. The project owner shall submit the proposed annual survey plan 45 days prior to commencing the surveys to the CPM for review and approval and to the CDFW and USFWS for review and comment. The project owner shall submit the pre-construction survey reports to the CPM, CDFW, and USFWS no more than 45 days after each survey effort has been completed. The project owner shall submit the receipt of

payment to the USFWS Regional Raven Management Program and the CPM 14 days prior to site mobilization. A report documenting survey results shall be prepared and submitted to the CPM, CDFW, and USFWS within 14 days of completing the surveys.

BIO-16 Habitat Management Land Acquisition for Desert Tortoise To mitigate for impacts to desert tortoise the project owner shall fulfill the following requirements:

The project owner shall purchase 4,316.5 acres of desert tortoise mitigation or conservation bank credits, at a location within the Mojave Desert approved in advance by the CPM, in coordination with the BLM, USFWS, and CDFW, or shall provide for both the permanent protection and management of 4,316.5 acres of Habitat Management (HM) lands pursuant to Item 3 (Habitat Management Lands Acquisition and Protection) and the calculation and deposit of the management funds pursuant to Item 5 (Endowment Fund). The amount of mitigation required shall be calculated based on the project's final direct permanent and temporary loss of desert tortoise habitat, as approved by the CPM, in consultation with the USFWS, BLM, and CDFW.

The project owner shall provide detailed maps of all proposed work areas that have the potential to result in temporary or permanent impacts to desert tortoise habitat. This includes providing maps of work areas around each of the generation tie-line poles, access roads, retention basins, berms, staging areas, pull and tensioning sites, or other work areas. Maps, at an approved scale of all proposed temporary and permanent work areas shall be provided to the CPM and CDFW prior to any site mobilization. At the conclusion of construction, the project owner shall provide a true-up of any habitat that were subject to temporary or permanent impacts. Any areas subject to grading would be considered permanent.

The purchase of mitigation or conservation bank credits or permanent protection and funding for perpetual management of HM lands must be complete before starting project activities, or within 18 months of the date of the site mobilization, if Security is provided pursuant to the Security (Item 11) below for all uncompleted obligations.

1. Cost Estimates. For the purposes of determining the Security amount, it is estimated the cost for the CPM or its contractors to complete acquisition, protection, and perpetual management of the HM lands is as follows:
    a. Land acquisition costs for HM lands identified in the Item 3 (Habitat Management Lands Acquisition and Protection) below, estimated at $4,000/acre for 4,316.5 acres: $17,266,000.00. Land acquisition costs are estimated using local fair market current value per acre for lands with habitat values meeting mitigation requirements.

b. All other costs are necessary to review and acquire the land in fee title and record a conservation easement as described below in Item 3b. (Conservation Easement) below: $17,440.00.

c. Start-up costs for HM lands, including initial site protection and enhancement costs as described in the Item 3f (Start-up Activities) below, estimated at $2,000/acre for 4,316.5 acres: $8,633,000.00.

d. Interim management period funding as described in the Item 4 (Interim Management) (Initial and Capital)) below, estimated at $600.00/acre for 4,316.5 acres: $2,589,900.00.

e. Long-term management funding as described in the Item 5 (Endowment Fund) below, estimated at $3,100.00/acre for 4,316.5 acres: $13,381,150.00. Long-term management funding is estimated initially for the purpose of providing Security to ensure implementation of HM lands management.

f. Related transaction fees including but not limited to account set-up fees, administrative fees, title and documentation review and related title transactions, expenses incurred from other state agency reviews, and overhead related to transfer of HM lands to CDFW as described in the Item 10 (Reimburse CDFW), estimated at $6,000.00.

g. All costs associated with the CPM engaging an outside contractor to complete the mitigation tasks, including but not limited to acquisition, protection, and perpetual funding and management of the HM lands and restoration of temporarily disturbed habitat. These costs include but are not limited to the cost of issuing a request for proposals, transaction costs, contract administration costs, and costs associated with monitoring the contractor's work $75,000.00.

2. Mitigation Bank Credits. If the project owner elects to purchase credits to complete desert tortoise compensatory mitigation obligations, then project owner shall purchase 4,316.5 acres of Covered Species credits from a mitigation or conservation bank approved in advance by the CPM prior to initiating project activities, or no later than 18 months from the start of site mobilization, if Security is provided pursuant to Item 11 (Security) below. Prior to the purchase of credits, the project owner shall obtain CPM approval to ensure the mitigation or conservation bank is appropriate to compensate for the impacts of the project. The project owner shall submit to the CPM a copy of the Bill of Sale(s) and Payment Receipt prior to initiating site mobilization or within 18 months from start of site mobilization, if Security is provided.

3. Habitat Management Lands Acquisition and Protection. If the project owner elects to provide for the acquisition, permanent protection, and perpetual management of HM lands to complete compensatory mitigation obligations, then the project owner shall:

a. Fee Title. Transfer fee title of the HM lands to CDFW pursuant to terms approved in writing by CDFW. Alternatively, the CPM, in consultation with CDFW, may authorize a governmental entity, special district, non-profit organization, for-profit entity, person, or another entity to hold title to and manage the property provided that the district, organization, entity, or person meets the requirements of Government Code sections 65965-65968, as amended.

b. Conservation Easement. If CDFW does not hold fee title to the HM lands, CDFW shall act as grantee for a conservation easement over the HM lands or shall, in its sole discretion, approve a non-profit entity, public agency, or Native American tribe to act as grantee for a conservation easement over the HM lands provided that the entity, agency, or tribe meets the requirements of Civil Code section 815.3. If CDFW elects not to be named as the grantee for the conservation easement, CDFW shall be expressly named in the conservation easement as a third-party beneficiary. The project owner shall obtain written approval from the CPM, in coordination with CDFW, of any conservation easement before its execution or recordation. No conservation easement shall be approved by the CPM unless it complies with Civil Code sections 815-816, as amended, and Government Code sections 65965-65968, as amended and includes provisions expressly addressing Government Code sections 65966(j) and 65967(e). Because the "doctrine of merger" could invalidate the conservation interest, under no circumstances can the fee title owner of the HM lands serve as grantee for the conservation easement.

c. HM Lands Approval. The project owner shall obtain CPM written approval of the HM lands, in coordination with CDFW, before acquisition and/or transfer of the land by submitting, at least 90 days before acquisition and/or transfer of the HM lands, documentation identifying the land to be purchased or property interest conveyed to an approved entity as mitigation for the project's impacts on desert tortoise.

d. HM Lands Documentation. The project owner shall provide a recent preliminary title report, Phase I Environmental Site Assessment, and other necessary documents (please contact CPM for document list). All documents conveying HM lands and all conditions of title are subject to approval from the CPM; and if applicable, the Wildlife Conservation Board, and the Department of General Services.

e. Land Manager. Designate both an interim and long-term land manager, approved by the CPM, in consultation with the BLM, USFWS, and CDFW. The interim and long-term land managers may, but need not, be the same. The interim and/or long-term land managers may be the landowner or another party. The land manager shall prepare a draft management plan for CPM review and approval, in consultation with CDFW, and written approval as part of the HM lands acquisition process. The project owner

shall notify the CPM of any subsequent changes in the land manager within 30 days of the change. If CDFW will hold fee title to the mitigation land, CDFW will also act as both the interim and long-term land manager unless otherwise specified. The grantee for the conservation easement cannot serve as the interim or long-term manager without the express written authorization of the CPM, in consultation with BLM, USFWS, and CDFW.

f. Start-up Activities. Provide for the implementation of start-up activities, including the initial site protection and enhancement of HM lands, once the HM lands have been approved by the CPM. Start-up activities include, at a minimum: (1) conducting a baseline biological assessment and land survey report within four months of recording or transfer; (2) developing and transferring Geographic Information Systems (GIS) data if applicable; (3) establishing initial fencing; (4) conducting litter removal; (5) conducting initial habitat restoration or enhancement, if applicable; and (6) installing signage.

4. Interim Management (Initial and Capital). Provide for the interim management of the HM lands. The project owner shall ensure that the interim land manager implements the interim management of the HM lands as described in the final management plan and conservation easement approved by the CPM, in consultation with CDFW. The interim management period shall be a minimum of three years from the date of HM land acquisition and protection and full funding of the Endowment and includes expected management following start-up activities. Interim management period activities described in the final management plan shall include fence repair, continuing trash removal, site monitoring, and vegetation and invasive species management.

   The project owner shall either (1) provide Security to the CPM for the minimum of three years of interim management that the land owner, the project owner, or land manager agrees to manage and pay for at their own expense, (2) establish an escrow account with written instructions approved in advance in writing by the CPM to pay the land manager annually in advance, or (3) establish a short-term enhancement account with a CPM-approved entity for payment to the land manager.

5. Endowment Fund. If the project owner elects to provide for the acquisition, permanent protection, and perpetual management of HM lands to complete compensatory mitigation obligations, then the project owner shall ensure that the HM lands are perpetually managed, maintained, and monitored by the long-term land manager as described in this condition of certification, the conservation easement, and the final management plan approved by the CPM. After obtaining CPM approval, in consultation with CDFW, of the HM lands, the project owner shall provide long-term management funding for the perpetual management of the HM lands by establishing a long-term

management fund (Endowment). The Endowment is a sum of money, held in a CPM-approved (in consultation with CDFW) fund that is permanently restricted to paying the costs of long-term management and stewardship of the mitigation property for which the funds were set aside, which costs include the perpetual management, maintenance, monitoring, and other activities on the HM lands consistent with the condition of certification, the conservation easement, and the management plan required by Item 3e (Land Manager). Endowment as used in the Certification shall refer to the endowment deposit and all interest, dividends, other earnings, additions and appreciation thereon. The Endowment shall be governed by this license, Government Code sections 65965-65968, as amended, and Probate Code sections 18501-18510, as amended. After the interim management period, the project owner shall ensure that the designated long-term land manager implements the management and monitoring of the HM lands according to the final management plan. The long-term land manager shall be obligated to manage and monitor the HM lands in perpetuity to preserve their conservation values in accordance with this license, the conservation easement, and the final management plan. Such activities shall be funded through the Endowment.

6. Identify an Endowment Manager. The Endowment shall be held by the Endowment Manager, which shall be either the CEC and/or CDFW or another entity qualified pursuant to Government Code sections 65965-65968, as amended.

    a. The project owner shall submit to the CPM for review and approval, a written proposal that includes: (i) the name of the proposed Endowment Manager; (ii) whether the proposed Endowment Manager is a governmental entity, special district, nonprofit organization, community foundation, or congressionally chartered foundation; (iii) whether the proposed Endowment Manager holds the property or an interest in the property for conservation purposes as required by Government Code section 65968(b)(1) or, in the alternative, the basis for finding that the Project qualifies for an exception pursuant to Government Code section 65968(b)(2); and (iv) a copy of the proposed Endowment Manager's certification pursuant to Government Code section 65968(e).

7. Calculate the Endowment Funds Deposit. After obtaining CPM written approval, in consultation with CDFW, of the HM lands, long-term management plan, and Endowment Manager, the project owner shall prepare an endowment assessment (equivalent to a Property Analysis Record (PAR)) to calculate the amount of funding necessary to ensure the long-term management of the HM lands (Endowment Deposit Amount). Note that the endowment for the easement holder should not be included in this calculation. The project owner shall submit to the CPM, in consultation with CDFW, for review and approval the results of the endowment assessment before transferring funds to the Endowment Manager.

a. Capitalization Rate and Fees. The project owner shall obtain the capitalization rate from the selected Endowment Manager for use in calculating the endowment assessment and adjust for any additional administrative, periodic, or annual fees.

b. Endowment Buffers/Assumptions. The project owner shall include in the endowment assessment assumptions the following buffers for endowment establishment and use that will substantially ensure long-term viability and security of the Endowment:

c. 10 Percent Contingency. A 10 percent contingency shall be added to each endowment calculation to hedge against underestimation of the fund, unanticipated expenditures, inflation, or catastrophic events.

d. Three Years Delayed Spending. The endowment shall be established assuming spending will not occur for the first three years after full funding.

e. Non-annualized Expenses. For all large capital expenses to occur periodically but not annually such as fence replacement or well replacement, payments shall be withheld from the annual disbursement until the year of anticipated need or upon request to Endowment Manager and the CPM, in consultation with CDFW.

8. Transfer Long-term Endowment Funds. The project owner shall transfer the long-term endowment funds to the Endowment Manager upon the CPM's approval of the Endowment Deposit Amount identified above.

9. Management of the Endowment. The approved Endowment Manager may pool the Endowment with other endowments for the operation, management, and protection of HM lands for local populations of desert tortoise but shall maintain separate accounting for each Endowment. The Endowment Manager shall, at all times, hold and manage the Endowment in compliance with this Certification, Government Code sections 65965-65968, as amended, and Probate Code sections 18501-18510, as amended.

   Notwithstanding Probate Code sections 18501-18510, the Endowment Manager shall not make any disbursement from the Endowment that will result in expenditure of any portion of the principal of the endowment without the prior written approval of the CPM in its sole discretion. The project owner shall ensure that this requirement is included in any agreement of any kind governing the holding, investment, management, and/or disbursement of the Endowment funds.

   Notwithstanding Probate Code sections 18501-18510, if the CPM, in consultation with CDFW, determines in its sole discretion that an expenditure needs to be made from the Endowment to preserve the conservation values of the HM lands, the Endowment Manager shall process that expenditure in accordance with directions from the CPM. The Endowment Manager shall not

be liable for any shortfall in the Endowment resulting from the CPM's decision to make such an expenditure.

10. Reimburse CDFW. The project owner shall reimburse CDFW for all reasonable costs incurred by CDFW related to transfer of the HM lands to CDFW, if applicable, including, but not limited to transaction fees, account set-up fees, administrative fees, title and documentation review and related title transactions, costs incurred from other state agency reviews, and overhead related to transfer of HM lands to CDFW.

11. Security: The project owner may proceed with project activities only after the project owner has ensured the funding (Security) to complete any activity required by the Item 3 (Habitat Management Land Acquisition and Protection) that has not been completed before project activities begin. Permittee shall provide Security as follows:

    a. Security Amount. The Security shall be in the amount of $41,968,490.00 or in the amount identified in the Item 1 (Cost Estimates) specific to the obligation that has not been completed. This amount is determined by the CPM and is based on cost estimates which are sufficient for the CEC or its contractors to complete land acquisition, property enhancement, startup costs, initial management, long-term management, and monitoring.

    b. Security Form. The Security shall be in the form of an irrevocable letter of credit or another form of Security approved in advance in writing by the CPM, in consultation with CDFW.

    c. Security Timeline. The Security shall be provided to the CPM before starting site mobilization.

    d. Security Holder. The Security shall be held by the CPM or in a manner approved in advance in writing by the CPM.

    e. Security Transmittal. The project owner shall transmit security to the CPM by way of an approved instrument such as an escrow agreement, irrevocable letter of credit, or other.

    f. Security Drawing. The Security shall allow the CPM to draw on the principal sum if the CPM, in its sole discretion, determines that the project owner has failed to comply with this Condition of Certification.

    g. Security Release. The Security (or any portion of the Security then remaining) shall be released to the project owner after the CPM has conducted an on-site inspection and received confirmation that all secured requirements have been satisfied, as evidenced by either:

        i. Copy of Bill of Sale(s) and Payment Receipt(s) or Credit Transfer Agreement for the purchase of Crotch's bumble bee and/or western burrowing owl credits. OR

        ii. Written documentation of the acquisition of the HM lands.

iii. Copies of all executed and recorded conservation easements.

iv. Written confirmation from the approved Endowment Manager of its receipt of the full Endowment.

12. Additional Funding. The CPM, in consultation with BLM, USFWS, and CDFW, may require the project owner to provide additional HM lands and additional funding to ensure the impacts of the taking are minimized and fully mitigated, as required by law, if the project owner does not complete these requirements within the specified timeframe.

Verification: The project owner shall provide verification that the required acquisition, protection and transfer of all HM lands and record any required conservation easements no later than 18 months from the date of start of site mobilization, even if a security is provided. The project owner shall provide the Draft Management Plan to the CPM for review and approval and to CDFW for review and comment no later than 60 days prior to construction. The project owner shall submit the Final Management Plan to the CPM and CDFW no later than 7 days prior to construction.

BIO-17 Special-Status Reptile Avoidance and Minimization Measures The Designated Biologist(s) and/or Biological Monitor(s) shall conduct pre-construction surveys for Mojave fringe-toed lizards. Surveys shall be conducted by qualified biologists, approved by the CPM pursuant to **BIO-1** and **BIO-3**.

1. Surveys. Prior to ground-disturbing or vegetation removal activities, including during site mobilization and construction, the Designated Biologist(s) and/or Biological Monitor(s) shall conduct focused surveys for Mojave fringe-toed lizards within 300 feet of any habitat that has the potential to support fine aeolian sand deposits. Surveys shall be conducted when soil and air temperatures are suitable for the detection of this species. Prior to conducting the surveys, the project owner shall submit an annual survey plan shall be submitted to the CPM for review and approval identifying proposed survey areas.

   One week prior to any ground disturbance and within 24 hours of beginning work within 300-feet of suitable habitat, the Designated Biologist and/or Biological Monitor(s) shall conduct surveys for these species, unless an alternate timeframe is approved by the CPM. Survey methods shall include visual methods of searching for tracks and tail drags and gently raking in soft friable soils or other methods approved by the CPM. In survey areas adjacent to suitable habitat the biologists shall search for dispersing animals in vegetation and at the base of small shrubs. A map of proposed survey areas shall be provided to the CPM for review and approval prior to initiating the surveys.

2. If Detected. If detected the Designated Biologist(s) and/or Biological Monitor(s) shall remain in the work area throughout the duration of any activities that could result in impacts to the animal. If it is not possible to allow the animal to leave the work area on its own, the Designated Biologist(s) and/or Biological Monitor(s) shall relocate it to the nearest suitable habitat out of harm's way.
3. Notification. The project owner or Designated Biologist(s) shall notify the CPM and CDFW within 24-hours if detected and include this information in Monthly Compliance Reports.
4. Release Locations Criteria. Prior to capturing or relocating Mojave fringe-toed lizards, the most appropriate release location(s) shall be determined in adjacent habitat as close as possible to the capture point.
5. Mortality or Serious Injury. If the cumulative mortality or serious injury (i.e., compromising survival in the wild) across the entire project area during relocation activities exceeds more than three animals, the Designated Biologist(s) shall notify the CPM, BLM, and CDFW within 24 hours and evaluate if a different method should be utilized or if additional measures are required.
6. Reporting. A report documenting survey results, including surveyor name(s), date(s) of survey, location (with maps), weather conditions, and any observations or detections of Mojave fringe-toed lizards shall be prepared and submitted to the CPM, BLM, and CDFW. In addition, a monitoring report that includes the location, description, and duration of the activities, any observations or detections of Mojave fringe-toed lizards found during the surveys or project activities, and any relocation efforts shall be provided during monthly and annual compliance reporting.

Verification: The project owner shall submit the proposed annual survey plan 60 days prior to commencing the surveys to the CPM for review and approval and to the CDFW for review and comment. The project owner shall provide the final plan to the CPM at least 10 days prior to the start of any site mobilization. The project owner shall submit the pre-construction survey reports to the CPM and CDFW within seven days of completing the surveys.

BIO-18 Nesting Bird Avoidance and Minimization Measures The project owner shall prepare and implement a Nesting Bird Management Plan (NBMP) in coordination with the Designated Biologist and submit to the CPM for review and approval. The project owner shall submit the resumes of avian monitors under **BIO-1** and/or **BIO-3** prior to site mobilization and/or construction, if these activities are planned to occur during the breeding season. The NBMP shall describe methods to minimize potential project effects to nesting birds. Where scheduling allows the project owner shall clear or remove any vegetation,

conduct site preparation in open or barren areas, or other project-related activities that may adversely affect breeding birds outside the nesting season.

Pre-construction nest surveys shall be conducted during the breeding season for local and migratory birds and will be timed to account for seasonal variation that occurs in the Mojave Desert (January 1 to August 31 for raptors and March 1 to August 31 for other species).

1. Survey Requirements. Surveys shall cover all potential nesting habitat and substrates within the project area and areas surrounding the project area within 500 feet of the project boundary for sensitive passerines (thrashers and shrikes) and raptors and within 2-mile line of sight for eagles, unless otherwise prohibited due to legal access or safety issues, upon approval from the CPM. Surveys shall include protocol methods for thrashers as identified by the Desert Thrasher Working Group and include multiple surveys using a callback recording unless otherwise authorized by the CPM. The NBMP shall describe each of the survey methodologies proposed to ensure that common and special status birds (except for western burrowing owls addressed in COC **BIO-20**) that have the potential to occur in the project area are detected. Surveys shall be repeated during all phases of site mobilization through construction.
2. Survey Schedules. At least two pre-construction surveys shall be conducted, separated by a minimum 10-day interval. Pre-construction surveys shall be conducted no more than 14 days prior to initiation of construction activity. One survey needs to be conducted within the 3-day period preceding initiation of site mobilization, brush clearing, ground disturbance, or construction activity. Surveys shall be repeated throughout site mobilization and construction phases to ensure that birds are not nesting on equipment or have moved into an area after the initial vegetation clearance has been completed.
3. Nest and Avian Monitoring and Surveys During Construction. Additional follow-up surveys shall be required if periods of construction inactivity exceed three weeks during January 1 through August 31 in any given area, an interval during which birds may establish a nesting territory and initiate egg laying and incubation.
4. Nest Detection. If active nests are detected during surveys, a no-disturbance buffer zone (protected area surrounding the nest) shall be established around each nest. Fencing and/or flagging will be used to delineate the no-activity zone. To minimize the potential to affect the reproductive success of the nesting pair, the extent of the no-activity zone shall be based several factors, including the distance of the activity to the nest, the type and extent of the proposed activity, the duration and timing of the activity, the sensitivity and habituation of the species, and the dissimilarity of the proposed activity to background activities. The no-activities zone shall be large enough to avoid

nest abandonment. Specific buffers shall also be proposed for any shrike caches should they be detected during construction.

The NBMP shall define species-specific or guild-specific default buffers to be applied if an active nest is encountered. These buffer distances shall be reviewed and approved by the CPM, in consultation with CDFW. The default buffers may be modified in the NBMP, with CPM approval. For special-status species, if an active nest is identified, the size of each buffer zone shall be determined by the Designated Biologist in consultation with the CPM (or as described in conditions of certification specific for those species). Nest locations shall be mapped using GPS technology.

The plan shall include a table outlining default buffer distances for specific avian groups during construction, detailing the avian groups, species potentially nesting within the project limits and survey area, and corresponding horizontal buffer distances based on disturbance level (DL) in feet, unless alternative table format is approved by the CPM. Typical default buffer distances are 500 feet for most raptors and 250 feet for most passerines, as well as other species or guild-specific buffers.

Nest buffers shall be delineated using the following process:

- Upon discovery of an active nest the default buffer identified in the NBMP shall be applied.
- The Designated Biologist(s) and/or Biological Monitor(s) with avian experience may adjust the buffer based on nest location characteristics (e.g. natural barriers), type and extent of project disturbance, and observed bird behavior. The nest buffer will be sufficiently large to avoid disturbance to the nesting birds and based on the default buffers included in the approved NBMP.
- Nest buffer reductions for special status species shall be requested in writing via email to the CPM for review and approval.

5. Active Nest Protection. If active nests are detected during the survey, the Designated Biologist(s) or Biological Monitor(s) shall monitor all nests with buffers at least once per week, to determine whether birds are being disturbed. If signs of disturbance or distress are observed, the Designated Biologist(s) or Biological Monitor(s) shall immediately implement adaptive measures to reduce disturbance, in coordination with the CPM. These measures could include, but are not limited to, increasing buffer size, halting disruptive construction activities in the vicinity of the nest until fledging is confirmed, or placement of visual screens or sound dampening structures between the nest and construction activity. The Designated Biologist(s) or Biological Monitor(s) shall monitor the nest until it is determined that nestlings have fledged and dispersed or the nest is no longer active. Activities that might, in the opinion of the Designated Biologist(s) or Biological Monitor,

disturb nesting activities (e.g., exposure to exhaust), shall be prohibited within the buffer zone until such a determination is made. Any nest buffer reduction would require full time monitoring if reduced from the levels identified in the approved NBMP.

6. NBMP Content. The NBMP shall include:
   a. definitions of default nest avoidance buffers for each species or group of species, depending on characteristics and conservation status for each species and the nature of planned project activities in the vicinity;
   b. a notification procedure for buffer distance reductions should they become necessary;
   c. a pre-construction survey protocol (surveys no longer than 3 days prior to starting work activity at any site);
   d. a monitoring protocol, to be implemented until adjacent construction activities are completed or the nest is no longer active, including qualifications of monitors, monitoring schedule, and field methods, to ensure that any project-related effects to nesting birds shall be minimized;
   e. a protocol for documenting and reporting any inadvertent contact with or effects to birds or nests;
   f. Specify the responsibilities of construction workers and site personnel with regard to nests and nest issues and specify a direct communication protocol to the Biological Monitor and/or Designated Biologist;
   g. Specify a procedure to be implemented following accidental disturbance of nests, including wildlife rehabilitation options; and
   h. Specify a procedure for removal of inactive nests, including verification that the nest is inactive and a notification/approval process.

   The NBMP will be applicable throughout the nesting season (from January 1 through August 31).

7. Nest deterrents. The NBMP shall describe any proposed measures or deterrents to prevent or reduce bird nesting activity on project equipment or facilities, such as buoys, visual or auditory hazing devices, bird repellents, securing of materials, and netting of materials, vehicles, and equipment.

   It shall also include timing for installation of nest deterrents and field confirmation to prevent effects to any active nest; guidance for the contractor to install, maintain, and remove nest deterrents according to product specifications; and periodic monitoring of nest deterrents to ensure proper installation and functioning and prevent injury or entrapment of birds or other animals.

If an active nest is located on project facilities, materials or equipment, the project owner shall avoid disturbance or use of the facilities, materials or equipment (e.g., by red-tag) until the nest is no longer active.

8. Nest Start Removal. Prior to removing any suitable nesting habitat, preconstruction nesting bird surveys should inform as to where existing raptor nests, and other special status bird nests, occur throughout the project area. The locations of existing special status bird nests within the habitat removal footprint shall be recorded and mapped by a qualified biologist. Such nests shall be removed outside of the nesting bird season.

   Due to the potential for nest building during active construction, a biological monitor shall be employed for the duration of project construction to regularly inspect for nest building attempts that may occur on/within construction equipment and/or within an area of active construction disturbance.

   In the event nest building is detected, the biologist shall deter birds from nesting using non-invasive methods to modify the circumstances. In the event a nest is built, and eggs are laid, the nest shall be considered active nest and shall be avoided. This may include placing a buffer around a piece of equipment or closing off a work area until the nest has fledged. This measure shall not be employed for state or federal special status species.

9. Accidental Nest Disturbance. The NBMP shall specify a procedure to be implemented following accidental disturbance of nests, including wildlife rehabilitation options. It also shall describe any proposed measures, and applicable circumstances, to prevent take of precocial young of ground-nesting birds such as killdeer or quail. The project owner shall identify an appropriate wildlife care facility before starting site mobilization. The location of the care facility shall be provided to the CPM prior to site mobilization. The project owner shall bear any costs associated with the care or treatment of project related injured birds. The project owner shall provide a letter report detailing the outcome of the care to the CPM.

10. Reporting. Throughout the construction phase of the project, nest locations, project activities in the vicinity of nests (including helicopter traces), and any adjustments to buffer areas shall be updated and available to the CPM, weekly or other CPM-approved timeframe. All buffer reduction notifications and prompt notifications of nest-related non-compliance and corrective actions will be made via email to the CPM.

    The draft NBMP shall include a proposed format for regular reporting (e.g., spreadsheet available online, tracking each nest). In addition, the NBMP shall specify the format and content of nest data to be provided in regular monitoring and compliance reports. At the end of each year's nest season, the project owner shall submit an annual NBMP report to the CPM and CDFW.

Specific contents and format of the annual report will be reviewed and approved by the CPM in consultation with CDFW.

Verification: The project owner shall prepare and implement a NBMP in coordination with the Designated Biologist and submit to the CPM for review and approval no less than 45 days prior to site mobilization. At the end of each year's nest season, the project owner shall submit an annual NBMP report to the CPM and CDFW no more than 30 days after the end of the nesting season. The project owner shall submit pre-construction survey reports to the CPM and CDFW no more than 30 days after each survey effort has been completed. The project owner shall provide a letter report detailing the outcome of the care of any injured birds or nest failures to the CPM and the CDFW within 14 days of the incident.

BIO-19 Bird and Bat Conservation Plan The project owner shall prepare and implement a Bird and Bat Conservation Plan (BBCP) in coordination with the Designated Biologist and submit to the CPM for review and approval. The BBCP shall be based on the USFWS Region 8 Interim Guidelines for the Development of a Project-specific Avian and Bat Protection Plan for Solar Energy Plants and Related Transmission Facilities and describe methods to monitor avian and bat mortality at the project area and implement adaptive management should collision risk to birds and bats exceed threshold limits. Plan requirements shall include:

1. Baseline Data Collection for Birds and Bats. A description of the baseline and ongoing avian and bat survey methods, including identification of onsite survey locations and seasonal survey considerations, and a description of acoustic bat monitoring methods.
2. Post Construction Monitoring. For the period of 5 years the project owner shall conduct carcass searches for birds and bats.
    a. The BBCP shall describe monitoring of representative locations in the facility at a level that accounts for potential spatial bias and allows for the extrapolation of survey results to non-surveyed areas.
    b. Include low-visibility and high-wind weather event monitoring to document potential weather-related collision risks that may be associated with increased risk of avian or bat collisions with project features, including foggy, highly overcast, or rainy night-time weather typically associated with an advancing frontal system, and high wind events (40-mph winds) are sustained for period of greater than 4 hours. The monitoring report shall include survey frequency, locations, and methods.
    c. Scavenger and searcher efficiency trials to document the extent to which avian or bat fatalities remain visible over time and can be detected, and to adjust the survey timing and survey results to reflect scavenger and searcher efficiency rates.

d. Provide a description of the statistical methods used to generate facility estimates of potential avian and bat impacts based on the number of detections during standardized searches during the monitoring season for which the cause of death can be determined.

e. Include field detection and mortality or injury identification, cause attribution, handling and reporting requirements. The BBCP shall include detailed specifications on data collection and provide a carcass collection protocol.

3. Description of Avoidance and Minimization Measures. Include a description of what existing measures are proposed to reduce the risk of bat and avian collisions.

4. Adaptive Management and Avian Mortality Thresholds. The BBCP shall include an adaptive management program to identify and implement reasonable and feasible measures that would reduce levels of avian or bat mortality or injury attributable to project operations and facilities. Such measures would include efforts to make panels more visible to birds (e.g., white borders around panel edges, the use of noise or aerial deterrents, or other feasible measures developed in coordination with the CPM, BLM, CDFW, and USFWS). The Plan shall include thresholds by species risk with an emphasis on threatened, endangered, proposed, or candidate species.

   Adaptive management shall be required if mortality exceeds more than 5 birds per MW per year (all species combined), any mortality of a threatened, endangered, proposed, or candidate species, or fully protected species such as golden eagles or Ridgeways rail, more than 3 bats per MW year, and any seasonal or weather spikes that result in mortality events twice the seasonal average.

5. Reporting. The draft BBCP shall include a proposed format for regular reporting (e.g., spreadsheet available online, tracking each nest). In addition, the BBCP shall specify the format and content of nest data to be provided in regular monitoring and compliance reports. At the end of each year's nest season, the project owner shall submit an annual NBMP report to the CPM and CDFW. Specific contents and format of the annual report will be reviewed and approved by the CPM in consultation with CDFW. The project owner shall report any mortality of a threatened, endangered, proposed, or candidate species, or fully protected species such as golden eagles or Ridgeways rail to the CPM within 24 hours followed by a written notification within 1 week. Any mortality exceedances shall be provided to the CPM in writing within 1 week.

Verification: The BBCP shall be provided to the CPM for review and approval and to CDFW for review and comment 60 days prior to construction. The project owner shall provide the final plan to the CPM at least 10 days prior to the start of construction.

BIO-20 Burrowing Owl Impact Avoidance, Minimization, and Mitigation Measures The project owner shall implement the following measures to avoid, minimize and offset impacts to breeding and foraging burrowing owls during site mobilization, construction, operation, and decommissioning:

1. Burrowing Owl Mortality Reduction Plan. The project owner shall submit a Burrowing Owl Mortality Reduction Plan prepared by the Designated Biologist(s) (s) for review and approval to the CPM, and CDFW for review and comment, prior to beginning any project activities including site mobilization, surveying, fencing, or ground disturbance. Burrow exclusion, burrow excavation, artificial burrow construction, and other relocation activities shall not proceed until this plan has been approved in writing by the CPM in coordination with the CDFW.

   The Burrowing Owl Mortality Reduction Plan shall include, but not be limited to detailed description of survey methodology; detailed burrow exclusion and excavation methods; project activities that may be performed within burrowing owl avoidance buffers; identification of a wildlife rehabilitation center or veterinary facility capable of and willing to treat injured burrowing owl or care for at-risk burrowing owl, burrowing owl eggs, and/or burrowing owl chicks; and procedure for collection and storage of burrowing owl carcasses. Only CPM approved Designated Biologist(s)), or personnel following directions from and under the supervision of the Designated Biologist(s), are authorized to handle and transport injured burrowing owl for treatment or impacted burrowing owl eggs for salvage. All other burrowing owl handling is prohibited.

   Once the Burrowing Owl Mortality Reduction Plan is approved in writing by the CPM, it shall be used for the duration of the project unless updated by request of the CPM to reflect best available science, or to update mitigation and conservation strategies. If any updates are required, the CPM will contact the project owner to discuss potential updates. Any proposed changes to the Burrowing Owl Mortality Reduction Plan shall be submitted, in writing, to the CPM for review and approval and the CDFW for review and comment in writing prior to the implementation of any proposed modifications.

2. Burrowing Owl Burrow Replacement Plan. The project owner shall replace each known burrowing owl burrow (as defined below under Burrow Avoidance) that cannot be avoided within the project area with an artificial burrow to compensate for the loss of important shelter used by BUOW for protection, reproduction, and escape from predators. The project owner shall submit a Burrowing Owl Burrow Replacement Plan prepared by an approved Designated Biologist(s) to the CPM. Implementation of the Burrowing Owl Burrow Replacement Plan shall not proceed until this plan has been approved in writing by the CPM in coordination with the CDFW. The Burrowing Owl Burrow Replacement Plan shall include, but not be limited to: a discussion

and map of potential artificial burrow replacement locations; description of the replacement burrow design and dimensions (e.g., depth and width of burrow, width of burrow entrance, orientation of burrow entrance, number and placement of entrances to natal burrows); artificial burrow installation methods; long-term artificial burrow protection and maintenance methods; and timing of BUOW burrow installation/construction.

Once the burrowing owl Burrow Replacement Plan is approved in writing by the CPM, it shall be used for the duration of the project unless it is updated by the CPM to reflect best available science, or to update mitigation and conservation strategies in which case the CPM will contact the project owner to discuss needed updates. If any updates are required, the CPM will contact the project owner to discuss potential updates. Any proposed changes to the Burrowing Owl Mortality Reduction Plan shall be submitted, in writing, to the CPM for review and approval and the CDFW for review and concurrence in writing prior to the implementation of any proposed modifications.

3. Burrowing Owl Pre-Construction Nesting Surveys and Reporting. The Designated Biologist with support from Biological Monitor(s) shall conduct preconstruction surveys for burrowing owls to identify potential, known, and/or nesting burrowing owl burrows. A potential burrowing owl burrow is any subterranean hole three inches or larger for which no evidence is present to conclude that the burrow is being used or any past use by a burrowing owl; a known burrowing owl burrow is a burrow that shows evidence the burrow is being used, known to have been used, or past use by a burrowing owl, or an "atypical" burrow (e.g., a pipe, culvert, buckled concrete, etc.) showing signs of occupancy (e.g. burrowing owl presence, whitewash, pellets, prey remains, etc.); and a nesting burrowing owl burrow is used for nesting (e.g. known burrowing owl burrow indications of the presence of eggs, chicks, dependent young, and/or brooding or egg incubation. The survey area shall include the project disturbance area and surrounding 300-meter survey buffer, as accessible.

   If surveys detect burrowing owls within 1,600 feet of proposed construction activities, based on four consecutive 24-hour periods of monitoring with infrared camera, the Designated Biologist shall provide to the CPM documentation indicating that non-disturbance buffer fencing has been installed no less than 10 days prior to the start of any project-related site disturbance activities. The documentation shall include information as specified in Items 4 and 5, or as otherwise requested by the CPM.

4. Burrow Map. The Designated Biologist(s)shall provide a Keyhole Markup Language (KMZ) map and GIS shapefiles to the CPM of all burrowing owl burrows found during the surveys conducted during the surveys required under Item 3 requirements (Burrowing Owl Pre-Construction Surveys and Reporting). The map shall show the details and locations of all burrowing owl

sightings and potential, known, and nesting burrowing owl burrows as defined in the Burrowing Owl Burrow Avoidance section. The map shall include an outline of the project area, and any distinct work area(s) surveyed within the project area, title, north arrow, scale bar, and legend.

If an active burrow is confirmed during the surveys the project owner shall notify the CPM and CDFW within 48 hours. In coordination with the Designated Biologist(s), CPM and CDFW, a 1,600-foot line of sight disturbance-free buffer shall be established and demarcated by fencing or flagging and placed on project maps. This buffer may be adjusted as determined by a qualified avian biologist in coordination with the CPM and CDFW. Nest locations shall be mapped using GPS technology and provided the CPM.

5. BUOW Burrow Avoidance. The Designated Biologist, shall establish no-disturbance buffer zones around potential, known and nesting burrowing owl burrows according to the following guidelines:

   a. If a potential burrowing owl burrow (any subterranean hole three inches or larger for which no evidence is present to conclude that the burrow is being used or any past use by a burrowing owl) is discovered, the Designated Biologist shall establish a minimum 50-foot no-disturbance buffer around the burrow.

   b. If a known burrowing owl burrow (a burrow that is known to have been used or shows evidence of current or past use) or an "atypical" burrow (e.g., a pipe, culvert, buckled concrete, etc.) showing signs of occupancy (e.g. burrowing owl presence, whitewash, pellets, prey remains, etc.) is discovered, the Designated Biologist(s) shall establish a minimum no-disturbance buffer of at least 100 feet around the burrow. A no-disturbance buffer of at least 1,600 feet shall be established around known burrowing owl burrows currently occupied by burrowing owl during the nesting season (typically February 1 to August 31 in this area). Nest buffer reductions are described below.

   c. If a nesting burrowing owl burrow (e.g. known burrowing owl burrow with indications of the presence of eggs, chicks, dependent young, and/or brooding or egg incubation) is discovered within or immediately adjacent to the project area, the project owner and/or Designated Biologist shall notify the CPM and CDFW immediately through email. A no-disturbance buffer of at least 1,600 feet shall be established around the nest burrow. A no-disturbance buffer of at least 1,600 feet shall be established around known burrowing owl burrows currently occupied by burrowing owl during the nesting season (February 1 to August 31).

      If burrowing owl burrows cannot be avoided as described above, then the project owner shall follow Item 6 (Burrowing Owl Burrow Blockage), Item 7 (Burrowing Owl Burrow Excavation), and Item 1 (Burrowing Owl

Mortality Reduction Plan), as appropriate. If the approved Designated Biologist determines burrowing owl are visibly stressed by project activities or by workers in the vicinity after these no-disturbance buffers the Designated Biologist shall immediately increase the non-disturbance buffer to a distance where the visible stress is no longer observed. The increased no-disturbance buffers will be reviewed and approved by the CPM, in coordination with CDFW, based on their behavioral observations of the affected burrowing owl.

The buffers prescribed above shall not be reduced or otherwise modified without prior written approval from the CPM, in coordination with the CDFW. If the approved Designated Biologist(s) determines that specific project activities are not likely to affect the burrowing owl using known or nesting burrowing owl burrows due to the nature of the specific project activities, or due to objects or topography that might reduce potential noise disturbance and obstruct view of the project activities from the nest, then the CPM approved Designated Biologist(s) may email a written request to the CPM to reduce the buffer distance with documented observational data (Buffer Reduction Request). The CPM will review each Buffer Reduction Request on a case-by-case basis and provide a determination in response to each Buffer Reduction Request in writing. The CPM may request additional and ongoing biological monitoring prior to approving a Buffer Reduction Request.

6. BUOW Burrow Blockage. If the CPM has approved the blockage of a known burrowing owl burrow, the Designated Biologist shall block rather than destroy any unoccupied known burrowing owl burrow located within the buffer distances limits prescribed in Item 5 (Burrowing Owl Burrow Avoidance), but outside the discrete work area(s) within the project area(s) where ground and vegetation disturbing project activities will be performed. Burrows (including burrows in natural substrate and in under man-made structures) may be blocked only immediately after the CPM-approved Designated Biologist(s) has conducted four consecutive 24-hour periods of monitoring with infrared camera and determined that burrowing owl is not currently present. Burrow blockage shall be done in a manner that prevents burrowing animals from digging back into the burrow. All blocked burrows shall be monitored by the approved Designated Biologist(s) and/or Biological Monitor(s) at least once every 48 hours while the blockage is in place to ensure that the exclusion material is still intact. If burrowing owl regains access to the burrow, the project owner or Designated Biologist shall contact the CPM immediately and obtain written guidance regarding how to proceed. All blocked burrows shall be unblocked within 48 hours of completion of construction activities within the prescribed buffer distance.
7. Burrowing Owl Burrow Excavation. The approved Designated Biologist(s), and/or Biological Monitor under direct supervision of the approved Designated

Biologist(s), shall excavate known or potential burrows that exhibit signs of current or past burrowing owl use or characteristics suggestive of a burrowing owl burrow (including burrows in natural substrate and in/under man-made structures) that cannot be avoided per guidance in Item 5 (Burrowing Owl Burrow Avoidance), that are within the project area. Burrows to be destroyed shall be fully excavated, filled with dirt, and compacted to ensure that burrowing owl cannot reenter or use the burrow during the period that project activities occur in the project area.

a. Excavation of known burrowing owl burrows shall only occur after the approved Designated Biologist(s) has determined that burrowing owl is not currently present after 4 consecutive 24-hour periods of monitoring with infrared cameras. If the excavation process reveals evidence of current use by burrowing owl, then burrow excavation shall cease immediately, and camera monitoring as described above shall be conducted or resumed as applicable. burrowing owl burrows shall be carefully excavated with hand tools, or by mechanical means if a specific methodology is approved in writing by the CPM, until it is clear no individuals of burrowing owl are inside.

b. Potential burrowing owl burrows without any signs of burrowing owl use or characteristics suggesting it is a burrowing owl burrow may be excavated under the direct supervision of the approved Designated Biologist(s) without prior camera monitoring.

c. Nesting burrowing owl burrows used for nesting shall not be excavated until biological and camera monitoring confirm that the chicks have fledged and are no longer dependent on the nest and then only after written concurrence from the CPM. An established burrowing owl burrow no-disturbance buffer may be removed once the burrow is collapsed and the burrowing owl (s) is/are no longer using the burrow.

8. Burrowing Owl Injury. If a burrowing owl is injured or found dead within the vicinity of the project area, project owner shall notify the CPM of the injury or mortality to the burrowing owl immediately by email. The Designated Biologist(s) shall follow the Burrowing Owl Mortality Reduction Plan to either immediately transport injured individuals to a CPM-approved wildlife rehabilitation center or veterinary facility or follow approved collection and storage procedures for deceased animals. The project owner shall bear any cost associated with care and recovery of any injured burrowing owl adults, nestling(s) or egg(s) and hacking (controlled release of captive reared young).

9. Burrowing Owl Observations and Notification. All workers shall be trained to identify burrowing owl and shall inform the approved Designated Biologist(s) if a burrowing owl is seen within or near the project area during implementation of any project activity. All work in the vicinity of the burrowing owl which could harm the individual, shall cease until the individual

moves from the project area of its own accord or the approved Designated Biologist(s) passively encourages the individual to move out of harm's way, in compliance with the timing and methods identified in the CPM-approved Burrowing Owl Mortality Reduction Plan.

10. Operation Activities Designated Biologist On-site. The approved Designated Biologist(s) shall be onsite during all ground and vegetation disturbing activities. The approved Designated Biologist(s) shall be on-site during all non-emergency ground and vegetation disturbing project activities performed at night. The approved Designated Biologist(s) shall ensure that the minimum amount of lighting is used to complete the activities and that lighting is directed away from active burrows to the maximum extent feasible.
11. Vehicle Parking (Site Mobilization, Construction and Operation). During site mobilization, construction, operation, and maintenance activities or while implementing burrowing owl take minimization measures, the project owner shall not allow vehicles to park on top of known or potential burrowing owl burrows. Vehicles left overnight shall not be located within 50 feet of known burrowing owl burrows. Workers shall inspect for burrowing owl under vehicles and equipment every time the vehicles and equipment are moved. If a burrowing owl is present, the worker shall wait for the burrowing owl to move unimpeded to a safe location. Alternatively, the approved Designated Biologist(s) shall be contacted to passively encourage the burrowing owl to move away from the vehicle or equipment, in compliance with the timing and methods identified in the Burrowing Owl Mortality Reduction Plan.
12. Pipes and Materials Inspection (Site Mobilization, Construction, Operation). The project owner shall ensure that all pipes or similar materials stockpiled or replaced in the project area are capped or otherwise enclosed at the ends to prevent entry by burrowing owl. The project owner shall ensure that any permanent pipes or similar materials or structures are left open where burrowing owl or other species may enter them and become trapped. The approved Designated Biologist(s) or Biological Monitor(s) shall thoroughly inspect all such materials for burrowing owl, before they are moved, buried, or capped. If a burrowing owl is discovered inside such material, that section of material shall not be moved until the animal has escaped of its own accord. Alternatively, the approved Designated Biologist may passively encourage the burrowing owl. to move away from the pipes, culverts, or similar structures, in compliance with the timing and methods identified in the Burrowing Owl Mortality Reduction Plan.
13. Ground and Vegetation Disturbing (Site Mobilization, Construction, and Operation). Burrowing Owl Pre-Construction Surveys and Reporting (Item 3) shall be implemented within 30 calendar days prior to commencing ground or vegetation disturbing activities during operation in each distinct work area(s) within the project area. If the approved Designated Biologist(s) identifies any potential, known, or nesting burrowing owl burrows, the burrow(s) shall be

monitored following the Burrowing Owl Burrow Blockage (Item 6) and Burrowing Owl Burrow Excavation (Item 7) as applicable, unless avoided per the Burrowing Owl Burrow Avoidance requirements (Item 5).

14. Burrowing Owl Observations (Operation). During operational activities within the project area, all workers shall inform the approved Designated Biologist if a burrowing owl is observed within or near the project area. All work in the vicinity of the burrowing owl, which could injure or kill the animal, shall cease immediately until the burrowing owl moves from the project area of its own accord or the approved Designated Biologist(s) passively encourages the individual to move out of harm's way, in compliance with the timing and methods identified in the approved Burrowing Owl Mortality Reduction Plan.
15. Burrowing Owl Injury (Operation). If a burrowing owl is injured or found dead within the vicinity of the project area, the project owner shall notify the CPM of the injury or mortality to the burrowing owl immediately. The approved Designated Biologist shall follow the approved Burrowing Owl Mortality Reduction Plan to either immediately transport injured individuals to a CDFW-approved wildlife rehabilitation center or veterinary facility or follow approved collection and storage procedures for deceased animals. The project owner shall bear any cost associated with care and recovery of any injured burrowing owl adults, nestling(s) or egg(s) and hacking (controlled release of captive reared young).

Verification: The Designated Biologist shall provide the preconstruction survey results to the CPM within 14 days of the completion of the survey. If surveys detect burrowing owls within 1,600 feet of proposed construction activities, the Designated Biologist shall provide the CPM documentation indicating that a non-disturbance buffer has been installed no less than 10 days prior to the start of any project-related site disturbance activities. The documentation shall include information as specified in Items 4 and 5, or as otherwise requested by the CPM.

If pre-construction surveys detect burrowing owls or active burrowing owl burrows within the project disturbance area, the project owner shall provide to the CPM a Burrowing Owl Mortality Reduction Plan prior to the start of activities (the measures described in the plan shall be incorporated into the BRMIMP and implemented.) The plan shall be for review and comment by the CPM and shall be submitted no less than 30 days prior to commencing site mobilization.

The project owner shall submit the Burrowing Owl Mortality Reduction Plan and Burrow Replacement Plan to the CPM for review and approval at least 30 days prior to initiation of site mobilization. Within 30 days of the conclusion of the construction period, the project owner shall submit a final Burrowing Owl Mitigation Implementation Report detailing location of all burrowing owl observed, take measures implemented, and their effectiveness.

During operations, the project owner shall include in the Annual Compliance Report an accounting of all burrowing owl documented on site, including copies of the Designated Biologist(s) and/or Biological Monitor(s) field notes, any buffer zones erected, maps, additional avoidance and minimization measures implemented, and their perceived effectiveness.

BIO-21 Habitat Management Land Acquisition for Burrowing Owl To mitigate for impacts to burrowing owl the project owner shall fulfill the following requirements:

The project owner shall purchase 3,724.34 acres of burrowing owl mitigation or conservation bank credits, at a location within the Mojave Desert approved in advance by the CPM, in coordination with the BLM, USFWS, and CDFW, or shall provide for both the permanent protection and management of 3,724.34 acres of Habitat Management (HM) lands pursuant to Item 3 (Habitat Management Lands Acquisition and Protection) and the calculation and deposit of the management funds pursuant to Item 5 (Endowment Fund). The amount of mitigation required shall be calculated based on the project's final direct permanent and temporary loss of desert tortoise habitat, as approved by the CPM, in consultation with USFWS, BLM, and CDFW.

The purchase of mitigation or conservation bank credits or permanent protection and funding for perpetual management of HM lands must be complete before starting project activities, or within 18 months of the date of the site mobilization, if Security is provided pursuant to the Security (Item 11) below for all uncompleted obligations.

1. Cost Estimates. For the purposes of determining the Security amount, it is estimated the cost for the CPM or its contractors to complete acquisition, protection, and perpetual management of the HM lands is as follows:
    a. Land acquisition costs for HM lands identified in the Item 3 (Habitat Management Lands Acquisition and Protection) below, estimated at $4,000.00/acre for 3,724.34 acres: $14,897,360.00. Land acquisition costs are estimated using local fair market current value per acre for lands with habitat values meeting mitigation requirements.
    b. All other costs are necessary to review and acquire the land in fee title and record a conservation easement as described below in Item 3b. (Conservation Easement) below: $17,440.00.
    c. Start-up costs for HM lands, including initial site protection and enhancement costs as described in the Item 3f (Start-up Activities) below, estimated at $2,000/acre for 3,724.34 acres: $7,488,680.00.
    d. Interim management period funding as described in the Item 4 (Interim Management) (Initial and Capital)) below, estimated at $2,000/acre for 3,798.36 acres: $7,488,680.00.

e. Long-term management funding as described in the Item 5 (Endowment Fund) below, estimated at $600.00/acre for 3,724.34 acres: $2,234,604.00. Long-term management funding is estimated initially for the purpose of providing Security to ensure implementation of HM lands management.

f. Related transaction fees including but not limited to account set-up fees, administrative fees, title and documentation review and related title transactions, expenses incurred from other state agency reviews, and overhead related to transfer of HM lands to CDFW as described in the Item 10 (Reimburse CDFW), estimated at $3,100.00/acre for 3,724.34 acres: $11,545,454.00.

g. All costs associated with the CPM engaging an outside contractor to complete the mitigation tasks, including but not limited to acquisition, protection, and perpetual funding and management of the HM lands and restoration of temporarily disturbed habitat. These costs include but are not limited to the cost of issuing a request for proposals, transaction costs, contract administration costs, and costs associated with monitoring the contractor's work $6,000.00.

2. Mitigation Bank Credits. If the project owner elects to purchase credits as approved by the approved mitigation bank to complete burrowing owl compensatory mitigation obligations, then project owner shall purchase 3,724.34 acres of burrowing owl credits from a mitigation or conservation bank approved in advance by the CPM prior to initiating project activities, or no later than 18 months from the start of site mobilization, if Security is provided pursuant to Item 11 (Security) below. Prior to the purchase of credits, the project owner shall obtain CPM approval to ensure the mitigation or conservation bank is appropriate to compensate for the impacts of the project. The project owner shall submit to the CPM a copy of the Bill of Sale(s) and Payment Receipt prior to initiating site mobilization or within 18 months from start of site mobilization, if Security is provided.

3. Habitat Management Lands Acquisition and Protection. If the project owner elects to provide for the acquisition, permanent protection, and perpetual management of HM lands to complete compensatory mitigation obligations, then the project owner shall:

   a. Fee Title. Transfer fee title of the HM lands to CDFW pursuant to terms approved in writing by CDFW. Alternatively, the CPM, in consultation with CDFW, may authorize a governmental entity, special district, non-profit organization, for-profit entity, person, or another entity to hold title to and manage the property provided that the district, organization, entity, or person meets the requirements of Government Code sections 65965-65968, as amended.

b. Conservation Easement. If CDFW does not hold fee title to the HM lands, CDFW shall act as grantee for a conservation easement over the HM lands or shall, in its sole discretion, approve a non-profit entity, public agency, or Native American tribe to act as grantee for a conservation easement over the HM lands provided that the entity, agency, or tribe meets the requirements of Civil Code section 815.3. If CDFW elects not to be named as the grantee for the conservation easement, CDFW shall be expressly named in the conservation easement as a third-party beneficiary. The project owner shall obtain written approval from the CPM, in coordination with CDFW, of any conservation easement before its execution or recordation. No conservation easement shall be approved by the CPM unless it complies with Civil Code sections 815-816, as amended, and Government Code sections 65965-65968, as amended and includes provisions expressly addressing Government Code sections 65966(j) and 65967(e). Because the "doctrine of merger" could invalidate the conservation interest, under no circumstances can the fee title owner of the HM lands serve as grantee for the conservation easement.

c. HM Lands Approval. The project owner shall obtain CPM written approval of the HM lands, in coordination with CDFW, before acquisition and/or transfer of the land by submitting, at least 90 days before acquisition and/or transfer of the HM lands, documentation identifying the land to be purchased or property interest conveyed to an approved entity as mitigation for the project's impacts on burrowing owl.

d. HM Lands Documentation. The project owner shall provide a recent preliminary title report, Phase I Environmental Site Assessment, and other necessary documents (please contact CPM for document list). All documents conveying HM lands and all conditions of title are subject to approval from the CPM; and if applicable, the Wildlife Conservation Board, and the Department of General Services.

e. Land Manager. Designate both an interim and long-term land manager, approved by the CPM, in consultation with the BLM, USFWS, and CDFW. The interim and long-term land managers may, but need not, be the same. The interim and/or long-term land managers may be the landowner or another party. The land manager shall prepare a draft management plan for CPM review and approval, in consultation with CDFW, and written approval as part of the HM lands acquisition process. The project owner shall notify the CPM of any subsequent changes in the land manager within 30 days of the change. If CDFW will hold fee title to the mitigation land, CDFW will also act as both the interim and long-term land manager unless otherwise specified. The grantee for the conservation easement cannot serve as the interim or long-term manager without the express written authorization of the CPM, in consultation with BLM, USFWS, and CDFW.

f. Start-up Activities. Provide for the implementation of start-up activities, including the initial site protection and enhancement of HM lands, once the HM lands have been approved by the CPM. Start-up activities include, at a minimum: (1) conducting a baseline biological assessment and land survey report within four months of recording or transfer; (2) developing and transferring Geographic Information Systems (GIS) data if applicable; (3) establishing initial fencing; (4) conducting litter removal; (5) conducting initial habitat restoration or enhancement, if applicable; and (6) installing signage.

4. Interim Management (Initial and Capital). Provide for the interim management of the HM lands. The project owner shall ensure that the interim land manager implements the interim management of the HM lands as described in the final management plan and conservation easement approved by the CPM, in consultation with CDFW. The interim management period shall be a minimum of three years from the date of HM land acquisition and protection and full funding of the Endowment and includes expected management following start-up activities. Interim management period activities described in the final management plan shall include fence repair, continuing trash removal, site monitoring, and vegetation and invasive species management.

   The project owner shall either (1) provide Security to the CPM for the minimum of three years of interim management that the land owner, the project owner, or land manager agrees to manage and pay for at their own expense, (2) establish an escrow account with written instructions approved in advance in writing by the CPM to pay the land manager annually in advance, or (3) establish a short-term enhancement account with a CPM-approved entity for payment to the land manager.

5. Endowment Fund. If the project owner elects to provide for the acquisition, permanent protection, and perpetual management of HM lands to complete compensatory mitigation obligations, then the project owner shall ensure that the HM lands are perpetually managed, maintained, and monitored by the long-term land manager as described in this condition of certification, the conservation easement, and the final management plan approved by the CPM. After obtaining CPM approval, in consultation with CDFW, of the HM lands, the project owner shall provide long-term management funding for the perpetual management of the HM lands by establishing a long-term management fund (Endowment). The Endowment is a sum of money, held in a CPM-approved (in consultation with CDFW) fund that is permanently restricted to paying the costs of long-term management and stewardship of the mitigation property for which the funds were set aside, which costs include the perpetual management, maintenance, monitoring, and other activities on the HM lands consistent with the condition of certification, the conservation easement, and the management plan required by Item 3e (Land

Manager). Endowment as used in the Certification shall refer to the endowment deposit and all interest, dividends, other earnings, additions and appreciation thereon. The Endowment shall be governed by this license, Government Code sections 65965-65968, as amended, and Probate Code sections 18501-18510, as amended. After the interim management period, the project owner shall ensure that the designated long-term land manager implements the management and monitoring of the HM lands according to the final management plan. The long-term land manager shall be obligated to manage and monitor the HM lands in perpetuity to preserve their conservation values in accordance with this license, the conservation easement, and the final management plan. Such activities shall be funded through the Endowment.

6. Identify an Endowment Manager. The Endowment shall be held by the Endowment Manager, which shall be either the CEC and/or CDFW or another entity qualified pursuant to Government Code sections 65965-65968, as amended.

    a. The project owner shall submit to the CPM for review and approval, a written proposal that includes: (i) the name of the proposed Endowment Manager; (ii) whether the proposed Endowment Manager is a governmental entity, special district, nonprofit organization, community foundation, or congressionally chartered foundation; (iii) whether the proposed Endowment Manager holds the property or an interest in the property for conservation purposes as required by Government Code section 65968(b)(1) or, in the alternative, the basis for finding that the Project qualifies for an exception pursuant to Government Code section 65968(b)(2); and (iv) a copy of the proposed Endowment Manager's certification pursuant to Government Code section 65968(e).

7. Calculate the Endowment Funds Deposit. After obtaining CPM written approval, in consultation with CDFW, of the HM lands, long-term management plan, and Endowment Manager, the project owner shall prepare an endowment assessment (equivalent to a Property Analysis Record (PAR)) to calculate the amount of funding necessary to ensure the long-term management of the HM lands (Endowment Deposit Amount). Note that the endowment for the easement holder should not be included in this calculation. The project owner shall submit to the CPM, in consultation with CDFW, for review and approval the results of the endowment assessment before transferring funds to the Endowment Manager.

    a. Capitalization Rate and Fees. The project owner shall obtain the capitalization rate from the selected Endowment Manager for use in calculating the endowment assessment and adjust for any additional administrative, periodic, or annual fees.

    b. Endowment Buffers/Assumptions. The project owner shall include in the endowment assessment assumptions the following buffers for endowment

establishment and use that will substantially ensure long-term viability and security of the Endowment:

c. 10 Percent Contingency. A 10 percent contingency shall be added to each endowment calculation to hedge against underestimation of the fund, unanticipated expenditures, inflation, or catastrophic events.

d. Three Years Delayed Spending. The endowment shall be established assuming spending will not occur for the first three years after full funding.

e. Non-annualized Expenses. For all large capital expenses to occur periodically but not annually such as fence replacement or well replacement, payments shall be withheld from the annual disbursement until the year of anticipated need or upon request to Endowment Manager and the CPM, in consultation with CDFW.

8. Transfer Long-term Endowment Funds. The project owner shall transfer the long-term endowment funds to the Endowment Manager upon the CPM's approval of the Endowment Deposit Amount identified above.

9. Management of the Endowment. The approved Endowment Manager may pool the Endowment with other endowments for the operation, management, and protection of HM lands for local populations of desert tortoise but shall maintain separate accounting for each Endowment. The Endowment Manager shall, at all times, hold and manage the Endowment in compliance with this Certification, Government Code sections 65965-65968, as amended, and Probate Code sections 18501-18510, as amended.

   Notwithstanding Probate Code sections 18501-18510, the Endowment Manager shall not make any disbursement from the Endowment that will result in expenditure of any portion of the principal of the endowment without the prior written approval of the CPM in its sole discretion. The project owner shall ensure that this requirement is included in any agreement of any kind governing the holding, investment, management, and/or disbursement of the Endowment funds.

   Notwithstanding Probate Code sections 18501-18510, if the CPM, in consultation with CDFW, determines in its sole discretion that an expenditure needs to be made from the Endowment to preserve the conservation values of the HM lands, the Endowment Manager shall process that expenditure in accordance with directions from the CPM. The Endowment Manager shall not be liable for any shortfall in the Endowment resulting from the CPM's decision to make such an expenditure.

10. Reimburse CDFW. The project owner shall reimburse CDFW for all reasonable costs incurred by CDFW related to transfer of the HM lands to CDFW, if applicable, including, but not limited to transaction fees, account set-up fees, administrative fees, title and documentation review and related title

transactions, costs incurred from other state agency reviews, and overhead related to transfer of HM lands to CDFW.

11. Security: The project owner may proceed with project activities only after the project owner has ensured the funding (Security) to complete any activity required by the Item 3 (Habitat Management Land Acquisition and Protection) that has not been completed before project activities begin. Permittee shall provide Security as follows:

    a. Security Amount. The Security shall be in the amount of $43,678,218.00 or in the amount identified in the Item 1 (Cost Estimates) specific to the obligation that has not been completed. This amount is determined by the CPM and is based on cost estimates which are sufficient for the CEC or its contractors to complete land acquisition, property enhancement, startup costs, initial management, long-term management, and monitoring.

    b. Security Form. The Security shall be in the form of an irrevocable letter of credit or another form of Security approved in advance in writing by the CPM, in consultation with CDFW.

    c. Security Timeline. The Security shall be provided to the CPM before starting site mobilization.

    d. Security Holder. The Security shall be held by the CPM or in a manner approved in advance in writing by the CPM.

    e. Security Transmittal. The project owner shall transmit security to the CPM by way of an approved instrument such as an escrow agreement, irrevocable letter of credit, or other.

    f. Security Drawing. The Security shall allow the CPM to draw on the principal sum if the CPM, in its sole discretion, determines that the project owner has failed to comply with this Condition of Certification.

    g. Security Release. The Security (or any portion of the Security then remaining) shall be released to the project owner after the CPM has conducted an on-site inspection and received confirmation that all secured requirements have been satisfied, as evidenced by either:

        i. Copy of Bill of Sale(s) and Payment Receipt(s) or Credit Transfer Agreement for the purchase of Crotch's bumble bee and/or western burrowing owl credits. OR
        ii. Written documentation of the acquisition of the HM lands.
        iii. Copies of all executed and recorded conservation easements.
        iv. Written confirmation from the approved Endowment Manager of its receipt of the full Endowment.

12. Additional Funding. The CPM, in consultation with BLM, USFWS, and CDFW, may require the project owner to provide additional HM lands and additional funding to ensure the impacts of the taking are minimized and fully mitigated,

as required by law, if the project owner does not complete these requirements within the specified timeframe.

Verification: The project owner shall provide verification that the required acquisition, protection and transfer of all HM lands and record any required conservation easements no later than 18 months from the date of start of site mobilization, even if a security is provided. The project owner shall provide the Draft Management Plan to the CPM for review and approval and to CDFW for review and comment no later than 60 days prior to construction. The project owner shall submit the Final Management Plan to the CPM and CDFW no later than 7 days prior to construction.

BIO-22 American Badger and Desert Kit Fox Avoidance and Minimization Measures The Designated Biologist and/or Biological Monitor(s) shall conduct pre-construction surveys for American badger and desert kit fox. Surveys shall be conducted by qualified biologists approved by the CPM, in coordination with CDFW, pursuant to **BIO-1** and/or **BIO-3**. These measures shall be included in the BRMIMP and implemented.

1. Surveys. Pre-construction surveys for American badger and desert kit fox shall be conducted within a 500-foot radius of all project disturbance areas, where legal access is granted, to detect individuals and dens. Surveys shall be conducted no more than 14 days prior to the start of project activities; however, the project owner may elect to conduct additional surveys to map and detect potential dens that occur on or near disturbance areas.

   Surveys shall be conducted using 20 meter (65-feet) spaced transects or less depending on topography to ensure 100 percent visual coverage of the survey area, unless approved by the CPM. Surveys shall be conducted during favorable weather conditions, avoiding periods of heavy wind or rain, fog, or other climate conditions that could potentially affect the ability of the surveyors to detect dens. All potential dens shall be examined for evidence of use by American badger or desert kit fox (i.e., scat, tracks, or fur). Any dens or den complexes identified during the surveys shall be classified as inactive, potentially active, or active.

   The Designated Biologist(s) and/or Biological Monitor(s) shall monitor all potentially active den entrances within 500-feet of project disturbance areas with infrared cameras for five consecutive days to determine den occupancy. Occupancy shall be determined through camera footage and/or by checking the apron of the den entrance(s) for tracks in loose dirt and by using a tracking medium (e.g. diatomaceous earth). If desert kit fox are detected during surveys, the project owner shall notify the CPM and CDFW immediately.

2. If Dens are Detected. If a desert kit fox den is determined to be active, it shall be avoided by a minimum of 500 feet during the pupping season

(January 1 through August 31) and by a minimum of 200 feet outside of the pupping season (September 1 through December 31 for desert kit fox). If an American badger den is determined to by active, it shall be avoided by a minimum of 250 feet during the pupping season (March 1 through August 31) and by a minimum of 100 feet during the non-pupping season (September 1 through February 28). Avoidance buffers shall be established by the Designated Biologist using staking, flagging, or other conspicuous materials. No project activities will be permitted within the avoidance buffers. The Designated Biologist may modify the avoidance buffer distances based on the location of the den, specific site conditions, and nature of proposed work activities, with prior written approval from the CPM in coordination with CDFW. The avoidance buffer shall remain in place until the Designated Biologist(s) confirms that the young have left the den or the den has been naturally abandoned or failed.

3. Passive Relocation. If confirmed active American badger or desert kit fox dens cannot be avoided, the project owner shall submit an American Badger and Desert Kit Fox Eviction Plan to the CPM for review and approval and the CDFW for review and comment. The American Badger and Desert Kit Fox Eviction Plan shall address proposed eviction activities outside the pupping season, and shall include, at a minimum, the following:

   a. Methods and materials used for construction and maintenance of one-way eviction doors;

   b. Use of continuous camera monitoring of dens for at least five consecutive days to confirm that no American badger or desert kit fox individuals are present and to ensure none are trapped during eviction;

   c. Specific timing of eviction activities;

   d. Design, materials, and methods used for construction and maintenance of artificial burrows and/or identification of location and discussion of preexisting, suitable, and unoccupied natural dens;

   e. Methods of den collapse; and

   f. Details regarding a "protect-in-place" option (i.e., evict but no collapse).

   Passive relocation during the pupping season shall not be authorized. Passive relocation outside the pupping season shall be evaluated on a case-by-case basis by the CPM, in consultation with CDFW.

4. Notification of Detection. The project owner or Designated Biologist shall notify the CPM as well as CDFW within 24-hours if an American badger or desert kit fox, or any other special status mammal is detected during the surveys or during routine monitoring. The report shall include the number of animals detected, photos, and the location of the detection. Upon receiving notification, the CPM and CDFW may provide guidance for further action as appropriate to the species.

5. Monitoring. The Designated Biologist and/or Biological Monitor(s) shall remain onsite throughout the duration of any project activities that are conducted within 300 feet of any active American badger or desert kit fox burrow. The biologist will have the authority to halt work, if it is determined that the animals are exhibiting increased levels of distress (e.g., displaying defensive behavior, pacing, leaving the den).
6. Report Mortalities and Serious Injuries Immediately. If any special status mammal species are found dead or injured during any project-related activities, the project owner or Designated Biologist shall immediately notify the CPM and CDFW and shall provide written notification to CPM and CDFW within 48 hours. The CPM and CDFW shall review the activities resulting in mortality and determine if additional protective measures are required.
7. Reporting. A report documenting survey results, including surveyor name(s), date(s) of survey, location (with maps), weather conditions, and any observations or detections of sensitive mammals or their dens will be prepared and submitted to the CPM and CDFW. In addition, a monitoring report that includes the location, description, and duration of the activities, any observations or detections of these species found during the surveys or project activities will be provided during monthly, quarterly, and annual compliance reporting.

Verification: The project owner shall submit the pre-construction survey reports to the CPM and CDFW no more than 30 days after each survey effort has been completed. If required, the project owner shall submit a draft American Badger and Desert Kit Fox Eviction Plan to the CPM for review and approval and CDFW for review and comment. A final plan shall be submitted no less than 7 days prior to implementation.

BIO-23 Mountain Lion and Ringtail Avoidance and Minimization Measures The Designated Biologist and/or Biological Monitor(s) shall conduct pre-construction surveys for mountain lion usage and ringtails prior to the start of any site mobilization or other ground-disturbing activities. Surveys shall be conducted by qualified biologists approved by the CPM, in coordination with CDFW, pursuant to **BIO-1** and/or **BIO-3**. These measures shall be included in the BRMIMP and implemented.

1. Pre-Construction Surveys. Surveys for mountain lions shall be conducted in all areas within 1,000 feet of the project disturbance limits and shall focus on an inspection of any dense brush, cavities, tunnels, or overhangs. The surveys shall also search for any tracks or sign that indicate potential mountain lion use. If construction activities could disturb potential denning sites during the breeding season for mountain lions (April through September), a qualified biologist will conduct surveys for potential dens. Any active dens will be avoided and an appropriate disturbance-free buffer identified by the Designated Biologist will be established and monitored. Once the young have

left the den or the den is no longer active, construction activities can resume within the proposed buffers. Surveys for ringtail shall be conducted no more than 15 days prior to initiation of site mobilization activities. Surveys shall be conducted in areas that contain habitat for these species including burrows, rock outcrops, cavities, pipes, or other manufactured features plus a 200-foot buffer surrounding these areas. If dens are detected, each den shall be classified as inactive, potentially active, active non-natal, or active natal.

2. Inactive Dens. Inactive dens that would be directly impacted by road grading shall be excavated either by hand or mechanized equipment under the direct supervision of the Designated Biologist(s) and backfilled to prevent reuse by desert tortoise, burrowing owls, ringtails, American badgers, or desert kit fox. Potentially and known active dens shall not be disturbed during the whelping/pupping season (February 1 – September 30). A den may be declared "inactive" after three days of monitoring via camera(s) or a tracking medium have shown no ringtail activity.
3. Active Dens. Active dens shall be flagged and all project activities within 200 feet of the site shall be avoided. Buffers may be modified by the Designated Biologist with the approval of the CPM on a case-by-case basis and in coordination with CDFW. No disturbance to these dens would be allowed until the animals have left the den on their own volition as they are a state fully protected species.
4. Notification of Detection. The project owner or Designated Biologist shall notify the CPM and CDFW within 24 hours any mountain lion or ringtail are detected during the surveys. The report shall include the number of animals detected, photographs (if available), and the location of the detection. Upon receiving notification, the CPM, in consultation with the CDFW, will provide guidance for further action as appropriate to the species.
5. Reporting. A report documenting survey results, including surveyor name(s), date(s) of survey, location (with maps), weather conditions, and any observations or detections of Mohave ground squirrels shall be prepared and submitted to the CPM and CDFW. In addition, a monitoring report that includes the location, description, and duration of the activities, any observations or detections of the species found during the surveys or project activities shall be provided during monthly and annual compliance reporting.

Verification: The project owner shall submit survey protocols no less than 45 days prior to conducting the surveys and/or site mobilization whichever comes first to the CPM for review and approval and CDFW for review and comment. The project owner shall submit the pre-construction survey reports to the CPM and CDFW no more than 21 days after the survey effort has been completed.

BIO-24 Desert Bighorn Sheep Avoidance and Minimization Measures The Designated Biologist and/or Biological Monitor(s) shall implement the following measures minimize potential impacts to desert bighorn sheep. Surveys and the

implementation of these measures shall be conducted by qualified biologists approved by the CPM, in coordination with BLM and CDFW, pursuant to **BIO-1** and/or **BIO-3**. These measures shall be included in the BRMIMP and implemented.

1. Work Boot Decontamination. All construction personnel will be trained on the importance of and procedures for decontaminating boots to prevent transmission of disease from domesticated sheep and goats to desert bighorn sheep. In addition, all personnel at the project area who have potential contact with domesticated sheep and/or goats (for example at home, farms, fairs, etc.) will be identified and shall decontaminate work boots prior to entering the project area. Decontamination shall involve scrubbing the soles of work boots with a 10% bleach solution to remove all organic matter and kill pathogens. Alternatively, footwear may be changed to ensure that potentially contaminated footwear are not used on the project area.
2. Seasonal Work Restrictions. Noises greater than 85 A-weighted decibels (dBA) maximum sound level (Lmax) will not be allowed within 500 meters of the hinge point (10% slope line) between December 1 and June 30. If loud work must occur, even briefly, then the project owner must obtain CPM and CDFW concurrence that the desert bighorn sheep lambing period is done or verify, in coordination with the CPM and CDFW, that there are no desert bighorn sheep on the facing slope within a distance that would be expected to be subject to an 85 dBA Lmax sound level. If the project owner believes that they may need to ultimately perform loud work during the lambing period, then they shall coordinate with the CPM and CDFW early (i.e., ideally as soon as possible, but minimally before the lambing period) to determine how much additional desert bighorn sheep-specific monitoring will be needed to evaluate whether the request is feasible. Conducting monitoring a week or two in advance of proposed activities will not provide enough data to perform the evaluation.
3. Biological Monitoring. A qualified biologist with experience searching for and identifying desert bighorn sheep shall be present during all site mobilization and construction activities. Should desert bighorn sheep be identified within 500-meters (1,640 feet) of project activities the work will be halted until the sheep have moved from the area. If the sheep do not move from the area the project after one day, the project owner shall contact the CPM and CDFW for guidance.
4. Installation of Artificial Water Sources. The project owner shall design and install at least five new artificial water sources for desert bighorn sheep. The CPM will decide on the location, design, and installation methods in collaboration with the BLM and CDFW. The locations may be on private or public lands but must be located within 5 miles of the project. The project owner shall establish a non-wasting endowment with a non-profit or other

agency approved by the CPM to fund the monitoring and maintenance of the water features in perpetuity.

5. Radio Collars. The project owner shall provide funding to CDFW in the amount of $50,000.00 to obtain 10 GPS radio collars. The project owner will provide a copy of the receipt to the CPM. The fee includes sheep capture by helicopter and veterinary supplies. These units will be used in conjunction with existing collared desert bighorn sheep to better understand how the project influences movement in the region.
6. Fencing. The project owner shall install fencing to exclude desert bighorn sheep from entering the facility and to prevent access to the manufactured drainages that occur between the arrays. The fencing between the arrays shall provide passage to small mammals and desert tortoise.
7. Bighorn Sheep Monitoring Plan. The project owner shall prepare a Desert Bighorn Sheep Mitigation and Monitoring Plan to the CPM for review and approval and CDFW for review and comment prior to site mobilization. The plan will include the measures previously described in this COC and require the monitoring of wildlife crossings, fencing effectiveness, water sources, and all other implemented Desert bighorn sheep COCs for a minimum of 8 years. The plan will include the methods for monitoring including the use of spotting scopes and wildlife cameras, identify the goals of the measures, methods for determining the effectiveness of the measures, and remedial triggers should water sources, fencing, or other measures be ineffective.
8. Reporting. The project owner shall submit an annual monitoring report for desert bighorn sheep documenting the survey and monitoring results, weather conditions, and any observations or detections of desert bighorn sheep. The annual report would be prepared and submitted to the CPM and CDFW for review and comment. Any observations or detections of desert bighorn sheep will be provided during monthly, quarterly, and annual compliance reporting.

Verification: The project owner shall submit the Draft Bighorn Sheep Monitoring Plan to the CPM for review and approval and CDFW for review and comment no less than 60 days prior to site mobilization. The project owner shall submit the Final Bighorn Sheep Monitoring Plan to the CPM for review and approval and CDFW for review and comment no less than 30 days prior to site mobilization. The project owner shall provide the CPM a receipt for $50,000.00 paid to CDFW for radio collars 7 days prior to site mobilization.

BIO-25 Lake and Streambed Equivalency Conditions The project owner shall implement the following measures to avoid, minimize, and mitigate for potential direct and indirect impacts to jurisdictional waters of the state and to satisfy the requirements of California Fish and Game Code, sections 1600 through 1607:

1. Copies of Requirements, Stop Work Authority: The project owner shall provide a copy of the Streambed Impact Minimization and Compensation Measures identified in this condition of certification and any other water related permit conditions to all contractors, subcontractors, and the project owner's project supervisors. This includes copies of the WDR required by **WATER-1**. Copies shall be maintained at each work site and be readily available during periods of active work and must be presented to any the CPM or CDFW upon demand. The CPM reserves the right to issue a stop work order after giving notice to the project owner, if the CPM, in consultation with CDFW, determines that the project owner is not in compliance with any of the requirements of this condition, including but not limited to the existence of any of the following:
    a. The information provided by the project owner regarding streambed alteration is incomplete or inaccurate;
    b. New information becomes available that was not known to the CEC CPM or the CDFW at the time of project certification; or
    c. The project or project activities as approved in the Final Commission Decision have changed.
2. Provide Maps of Proposed Disturbance Areas. The project owner shall provide detailed maps of all proposed work areas that have the potential to result in temporary or permanent impacts to any jurisdictional feature. This includes providing maps of work areas around each of the generation tie-line poles, access roads, retention basins, berms, staging areas, pull and tensioning sites, or other work areas. Maps, at an approved scale of all proposed temporary and permanent work areas shall be provided to the CPM and CDFW prior to any site mobilization. At the conclusion of construction, the project owner shall provide a true-up of any jurisdictional features that were subject to temporary or permanent impacts.
3. General Species Protection Measures. Species specific protection measures including surveys and monitoring for sensitive plants and wildlife are included in separate conditions of certification. General protective conditions applicable to all species are identified below.
4. Best Management Practices: The project owner shall comply with the following conditions to protect drainages near the project disturbance area:
    a. No In-Water Work. The project owner shall not operate vehicles or equipment in ponded or flowing water within a jurisdictional feature except as described in this condition.
    b. Stream Diversion. When work in a flowing stream is unavoidable, stream flow shall be diverted around or through the work area during construction operations. A Stream Diversion Plan shall be submitted to the CPM for review and approval and the CDFW for review and comment.

c. Diversion Method. Stream flow is unlikely in the project area except during large storms. If present, stream flow shall be diverted using gravity flow through temporary culverts/pipes or pumped around the work site with the use of hoses. Any alternative methods shall be included in the Stream Diversion Plan submitted to the CPM.

d. Work in Dry Weather. The National Weather Service 72-hr forecast for the project area shall be monitored prior to work proposed in or near drainages. Project activities within drainages shall be restricted if the forecast predicts a 60% chance or more of a greater than 1/2-inch precipitation event within a 24-hour period, unless otherwise approved by the CPM, in coordination with CDFW. Ground-disturbing project activities in drainages shall cease during these events and resume only if the site is not saturated or does not contain ponded or flowing water within jurisdictional features.

e. Moving Equipment. When any activity requires moving equipment across a flowing drainage, such operations shall be conducted without substantially increasing stream turbidity. Vehicles driven across drainages when water is present shall be completely clean of petroleum residue and water levels shall be below the vehicles' axels.

f. Materials. Rock, gravel, and/or other materials shall not be taken from the bed, channel, or bank of any river, lake, or stream except as authorized by this condition and consistent with proposed grading plans.

g. Temporary Fill. All temporary fills shall be constructed of pre-approved, non-erodible materials and fill areas shall have a liner between the bottom of the fill and the stream sediments. Following completion of project activities, all temporary fill material shall be removed and the disturbed portions of the bed, channel, and bank shall be returned to previous contours. Minor amounts of fill material that have sunk into the sediment below the natural channel bottom may remain, but only if there is no accretion in bed or channel elevation above the original contour.

h. Bank Stabilization. Suitable, non-erodible materials that will withstand wash out shall be used for bank stabilization on any proposed manufactured channels. Only clean material such as rock riprap free of trash, debris and deleterious material shall be used as bank stabilization, and placement shall extend above the normal high-water mark. Asphalt and broken concrete are not acceptable materials.

i. Operating Equipment and Vehicle Leaks. Any equipment or vehicles driven and/or operated within or adjacent to any stream shall be checked and maintained daily to prevent leaks of materials that could be deleterious to aquatic and terrestrial life or ephemeral stream associated habitat.

j. Clean Equipment Prior to Entering Stream. All heavy equipment that will be entering the stream shall be cleaned of materials deleterious to aquatic

life including oil, grease, hydraulic fluid, soil and other debris prior to entering the water.

k. Stationary Equipment Leaks. Stationary equipment such as motors, pumps, generators, and welders, within or adjacent to any stream shall be positioned over drip pans. Stationary heavy equipment shall have suitable containment to handle a catastrophic spill/leak.

l. Equipment Maintenance and Fueling. No equipment maintenance or fueling shall be done within or within 50 ft of any stream channel or lake margin where petroleum products or other pollutants from the equipment may enter these areas unless the area is contained to prevent spills from entering the channel.

m. Equipment Storage. Staging and storage areas for equipment, materials, fuels, lubricants and solvents, shall be located outside of a stream channel and banks and contained in a leakproof berm or other secondary containment.

n. Staging and Storage Areas. Staging and storage areas for equipment, materials, fuels, lubricants, and solvents shall be located more than fifty (50) feet from a stream channel and banks. All equipment and fuel stored on site shall be surrounded by a berm to contain any spilled material and shall be protected from rain. Berms shall consist of plastic covered dirt or sandbags.

o. Stockpiled Materials. Building materials and/or construction equipment shall not be stockpiled or stored where they may be washed into the water or cover ephemeral stream associated vegetation. Stockpiles shall be covered when measurable rain is forecasted or contained by BMPs.

p. Remove Structures. Project-related structures and associated materials not designed to withstand high water flows or placed in seasonally dry portions of the stream that could be washed downstream or could be deleterious to aquatic life, wildlife, or ephemeral wash associated habitat shall be moved to areas above high water before such flows occur.

q. Location of Spoil Sites. Spoil sites shall not be within locations that may be subjected to high storm flows, where spoils may be washed back into the stream, or where it may impact streambed habitat.

r. Removal of Debris, Materials and Rubbish. All project generated debris, building materials and rubbish shall be removed and properly disposed of in a legal manner, from a stream and from areas within twenty-five (25) feet of the high-water mark where such materials could be washed into a stream following completion of project activities.

s. Wash Water. Water containing mud, silt, or other pollutants from equipment washing or other activities, shall not be allowed to enter the

flowing stream or placed in locations that may be subjected to high storm flows.

5. Hazardous Materials and Concrete

   a. Hazardous Substances. Raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances which could be hazardous to aquatic life, resulting from project-related activities, shall be prevented from contaminating the soil and/or entering the waters of the state.

   b. Toxic Materials. Any hazardous or toxic materials that could be deleterious to aquatic life that could be washed into a stream, or its tributaries shall be contained in watertight containers or removed from the project area.

   c. Hazardous Materials. Debris, soil, silt, bark, slash, sawdust, rubbish, creosote-treated wood, raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances which could be hazardous to aquatic life, wildlife, or stream habitat resulting from the project-related activities shall be prevented from contaminating the soil and/or entering the waters of the state.

   d. Sacked Concrete. The use of sacked concrete, asphalt pieces or asphalt containing pavement grindings within twenty (20) feet of the top-of-bank of a stream /outside of the ordinary high-water mark is prohibited, or where it may enter the channel.

   e. Concrete – Primary Containment. Wet concrete shall be contained and prevented from entering any stream unless as authorized by this COC. No concrete shall be poured within the high flow line if the 10-day weather forecast indicates any chance of rain above ¼" in a 24-hour period, unless approved by the CPM, in coordination with CDFW.

   f. Concrete – Biological Monitor. At all times when pouring or working with wet concrete a Designated Biologist and/or Biological Monitor shall be present to inspect containment structures and ensure that no concrete or other debris enters the stream outside of those structures.

   g. Concrete – Secondary Containment. Secondary containment shall be installed between the primary containment structures (i.e. headwall form, roadway forms) and the stream to prevent wet concrete from entering into the stream upon failure or leak of primary structures. No concrete shall be poured within the high flow line if the 10-day weather forecast indicates any chance of rain above ¼" in a 24-hour period, unless approved by the CPM, in coordination with CDFW.

   h. Creosote-Treated Wood. Creosote-treated wood products for decking shall not be used in waters of the state. Alternatives that may be appropriate include steel, concrete, plastic, or wood products treated with

preservatives that do not contain creosote or other materials that are deleterious to aquatic life.

i. Spill Containment. All activities performed in or near a stream shall have absorbent materials designated for spill containment and cleanup activities on-site for use in an accidental spill. In the event of a spill the project owner shall immediately notify the CPM, CDFW, RWQCB, and the California Emergency Management Agency at 1-800-852-7550, or most current phone number, and immediately initiate the cleanup activities.

6. Crossings. The installation of bridges, culverts, or other structures shall be such that water flow (velocity and low flow channel width) is not impaired. Bottoms of temporary culverts shall be placed at or below stream channel grade.

   i. Sized to Accommodate Storm Flows. All crossing sites shall be designed to accommodate the estimated 100-year flow including sediment load and debris without diverting and shall be installed in accordance with design plans and diagrams provided to the CPM for review and approval. Culvert sizing factors shall include culvert capacity loss from placement of the culvert pipe bottom below stream bed grade, transportation of bed load, and the abundance and size of woody debris likely to be introduced to a stream upstream of the culvert crossing, in addition to the 100-year flow.

   ii. Alignment. All crossing structures shall be properly aligned within a stream and shall be otherwise designed and sized to assure resistance to washout and erosion of the streambed.

   iii. Allow Passage of Wildlife. Installation of bridges, culverts or other structures shall be such that water flow during storm events is not impaired and upstream or downstream passage of wildlife is assured at all times. Ensure that any debris is cleared if the structure after storm events.

7. Vegetation.

   a. Demarcation of Work Areas. All work areas shall be adequately marked to prohibit unauthorized and unnecessary disturbance to vegetation. All areas shall be mapped and identified on plans for all project personnel.

   b. Vegetation Disposal. All native vegetation not proposed for salvage (i.e., cuttings) shall be chipped and left on-site in a manner optimizing erosion control purposes in accordance with the recommendations of an erosion control specialist unless this conflicts with any requirements of the BLM. All non-native vegetation shall be removed and disposed of at an approved disposal location according to state and local laws and ordinances.

   c. Remove Debris from Stream Zones. All removed vegetation and debris shall be moved outside the normal high-water mark prior to inundation

by water. All removed vegetation and debris shall be disposed of according to state and local laws and ordinances.

d. Minimum Removal. Disturbance or removal of vegetation shall not exceed the minimum necessary to complete operations. The disturbed portions of any stream channel or lake margin within the high-water mark of a stream or lake shall be restored to as near their original condition as possible.

e. Stabilize Exposed Areas. All exposed/disturbed areas within the project area shall be stabilized to the greatest extent possible.

8. Herbicide Use

a. Herbicide/Pesticide Use Permitted in Accordance with Law. All herbicide use conditions for mixing, application and clean-up shall conform to all applicable federal, state, and local regulations. Nothing in this condition represents an herbicide/pesticide use recommendation that allows for an action that conflicts with herbicide/pesticide use regulations.

b. Licensed Applicators Only. Any application of herbicide shall be overseen by a licensed applicator in accordance with all applicable, federal, state, local laws, and/or guidelines.

c. Prevent Overspray of Herbicides/Pesticide. Conduct all treatment activities in a manner to minimize overspray of herbicide on to adjacent native vegetation and where there is no potential of contamination waters of the state.

d. Herbicide/Pesticide Mixing. Ensure that herbicide-mixing sites are located in areas devoid of vegetation, and where there is no potential of a spill reaching a vegetated area or waters of the state.

e. Avoid Treatment in Sensitive Areas. Areas identified as sensitive by the Designated Biologist or with suspected occupied nesting or denning habitats shall not be treated with pesticides or herbicides. Environmental damage caused by the application or use of substances that prove harmful to fish and aquatic wildlife per Fish and Game Code, section 5650 shall not occur.

9. Invasive Species Control and Special Status Species Protection Measures have been included in separate conditions of certification, see **BIO-10** (Invasive Species Management Plan) and **BIO-7** (General Impact Avoidance and Minimization Measures).

Verification: The project owner shall provide the updated Jurisdictional Report that clearly delineates all proposed permanent and temporary impacts, the proposed engineering drawings for each crossing type, and the hydrologic studies used to inform the engineering design to the CPM for review and approval no less than 45 days prior to site mobilization. The project owner shall provide Final Reports

and Plans to the CPM and the CDFW no later than 14 days prior to the installation of any engineered crossing, bridge, or new culvert.

Maps of all proposed temporary and permanent work areas shall be provided to the CPM no less than 30 days prior to any site mobilization. At the conclusion of construction, the project owner shall provide a true-up of any jurisdictional features that were subject to temporary or permanent impacts the CPM no more than 30 days following the cessation of construction along the generation tie-line in the Construction Termination Report.

BIO-26 Habitat Management Land Acquisition for Permanent and Temporary Impacts to State Waters To mitigate for impacts to state jurisdictional waters the project owner shall fulfill the following requirements:

The project owner shall purchase 376.9 acres of state jurisdictional waters mitigation or conservation bank credits, at a location within the Mojave Desert approved in advance by the CPM, in coordination with the CDFW and LRWQCB, or shall provide for both the permanent protection and management of 376.9 acres of Habitat Management (HM) lands pursuant to Item 3 (Habitat Management Lands Acquisition and Protection) and the calculation and deposit of the management funds pursuant to Item 5 (Endowment Fund). The amount of mitigation required shall be calculated based on the project's final direct permanent and temporary loss of state and CDFW jurisdictional waters, as approved by the CPM, in consultation with USFWS, BLM, and CDFW. Temporary impacts are defined as any physical disturbance to the stream.

The purchase of mitigation or conservation bank credits or permanent protection and funding for perpetual management of HM lands must be complete within 18 months of the date of the site mobilization, if Security is provided pursuant to the Security (Item 11) below for all uncompleted obligations.

1. Cost Estimates. For the purposes of determining the Security amount, it is estimated the cost for the CPM or its contractors to complete acquisition, protection, and perpetual management of the HM lands is as follows:
    a. Land acquisition costs for HM lands identified in the Item 3 (Habitat Management Lands Acquisition and Protection) below, estimated at $4,000/acre for 376.9 acres: $1,507,600.00. Land acquisition costs are estimated using local fair market current value per acre for lands with habitat values meeting mitigation requirements.
    b. All other costs are necessary to review and acquire the land in fee title and record a conservation easement as described below in Item 3b. (Conservation Easement) below: $17,440.00.
    c. Start-up costs for HM lands, including initial site protection and enhancement costs as described in the Item 3f (Start-up Activities) below, estimated at $2,000/acre for 376.9 acres: $753,800.00.

d. Interim management period funding as described in the Item 4 (Interim Management) (Initial and Capital) below, estimated at $600.00/acre for 376.9 acres: $226,140.00.

e. Long-term management funding as described in the Item 5 (Endowment Fund) below, estimated at $3,100.00/acre for 376.9 acres: $1,168,390.00. Long-term management funding is estimated initially for the purpose of providing Security to ensure implementation of HM lands management.

f. Related transaction fees including but not limited to account set-up fees, administrative fees, title and documentation review and related title transactions, expenses incurred from other state agency reviews, and overhead related to transfer of HM lands to CDFW as described in the Item 10 (Reimburse CDFW), estimated at $6,000.00.

g. All costs associated with the CPM engaging an outside contractor to complete the mitigation tasks, including but not limited to acquisition, protection, and perpetual funding and management of the HM lands and restoration of temporarily disturbed habitat. These costs include but are not limited to the cost of issuing a request for proposals, transaction costs, contract administration costs, and costs associated with monitoring the contractor's work $75,000.00.

2. Mitigation Bank Credits. If the project owner elects to purchase credits to complete state jurisdictional waters compensatory mitigation obligations, then project owner shall purchase XXX acres of jurisdictional waters credits from a mitigation or conservation bank approved in advance by the CPM prior to initiating project activities, or no later than 18 months from the start of site mobilization, if Security is provided pursuant to Item 11 (Security) below. Prior to the purchase of credits, the project owner shall obtain CPM approval to ensure the mitigation or conservation bank is appropriate to compensate for the impacts of the project. The project owner shall submit to the CPM a copy of the Bill of Sale(s) and Payment Receipt prior to initiating site mobilization or within 18 months from start of site mobilization, if Security is provided.

3. Habitat Management Lands Acquisition and Protection. If the project owner elects to provide for the acquisition, permanent protection, and perpetual management of HM lands to complete compensatory mitigation obligations, then the project owner shall:

   a. Fee Title. Transfer fee title of the HM lands to CDFW pursuant to terms approved in writing by CDFW. Alternatively, the CPM, in consultation with CDFW, may authorize a governmental entity, special district, non-profit organization, for-profit entity, person, or another entity to hold title to and manage the property provided that the district, organization, entity, or person meets the requirements of Government Code sections 65965-65968, as amended.

b. Conservation Easement. If CDFW does not hold fee title to the HM lands, CDFW shall act as grantee for a conservation easement over the HM lands or shall, in its sole discretion, approve a non-profit entity, public agency, or Native American tribe to act as grantee for a conservation easement over the HM lands provided that the entity, agency, or tribe meets the requirements of Civil Code section 815.3. If CDFW elects not to be named as the grantee for the conservation easement, CDFW shall be expressly named in the conservation easement as a third-party beneficiary. The project owner shall obtain written approval from the CPM, in coordination with CDFW, of any conservation easement before its execution or recordation. No conservation easement shall be approved by the CPM unless it complies with Civil Code sections 815-816, as amended, and Government Code sections 65965-65968, as amended and includes provisions expressly addressing Government Code sections 65966(j) and 65967(e). Because the "doctrine of merger" could invalidate the conservation interest, under no circumstances can the fee title owner of the HM lands serve as grantee for the conservation easement.

c. HM Lands Approval. The project owner shall obtain CPM written approval of the HM lands, in coordination with CDFW, before acquisition and/or transfer of the land by submitting, at least 90 days before acquisition and/or transfer of the HM lands, documentation identifying the land to be purchased or property interest conveyed to an approved entity as mitigation for the project's impacts on burrowing owl.

d. HM Lands Documentation. The project owner shall provide a recent preliminary title report, Phase I Environmental Site Assessment, and other necessary documents (please contact CPM for document list). All documents conveying HM lands and all conditions of title are subject to approval from the CPM; and if applicable, the Wildlife Conservation Board, and the Department of General Services.

e. Land Manager. Designate both an interim and long-term land manager with demonstrated aquatic resource management experience, approved by the CPM, in consultation with BLM, USFWS, LRWQCB, and CDFW. The interim and long-term land managers may, but need not, be the same. The interim and/or long-term land managers may be the landowner or another party. The land manager shall prepare a draft management plan for CPM review and approval, in consultation with CDFW, and written approval as part of the HM lands acquisition process. The project owner shall notify the CPM of any subsequent changes in the land manager within 30 days of the change. If CDFW will hold fee title to the mitigation land, CDFW will also act as both the interim and long-term land manager unless otherwise specified. The grantee for the conservation easement cannot serve as the interim or long-term manager without the express written authorization of the CPM, in consultation with BLM, USFWS, and CDFW.

f. Start-up Activities. Provide for the implementation of start-up activities, including the initial site protection and enhancement of HM lands, once the HM lands have been approved by the CPM. Start-up activities include, at a minimum: (1) conducting a baseline biological assessment and land survey report within four months of recording or transfer; (2) developing and transferring Geographic Information Systems (GIS) data if applicable; (3) establishing initial fencing; (4) conducting litter removal; (5) conducting initial habitat restoration or enhancement, if applicable; and (6) installing signage.

4. Interim Management (Initial and Capital). Provide for the interim management of the HM lands. The project owner shall ensure that the interim land manager implements the interim management of the HM lands as described in the final management plan and conservation easement approved by the CPM, in consultation with CDFW. The interim management period shall be a minimum of three years from the date of HM land acquisition and protection and full funding of the Endowment and includes expected management following start-up activities. Interim management period activities described in the final management plan shall include fence repair, continuing trash removal, site monitoring, and vegetation and invasive species management.

   The project owner shall either (1) provide Security to the CPM for the minimum of three years of interim management that the land owner, the project owner, or land manager agrees to manage and pay for at their own expense, (2) establish an escrow account with written instructions approved in advance in writing by the CPM to pay the land manager annually in advance, or (3) establish a short-term enhancement account with a CPM-approved entity for payment to the land manager.

5. Endowment Fund. If the project owner elects to provide for the acquisition, permanent protection, and perpetual management of HM lands to complete compensatory mitigation obligations, then the project owner shall ensure that the HM lands are perpetually managed, maintained, and monitored by the long-term land manager as described in this condition of certification, the conservation easement, and the final management plan approved by the CPM. After obtaining CPM approval, in consultation with CDFW, of the HM lands, the project owner shall provide long-term management funding for the perpetual management of the HM lands by establishing a long-term management fund (Endowment). The Endowment is a sum of money, held in a CPM-approved (in consultation with CDFW) fund that is permanently restricted to paying the costs of long-term management and stewardship of the mitigation property for which the funds were set aside, which costs include the perpetual management, maintenance, monitoring, and other activities on the HM lands consistent with the condition of certification, the conservation easement, and the management plan required by Item 3e (Land

Manager). Endowment as used in the Certification shall refer to the endowment deposit and all interest, dividends, other earnings, additions and appreciation thereon. The Endowment shall be governed by this license, Government Code sections 65965-65968, as amended, and Probate Code sections 18501-18510, as amended. After the interim management period, the project owner shall ensure that the designated long-term land manager implements the management and monitoring of the HM lands according to the final management plan. The long-term land manager shall be obligated to manage and monitor the HM lands in perpetuity to preserve their conservation values in accordance with this license, the conservation easement, and the final management plan. Such activities shall be funded through the Endowment.

6. Identify an Endowment Manager. The Endowment shall be held by the Endowment Manager, which shall be either the CEC and/or CDFW or another entity qualified pursuant to Government Code sections 65965-65968, as amended.

    a. The project owner shall submit to the CPM for review and approval, a written proposal that includes: (i) the name of the proposed Endowment Manager; (ii) whether the proposed Endowment Manager is a governmental entity, special district, nonprofit organization, community foundation, or congressionally chartered foundation; (iii) whether the proposed Endowment Manager holds the property or an interest in the property for conservation purposes as required by Government Code section 65968(b)(1) or, in the alternative, the basis for finding that the Project qualifies for an exception pursuant to Government Code section 65968(b)(2); and (iv) a copy of the proposed Endowment Manager's certification pursuant to Government Code section 65968(e).

7. Calculate the Endowment Funds Deposit. After obtaining CPM written approval, in consultation with CDFW, of the HM lands, long-term management plan, and Endowment Manager, the project owner shall prepare an endowment assessment (equivalent to a Property Analysis Record (PAR)) to calculate the amount of funding necessary to ensure the long-term management of the HM lands (Endowment Deposit Amount). Note that the endowment for the easement holder should not be included in this calculation. The project owner shall submit to the CPM, in consultation with CDFW, for review and approval the results of the endowment assessment before transferring funds to the Endowment Manager.

    a. Capitalization Rate and Fees. The project owner shall obtain the capitalization rate from the selected Endowment Manager for use in calculating the endowment assessment and adjust for any additional administrative, periodic, or annual fees.

    b. Endowment Buffers/Assumptions. The project owner shall include in the endowment assessment assumptions the following buffers for endowment

establishment and use that will substantially ensure long-term viability and security of the Endowment:

c. 10 Percent Contingency. A 10 percent contingency shall be added to each endowment calculation to hedge against underestimation of the fund, unanticipated expenditures, inflation, or catastrophic events.

d. Three Years Delayed Spending. The endowment shall be established assuming spending will not occur for the first three years after full funding.

e. Non-annualized Expenses. For all large capital expenses to occur periodically but not annually such as fence replacement or well replacement, payments shall be withheld from the annual disbursement until the year of anticipated need or upon request to Endowment Manager and the CPM, in consultation with CDFW.

8. Transfer Long-term Endowment Funds. The project owner shall transfer the long-term endowment funds to the Endowment Manager upon the CPM's approval of the Endowment Deposit Amount identified above.

9. Management of the Endowment. The approved Endowment Manager may pool the Endowment with other endowments for the operation, management, and protection of HM lands for local populations of desert tortoise but shall maintain separate accounting for each Endowment. The Endowment Manager shall, at all times, hold and manage the Endowment in compliance with this Certification, Government Code sections 65965-65968, as amended, and Probate Code sections 18501-18510, as amended.

   Notwithstanding Probate Code sections 18501-18510, the Endowment Manager shall not make any disbursement from the Endowment that will result in expenditure of any portion of the principal of the endowment without the prior written approval of the CPM in its sole discretion. The project owner shall ensure that this requirement is included in any agreement of any kind governing the holding, investment, management, and/or disbursement of the Endowment funds.

   Notwithstanding Probate Code sections 18501-18510, if the CPM, in consultation with CDFW, determines in its sole discretion that an expenditure needs to be made from the Endowment to preserve the conservation values of the HM lands, the Endowment Manager shall process that expenditure in accordance with directions from the CPM. The Endowment Manager shall not be liable for any shortfall in the Endowment resulting from the CPM's decision to make such an expenditure.

10. Reimburse CDFW. The project owner shall reimburse CDFW for all reasonable costs incurred by CDFW related to transfer of the HM lands to CDFW, if applicable, including, but not limited to transaction fees, account set-up fees, administrative fees, title and documentation review and related title

transactions, costs incurred from other state agency reviews, and overhead related to transfer of HM lands to CDFW.

11. Security: The project owner may proceed with project activities only after the project owner has ensured the funding (Security) to complete any activity required by the Item 3 (Habitat Management Land Acquisition and Protection) that has not been completed before project activities begin. Permittee shall provide Security as follows:

    a. Security Amount. The Security shall be in the amount of $3,754,370.00 or in the amount identified in the Item 1 (Cost Estimates) specific to the obligation that has not been completed. This amount is determined by the CPM and is based on cost estimates which are sufficient for the CEC or its contractors to complete land acquisition, property enhancement, startup costs, initial management, long-term management, and monitoring.

    b. Security Form. The Security shall be in the form of an irrevocable letter of credit or another form of Security approved in advance in writing by the CPM, in consultation with CDFW.

    c. Security Timeline. The Security shall be provided to the CPM before starting site mobilization.

    d. Security Holder. The Security shall be held by the CPM or in a manner approved in advance in writing by the CPM.

    e. Security Transmittal. The project owner shall transmit security to the CPM by way of an approved instrument such as an escrow agreement, irrevocable letter of credit, or other.

    f. Security Drawing. The Security shall allow the CPM to draw on the principal sum if the CPM, in its sole discretion, determines that the project owner has failed to comply with this Condition of Certification.

    g. Security Release. The Security (or any portion of the Security then remaining) shall be released to the project owner after the CPM has conducted an on-site inspection and received confirmation that all secured requirements have been satisfied, as evidenced by either:

        i. Copy of Bill of Sale(s) and Payment Receipt(s) or Credit Transfer Agreement for the purchase of Crotch's bumble bee and/or western burrowing owl credits. OR

        ii. Written documentation of the acquisition of the HM lands.

        iii. Copies of all executed and recorded conservation easements.

        iv. Written confirmation from the approved Endowment Manager of its receipt of the full Endowment.

12. Additional Funding. The CPM, in consultation with BLM, USFWS, and CDFW, may require the project owner to provide additional HM lands and additional

funding to ensure the impacts of the taking are minimized and fully mitigated, as required by law, if the project owner does not complete these requirements within the specified timeframe.

Verification: The project owner shall provide verification that the required acquisition, protection and transfer of all HM lands has occurred, and record any required conservation easements no later than 18 months from the date of start of site mobilization, even if a security is provided. The project owner shall provide the Draft Management Plan to the CPM for review and approval and to CDFW for review and comment no later than 60 days prior to construction. The project owner shall submit the Final Management Plan to the CPM and CDFW no later than 7 days prior to construction.

5.2.5 References

Aiello 2025 – Christian Aiello (TN 261255). Christian Aiello comments – Impacts to desert bighorn sheep, dated January 23, 2025. Accessed online at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=261255&DocumentContentId=9762

Aiello et al. 2025 – Aiello, I., & Moss Landing Marine Laboratories (Aiello et al.) 2025, January 29, Scientists detect heavy metals in environmentally sensitive Elkhorn Slough after battery storage plant fire. San José State University NewsCenter. Accessed online at: https://blogs.sjsu.edu/newsroom/2025/scientists-detect-heavy-metals-in-environmentally-sensitive-elkhorn-slough-after-battery-storage-plant-fire/

Audubon 2025a – National Audubon Society, Important Bird Areas, 2025.

Audubon 2025b – National Audubon Society, Bendire's Thrasher, 2025.

Audubon 2025c – National Audubon Society, Black Tern, 2025.

Billerman et al. 2022 – Birds of the World, *Cornell Laboratories, 2022.*

BLM 2015 – Bureau of Land Management (BLM). U.S. Department of Interior Bureau of Land Management Soda Mountain Solar Project, Proposed Plan Amendment/ Final Environmental Impact Statement/ Environmental Impact Report, June 2015.

BLM 2019 – Bureau of Land Management (BLM). U.S. Department of Interior Bureau of Land Management, Special Status Animals in California, Including BLM Designated Sensitive Species. 2019.

BLM 2023 – Bureau of Land Management (BLM). U.S. Department of Interior Bureau of Land Management, California Plant Special Status Species List. October 2023.

Brooks 2000 – Brooks, M. L. 2000. Competition Between Alien Annual Grasses and Native Annual Plants in the Mojave Desert, The American Midland Naturalist, 144(1):92–108.

Brown 1997 – Charles R. Brown, Alan Poole, and Frank Gill, "Purple Martin (Progne subis)," The Birds of North America Online, January 1997.

CalFlora 2025 – Calflora Information on California plants. Accessed online at: https://www.calflora.org/

Cal-IPC 2025 – The Cal-IPC Inventory. Accessed online at: California Invasive Plant Council – Protecting California's environment and economy from invasive plants

CalTrans 2018 – California Transit Department, California Log of Bridges on State Highways District 8., October 2018.

CBD 2025 – Center for Biological Diversity, 2025.

CBI 2025 – Dessert Renewable Energy Conservation Plan Gateway, 2025, Accessed online at: https://drecp.databasin.org/

CCH 2025 – Specimen Data from the Consortium of California Herbaria, Accessed online at: https://www.cch2.org/portal/

CDFW 1989 – California Department of Fish and Wildlife, State of California Department of Fish and Game, Recovery Plan: Bank Swallow, December 1992.

CDFW 2012 – California Department of Fish and Wildlife. State of California Department of Fish and Game, Staff Report on Burrowing Owl Mitigation, March 2012.

CDFW 2023 – California Department of Fish and Wildlife, Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species, June 2023.

CDFW 2025 – California Department of Fish and Wildlife 2025, The Conservation and Management Plan for Bighorn Sheep in California, California Department of Fish and Wildlife, West Sacramento, CA, USA.

CDFW 2025a – California Department of Fish and Wildlife. Biogeographic Data Branch. California Natural Diversity Database. RareFind v. 5. Accessed March - August 2025. Accessed online at: https://wildlife.ca.gov/Data/CNDDB/Maps-and-Data

CDFW 2025b – California Department of Fish and Wildlife. Vegetation Datasets (GIS). Accessed online at: https://wildlife.ca.gov/Data/GIS/Vegetation-Data

CDFW 2025c – California Department of Fish and Wildlife. Special Vascular Plants, Bryophytes, and Lichens List. October 2025.

CDFW 2025d – California Department of Fish and Wildlife, California Wildlife Habitat Relationships Maps and Data.

CDFW 2025e – California Department of Fish and Wildlife, Special Animals List, October 2025. Accessed online at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109406&inline

CDFW 2025f – California Department of Fish and Wildlife, Sensitive Natural Communities.

CDFW 2025g – California Department of Fish and Wildlife, California Natural Community List. February 2025.

CEC et al. 2015 – California Energy Commission, Desert Renewable Energy Conservation Plan.

Chetkiewicz et al. 2006 – Chetkiewicz, C.L., St. Clair, C.C., Boyce, M.S. Corridors for Conservation: Integrating Pattern and Process. 2006. CNPS 2025 – California Native Plant Society. Inventory of Rare Plants. 2025. Claassen et al., 2024 – Claassen, M., Bingham, B., Chow, J.C., Watson, J.G., Wang, Y., & Wang, X. (2024). Characterization of Lithium-Ion Battery Fire Emissions—Part 1: Chemical Composition of Fine Particles (PM2.5). *Batteries*, 10(9), 301.

Cody 2020 – Cody, M. Birds of the World, Crissal Thrasher. March 2020.

Cornell Lab of Ornithology 2025a – Cornell Laboratories, Black Tern, 2025.

Cornell Lab of Ornithology 2025b – Cornell Laboratories, Common Loon, 2025.

Craig 1978 – Craig, R. B., "An Analysis of the Predatory Behavior of the Loggerhead Shrike," *The Auk*, Vol. 95, No. 2, April 1978, pp. 221–234, Oxford University Press.

Dobkin et al. 2008 – Dobkin, D., S. Granholm, reviewed by L. Mewaldt, edited by R. Duke, updated by California Wildlife Habitat Relationships (CWHR) Staff, *Life History Account for Grasshopper Sparrow (Ammodramus savannarum)*, California Wildlife Habitat Relationships System, California Department of Fish and Wildlife, California Interagency Wildlife Task Group, August 2008, accessed online at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=2163

Drenovsky et al. 2014 – Rebecca E. Drenovsky, N. Pietrasiak, L.S. Santiago, and R.C. Graham. 2014. Biogeomorphology of a Mojave Desert landscape – Configurations and feedbacks of abiotic and biotic land surfaces during landform evolution. Biology 14: 23 –36.

Dunn and Garrett 1997 – Dunn, J. L., and K. L. Garrett, *A Field Guide to Warblers of North America*, Peterson Field Guide Series, Houghton Mifflin Company, Boston, Massachusetts, 1997.

England and Laudenslayer 1993 – England, A.S. and Laudenslayer, F. Bendire's Thrasher, The Birds of North America No. 71. 1993.

Epps et al. 2005 – Epps, C.W., Wehausen, J., Palsbell, P.J., Roderick, G.K. Highways block gene flow and cause rapid decline in genetic diversity of desert bighorn sheep. October 2005.

Epps et al. 2007 – Epps, C.W., Wehausen, J.D., Bleich, V.C., Torres, S.G., Brashares, J.S. Optimizing dispersal and corridor models using landscape genetics. *Journal of Applied Ecology.* 2007.

Epps et al. 2018 – Epps, C.W., Crowhurst, R.S., Nickerson, B.S. Assessing changes in functional connectivity in a desert bighorn sheep metapopulation after two

generations. Wiley. March 2018. Accessed online at: https://wafwa.org/wp-content/uploads/2020/09/Epps-etal-2018-Molecular_Ecology.pdf

Flemming 2025 – Fleming, P.A. (2025). All that glitters—Review of solar facility impacts on fauna. *Renewable and Sustainable Energy Reviews*.

Garrison 1989 – Garrison, B.A. California Partners in Flight Riparian Bird Conservation Plan Bank Swallow. California Department of Fish and Game. 1989.

Garrison 1999 – Garrison, B.A. Bank Swallow. Birds of the World. *Cornell Labratories.* January 1999.

Grinnell and Miller 1944 – Grinnell, J., and A. H. Miller, *The Distribution of the Birds of California*, Pacific Coast Avifauna, No. 27, Cooper Ornithological Club, Berkeley, California, 1944. Accessed online at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=10460

Grodsky et al. 2020 – Grodsky, S.M., Saul-Gershenz, L., Moore-O'Leary, K.A., Hernandez, R. Her Majesty's Desert Throne: The Ecology of Queen Butterfly Oviposition on Mojave Milkweed Host Plants. *Insects.* April 2020.

Hadad et al. 2015 – Haddad, N.M., Brudvig, L.A., Clobert, J., Davies, K.F., Gonzalez, A., Holt, R.D., Lovejoy, T.E., Sexton, J.O., Austin, M.P., Collins, C.D., Cook, W.M., Damschen, E.I., Ewers, R.M., Foster, B.L., Jenkins, C.N., King, A.J., Laurance, W.F., Levey, D.J., Margules, C.R., Melbourne, B.A., Nicholls, A.O., Song, D., Townshend, J.R. Habitat fragmentation and its lasting impact on Earth's ecosystems. *Applied Ecology.* 2015.

HT Harvey and Associated 2019 – Johnson, D., Briones, K. Final Caltrans Bat Mitigation: A Guide to Developing Feasible and Effective Solutions. California Department of Transportation. July 2019.

iNaturalist 2025 – iNaturalist Observations. 2025.

Karban et al. 2024 – Karban, C.C., Lovich, J.E., Grodsky, S.M., & Munson, S.M. (2024). Predicting the effects of solar energy development on plants and wildlife in the Desert Southwest, United States. *Renewable and Sustainable Energy Reviews, 205*, 114823

Knopf and Evans 2004 – Knopf, F.L., Evans, R.M. American White Pelican. Birds of the World. *Cornell Laboratories.* November 2004.

Loeb et al. 2015. – Loeb, S.C., Rodhouse, T.J., Ellison, L.E., Lausen, C.L., Reichard, J.D., Irvine, K.M., Ingersoll, T.E., Coleman, J.T.H., Thogmartin, W.E., Sauer, J.R., Francis, C.M., Bayless, T.R., Stanley, T.R., Johnson, D.H. A Plan for North America Bat Monitoring Program (NABat). U.S. Forest Service. 2015.

Los Padres Forest Watch 2025 – Los Padres Forest Watch. Crotch's Bumblebee. 2025.

Lovich et al. 1999 – Lovich, J.E. and Bainbridge, D. Anthropogenic Degradation of the Southern California Desert Ecosystem and Prospects for Natural Recovery and Restoration. 1999.

MacWhirter 1996 – MacWhirter, R.B and Bildstein, L.B. Northern Harrier: Circus cyaneus, American Ornithologists' Union; Academy of Natural Sciences of Philadelphia, Washington, D.C.; Philadelphia, PA, 1996.

McLuckie et al. 2002 – McLuckie, A.M., Harstad, D.L., Marr, J.W., Fridell, R.A. Regional Desert Tortoise Monitoring in the Upper Virgin River Recovery Unit, Washington County, Utah. 2002.

Mueller et al. 1998 — Mueller, J. M., K. R. Sharp, K. K. Zander, D. L. Rakestraw, K. R. Rautenstrauch, and P. E. Lederle, "Size-Specific Fecundity of the Desert Tortoise (*Gopherus agassizii*)," *Journal of Herpetology*, Vol. 32, No. 3, September 1998, pp. 313–319, Society for the Study of Amphibians and Reptiles

Nafis 2025 – California Herps, *A Guide to the Amphibians and Reptiles of California*, CaliforniaHerps.com, accessed online at: https://www.californiaherps.com/, 2025.NatureServe 2025 – Nature Serve, Definitions of NatureServe Conservation Status Ranks, 2025.

NPCA 2025a – National Parks Conservation Association (TN 267811). National Parks Conservation Association Comments - Response to Applicant's Memo re Impacts to Bighorn Sheep, dated December 2, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

NPS 2025 – National Park Service. Species Checklist for Mojave National Preserve. Accessed online at: https://www.nps.gov/moja/learn/nature/upload/reptiles_508.pdf

NRCS 2025 – National Resource Conservation Service. U.S. Department of Agriculture. Web Soil Survey. Accessed online at: https://www.nrcs.usda.gov/resources/data-and-reports/web-soil-survey

Panorama Environmental 2013 – Panorama Environmental, Inc., Biological Resources Technical Report for Soda Mountain Solar Project, San Bernardino County, CA, prepared for Soda Mountain Solar, LLC, Bureau of Land Management Case Number CACA49584, March 2013, Panorama Environmental, Inc., One Embarcadero Center, Suite 740, San Francisco, CA 94111\

Parker et al. 2020—Parker, Sophie S.; Zdon, Andy; Christian, William T.; Cohen, Brian S.; Palacios Mejia, Maura; Fraga, Naomi S.; Curd, Emily E.; Edalati, Kiumars; Renshaw, Mark A., "Conservation of Mojave Desert springs and associated biota: status, threats, and policy opportunities," Biodiversity and Conservation, Vol. 30, pp. 311–327, Springer Nature, December 2020

Peirson and Rainey 1994—Pierson, Elizabeth D.; Rainey, William E., "Distribution, Status, and Management of Townsend's Big-Eared Bat (*Corynorhinus townsendii*) in California," BMCP Technical Report No. 96-7, California Department of Fish and Game, Wildlife Management Division, Bird and Mammal Conservation Program, November 1994

Perkins et al. 2018 – Perkins, K.S., Miller, D.M., Sandquist, D.R., Macias, M., & Roach, A. (2018). Ecohydrologic changes caused by hydrologic disconnection of

ephemeral stream channels in Mojave National Preserve, California. *Vadose Zone Journal, 17*(1), 180022.

Pimm and Raven 2000 – Pimm, S.L., Raven, P. "Extinction by Numbers." *Nature.* 2000. Accessed online at: https://www.nature.com/articles/35002708

Randall et al. 2010 – Randall, J.M., Parker, S.S., Moore, J., Cohen, B., Crane, L., Christian, B., Cameron, D., Mackenzie, J.B., Klausmeyer, K., Morrison, S. "Mojave Desert Ecoregional Assessment." *The Nature Conservancy.* September 2010. Accessed online at: https://www.scienceforconservation.org/assets/downloads/Mojave_Desert_Ecoregional_Assessment_2010.pdf

Rayfield et al. 2011 – Rayfield, B., Fortin, M.J., Fall, A. "Connectivity for conservation: a framework to classify network measure." *PubMed.* 2011. Accessed online at: https://pubmed.ncbi.nlm.nih.gov/21661548/

RE 2024aa – Resolution Environmental (TN 257926). Section 3-4 Biological Resources dated July 23, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025aaaa – Resolution Environmental (TN 266855). Updated JD Report Volume 1, dated October 27, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025bbbb – Resolution Environmental (TN 266856). Updated JD Report Volume 2, dated October 27, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2024c – Resolution Environmental (TN 257902). Appendix D1 Biological Resources Technical Report dated July 23, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025cc – Resolution Environmental (TN 264861). Project Impacts and Mitigation dated July 17, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025cccc – Resolution Environmental (TN 266857). Updated JD Report Volume 3, dated October 27, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025f – Resolution Environmental (TN 261590). Appendix D2 Appendices for Biological Resources Technical Report, dated February 7, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025i – Resolution Environmental (TN 261593). Appendix D4, dated February 7, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025s – Resolution Environmental (TN 261603). Appendix D-1 Biological Resources Technical Report, dated February 7, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025t – Resolution Environmental (TN 261604). Appendix E-1 Aquatic Resources Delineation, dated February 7, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025jjj – Resolution Environmental (TN 265726). Letter of Support, dated August 20, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025kkk – Resolution Environmental (TN 265739). Response to CEC's Request for Information dated July 31 2025, dated August 21, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2024vv – Resolution Environmental (TN 257948). Appendix D2 Desert Bighorn Sheep Study, dated July 23, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025x – Resolution Environmental (TN 261667). Appendix AA_Determination of Infeasibility for DR BIO-20, dated February 10, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025iiii – Resolution Environmental (TN 267965). Data request responses, dated December 18, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025llll – Resolution Environmental (TN 267999). Final Data Responses, dated December 19, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

Rostal et al. 1999 – Rostal, David C.; Lance, Valentine A.; Grumbles, Janice S.; Alberts, Allison C., "Seasonal Reproductive Cycle of the Desert Tortoise (Gopherus agassizii) in the Eastern Mojave Desert," Herpetological Monographs, Vol. 8, pp. 72–82, The Herpetologists' League, 1994.

Sada and Thomas 2025 – Sada, Donald W.; Thomas, James M., "Relationships Between Aquatic Ecology, Landscapes, Hydrogeology and Hydrochemistry in Great Basin and Mojave Desert Spring Systems, USA," Ecohydrology, Vol. 18, e70035, John Wiley & Sons Ltd., April 2025.

Sawyer et al. 2009 – Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. A Manual of California Vegetation. 2nd Edition. California Native Plant Society. Sacramento, CA. Accessed online at: https://vegetation.cnps.org/

SC Wildlands 2012 – A Linkage Network for the California Deserts. 2012.

Shepard 1970 – Shepard, M., *LeConte's Thrasher (Toxostoma lecontei)*, *Western Birds*, Vol. 1, No. 1, 1970, pp. 1–8, Borderlands Birds Archive. Accessed online at: https://borderlandsbirds.org/wp-content/uploads/2017/08/Shepard_LeContesThrasher_1970.pdf

Shuford and Gardali 2008a — Shuford, W. David; Gardali, Thomas (eds.), "California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in

California," Studies of Western Birds No. 1, Western Field Ornithologists and California Department of Fish and Game, Camarillo, CA and Sacramento, CA, 2008.

Shuford and Gardali 2008b — Shuford, W. David; Gardali, Thomas (eds.), "California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California," Studies of Western Birds No. 1, Western Field Ornithologists and California Department of Fish and Game, Camarillo, CA and Sacramento, CA, 2008.

Shuford and Gardali 2008c—Shuford, W. David; Gardali, Thomas (eds.), "California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California," Studies of Western Birds No. 1, Western Field Ornithologists and California Department of Fish and Game, Camarillo, CA and Sacramento, CA, 2008.

Smallwood 2022 — Smallwood, K. S. (2022). Utility-scale solar impacts to volant wildlife. *Journal of Wildlife Management, 86*, e22216.

Spencer et al. 2010—Spencer, Wayne D.; Beier, Paul; Penrod, Kristeen; Winters, Karen; Paulman, Christine; Rustigian, Holly; et al., "California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California," California Department of Transportation (Caltrans) and California Department of Fish and Game, Sacramento, CA, 2010.

TEEX 2024 – Texas A&M Engineering Extension Service (TEEX). (2024). Lithium-ion battery fires and emissions characterization report. Southwest Research Institute.

Tinsley et al. 2023 – Tinsley, E.; Froideveaux, J.S.P; ZsebőK, S.; Szabadi, K.L.; and Jones, G. (2023). Renewable energies and biodiversity: Impact of ground-mounted solar photovoltaic sites on bat activity. Journal of Applied Ecology 60, 1752–1762.

Unitt 2004 – Unitt, P., *Grasshopper Sparrow (Ammodramus savannarum philippi)*, in *San Diego County Bird Atlas*, Proceedings of the San Diego Natural History Museum, Ibis Publishing Company, San Diego, California, 2004. Accessed online at: https://docslib.org/doc/5895934/grasshopper-sparrow-ammodramus-savannarum-philipi-unitt

USFWS 1994 – U.S. Fish and Wildlife Service (USFWS). 1994. Desert Tortoise (Mojave Population) Recovery Plan. U.S. Fish and Wildlife Service, Portland, Oregon.

USFWS 2016 – U.S. Fish and Wildlife Service (USFWS).Biological Opinion for the Soda Mountain Solar Project, San Bernardino County, California [2831.03(CP), CACA-49584, CAD000.06/CAD080].

USFWS 2007 – U.S. Fish and Wildlife Service (USFWS). 2007. Coachella Valley Fringe-toed Lizard (*Uma inornata*) Survey Protocol, April 2007 Revision. U.S. Fish and Wildlife Service.

USFWS 2013 – U.S. Fish and Wildlife Service (USFWS). 2013. Eagle Conservation Plan Guidance: Module 1 – Land-based Wind Energy, Version 2. Division of Migratory Bird Management, April 2013.

USFWS 2019a – U.S. Fish and Wildlife Service (USFWS). 2019. Survey Protocols for the Rusty Patched Bumble Bee (*Bombus affinis*), Version 2.2. U.S. Fish and Wildlife Service, April 12, 2019.

USFWS 2019b – U.S. Fish and Wildlife Service (USFWS). 2018. Preparing for Any Action That May Occur Within the Range of the Mojave Desert Tortoise (Gopherus agassizii). U.S. Fish and Wildlife Service, October 26, 2018.

USFWS 2025a – U.S. Fish and Wildlife Service. Information for Planning and Consultation. Accessed online at: https://www.fws.gov/service/information-planning-and-consultation

USFWS 2025b – U.S. Fish and Wildlife Service. Environmental Conservation Online System (ECOS). Accessed online at: https://ecos.fws.gov/ecp/

USFWS 2025c – U.S. Fish and Wildlife Service: Threatened and Endangered Species Active Critical Habitat Report. Accessed online at: https://ecos.fws.gov/ecp/report/table/critical-habitat.html

USFWS 2025d – U.S. Fish and Wildlife Service (USFWS). 2025. Endangered and Threatened Wildlife and Plants; Reopening Comment Periods for Three Proposed Rules; Announcement of a Public Hearing for One Proposed Rule. Federal Register, Vol. 90, No. 52, March 19, 2025.

Ventra and Clark 2018 – Ventra, D. and Clarke L.E. "Geology and geomorphology of alluvial and fluvial fans: current progress and research perspectives." *The Geological Society of London.* 2018.

Vickery 1996 – Vickery, P.D., Grasshopper Sparrow, Birds of the World, *Cornell Laboratories,* January 1996.

Wildlife Society 2025 – Milloway, O. The Wildlife Society, Wildlife Crossings Program Reduces Crashes, Saves Lives, May 2025.

Willstrand et al. 2025 – Willstrand, O., Quant, M., Hynynen, J. Contaminations from Lithum-ion Battery Fires—Per and Polyfluoroalkyl (PFAS) in Soot, *Fire Technology,* March 2025.

Xerces 2018 – Xerces Society for Invertebrate Conservation, Defenders of Wildlife, and Center for Food Safety. 2018. A Petition to the State of California Fish and Game Commission to List the Crotch Bumble Bee (Bombus crotchii), Franklin's Bumble Bee (Bombus franklini), Suckley Cuckoo Bumble Bee (Bombus suckleyi), and Western Bumble Bee (Bombus occidentalis occidentalis) as Endangered under the California Endangered Species Act. October 2018.

Yosef 1996 – Yosef, R., *Loggerhead Shrike (Lanius ludovicianus)*, *The Birds of North America* (A. Poole and F. Gill, eds.), No. 231, The Academy of Natural Sciences of Philadelphia and The American Ornithologists' Union, Washington, D.C., 1996.

Zeiner et al. 1988a – Zeiner, D.C., W.F. Laudenslayer Jr., K.E. Mayer, and M. White, eds. 1988–1990. California's Wildlife. Vol. I–III. California Department of Fish and Game, Sacramento, California. (Life history account: Black Tern, Chlidonias niger).

Zeiner et al. 1988b – Zeiner, D.C., W.F. Laudenslayer Jr., K.E. Mayer, and M. White, eds. 1988–1990. California's Wildlife. Vol. I–III. California Department of Fish and Game, Sacramento, California. (Life history account: Common Loon, Gavia immer).

Zeiner et al. 1988c – Zeiner, D.C., W.F. Laudenslayer Jr., K.E. Mayer, and M. White, eds. 1988–1990. California's Wildlife. Vol. I–III. California Department of Fish and Game, Sacramento, California. (Life history account: Golden Eagle, Aquila chrysaetos).

3M – 3M Traffic Safety Systems Division (3M). "Reflectivity," 2004. Accessed on: May 8, 2017. Accessed online at: http://multimedia.3m.com/mws/ymedia/295767O/reflectivity-flyer.pdf

5.3 Climate Change and Greenhouse Gas Emissions

This section analyzes the jurisdictional and non-jurisdictional project components. The jurisdictional project components include the construction and operation of the solar photovoltaic (PV) facility, battery energy storage system (BESS), project substation and generation intertie line (gen-tie) and construction of the utility switchyard and section of transmission loop in lines that would connect to the existing Mead-Adelanto Transmission Line. The non-jurisdictional project components include the construction and operation of the protection setting upgrades to the Marketplace and Adelanto substations and operation of the utility switchyard and section of transmission loop in lines.

This section describes the environmental and regulatory setting and potential impacts to the environment caused by the proposed project greenhouse gas (GHG) emissions. Unlike emissions of criteria and toxic air pollutants, which have regional and localized impacts, GHG emissions relate to the broader impact of global climate change.

5.3.1 Environmental Setting

Existing Conditions

Global warming associated with the "greenhouse effect" is a process whereby GHGs accumulating in the atmosphere contribute to an increase in the temperature of the Earth's atmosphere. The principal GHGs that contribute to global warming and climate change include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), black carbon, and fluorinated gases (F-gases) (hydrofluorocarbons [HFCs], perfluorocarbons [PFCs], and sulfur hexafluoride [SF_6]). Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the transportation, industrial/manufacturing, utility, residential, commercial, and agricultural sectors.

Each GHG has its own potency and effect upon the Earth’s energy balance, expressed in terms of a global warming potential (GWP), with CO_2 being assigned a value of one (1.0). Specifically, the GWP is a measure of how much energy the emissions of 1 ton of a gas will absorb over a given time relative to the emissions of 1 ton of CO_2. The larger the GWP, the more that a given gas warms the Earth compared to CO_2 over that time. The time usually used for GWPs is 100 years. The F-gases are sometimes called high-GWP gases because, for a given amount of mass, they trap substantially more heat than CO_2. The GWPs for these gases can be in the thousands or tens of thousands. The carbon dioxide equivalent (CO_2e) mass emission rate for a source is obtained by multiplying the mass of each GHG by the assigned GWP for that compound and then adding the results of this product together to obtain a single, mass emission rate in terms of CO_2e that represents the combined effects of the GHGs.

California Emissions Inventory

California is a contributor to global GHG emissions. The total gross California GHG emissions in 2022 were 371.1 million metric tons of CO2-equivalent (MMTCO2e) (CARB 2024). The largest category of GHG emissions in California is transportation, followed by industrial activities and electricity generation in state and out of state.

In 2022, the total gross U.S. greenhouse gas emissions were 6,343 MMTCO2e, or 5,489 MMTCO2e after accounting for sequestration from the land sector (U.S. EPA 2024). Nationwide GHG emissions in 2022 rebounded from 2020 levels that were lower than 2019 because of a sharp decline due to the impacts of the coronavirus (COVID-19) pandemic on fossil fuel combustion, related to travel and economic activity (CARB 2024, U.S. EPA 2024).

San Bernadino County Emissions Inventory

The total gross 2016 inventory of the unincorporated portion of San Bernadino County GHG emissions was approximately 2,873,469 MT CO_2e. The largest portion of emissions in the 2016 inventory came from the transportation sector, which was 52.9 percent of the County's total GHG emissions. Commercial and residential energy (both electricity and natural gas) uses were the second largest contributor of GHG emissions with 33 percent of total emissions. Solid waste accounted for 7 percent and Agriculture accounted for 5 percent of total GHG emissions in 2016. Off-Road Equipment accounted for approximately 1.2 percent of total GHG emissions, and both water and wastewater-related uses emitted less than 1 percent (San Bernadino County 2021).

Decarbonization of California's Electricity Sector

The electricity sector in California has achieved substantial GHG emissions reductions through renewable and zero-carbon energy deployment. Moving forward, a clean, affordable, and reliable electricity grid will serve as a backbone to support deep decarbonization across California's economy. Decarbonizing the electricity sector is a crucial pillar of achieving carbon neutrality, and CARB anticipates that the role of electricity in powering the economy will continue to grow while electric loads increase (CARB 2022).

California continues to add zero-carbon energy resources to replace fossil-fuel generation and support growing demand. Moving to zero-carbon resources is critical to reducing GHG emissions and addressing the long-term impacts of climate change (CEC 2022). Renewable and zero-carbon sources of energy do not operate on-demand like traditional fossil fuel power plants. The growth of zero-carbon resources, especially solar resources, has shifted the reliability concerns from the peak hour (hour with the highest energy demand) to net peak hours (hours when energy demand minus wind and solar generation is largest). As solar capacity has grown in recent years, net peak has shifted to later in the day. Wind generation late in the day aids in meeting the shift to a later net peak (CEC 2022).

Peak demand times require dispatching generation plants with different fuels, and generation resources in the state are diverse. Wind and solar generation are part of the supply on most days. While the electricity sector is using less fossil fuel due to increasing amounts of renewables, existing fossil-fuel natural gas-fired generation will continue to play a critical role in grid reliability until other clean, dispatchable alternatives can be deployed at scale. Presently, fossil-fuel natural gas-fired power plants provide about 75 percent of the flexible capacity for grid reliability. As more renewable power enters the system, other resources such as storage and demand-side management are essential to maintain reliability with high concentrations of renewables (CARB 2022).

Regulatory

Federal

There are no federal plans, policies, and regulations related to GHGs that would apply to the project.

State

California Global Warming Solutions Act of 2006. In 2006, the state Legislature passed the California Global Warming Solutions Act of 2006 (Assembly Bill 32, Núñez, Chapter 488, Statutes of 2006), codified as Health and Safety Code, section 38500 and the following, which provided the initial framework for regulating GHG emissions in California. This law required CARB to design and implement GHG emissions limits, regulations, and other measures such that statewide GHG emissions are reduced in a technologically feasible and cost-effective manner to 1990 levels by 2020. AB 32 also required CARB to implement a mandatory GHG emissions reporting program for major sources, which includes electricity generators, industrial facilities, fuel suppliers, and electricity importers.

CARB Scoping Plan. Part of the Legislature's direction to CARB under AB 32 was to develop a scoping plan that serves as a statewide planning document to coordinate the main strategies California will use to reduce GHG emissions that cause climate change. CARB approved the AB 32 Climate Change Scoping Plan (Scoping Plan) in 2008 and released updates in 2014, 2017, and 2022. The CARB's Scoping Plan includes a range of GHG emissions reduction actions, which include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based compliance mechanisms, such as the cap-and-trade program. In December 2007, CARB set the statewide 2020 emissions limit, defined as reducing emissions to 1990 levels, at 427 $MMTCO_2e$. The 2014 Scoping Plan adjusted the 1990 emissions estimate and the statewide 2020 emissions limit goal to 431 $MMTCO_2e$ (CARB 2014). The 2017 Scoping Plan (CARB 2017a) demonstrates the approach necessary to achieve California's 2030 target, which is to reduce GHG emissions 40 percent below 1990 levels to 260 $MMTCO_2e$. On November 16, 2022, CARB published the 2022

Scoping Plan for Achieving Carbon Neutrality (CARB 2022), which lays out a path to achieve targets for carbon neutrality by 2045.

Executive Order B-30-15. On April 29, 2015, former 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 make it possible to achieve the previously stated goal of an 80 percent GHG emissions reduction below 1990 GHG emissions by 2050 (CARB 2017a).

Statewide 2030 GHG Emissions Limit. On September 8, 2016, SB 32, codified as Health and Safety Code, section 38566, extended California's commitment to reduce GHG emissions by requiring the state to reduce statewide GHG emissions by 40 percent below 1990 levels by 2030 (CARB 2017a).

Renewable Energy Programs. In 2002, California initially established the Renewables Portfolio Standard (RPS) with the goal of increasing the percentage of renewable energy in the state's electricity mix to 20 percent by 2017. State energy agencies recommended accelerating that goal, and former Governor Schwarzenegger's Executive Order S-14-08 (November 2008) required California utilities to reach the 33 percent renewable electricity goal by 2020, consistent with the CARB's 2008 Scoping Plan. In April 2011, Senate Bill X1-2 (Simitian, Chapter 1, Statutes of 2011) of the First Extraordinary Session was signed into law. SB X1-2 expressly applied the 33 percent RPS by December 31, 2020, to all retail sellers of electricity and established renewable energy standards for interim years prior to 2020.

- Clean Energy and Pollution Reduction Act (Senate Bill 350, De León, Chapter 547, Statutes of 2015): Beginning in 2016, SB 350 took effect declaring it the intent of the Legislature to acknowledge Governor Brown's clean energy, clean air and greenhouse gas emissions reduction goals for 2030 and beyond. SB 350 increases California's renewable electricity procurement goal from 33 percent by 2020 to 50 percent by 2030.
- The 100 Percent Clean Energy Act of 2018 (Senate Bill 100, De León, Chapter 312, Statutes of 2018): Beginning in 2019, the RPS deadlines advanced to 50 percent renewable resources by December 31, 2026, and 60 percent by December 31, 2030. In addition, SB 100 establishes policy that renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of electricity by December 31, 2045.
- Clean Energy, Jobs, and Affordability Act of 2022 (Senate Bill 1020, Laird, Chapter 361, Statutes of 2022): Accelerates the timelines set forth in SB 100 to provide that eligible renewable energy resources and zero-carbon resources supply 90 percent of all retail sales of electricity to California end-use customers by December 31, 2035, 95 percent of all retail sales of electricity to California end-use customers by December 31, 2040, 100 percent of all retail sales of electricity to California end-use customers by December 31, 2045, and 100 percent of electricity procured to serve all state agencies by December 31, 2035, as specified.

Short-Lived Climate Pollutant Strategy. To best support the reduction of GHG emissions consistent with AB 32, CARB released the Short-Lived Climate Pollutant (SLCP) Strategy, under Health and Safety Code, section 39730, in March 2017. Health and Safety Code, section 39730, defined SLCPs as having lifetimes in the atmosphere ranging from "a few days to a few decades." Then beginning in 2017 under Health and Safety Code, section 39730.5, CARB was directed to set targets to reduce SLCP emissions 40 percent below 2013 levels by 2030 for CH_4 and HFCs and 50 percent below 2013 levels by 2030 for anthropogenic black carbon (CARB 2017b). The SLCP Strategy was integrated into the 2017 update to CARB's Scoping Plan.

To help meet the HFC reduction goal, California adopted Prohibitions on Use of Certain Hydrofluorocarbons in Stationary Refrigeration, Stationary Air-conditioning and Other End-Uses (California Code of Regulations, Title 17, Division 3, Chapter 1, Subchapter 10 Climate Change, Article 4, Subarticle 5, Sections 95371, et seq.). The prohibited HFCs and their respective effective dates are listed in the regulation. In addition, on September 30, 2022, the Governor approved SB 1206, which would prohibit a person from offering for sale or distribution, or otherwise entering into commerce in the state, bulk HFCs or bulk blends containing HFCs that exceed the GWP limit of 2,200 beginning January 1, 2025, and lower GWP limits beginning January 1, 2030, and January 1, 2033. The bill does not restrict the authority of CARB to establish regulations lowering the maximum allowable GWP limits below the limits established by the bill.

Senate Bill SB 375. The Sustainable Communities and Climate Protection Act of 2008 (SB 375), signed in August 2008, enhances the state's ability to reach AB 32 goals by directing CARB to develop regional GHG emission reduction targets to be achieved from passenger vehicles by 2020 and 2035. SB 375 aligns regional transportation planning efforts, regional GHG reduction targets, and affordable housing allocations. Metropolitan Planning Organizations (MPO) are required to adopt a Sustainable Communities Strategy (SCS), which allocates land uses in the MPO's Regional Transportation Plan (RTP). Qualified projects consistent with an approved SCS or Alternative Planning Strategy (categorized as "transit priority projects") can receive incentives to streamline CEQA processing.

On March 22, 2018, CARB adopted updated regional targets for reducing GHG emissions from 2005 levels by 2020 and 2035.

Executive Order B-55-18. On September 10, 2018, the same day he signed SB 100 into law, former Governor Brown issued Executive Order B-55-18 to achieve carbon neutrality, stating the governor's intention "to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter. This goal is in addition to the existing statewide targets of reducing greenhouse gas emissions." From the 2020 GHG limit of 431 $MMTCO_2e$, California will need to reduce statewide emissions another 170 million tons to meet its 2030 statutory target of 260 million tons per year (40 percent below 1990 levels). The state would

need to cut annual emissions by a further 175 million tons to meet its 2050 goal (set by executive order) of 85 million tons per year (80 percent below 1990 levels).

Reducing SF6 Emissions from Gas Insulated Switchgear. In early 2011, CARB adopted a regulation (17 CCR §§ 95350 to 95359) to reduce SF_6 emissions in gas insulated switchgear used in the electricity sector's transmission and distribution system as an early action measure pursuant to AB 32. SF_6 is an extremely powerful and long-lived GHG. The 100-year GWP of SF_6 is 22,800 (from IPCC Fourth Assessment Report), making it the most potent of the six main GHGs, according to the U.S. EPA. Because of its extremely high GWP, small reductions in SF_6 emissions can have a large impact on reducing GHG emissions, which are the main drivers of climate change.

The regulation requires gas insulated switchgear owners to report SF_6 emissions annually and requires reducing losses of SF_6 over time, subject to annual emission rate limits. The maximum allowable emission rate started at 10 percent in 2011 and has decreased one percent per year since then. The limit reached one percent in 2020 and remained at that level going forward. However, data show that statewide SF_6 capacity is growing by one to five percent per year, which would increase the expected SF_6 emissions. In response to emerging technologies using lower or zero GWP insulators, CARB amended the regulation (Cal. Code Regs., tit. 17, §§ 95350 to 95359.1) in 2021 to further reduce GHG emissions from gas-insulated equipment (GIE). Key provisions of the amended regulation include a phase-out schedule in stages between 2025 and 2033 for new SF_6 GIE, coverage of other GHG beyond SF_6 used in GIE, and other changes that enhance accuracy of emissions accounting and reporting.

The California Climate Crisis Act (Assembly Bill 1279). Assembly Bill 1279 (Muratsuchi, Chapter 337, Statutes of 2022) establishes the policy of the state to achieve carbon neutrality as soon as possible, but no later than 2045; to maintain net negative GHG emissions thereafter; and to ensure that by 2045 statewide anthropogenic GHG emissions are reduced by at least 85 percent below 1990 levels. The bill requires CARB to ensure that Scoping Plan updates identify and recommend measures to achieve carbon neutrality, and to identify and implement policies and strategies that enable CO_2 removal solutions and carbon capture, utilization, and storage (CCUS) technologies. The CARB 2022 Scoping Plan for Achieving Carbon Neutrality (CARB 2022) plans for the 2045 target set forth by AB 1279 and Executive Order B-55-18.

California Environmental Quality Act (CEQA) Guidelines for GHG Emissions. With the enactment of Senate Bill 97 (Dutton, Chapter 185, Statutes of 2007), the Governor's Office of Planning and Research was required by July 1, 2009, to prepare, develop, and transmit to the Natural Resources Agency guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. Those amendments to the CEQA guidelines became effective March 18, 2010, and were subsequently updated in December 2018 to further address the analysis of GHG emissions, including the following:

- Lead agencies must analyze the GHG emissions of proposed projects. (See CEQA Guidelines, § 15064.4, subd. (a))
- The focus of the lead agency's analysis should be on the project's effect on climate change, rather than simply focusing on the quantity of emissions and how that quantity of emissions compares to statewide or global emissions. (See CEQA Guidelines, § 15064.4, subd. (b))
- The impacts analysis of GHG emissions is global in nature and thus should be considered in a broader context. A project's incremental contribution may be cumulatively considerable even if it appears relatively small compared to statewide, national, or global emissions. (See CEQA Guidelines, § 15064.4, subd. (b))
- Lead agencies should consider a timeframe for the analysis that is appropriate for the project. (See CEQA Guidelines, § 15064.4, subd. (b))
- A lead agency's analysis must reasonably reflect evolving scientific knowledge and state regulatory schemes. (See CEQA Guidelines, § 15064.4, subd. (b).)
- Lead agencies may rely on an adopted statewide, regional, or local plan in evaluating a project's GHG emissions. (See CEQA Guidelines, § 15064.4, subd. (b)(3))
- Lead agencies may analyze and mitigate the significant impact of GHG emissions as part of a larger plan for the reduction of greenhouse gases. (See CEQA Guidelines, § 15183.5, sub. (a))
- A project's incremental contribution to a cumulative GHG emissions effect may be determined not to be significant and the effects of the project to not be cumulatively considerable if the project complies with the requirements of the GHG emissions reduction strategy. (See CEQA Guidelines, §§ 15064, sub. (h)(3); 15130, sub. (d); 15183, sub. (b))
- In determining the significance of a project's impacts, the lead agency may consider a project's consistency with the state's long-term climate goals or strategies, provided that substantial evidence supports the agency's analysis of how those goals or strategies address the project's incremental contribution to climate change and its conclusion that the project's incremental contribution is consistent with those plans, goals, or strategies. (See CEQA Guidelines, § 15064.4, subd. (b)(3))
- The lead agency has discretion to select the model or methodology it considers most appropriate to enable decision makers to intelligently account for the project's incremental contribution to climate change. (See CEQA Guidelines, § 15064.4, subd. (c).)

Local

Southern California Association of Governments (SCAG). SCAG is the federally recognized metropolitan planning organization (MPO) for the Southern California region which includes Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties. Pursuant to the Sustainable Communities and Climate Protection Act of 2008

(SB 375), the SCAG developed the 2024 Regional Transportation Plan & Sustainable Communities Strategy, Connect SoCal 2024, approved by SCAG's Regional Council in April 2024. The 2024 RTP/SCS, Connect SoCal 2024, includes GHG emissions quantification for vehicle-miles traveled by automobiles and light-duty trucks in the region to achieve a GHG reduction target of 19 percent below 2005 per capita emissions levels by 2035 (SCAG 2024). The RTP/SCS, Connect SoCal 2024, lays out how the region will meet certain transportation-related GHG reduction targets while considering all economic segments of the population, net migration into the region, population growth, household formation, and employment growth (SCAG 2024).

CARB accepted the SCAG quantification of GHG reductions for the 2024 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) on May 7, 2025. CARB confirmed that the plan meets the 2035 target of 19% per capita GHG reductions below 2005 levels if fully implemented, and it accepted SCAG's modeling methods as accurate for Senate Bill 375 purposes, though it recommended improvements for future plans and noted that additional actions are needed for full achievement. This ensures SCAG region projects remain eligible for state funding (SCAG 2025).

San Bernardino Greenhouse Gas Reduction Plan Update. The 2021 San Bernardino Greenhouse Gas Reduction Plan (GHGRP) Update is an update to the 2011 San Bernardino County GHGRP. The GHGRP Update presents a target for the year 2030, which is to reduce emissions to 40% below 2007 levels. This goal would put the county on a path toward the state's long-term goal to achieve statewide carbon neutrality (zero net emissions) by 2045 (San Bernardino County 2021).

San Bernardino Countywide Plan. The San Bernardino County Policy Plan (San Bernardino County 2020a) includes long-term goals and policies that will guide County decisions, investments, and improvements toward achieving the countywide vision. It serves as the County's General Plan for the unincorporated areas, which is mandated by state law (San Bernardino County 2020b). The following policies identified in the Natural Resources element of the Countywide Plan are relevant to this analysis (San Bernardino County 2020b).

- **Goal NR-1 Air Quality.** Air quality that promotes health and wellness of residents in San Bernardino County through improvements in locally-generated emissions.
- **Policy NR-1.3** We collaborate with air quality management districts and other local agencies to monitor and reduce major pollutants affecting the county at the emission source.
- **Policy NR-1.5** We consider recommendations from the California Air Resources Board on the siting of new sensitive land uses and exposure to specific source categories.
- **Policy NR-1.6** We coordinate with air quality management districts on requirements for dust control plans, revegetation, and soil compaction to prevent fugitive dust emissions.

- **Policy NR-1.7** Greenhouse gas reduction targets. We strive to meet the 2040 and 2050 greenhouse gas emission reduction targets in accordance with state law.
- **Policy NR-1.8** Construction and operations. We invest in County facilities and fleet vehicles to improve energy efficiency and reduce emissions. We encourage County contractors and other builders and developers to use low-emission construction vehicles and equipment to improve air quality and reduce emissions.
- **Policy NR-1.9** Building design and upgrades. We use the [California Green Building Standards] CALGreen Code to meet energy efficiency standards for new buildings and encourage the upgrading of existing buildings to incorporate design elements, building materials, and fixtures that improve environmental sustainability and reduce emissions.

Cumulative

The CEQA Guidelines indicate that the impact analysis for GHG emissions is global in nature, and the focus of the lead agency's analysis should be on the project's effect on climate change, rather than simply focusing on the quantity of emissions and how that quantity of emissions compares to statewide or global emissions. The discussion under the "Existing Conditions" subsection describes the broader context of global climate change and provides information on statewide and local emissions.

5.3.2 Environmental Impacts

CLIMATE CHANGE AND GREENHOUSE GAS EMISSIONS Would the project:	**Significant and Unavoidable Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☒	☐	☐
b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☒	☐	☐

Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix G, greenhouse gas emissions.

5.3.2.1 Methodology and Thresholds of Significance

In addition to the above environmental checklist, staff used the following methodology and thresholds of significance to evaluate the project.

Methodology

The applicant estimated GHG emissions for construction and operation using CalEEMod (version 2022.1.1.29) and spreadsheet tools. The applicant's estimates include GHG from off-road equipment, haul-truck trips, on-road worker vehicle trips, vehicle travel on

paved and unpaved surfaces, and fugitive dust from material handling activities, based on the proposed project including the 18-month construction duration (RE 2025ggg).

In this analysis, staff reviewed revised GHG emissions estimates for construction and operation of the proposed project using CalEEMod (version 2022.1.1.29). Staff also reviewed the CalEEMod provided results for mobile sources, and other uses of transportation fuels and energy (electricity) to provide landscaping, water supply, and solid waste disposal related to the operation and maintenance (O&M) building. Additional spreadsheet analysis quantifies the effects of indirect GHG emissions reductions due to the electricity produced from renewable energy.

Thresholds of Significance

The MDAQMD has established 100,000 short tons (90,718 metric tons) of CO2e per annum or 548,000 pounds per day as the District's significant emissions thresholds for greenhouse gases. This means that, if the project does not exceed these thresholds, then staff would consider the project GHG emissions to cause no significant impact on the environment.

5.3.2.2 Direct and Indirect Impacts

a. Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Construction

Less Than Significant. Based on the analysis below, the combined direct and indirect effects of the GHG emissions indicate that a net GHG reduction would occur primarily due to the emissions avoided by producing electricity from renewable energy. The impact would be less than significant.

Table 5.3-1 summarizes the different project effects of construction; the table also includes the effects of indirect GHG emissions reductions due to the electricity produced from the solar PV and BESS facilities as renewable energy.

Jurisdictional Project Components

Construction activities would cause GHG emissions resulting from fossil-fuel combustion in the engines of construction equipment and the vehicles carrying construction materials and workers to and from the site. Diesel fuel or gasoline would be used in mobilizing the heavy-duty construction equipment, site development and preparation, facility construction, and roadway construction. Over the 18-month of construction, daily average pounds per day and total annual GHG emissions would amount to approximately 30,155 pounds per day and 8,178 $MTCO_2e$ respectively including all equipment and vehicle use, for all on-site and off-site activity needed to install the proposed project (RE 2025ggg); this also includes energy consumed to supply up to 20

acre-feet of water supplied to the site for dust control (RE 2025ggg). The project construction emissions would be lower than the MDAQMD significance thresholds of 100,000 short tons (90,718 metric tons) of CO2e per annum or 548,000 pounds per day. To capture the long-term effects of the one-time, short-term construction GHG emissions, this analysis averages the construction effects over a 40-year life of the project. On this basis, the overall construction GHG emissions amortized over 40 years would be equivalent to an annualized rate of 204 MT CO_2e per year for the 18-month construction period.

Non-Jurisdictional Project Components

Construction activities to upgrade the protection settings at existing Marketplace and Adelanto substations would not involve groundwork and thus would be temporary in nature and are unlikely to result in significant GHG emissions. The upgrades include the installation of line tuners, wave traps, microwave telecom links, relay protection equipment, and metering and controls equipment (RE 2024uuu, pg. 3, RE 2025kkk.) Short-term construction would cause GHG emissions resulting from fossil-fuel combustion in the engines of construction equipment and the vehicles carrying construction materials and workers to and from the site.

Fugitive dust emissions can create a nuisance and adverse effects. To ensure that fugitive dust emissions would not occur at levels that could adversely affect a substantial number of people, the project would be required to be consistent with MDAQMD Rule 402 for limiting visible emissions from fugitive dust, including unpaved roads, and would be subject to prohibitions on creating nuisances in the California Health & Safety Code. Furthermore, any interconnection facilities under LADWP's jurisdiction would comply with Los Angeles Board of Water and Power Commissioners permitting requirements, relying on the CEC's CEQA review. Staff recommends MDAQMD's construction best practices for air quality, to further reduce fugitive dust during construction of downstream network upgrades. Furthermore, staff has recommended COCs **AQ-SC1** through **AQ-SC5** (see **Section 5.1, Air Quality**) to ensure that the project would not generate greenhouse gas emissions, either directly or indirectly. Therefore, construction emissions from the downstream network upgrades would be further reduced below the acceptable levels established in the applicable air quality management plans

Operation

Less Than Significant with Mitigation Incorporated. Based on the analysis below the combined direct and indirect effects of the GHG emissions indicate that a net GHG reduction would occur primarily due to the emissions avoided by producing electricity from renewable energy. To ensure that the project would remain consistent with current hydrofluorocarbon (HFC) prohibition, staff proposes Condition of Certification (COC), described below to ensure impacts would be less than significant with mitigation incorporated.

Table 5.3-1 summarizes the different project effects of the O&M activities, and fugitive losses of SF_6; the table also includes the effects of indirect GHG emissions reductions due to the electricity produced from the solar PV and BESS facilities as renewable energy.

Jurisdictional Project Components

Operation would cause GHG emissions from the following types of activities: worker motor vehicle trips; energy use (electricity) for the O&M building; required maintenance work; the electricity intensity of the O&M water supply; solid waste disposal; and SF_6 leaked from circuit breakers at the proposed substation site.

TABLE 5.3-1 PROJECT GHG EMISSIONS FOR CONSTRUCTION AND OPERATION

Emission Source	**Annual Emissions (MTCO2e/year)**
Mobile (vehicles)	1,188
Area (landscape, coatings)	2.23
Energy (electricity)	24
Waste	3.09
Water Use	9.9
BESS (~400 units) – Battery Cooling (R-134a)	256[a]
SF6 – Step-up Substation	369[b]
SF6 – 5 circuit breakers at Switchyard	1,845[b]
Total Operation	**3,441**
Construction Emissions	8,178 (duration of Construction for 18-months)
One-time Construction, if amortized over 40-year project life	204
Combined Effects Of Operation and Construction	**3,645**
Annual Emissions Avoided by Producing Electricity averaged over 40-year project life[c]	-75,196
Total Net Emissions	**-71,551**

Source: Construction and O&M emissions sources from applicant activity (RE 2025ggg) and EPA Emission Factors for GHG inventories (US EPA 2024b).
a The applicant has estimated battery cooling using refrigerant R-134a which will be prohibited for purchase in large scale commercial uses. See details in the text.
b The applicant conservatively estimated the GHG emissions assuming that all circuit breakers would contain SF_6. However, due to the CARB SF_6 phase-out regulation 17 CCR §§ 95350 to 95359, circuit breakers in the later phases may not use SF_6 and these values are conservative.
c See more details under Emissions Avoided by Producing Electricity below.

Refrigerant Leakage

The BESS would be equipped with air conditioning for thermal management purposes. In Data responses Set 2 (RE 2025nn), the applicant has specified the refrigerant for BESS cooling as R-134a and the use of R-32 for the buildings air conditioning needs.

R-134a and R-32 have GWPs of 1,430 and 675 respectively. The use of R-32 aligns with Senate Bill 1206 (SB 1206), which phases out high-GWP refrigerants. However, as

discussed in more detail under CEQA criterion b below, R-134a (with GWP greater than 750) would be prohibited per regulation, Prohibitions on Use of Certain Hydrofluorocarbons (HFCs) in Stationary Refrigeration, Stationary Air-conditioning and Other End-Uses (California Code of Regulations, Title 17, Division 3, Chapter 1, Subchapter 10 Climate Change, Article 4, Subarticle 5).

Staff proposes COC **GHG-1** to ensure the project would remain in compliance with the current HFCs prohibition, and the air-cooling units installed onsite would use non-prohibited refrigerant. Therefore, the estimated GHG emissions due to refrigerant leakage for BESS cooling and other refrigeration/air conditioning needs shown in **Table 5.3-1** above are conservative.

Vehicle Trips, O&M Building, and Equipment

Proposed project operations with maintenance and inspection of the solar PV facility, and BESS energy generation facility would use diesel fuel and gasoline for off-site vehicle trips for worker commutes, material deliveries, site security, and facility upkeep. Use of these fuels would cause GHG emissions from the vehicle trips to and from the site and water use for dust suppression and mirror washing. Other onsite GHG emissions would be caused by landscaping, water supply, and solid waste disposal related to O&M building use and occupancy. For the vehicle trips and proposed project workforce of up to 4 O&M employees (2-4 employees at the BESS facility), the O&M building (5,000 square-feet), the emissions would be approximately 1,227.2 $MTCO_2e$ per year which are the combined mobile, area, energy, water and waste sources in **Table 5.3-1**.

Fugitive SF_6 Emissions from Gas-Insulated Equipment

The proposed project would add new sources of GHG with electrical power equipment that contains gas to provide thermal insulation or arc quenching. This gas-insulated equipment includes devices such as switchgear, switches, and circuit breakers within the proposed substations. Until an alternative insulating gas becomes commercially available, circuit breakers and gas-insulated switchgear would contain SF_6, a potent GHG. The SF_6 insulating gas could be expected to leak at small amounts annually over the life of the project. Federal and state-level mandatory reporting rules track SF_6 emissions, and the CARB Regulation for Reducing Greenhouse Gas Emissions from Gas-Insulated Equipment requires control and eventual replacement and phase-out of SF_6 with alternative gases having lower GWP.

Accordingly, the project would need to manage its use of SF_6 through inventory recordkeeping, proper handling, and planning for an eventual replacement with an alternative. The new phase out schedule began in January 2025 with all switchgear needing to be SF_6 free by January 2033. CARB has developed a timeline for phasing out SF_6 equipment in California and created incentives to encourage owners to replace SF_6 equipment. The California Office of Administrative Law approved this rulemaking in December 2021 and the Resolution went into effect January 1, 2022 (CARB 2021).

CARB has implemented phasing requirements for the elimination of SF_6 from electrical equipment, including circuit breakers. While the analysis assumes that all circuit breakers would contain SF_6, circuit breakers in the later phases may not contain SF_6 and/or as circuit breakers are replaced, they would be replaced with non-SF_6 technology. As estimated in **Table 5.3-1** of this analysis staff assumed the maximum amount of SF_6 per circuit breaker and depending on the circuit breaker used, SF_6 content may be substantially less than assumed in **Table 5.3-1**. Therefore, GHG emissions reported for the project are conservative.

Prior to the phase-out, emissions of SF_6 due to potential leaks are quantified as approximately 2,214 $MTCO_2e$ per year, and these GHG emissions are included in the sum of the project which would include one circuit breaker to support the substation and one at the utility switchyard (RE 2025ggg).

Emissions Avoided by Producing Electricity

Some of the renewable power generated by the proposed project would displace power produced by carbon-based fuels that would otherwise be used to meet electricity demand. The power displaced is incremental power provided by generators elsewhere on the grid, typically from natural gas power plants.

The proposed solar PV and BESS energy generation facility, with a capacity of up to 300-megawatt (MW) solar PV facility and up to 1,200 MW-hour BESS (RE 2025ggg). Some of the electricity produced would displace fuel-burning by California's flexible natural gas-fired resources or electricity otherwise imported to California. This would avoid GHG that could otherwise be emitted by fuel-burning generators. The rate of GHG emissions avoided would vary with the mix of generators and imported electricity displaced by the incremental supply generated by the proposed project. The least efficient and highest-emitting generators are normally turned down to accommodate additional renewable generation; in California, there is a single dominant dispatchable fuel (natural gas) (CEC 2019; CPUC 2022).

To estimate the emissions avoided by solar and battery energy produced by the project, this analysis assumes that the proposed solar PV and BESS energy generating facility would avoid the need to use fuel at a mix of flexible, dispatchable generating facilities using coal and natural gas. Combustion of natural gas and coal for power are of the greatest concern related to the generation of criteria pollutants and GHG emissions, therefore only fuel displacement of natural gas and coal due to electricity production were used. While the precise quantity of GHG emissions avoided by the proposed project would depend on the operations, and the assumption of degradation in battery efficiency, the project has the potential to displace over 300,786 $MTCO_2e$ per year (RE 2025ggg). Over the projects 40-year life, with the assumption of carbon neutrality by 2045, the potential displacement would be equivalent to an average of about 75,196 $MTCO_2e$ per year.

Non-Jurisdictional Project Components

The GHG emissions quantification in **Table 5.3-1** shows that for the utility switchyard, GHG emissions generated during operation and maintenance would be around 1,845 $MTCO_2e$/year, which would be considerably less than the quantity of avoided GHG emissions, and that the proposed facility (including all project components) would lead to a net reduction in GHG emissions across the State's electricity system.

CARB has implemented phasing requirements for the elimination of SF_6 from electrical equipment, including circuit breakers. While the analysis assumes that all circuit breakers would contain SF_6, circuit breakers in the later phases may not contain SF_6 and/or as circuit breakers are replaced, they would be replaced with non-SF_6 technology. As estimated in **Table 5.3-1** of this analysis, staff assumed the maximum amount of SF_6 per circuit breaker and depending on the circuit breaker actually used, SF_6 content may be substantially less than assumed in **Table 5.3-1** of 1,845 $MTCO_2e$. Therefore, GHG emissions reported for the utility switchyard are conservative.

Operation and maintenance activities associated with the transmission loop in line and towers would be performed remotely by LADWP and therefore would result in minimal emissions from vehicle trips to and from these components once construction is completed. No diesel generators or other nonelectric equipment would be used that result in GHG emissions. The operation and maintenance activities anticipated for the downstream network upgrades are those that are already in practice, and would not therefore, result in an increase in GHG emissions.

b. Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Construction

Less Than Significant. Based on the analysis below, construction of the project would not conflict with an applicable plan, policy or regulation adopted for the purposes of reducing the emissions of greenhouse gases.

The GHG emissions quantification in this section illustrates that emissions generated during construction would be considerably less than the quantity of avoided GHG emissions, and that the project would lead to a net reduction in GHG emissions across the State's electricity system. Construction of the project would contribute to meeting the State's GHG reduction goals under AB 32, and subsequent targets for 2030 and beyond, and would not conflict with California's RPS.

Jurisdictional Project Components

The project's short-term construction GHG emissions would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emission of GHG, and this is considered a less than significant impact. Construction vehicles and

the supplies of transportation fuels used during construction of the project are required to be consistent with the applicable GHG reduction programs for mobile sources and suppliers of transportation fuels. Construction activities of the project would conform to relevant programs and recommended actions detailed in CARB's Scoping Plan. Construction emissions would be further reduced with the implementation of COC **AQ-SC5** in **Section 5.1, Air Quality**, which limits equipment idling and requires the use of zero-emission or hybrid powertrains and electric motors when feasible. The project would be consistent with Policy NR-1.8 in the San Bernardino County Policy Plan, which encourages the use of low-emission construction vehicles and equipment to improve air quality and reduce emissions.

Table 5.3-2 below details staff's determination of consistency with applicable local, state and federal plans, policies, and regulations, including any proposed COCs, where applicable, to ensure the jurisdictional components of the project would be consistent with plans, policies, and regulations. As shown in this table, staff concludes that with implementation of specific COCs, the jurisdictional components of the project would be consistent with all applicable plans, policies, and regulations. The subsection below, "Staff Proposed Conditions of Certification," contains the full text of the referenced conditions of certification.

TABLE 5.3-2 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS

Applicable Plans, Policies and Regulations	Consistency and Basis for Determination
Federal	
None	
State	
Scoping Plan	**Yes.** The proposed PV and BESS energy generation facilities would provide electricity to facilitate consistency with California's RPS and would lead to a net reduction in GHG emissions across the State's electricity system.
CARB SF_6 Reduction Requirements	**Yes.** The project would be consistent with GHG emissions reduction requirements through conformance with reporting and phase-out requirements of this regulation.
Short-Lived Climate Pollutant (SLCP) Strategy	**Yes.** The project would consistent with GHG emissions reduction requirements through conformance with COC **GHG-1**.
Local	
Southern California Association of Governments	
The 2024 RTP/SCS is a financially feasible plan that achieves health standards for clean air and addresses climate goals set by the state.	**Yes.** The proposed project would be consistent with these goals by reducing fossil fuel use by generating renewable energy, as well as through the implementation of the BESS facility that would store electrical energy for additional grid support during peak demand addressing climate goals set by the state.
San Bernadino Greenhouse Gas Reduction Plan Update	
The GHG Reduction Plan Update directs the County to develop guidance to assist lead	**Yes.** The Project would generate solar energy that would supplement the utility's requirement to

TABLE 5.3-2 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS

Applicable Plans, Policies and Regulations	Consistency and Basis for Determination
agencies, project proponents, permit applicants, and interested parties in assessing and reducing the impacts of project-specific GHG emissions on global climate change and sets a target for the year 2030, which is to reduce emissions to 40% below 2007 levels.	increase its renewable energy procurement in accordance with SB 100 targets. Therefore, the proposed project would not conflict with the GHG Reduction Plan Update and GHG impacts would be less than significant.
San Bernadino Countywide Plan	
Applicable County Policy Plan components are those that set policies regarding natural resources and renewable energy and conservation. Goal NR-1 Air Quality includes but not limited to focuses on meeting 2040 and 2050 greenhouse gas emission reduction targets in accordance with state law (Policy NR-1.7), and encouraging builders and developers to use low-emission construction vehicles and equipment to improve air quality and reduce emissions (Policy NR-1.8).	**Yes.** The proposed project would be consistent with these goals by reducing fossil fuel use by generating renewable energy, as well as through the implementation of the BESS facility that would store electrical energy for additional grid support during peak demand addressing climate goals set by the state.

Non-Jurisdictional Project Components

Construction activities to upgrade the protection settings at existing Marketplace and Adelanto substations would not involve groundwork and thus would be temporary in nature and are unlikely to conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emission of GHG, and this is considered a less than significant impact. Construction vehicles and the supplies of transportation fuels used during construction of the project are required to be consistent with the applicable GHG reduction programs for mobile sources and suppliers of transportation fuels. Construction activities of the project would conform to relevant programs and recommended actions detailed in CARB's Scoping Plan. The project would be consistent with Policy NR-1.8 in the San Bernardino County Policy Plan, which encourages the use of low-emission construction vehicles and equipment to improve air quality and reduce emissions.

Operation

Less Than Significant with Mitigation Incorporated. Based on the analysis below, and with the incorporation of the condition of certification described below, operation of the project would not conflict with an applicable plan, policy or regulation adopted for the purposes of reducing the emissions of greenhouse gases.

The GHG emissions quantification in this section illustrates that emissions generated during operation would be considerably less than the quantity of avoided GHG emissions, and that the project would lead to a net reduction in GHG emissions across the State's electricity system. Operation of the project would contribute to meeting the State's GHG reduction goals under AB 32, and subsequent targets for 2030 and beyond, and would facilitate consistency with California's RPS.

Jurisdictional Project Components

The primary effect of the proposed project on GHG emissions would be the ability to produce electricity from renewable resources, which improves the supply of renewable energy to end-use customers and facilitates achieving statewide renewable energy goals. Electricity from the solar PV and BESS energy generation facilities would be used to serve the needs of California's customers and would facilitate consistency with California's Renewables Portfolio Standard (RPS).

Other project GHG emissions due to operational activities would be subject to energy efficiency requirements and GHG reduction programs for mobile sources and suppliers of transportation fuels. For example, emissions from the operational workforce and from O&M activity and building use would be similar to those of other industrial development. According to **Section 4.1, Facility Design**, with implementation of COC **GEN-1** through **GEN-8, CIVIL-1** through **CIVIL-4, STRUC-1** through **STRUC-4, MECH-1, MECH-2**, and **ELEC-1**, the proposed project would not conflict with all applicable city and state green building standards measures, including California Code of Regulations, Title 24, Part 6, baseline standard requirements for energy efficiency, based on the 2022 Energy Efficiency Standards requirements, and the 2022 California Green Building Standards Code, commonly referred to as CALGreen (California Code of Regulations, Title 24, Part 11).

Achieving the renewable energy targets mandated by the RPS is critical to California achieving its GHG targets and statewide carbon neutrality as established by the California Climate Crisis Act of 2022 (AB 1279). The CARB 2022 Climate Change Scoping Plan identifies decarbonizing the electricity sector as a crucial pillar of achieving carbon neutrality (CARB 2022). The California Global Warming Solutions Act of 2006 (AB 32) and Senate Bill 32 (SB 32) of 2016 codified the GHG emissions target to 40 percent below the 1990 level by 2030. Subsequently, California's Clean Energy and Pollution Reduction Act of 2015 [Senate Bill 350 (SB 350)], SB 350 set ambitious 2030 targets for energy efficiency and renewable electricity, among other actions aimed at reducing GHG emissions across the energy and transportation sectors. SB 350 also connects long-term planning for electricity needs with the state's climate targets, with CARB establishing 2030 GHG emissions targets for the electricity sector in general (CARB 2022). The current RPS was signed into law in September 2018 with Senate Bill 100 (SB 100), which established the goals of 50 percent renewable energy resources by 2026 and 60 percent renewable energy resources by 2030. SB 100 also sets a target for California to achieve a GHG-free energy supply by December 31, 2045.

The strategy for achieving the GHG reductions is set forth by the CARB's Scoping Plan. Overall, the electricity produced by the project would contribute to continuing GHG reductions in California's power supply. Because the project would use renewable energy resources to produce electricity, the avoided GHG emissions would be consistent with and would not conflict with California's GHG emissions reduction targets and the CARB's Scoping Plan that relies on achieving the RPS targets.

Refrigerant Prohibition

As mentioned above, the applicant proposed the use of refrigerant R-134a for BESS cooling (CESP 2025a). R-134a has a GWP of 1,430. The regulation Prohibitions on Use of Certain Hydrofluorocarbons (HFCs) in Stationary Refrigeration, Stationary Air-conditioning and Other End-Uses (California Code of Regulations, Title 17, Division 3, Chapter 1, Subchapter 10 Climate Change, Article 4, Subarticle 5). And refrigerants with a GWP of 750 or greater have been prohibited as of January 1, 2024, for new chillers (CARB 2021). Since the date has passed, R-134a will be prohibited from use.

Staff proposes COC **GHG-1** to ensure the project would remain consistent with the current HFCs prohibition, and the air-cooling units installed onsite would use non-prohibited refrigerant.

The operation of the BESS cooling units would be consistent with all regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions, and the proposed project would not conflict with any applicable GHG management plan, policy, or regulation except for using prohibited refrigerants for the BESS cooling needs. This impact would be less than significant with the incorporation of COC **GHG-1**.

Non-Jurisdictional Project Components

Operation and maintenance for the utility switchyard and the transmission loop in line and towers would be performed remotely by LADWP and therefore would result in minimal emissions from vehicle trips to and from these components once construction is completed.

The GHG emissions generated during O&M of the non-jurisdictional components would be considerably less than the quantity of avoided GHG emissions, and the proposed project generating facility would lead to a net reduction in GHG emissions across the State's electricity system. These project components would not conflict with CARB SF_6 Reduction Requirements and would allow for the ability to produce electricity from renewable resources, which improves the supply of renewable energy to end-use customers and facilitates achieving statewide renewable energy goals. These components would serve the needs of California's customers and would not conflict with California's Renewables Portfolio Standard (RPS).

Furthermore, no diesel generators or other nonelectric equipment would be used that result in GHG emissions.

The operation and maintenance activities anticipated for the downstream network upgrades to the protection settings are those that are already in practice, and therefore would not result in an increase in GHG emissions.

5.3.2.3 Cumulative Impacts

Construction and Operation

Less Than Significant with Mitigation Incorporated. The impact analysis for GHG emissions is global in nature, and the project's GHG emissions are considered in the broad context of global climate change. The focus of this analysis is to disclose the project's effect on climate change, while presenting the quantity of GHG emissions. The State CEQA Guidelines provide that a project's incremental contribution to a cumulative GHG emissions effect may be determined not to be significant and the effects of the project to not be cumulatively considerable if the project complies with the requirements of the state's long-term climate goals or strategies.

The proposed PV and BESS energy generation facilities would lead to a net reduction in GHG emissions across the State's electricity system, and the GHG emissions related to the project would not conflict with any plans, policies, or regulations except for using prohibited refrigerants for the BESS cooling needs. This impact would be less than significant with the incorporation of COC **GHG-1**. Therefore, the project's GHG emissions would not be cumulatively considerable.

5.3.3 Conclusions and Recommendations

It should be noted that staff's analysis of the project's impacts is based on the project design before the consideration of the applicant's proposed change in stormwater design (applicant-proposed HYD-1 (RE 2025jjjj), incorporated as COC **WATER-9,** in **Section 5.16, Water Resources**). The revised project design removes the previously proposed stormwater berms and associated drainage features. Construction of these components would have required additional grading, soil disturbance, and operation of heavy construction equipment, resulting in increased fuel consumption and greenhouse gas emissions. Removal of the components therefore would reduce construction-related greenhouse gas emissions compared to the project configuration analyzed in this analysis. These reductions are achieved through implementation of COC **WATER-9**, which minimizes grading and ground disturbance by preserving existing drainage patterns and applying fluvial geomorphic stormwater design principles rather than engineered berms and channels. Accordingly, the greenhouse gas emissions analysis presented in this section represents a conservative assessment of potential impacts.

As discussed above, with implementation of staff's proposed COC **GEN-1** through **GEN-8, CIVIL-1** through **CIVIL-4, STRUC-1** through **STRUC-4, MECH-1, MECH-2**, and **ELEC-1,** (**Section 4.1, Facility Design**) and the **COC** below, construction and operation of the jurisdictional project components would have a less than significant impact related to climate change and greenhouse gas emissions with the incorporation of mitigation measures. No mitigation measures are recommended for the non-jurisdictional project components. Staff recommends adopting the COC as detailed in subsection "5.3.4 Proposed Conditions of Certification" below.

5.3.4 Proposed Conditions of Certification

GHG-1 Prior to the installation of any onsite cooling/refrigeration/air conditioning units, the project owner must demonstrate that the project would use refrigerants that comply with the Prohibitions on Use of Certain Hydrofluorocarbons in Stationary Refrigeration, Stationary Air-conditioning and Other End-Uses (California Code of Regulations, Title 17, Division 3, Chapter 1, Subchapter 10 Climate Change, Article 4, Subarticle 5, Sections 95371, et seq.) in all onsite cooling/refrigeration/air conditioning units.

Verification: To ensure compliance with this condition the project owner must identify and confirm the compliant refrigerant cooling fluid installation, along with an estimated annual greenhouse gas emissions in metric tons of CO_2-equivalent ($MTCO_2e$) to be submitted to the CEC CPM for verification, within 30 days prior to installation of the installation of any onsite cooling/refrigeration/air conditioning units. Once confirmed and approved by the CEC CPM, this verification is considered complete.

5.3.5 Recommended Mitigation Measures

No mitigation measures for non-jurisdictional project components are recommended for climate change and GHG emissions.

5.3.6 References

CARB 2014 – California Air Resources Board (CARB). First Update to the Climate Change Scoping Plan. Dated May 2014. Accessed on Sep 12, 2025. Available online at: https://ww3.arb.ca.gov/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf

CARB 2017a – California Air Resources Board (CARB). 2017 Climate Change Scoping Plan Update: The Strategy for Achieving California's 2030 GHG Target. Dated November 2017. Accessed on September 12, 2024. Available online at: https://ww3.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf

CARB 2017b – California Air Resources Board (CARB). Short-Lived Climate Pollutant Reduction Strategy. Dated March 2017. Accessed on September 12, 2024. Available online at: https://ww2.arb.ca.gov/sites/default/files/2020-07/final_SLCP_strategy.pdf

CARB 2018 – California Air Resources Board (CARB). SB 375 Regional Plan Climate Targets. Dated March 2018. Accessed on September 12, 2024. Available online at: https://ww2.arb.ca.gov/our-work/programs/sustainable-communities-program/sb-375-regional-targets

CARB 2021 – CARB Prohibitions on Use of Certain Hydrofluorocarbons in Stationary Refrigeration, Chillers, Aerosols-Propellants, and Foam End-Uses Regulation. Approved on December 29, 2021. Effective October 1, 2022. Accessed on

October 16, 2025. Available online at: https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2020/hfc2020/frorevised.pdf

CARB 2022 – California Air Resources Board (CARB). 2022 Scoping Plan for Achieving Carbon Neutrality. Dated November 16, 2022. Accessed on October 12, 2025. Available online at: https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp_1.pdf

CARB 2024 – California Air Resources Board (CARB). California Greenhouse Gas Inventory for 2000-2022 — Trends of Emissions and Other Indicators. Dated September 20, 2024. Accessed on October 17, 2025. Available online at: https://ww2.arb.ca.gov/sites/default/files/2024-09/nc-2000_2022_ghg_inventory_trends.pdf

CEC 2019 – California Energy Commission (CEC). Staff Report. "Estimated Cost of New Utility-Scale Generation in California: 2018 Update." CEC-200-2019-500. Dated May 2019. Accessed on October 16, 2024. Available online at: https://www.energy.ca.gov/sites/default/files/2021-06/CEC-200-2019-005.pdf

CEC 2022 – California Energy Commission (CEC). Final 2021 Integrated Energy Policy Report (IEPR), Volume II - Ensuring Reliability in a Changing Climate. Dated February 17, 2022. Accessed on October 16, 2025. Available online at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=241583

CPUC 2022 – California Public Utilities Commission (CPUC). Greenhouse Gas and Criteria Pollutant Accounting Methodology for use in Load-Serving Entity Portfolio Development in 2022 Integrated Resource Plans. Dated July 2022. Accessed on October 16, 2025. Available online at: https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/integrated-resource-plan-and-long-term-procurement-plan-irp-ltpp/2022-irp-cycle-events-and-materials/clean-system-power-calculator-documentation.pdf

RE 2024uuu – Resolution Environmental (TN 259708). Appendix A1 Engineering Generation Facility Description, Design and Operation - October 2024 - Revision 1, dated October 25, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025nn – Resolution Environmental (TN 264932). CEC Data Request Response Set #2 - July 21 2025, dated July 21, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025ggg – Resolution Environmental (TN 265688). Appendix C, Air Quality and Greenhouse Gas Technical Report, July 2025, dated August 19, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025kkk – Resolution Environmental (TN 265739). Response to CEC's Request for Information, dated July 31 2025, dated August 21, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025jjjj – Resolution Environmental (TN 267972). MM HYD-1, dated December 18, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

San Bernardino County 2020a. Countywide Plan, dated October 2020. Accessed October 17, 2025. Available at: https://countywideplan.com/

San Bernardino County 2020b. About the Policy Plan. Dated October 2020 Accessed October 17, 2025. Available at https://countywideplan.com/policy-plan/

San Bernardino County 2021. Greenhouse Gas Reduction Plan Update, dated September 9, 2021. Accessed October 2025. Available at: https://www.gosbcta.com/wp-content/uploads/2019/09/San_Bernardino_Regional_GHG_Reduction_Plan_Main_Text_Mar_2021.pdf.

SCAG 2024 – Southern California Association of Governments (SCAG). Connect SoCal 2024. Adopted April 4, 2024. Accessed on October 16, 2025. Available online at: https://scag.ca.gov/sites/default/files/2024-05/23-2987-connect-socal-2024-final-complete-040424.pdf

SCAG 2025 – Southern California Association of Governments (SCAG). California Air Resource Board Accepts SCAG's Sustainable Communities Strategy. Dated June 5, 2025. Accessed on November 7, 2025. Available online at: https://scag.ca.gov/news/california-air-resource-board-accepts-scags-sustainable-communities-strategy

U.S. EPA 2024 – U.S. Environmental Protection Agency (U.S. EPA). Inventory of U.S. Greenhouse Gas Emissions and Sinks. Accessed on October 16, 2025. Available online at: https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks

5.4 Cultural and Cultural Tribal Resources

5.4.1 Environmental Setting

This section analyzes the jurisdictional and non-jurisdictional project components. The jurisdictional project components include the construction and operation of the solar photovoltaic (PV) facility, battery energy storage system (BESS), project substation and generation intertie line (gen-tie) and construction of the utility switchyard and section of transmission loop in lines that would connect to the existing Mead-Adelanto Transmission Line. The non-jurisdictional project components include the construction and operation of the protection setting upgrades to the Marketplace and Adelanto substations and operation of the utility switchyard and section of transmission loop in lines.

This section assesses the potential impacts of the construction and operation of the proposed project on cultural and tribal cultural resources.

Existing Conditions

The applicant's appropriately qualified cultural resource consultants prepared and revised various confidential cultural documents for the Soda Mountain Project or proposed project. Two primary documents used herein are the revised December 2024 Archaeological Resources Assessment of the Soda Mountain Solar Project for an Environmental Impact Report, San Bernardino County (SWCA 2024a), and the revised December 2024 Historic Resources Assessment Report for the Soda Mountain Solar Project, San Bernardino County (SWCA 2024b). Additional docketed items containing relevant data used herein include an updated project description (RE 2025k) and a brief overarching summary of cultural resource investigations and findings (RE 2025l).

The project area occupies the alluvial valley that separates the northern and southern portions of the Soda Mountains in the Mojave Desert. The site consists of largely undeveloped, rural desert land. Rasor Road, an unimproved Bureau of Land Management (BLM) public access route, enters the site at the southwest corner, extending roughly 1.4 miles before splitting into two branches. One branch of Rasor Road continues east toward the Rasor off-highway-vehicle (OHV) Recreation Area, while the other branch (Arrowhead Trail) heads north through the project area.

There are no existing overhead or subterranean transmission lines on-site that would be impacted by the proposed project. Nearby infrastructure includes Interstate 15 (I-15), two high-voltage electric transmission lines, an electrical distribution line, wireless cellular towers, two fiber-optic cables, and two fuel pipelines. The two transmission lines west of I-15 consist of a 115-kV Southern California Edison (SCE) sub-transmission line and the Los Angeles Department of Water and Power (LADWP)–operated Mead-Adelanto 500-kV transmission line. The project would connect to the Mead-Adelanto line using an existing culvert beneath I-15 for the gen-tie. The Mead-Adelanto Transmission

Project is a 202-mile-long, 500-kV alternating current line extending from the Adelanto Substation in Southern California to the Marketplace Substation, located approximately 17 miles southwest of Boulder City, Nevada.

Geologically, most of the project area is underlain by Holocene to late Pleistocene young alluvial fan deposits (Qyf) and late Holocene alluvial fan deposits (Qf) (SWCA 2024a, p. 20). These units consist of unconsolidated to slightly consolidated boulder, cobble, gravel, sand, and silt laid down by recent fluvial and alluvial processes within a confined valley or canyon. Typically, these deposits form fan-shaped cones where coarser, gravel-rich material accumulates near the apex and transitions to finer-grained sediment toward the distal end and at depth. Preliminary geotechnical investigations (SWCA 2024a, p. 20) further indicate that the deposits become finer with depth beginning approximately 7–10 feet below the surface. Late to middle Pleistocene old alluvial fan deposits (Qof) are present in higher elevation areas of the project area. These consist of slightly to moderately consolidated, moderately dissected boulders, cobbles, gravels, sands, and silts (SWCA 2024a, p. 21). Although mapped primarily along the project's periphery, these deposits may also underlie younger alluvium across the area. Additionally, Holocene to late Pleistocene eolian and dune deposits (Qye) occur in the southwest corner of the project site and are composed of unconsolidated to slightly consolidated windblown sands that are undissected to slightly dissected. Eolian sediments are typically fine-grained sands that accumulate as broad sheets or discrete dunes.

Vegetation across the project area is sparse and generally uniform across desert pavement and dry, flood-cut drainages. Dominant plant species include creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*), with blackbrush (*Coleogyne ramosissima*) and Mormon tea (*Ephedra viridis*) occurring at higher elevations along alluvial slopes. Desert milkweed (*Asclepias erosa*) and cottontop cactus (*Echinocactus polycephalus*) are most commonly found along larger ephemeral washes. Typical wildlife includes desert bighorn sheep (*Ovis canadensis nelsoni*), coyote (*Canis latrans*), kit fox (*Vulpes macrotis*), black-tailed jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus audubonii*), desert tortoise (*Gopherus* sp.), sagebrush lizard (*Sceloporus graciosus*), desert horned lizard (*Phrynosoma platyrhinos*), rattlesnakes, hawks, and owls (SWCA 2024a, p. 21).

The methods employed for the cultural and tribal cultural resources analysis include determining proposed project impact areas (project area of analysis); reviewing records and other documents provided by a literature search and other historical sources; consultation with California Native American tribes; and conducting historic architectural and archaeological surveys. This methodology follows CEQA Guidelines § 15064.5 (b)-(c) and PRC §§ 21083.2 and 21084.1-21084.3. To this end, the applicant's consultant first developed a Project Area of Analysis (PAA) for archaeological resources and a Built Environment PAA for architectural and built environment resources. The archaeological PAA defines the geographic area within which ground-disturbing project activities could directly or indirectly affect archaeological resources, including both surface and buried

sites. The built environment PAA, by contrast, encompasses the area within which above-ground project elements—such as visual, auditory, or contextual changes—could alter the character, integrity, or setting of historic-period buildings, structures, objects, or landscapes.

Project Area of Analysis

The proposed PAA was developed to encompass the extent of potential ground disturbance and surrounding visual impacts associated with the project. As described in cultural resources documentation, the PAA includes the project area, areas of potential direct and indirect archaeological effects. Following CEC requirements outlined in Appendix B(g)(2)(C) of the California Code of Regulations, Title 20, Section 1704(b)(2), the archaeological PAA incorporates a 200-foot buffer around the project area and the built environment PAA includes a 0.5-mile buffer around the project area to evaluate potential visual, auditory, and contextual impacts on historical-period architectural and built environment resources. Together, these boundaries collectively define the PAA used to evaluate potential effects on cultural resources.

Archaeological Context

Over the past several decades, numerous researchers have proposed different chronological sequences for this region. Early frameworks were designed strictly as temporal units but evolved as cultural interpretations and reconstructions of lifeways were added. More recent studies have served as cultural overviews and syntheses that introduced new terminology to earlier established timelines, leading to some inconsistencies across the literature. Contributing to these discrepancies are the wide variety of cultural adaptations in the region and the scarcity of stratified, well-dated archaeological sites. Despite this, Warren and Crabtree's (1972) chronology for the southwestern Great Basin and Mojave Desert continues to be regarded as the most comprehensive and will therefore be applied in the present project, supplemented with information from other researchers as relevant.

The precontact setting is divided into five temporal units: Lake Mojave, Pinto, Gypsum, Saratoga Springs, and Shoshonean. The first four periods are grouped within the Archaic time period or precontact, while the Shoshonean period reflects the late precontact and ethnographic era (referred to here as the Protohistoric). The Saratoga Springs period also reflects formative influences from the Southwest (Ancestral Puebloan). Brief overviews of each period are presented below.

Lake Mojave Period (Paleoindian and Early Archaic; ca. 12,000–7000 B.P.)

The Lake Mojave period marks the earliest known human occupation of the Mojave Desert, beginning approximately 12,000 years before present (B.P.). Recognized as a Paleoindian cultural expression, this period is generally considered ancestral to the Early Archaic cultures of the following Pinto period. While some researchers have claimed evidence of even earlier occupation in the region, these findings remain controversial

and, even if verified, appear to be unrelated to later cultural development in the Mojave Desert (SWCA 2024a, p. 22).

This period coincides with the end of the Pleistocene, a time of marked environmental transition as cool, moist glacial conditions gave way to the warmer and drier climate of the Holocene. Widespread desertification characterized this shift, and vegetation such as mesquite became established in the landscape.

Artifact assemblages of the Lake Mojave period include distinctive dart-sized projectile point types such as Lake Mojave, Parman, and Silver Lake, as well as the rare fluted projectile points associated with early Paleoindian technologies. Other tools commonly found include crescent-shaped stone artifacts, flake engravers, various scrapers, leaf-shaped knives, drills, and heavy core tools such as choppers and hammerstones. Unlike later periods, groundstone milling tools are generally absent, suggesting a subsistence focus on hunting rather than plant processing (SWCA 2024a, p. 22).

Sites attributed to this period are most often (though not always) located near ancient lake margins and alluvial outwash systems associated with late Pleistocene and early Holocene water bodies. Researchers differ in their interpretations of how these lakes factored into subsistence strategies. Some argue that lacustrine resources were central, while others propose that nearby grasslands supporting Pleistocene megafauna were the primary focus. Still others suggest a more generalized hunting-and-gathering strategy, with lakeside locations used seasonally (SWCA 2024a, p. 22).

The Lake Mojave period shows cultural connections to both the western Great Basin and to the San Dieguito complex of the southern California region. However, the chronology for this period remains difficult to refine due to a lack of well-stratified and datable archaeological deposits. Most artifacts are recovered from surface contexts without clear association to subsistence remains, and there are few confirmed links between Lake Mojave projectile points and extinct megafauna. As a result, this early period is complex and subject to multiple competing models regarding cultural behavior and adaptation in early Mojave Desert prehistory.

Pinto Period 7000–4000 B.P.

The shift from the wetter pluvial conditions of the early Holocene to the increasingly arid climate of the southern Great Basin at the close of the Pleistocene represented a major environmental transition (SWCA 2024a, p. 22). Between approximately 7500 and 5000 B.P., aridity intensified across the region, driving the upward migration of woodland environments and the establishment of modern desert scrub communities, such as creosote bush (SWCA 2024a, p. 22). Cultural adaptations to these changes are reflected in the archaeological record. As lakes and rivers dried and plant and animal communities shifted, human populations either adjusted to the new conditions or relocated to more favorable environments. During this time, populations associated with the Pinto period appear to have moved toward desert margins and isolated oases,

where assemblages of the Pinto Basin Complex gradually displaced those of the preceding Lake Mojave period (SWCA 2024a, p. 23).

Like their predecessors, Pinto period sites are most commonly located in open settings within relatively well-watered areas that represent isolated pockets of high productivity (SWCA 2024a, p. 23). Characteristic artifacts include Pinto-series projectile points, leaf-shaped points and knives, domed and elongated keeled scrapers, and occasional Lake Mojave or Silver Lake points (SWCA 2024a, p. 23). Groundstone implements such as flat and shallow-basin milling stones and handstones also begin to appear at sites from this period. This emergence of milling equipment likely reflects increased processing of hard seeds as part of a broader subsistence diversification strategy to cope with reduced resource availability driven by expanding desert conditions (SWCA 2024a, p. 24). Although big-game hunting likely remained an important activity, diminishing returns from declining artiodactyl populations would have made it a less reliable subsistence base (SWCA 2024a, p. 24).

Pinto projectile points serve as the primary diagnostic artifact for this period in the Mojave Desert, though their precise dating remains the subject of debate (SWCA 2024a, p. 24). Many researchers suggest that the Pinto Complex represents a cultural evolution of the hunting traditions established during the Lake Mojave period. Subsistence during the Pinto period appears to have continued to rely on highly mobile strategies centered on hunting and gathering, even as grinding technology became more commonplace. Interpretations regarding how human populations responded to environmental change during this time vary. Some scholars argue that the Mojave Desert was largely abandoned between 7000 and 5000 B.P., while others maintain that no occupational hiatus occurred, with debate continuing over the definition, dating, and significance of Pinto projectile points in the archaeological record.

Gypsum Period 4000–1500 B.P.

Gradual climatic improvement began by around 5000 B.P., culminating in the Neoglacial at approximately 3600 B.P. Increased effective moisture developed during the latter part of the middle Holocene (by ca. 3000–4000 B.P.), and at this time, normally dry basins such as those in the Mojave Sink intermittently held perennial water. The Gypsum period is marked by a notable rise in population and diversification of economic activities as technological adaptation to shifting environmental conditions advanced. Hunting remained an important component of subsistence, but the growing frequency and variety of ground stone implements suggest that plant foods assumed an increasingly significant role. These innovations may explain why the heightened aridity of the late Gypsum period (after ca. 2500 B.P.) appears to have had limited influence on the growth and distribution of human populations. (SWCA 2024a, p. 24)

During this time, use of rockshelters seems to have increased, although open-air sites continued to be occupied. In well-watered valleys, base camps with extensive midden deposits became prominent, while specialized activity sites appeared in upland areas. Artifact assemblages are characterized by medium- to large-stemmed and notched

projectile points, such as Elko, Humboldt Concave Base, and Gypsum types, along with rectangular knives, flake scrapers, occasional scraper planes, choppers, and hammerstones. (SWCA 2024a, p. 24) Milling tools become more common, and the mortar and pestle appear for the first time.

Evidence suggests increased cultural interaction with both the California coast and the Southwest through expanded socioeconomic ties and ritual practices. Split-twig figurines and zoomorphic petroglyphs, attributed to this period, indicate a complex ritual life, as demonstrated by discoveries at Newberry Cave where figurines, bows and arrows, pictographs, and ritual artifacts interpreted as components of hunting magic were recovered (SWCA 2024a, p. 24). Overall, the Gypsum period reflects a time when human populations adapted to desert environments through technological innovation, ritual expression, and widening social networks (SWCA 2024a, p. 24).

Saratoga Springs Period 1500–750 B.P.

Around 1350 B.P., projectile point sizes decreased, as the bow and arrow were introduced, signaling heightened hunting efficiency and possibly a shift toward smaller game. Arrow-sized Eastgate and Rose Spring projectile points begin to dominate artifact assemblages in parts of the Mojave Desert (SWCA 2024a, p. 24). These artifacts characterize the Saratoga Springs period and signal a time of increasing regional diversification, during which cultural developments south of the Mojave River and Providence Mountains diverged from those in the north, reflecting the growing influence of Patayan groups residing along the Colorado River (SWCA 2024a, p. 25). This era coincided with the introduction of ceramic technology and the emergence of agricultural subsistence along the lower Colorado River, developments that may reflect external influences (SWCA 2024a, p. 25). The Patayan Tradition—which encompasses Yuman-speaking peoples and some neighboring groups—has been divided into three phases based on changes in ceramics, settlement patterns, and trade wares: Patayan I (A.D. 500–1050), Patayan II (A.D. 1050–1500), and Patayan III (A.D. 1500–present). Groups such as the Mohave, Quechan, and Cocopa are generally considered descendants of the Lowland Patayan (SWCA 2024a, p. 25).

Further north in the Mojave Desert, influence from Ancestral Puebloan peoples is documented archaeologically but appears limited primarily to the presence of pottery fragments found as far west as Halloran Springs and the Cronise Basin. It remains unclear whether these materials represent trade, foraging expeditions, or mining activities, and the nature of the Puebloan presence in the Mojave Desert is still poorly understood. In contrast, strong Puebloan influence is documented in the northeastern Mojave Desert where horticultural populations of the Lowland Virgin Branch Anasazi established residential communities along the Muddy and lower Virgin Rivers. (SWCA 2024a, p. 25)

Elsewhere in the Mojave Desert, cultural continuity with the preceding Gypsum period is suggested (SWCA 2024a, p. 26). One notable change is the decreasing size of projectile points, with Rose Spring and Cottonwood series points becoming dominant; these are

morphologically similar to Gypsum types but are generally smaller. Around 1000 B.P., Numic-speaking peoples are thought to have expanded from the Death Valley area throughout the Great Basin. The Numic Expansion hypothesis proposes that these groups displaced earlier inhabitants due to highly efficient adaptive strategies focused on the exploitation of diverse plant resources (SWCA 2024a, p. 26). Although this model has received substantial attention and support, it remains debated and controversial within Great Basin archaeology (SWCA 2024a, p. 26).

Proto Historic Period 750 B.P.–Contact

The Protohistoric period marks a transitional era between precontact and historic times, beginning around 700 B.P. and continuing until Euro-American arrival in the region. Cultural developments established during the preceding Saratoga Springs period largely continue, albeit with some modifications. Diagnostic artifacts associated with this period include Desert Side-notched projectile points and a variety of brown ware ceramics, with continued evidence of regional diversification. (SWCA 2024a, p. 26) South of the Mojave River, Patayan influence remains strong. By approximately A.D. 600, Patayan groups occupied broad areas of western Arizona, southeastern California, and southern Nevada, with material culture—such as brown, buff, and red-on-buff ware ceramics and Desert Side-notched and Cottonwood Triangular projectile points—appearing throughout the Mojave River drainage to the Mojave Sinks (SWCA 2024a, p. 26). Archaeological indicators of Patayan occupation include ceramics, projectile points, floodplain farming along the Colorado River, and stone construction features such as rock alignments, stone-lined roasting pits, and walled structures (SWCA 2024a, p. 26). The extent of Patayan influence remains uncertain but finds such as Colorado River Buff Ware ceramics farther upriver suggest a broad distribution (SWCA 2024a, p. 26).

North of the Mojave River, artifact assemblages generally show continuity with the Saratoga Springs period, augmented by Desert Side-notched and Cottonwood Triangular points and Great Basin Brown Ware pottery. Additional artifacts in these assemblages include steatite beads, large triangular knives, unshaped manos and milling stones, mortars and pestles, incised stones, slate pendants, and shell beads. Increased use of pinyon-juniper woodland resources is suggested by upland camp sites in these environments, signaling the beginning of more intensive pinyon exploitation during this period. This assemblage is thought to be associated with ancestors of the historic Southern Paiute people and is approximately contemporaneous with the terminal phase of Ancestral Puebloan presence in the region. Even with these changes, the occupation by hunter-gatherer groups appears to have continued largely unchanged from earlier patterns. (SWCA 2024a, p. 26)

Ethnographic Context

The project site lies within the northeastern portion of the traditional territory of the Mojave and Serrano peoples and extends toward the traditional lands of the Kawaiisu and the Southern Paiute/Chemehuevi. A brief overview of these four groups is provided below.

Mojave

The Mojave were riverine agriculturalists who traditionally lived along the lower Colorado River and spoke a Yuman language belonging to the Hokan linguistic stock. Their ancestral territory encompassed the river valley spanning present-day California, Nevada, and Arizona (SWCA 2024a, p. 27). In addition to cultivating crops, the Mojave practiced hunting and gathering, with agricultural activities focused on the seasonal flooding of the Colorado River from May through June. Small settlements were established along the riverbank adjacent to fields, and domestic structures included semi-subterranean winter houses constructed with cottonwood log frames and arrow-weed wattling covered with earth. During the summer, flat-topped ramadas provided shade (SWCA 2024a, p. 27).

Mojave society emphasized a strong tribal identity organized into patrilineal clans, with patrilocal residences. Their material culture was comparatively complex relative to neighboring desert groups, and their innovations and technologies significantly influenced other communities in the California deserts (SWCA 2024a, p. 27). Farming tools included heavy digging sticks and wooden cultivators used for clearing weeds, while large wooden pestles were employed in food processing. Fishing was accomplished with seines and scoops, and pottery was the primary form of container technology, often linked through mythology to agriculture. Basketry, both coiled and twined, was also produced (SWCA 2024a, p. 27).

A distinctive cultural feature was the Mojave emphasis on tribal identity and territoriality, viewing themselves as a unified national entity, the Hamakhava. Their clan system resembled that of other Yuman groups, being patrilineal, exogamous, and totemically affiliated. Leadership was hereditary through the male line, though distinctions between the roles of chief, war leader, and shaman remain unclear. Dreaming was integral to Mojave belief systems, understood as the source of life's guidance, healing, and foresight (SWCA 2024a, p. 27).

By the sixteenth century, at the time of Spanish arrival, the Mojave were one of the largest Native populations in the region, numbering approximately 7,000 persons. (SWCA 2024a, p. 27) They also played a central role as guides for travelers crossing the Mojave Trail, leading newcomers through harsh desert terrain to coastal destinations (SWCA 2024a, p. 27). In 1859, the U.S. military established a fort on the Colorado River to secure immigrant passage. After its closure in 1890, the site was repurposed as a boarding school until 1930. Today, remains of Fort Mojave overlook the Colorado River south of Bullhead City (SWCA 2024a, p. 27).

The Mojave are now represented by the federally recognized Fort Mojave Indian Tribe. Their reservation was first designated in 1870 by War Department General Order No. 19 and later reaffirmed by Executive Order in 1911. It straddles the Colorado River across California, Arizona, and Nevada, making the Mojave one of the few tribes who still occupy portions of their ancestral lands, albeit only a fraction of their traditional territory. They refer to themselves as Ahamakav, or Pipa Aha Macav, meaning "the

people who live along the river" (SWCA 2024a, p. 27). Today, the Fort Mojave Tribe maintains its own police force and courts, administers housing through the Tribal Housing Authority, and continues to sustain agriculture as a cornerstone of their economy, with farmland comprising about 40 percent of reservation (SWCA 2024a, p. 27).

Serrano/Vanyume

The Serrano people traditionally inhabited the southwestern Mojave Desert and Inland Empire region of present-day San Bernardino and Los Angeles Counties. Their language belongs to the Serran branch of the Takic family within the Uto-Aztecan linguistic stock (SWCA 2024a, p. 28). Two closely related languages, Serrano and Kitanemuk, were spoken, with the Kitanemuk occupying lands to the northwest of the Serrano. The term "Serrano," meaning "mountaineers" or "those of the Sierras," was applied during the ethnohistoric period to the Indigenous groups living in the San Bernardino Mountains (SWCA 2024a, p. 28). The Serrano refer to themselves as Maara'yam and were organized into multiple clans, including the Yuhaaviatam, or "People of the Pines." Their traditional territory encompassed large portions of the Mojave Desert and San Bernardino Mountains, from Cajon Pass and Victorville east to Twentynine Palms and south to the Yucaipa Valley, while the Vanyume, or Desert Serrano, occupied lands along the Mojave River (SWCA 2024a, p. 28).

The Vanyume were associated with Mojave River villages, though their exact linguistic affiliation is unclear. Some scholars have considered their speech a dialect of Serrano, while others linked it more closely to Kitanemuk. Their precise territorial boundaries were poorly documented but are thought to have extended eastward from the Mojave River sink to the vicinity of Daggett or Barstow. The name "Vanyume" was first recorded in 1776 by Fr. Francisco Garcés, who noted it derived from a Mojave term meaning "them." Cultural traditions among the Vanyume were heavily disrupted by the Spanish mission system beginning in the early 1800s, and by the turn of the twentieth century only a few Vanyume descendants remained in their homelands (SWCA 2024a, p. 28).

Serrano settlement patterns consisted primarily of small villages in foothill areas, though some groups lived along the desert floor near water sources. Average village size is estimated at about 70 people, with settlements located at regular intervals along the Mojave River. Their sociopolitical structure was based on lineage sets that incorporated two moieties, each represented by a leader responsible for religious and ceremonial functions. These lineage sets coordinated hunting, gathering, and economic relationships with neighboring communities, including the Cahuilla, Chemehuevi, Gabrielino, and Cupeño (SWCA 2024a, p. 28).

The Serrano economy was based on subsistence hunting, gathering, and seasonal harvesting, supplemented by intervillage trade. Ritualized food procurement events such as deer and rabbit hunts, or piñon and acorn harvesting, reinforced social and economic ties across the varied ecological zones of their territory. The Serrano

developed a wide array of tools and ceremonial items from bone, stone, wood, shell, and fiber, and maintained a strong tradition of decorated basketry. They also produced pottery, which served both domestic and ceremonial purposes (SWCA 2024a, p. 28).

Due to their inland location, the Serrano initially experienced less contact with Europeans, though epidemics spread through the Mojave Desert as early as the late eighteenth century. By the 1790s, some Serrano were forcibly relocated to the San Gabriel Mission and its outpost in Redlands. In the early nineteenth century, further relocations and outbreaks of disease devastated the population. Oral tradition also recalls a massacre in the 1860s at Twentynine Palms, likely part of a larger military campaign in the region (SWCA 2024a, p. 29).

Some survivors sought refuge with the Cahuilla at Morongo, later forming the Morongo Band of Mission Indians. Others followed the leadership of Santos Manuel to new lands, eventually establishing the San Manuel Band of Mission Indians Reservation in 1891. While ethnographers of the early twentieth century believed the Vanyume had been largely lost as a distinct group, more recent genealogical and genetic research has identified surviving lineages tied to Mojave River villages. These descendants are today affiliated with the San Fernando Band of Mission Indians, which includes Kitanemuk, Inland Chumash, Tataviam, and Vanyume ancestry, and are currently seeking federal recognition (SWCA 2024a, p. 29).

Kawaiisu

The Kawaiisu are a Numic-speaking people whose ancestry is linked to the Chemehuevi, a Shoshonean Plateau division historically regarded as part of the Southern Paiute. Early ethnographers considered "Chemehuevi" more a geographic designation than an ethnic one, with the Kawaiisu emerging as a distinct group due to localized environmental differences influencing subsistence practices and settlement (SWCA 2024a, p. 30). Their traditional territory encompassed the Tehachapi Mountains and associated watersheds, including Tehachapi Pass, Walker Basin, and portions of the Kern River drainage, extending between the Mojave Desert, the San Joaquin Valley, and the lower reaches of Death Valley. Neighboring groups referred to them by a variety of names, while the Kawaiisu referred to themselves as Nuwu, Nuwuwu, or Newooah, meaning "people." Ethnohistoric accounts sometimes identified them as the Tehachapi or Caliente Indians (SWCA 2024a, p. 30).

The Kawaiisu lived as mobile hunter-gatherers, maintaining a core territory in the Tehachapi Mountains and southern Sierra Nevada but frequently traveling into the Mojave Desert to exploit seasonal resources. Their language is part of the Southern Numic branch of the Uto-Aztecan family, closely related to languages spoken across the Great Basin (SWCA 2024a, p. 30). While their core territory is well documented, the extent of their presence in the Mojave Desert remains less certain. Ethnographic accounts place them as far east as the Granite Mountains and Fort Irwin, with seasonal use extending into the Panamint Valley, Argus Range, and Trona region, where they occasionally overlapped with Shoshone groups (SWCA 2024a, p. 30).

Subsistence relied on a wide range of plant and animal resources. Staples included piñon, juniper, yucca, chia, wild rice, buckwheat, sunflower, and screwbean, supplemented by deer, pronghorn, bighorn sheep, and small game. Salt was collected from Koehn Lake and Proctor Lake, while hundreds of plant species were used for food, beverages, medicines, and rituals. Acorns and seeds were processed in extensive bedrock mortars and milling stations that remain widespread across their territory. Basketry was a strong cultural tradition, with numerous functional forms including seedbeaters, burden baskets, winnowers, and trays. Pottery was rare and likely obtained through trade. Lithic toolstone was procured locally, such as cherts from Red Rock Canyon, while obsidian was obtained via exchange with groups near the Coso Volcanic Field. Long-distance trade is evident in the recovery of marine shell artifacts within Kawaiisu sites (SWCA 2024a, p. 30).

Kawaiisu dwellings included tomo-kahni, circular aboveground houses framed with poles and covered with brush and tule mats for winter use. Shade houses (havakahni), sweathouses (tivikahni), brush enclosures, and granaries were also constructed. Their cultural expression included distinctive polychromatic rock art, typified by sites such as Teddy Bear Cave (CA-KER-508) in Sand Canyon, which is central to Kawaiisu oral history as the place of creation. Associated sites within the Nettle Spring complex contain habitation features, bedrock mortars, cremations, and additional rock art panels, highlighting the cultural significance of the area (SWCA 2024a, p. 31).

Euro-American settlement began impacting Kawaiisu lands by the mid-nineteenth century, with the California Gold Rush and subsequent mining claims in the 1850s. Despite displacement and cultural disruption, the Kawaiisu remain in California's Sierra Nevada foothills today, numbering around 250 members. They were never assigned a reservation and are not federally recognized, though efforts for recognition continue. Language and cultural revitalization efforts are ongoing, supported by the Kawaiisu Language and Cultural Center, established in 2007 to reintroduce the Kawaiisu language into community life. The Kawaiisu Tribe of Tejon identifies as the contemporary tribal body, associated with the Tejon Indian Reservation and participating in regional coalitions such as the Kern Valley Indian Community and the Nuui Cunni Inter-Tribal Cultural Center (SWCA 2024a, p. 31).

Southern Paiute/Chemehuevi

The Southern Paiute traditionally occupied vast regions of the southeastern Great Basin and are distinct from the Northern Paiute, with whom they share mutually unintelligible languages. They are part of the Shoshonean Plateau division and belong to the Southern Numic branch of the Uto-Aztecan family, encompassing 15 subgroups: Antarianunts, Kaiparaowits, San Juan, Kaibab, Shiwits, Uinkaret, Saint George, Gunlock, Cedar, Beaver, Panaco, Pahranagat, Moapa, Las Vegas (including Pahrump), and Chemehuevi (SWCA 2024a, p. 31). While some ethnographers treat the Chemehuevi as a separate group, most differences between them and other Southern Paiute are understood as adaptations to localized environments. Both the Southern Paiute and Chemehuevi referred to themselves as Nüwü, meaning "people," a cognate of the Mono

and Northern Paiute term Nümü (SWCA 2024a, p. 31). Their traditional territory extended across the Colorado Plateau and Mojave Desert, encompassing the Colorado River basin and numerous mountain ranges (SWCA 2024a, p. 31).

Subsistence practices reflected the diversity of their environments. Small game such as rabbits, tortoises, rodents, lizards, and fish formed dietary staples, along with mountain sheep and a wide array of plant resources, including piñon nuts, mescal, and agave. Some groups practiced small-scale agriculture, cultivating maize, squash, and wheat. By the time of European contact, Paiute groups along the Colorado River maintained effective irrigation systems and had been farming for centuries (SWCA 2024a, p. 31). Basketry was highly developed and served both practical and ceremonial purposes, with water carried in tightly woven baskets sealed with pine pitch. The family household was the primary social unit, and while no centralized political hierarchy was recorded, families often cooperated during resource procurement activities. Marital residence patterns varied, though many couples eventually settled near the husband's kin (SWCA 2024a, p. 31).

At the time of Euro-American contact, Southern Paiute territory extended across California, Nevada, Utah, and Arizona. Today, ten modern Paiute groups occupy only small portions of this territory. In Utah, five bands united to form the Paiute Tribe of Utah, while the San Juan Paiute maintain communities in both Arizona and Utah. The Kaibab Paiute Tribe resides in Arizona north of the Grand Canyon, while the Moapa, Las Vegas, and Pahrump Paiutes are in southern Nevada, with the latter lacking federal recognition. In California, the Twenty-Nine Palms Band of Mission Indians are federally recognized and include many Chemehuevi descendants (SWCA 2024a, p. 32).

The Chemehuevi share close cultural ties with the Shoshone of the Great Basin, though their material culture shows strong Yuman influences and religious similarities with the Mohave. They lived primarily as hunter-gatherers, though some groups adopted riverine agriculture in the lower Colorado River valley during the historic period. Social organization was flexible, generally based on extended families that cooperated in seasonal rounds to harvest resources. While pottery was made by riverine groups, the Chemehuevi are best known for their finely crafted basketry, produced with willow fibers in styles similar to those of central California groups. They also produced a distinctive recurved, sinew-backed bow, though no physical examples survive (SWCA 2024a, p. 32).

By the early twentieth century, Chemehuevi communities were concentrated on Cottonwood Island, Beaver Lake, the Needles area, and Chemehuevi Valley, with others residing at the Colorado River Indian Tribes Reservation, the Twentynine Palms Reservation, and in the Coachella Valley. The Special Committee on Chemehuevi Affairs was formed in the late 1960s and drafted a constitution, approved in 1971, which established the Chemehuevi Indian Reservation in Chemehuevi Valley. Initial enrollment recorded 312 members, with several hundred additional individuals identifying as Chemehuevi at the Colorado River Indian Tribes Reservation. Today, the Chemehuevi continue to occupy their reservation along the Colorado River, with members also

residing at Morongo, Cabazon, Agua Caliente, and the Colorado River Indian Tribes reservations, as well as in urban communities across inland southern California and neighboring states. (SWCA 2024a, p. 32)

Historic Period Context

The historic period in this area is defined as spanning from approximately 1848 to 1974. The most significant influx of Euro-American populations into the Mojave Desert occurred during the late nineteenth century, following the discovery of gold in California. During this period, emigrants bound for the Pacific Coast largely bypassed much of the Mojave Desert, perceiving it as a vast and inhospitable landscape to be crossed as quickly as possible. The contextual framework presented here is adapted from the historical resources assessment prepared for the project (SWCA 2024a, p.32) and focuses on the themes of transportation, mining, community development, and recreation/tourism, which background research has identified as the most relevant to the project site.

Transportation

Wagon roads and railroads were critical to the settlement and development of California's Colorado and Mojave deserts between the 1840s and the early twentieth century. Initially, wagon routes provided the means to transport mail, miners, merchants, immigrants, laborers, settlers, military personnel, livestock, produce, timber, and mineral resources. These routes often gave rise to small communities that depended on and supported the new transportation corridors. By the early- to mid-twentieth century, desert trails and wagon roads were replaced with permanent roadways as automobile use expanded (SWCA 2024a, p. 33).

Wagon Routes. During the California Gold Rush, thousands of emigrants crossed the desert via the Gila Trail, also known as the Southern Overland Trail, which extended from Texas into Arizona, crossed the Colorado River near present-day Yuma, and continued through the Colorado Desert into California. From there, travelers could follow the main trail north to Los Angeles or diverge south toward San Diego, where they would either board ships to San Francisco or proceed inland to rejoin the route northward to the gold fields. Another major corridor was the Mojave River Trail—later called the Old Spanish Trail by John C. Frémont in 1844—which began in Santa Fe, New Mexico, passed through Utah and Arizona, and crossed the Mojave Desert to reach Mission San Gabriel Arcángel and Los Angeles. As miners and settlers established themselves along the Mojave River valley, U.S. Army forts were built to protect them and secure the trail, which had previously been subject to conflict with the Mohave people (SWCA 2024a, p. 33).

In addition to the Mojave River Trail and the southern Yuma route, several other wagon routes were established through the desert. These included Brown's Wagon Road, the Bradshaw Trail, and Brown and Frink's Road. Prior to 1855, Hank Brown cut an east–west route across Riverside County through Salt Creek Pass to the Colorado River. In 1862, William D. Bradshaw opened the Bradshaw Trail, the first major road across

Riverside County, which connected San Bernardino to the gold fields at La Paz, Arizona. This route saw heavy use between 1862 and 1877, primarily as a stage route. In 1863, Brown's route was incorporated into Frink's Road, which provided a shorter, less sandy crossing. Following the Civil War, stage services resumed, with companies such as Holladay and Wells Fargo operating across the desert beginning in 1868 (SWCA 2024a, p. 33).

Wagon route development in the vicinity of the project site dates to 1853–1854, when U.S. surveyors explored potential alignments across the Mojave Desert. Additional surveys were conducted by the General Land Office between 1855 and 1857. In 1857–1858, Edward F. Beale crossed the desert using the path that later became the Mojave Road (Old Government Road, Mojave Freeway). His repeated use of the route demonstrated its viability and solidified its role as a major transportation corridor (SWCA 2024a, p. 33).

Railroads. The expansion of railroads during the nineteenth century transformed transportation across the Mojave Desert. Though surveys for potential routes began in the 1850s, congressional approval for construction did not come until after the Civil War. The Texas and Pacific Railway initially pursued a southern transcontinental route in the early 1870s but was delayed in Texas, enabling San Francisco investors to extend the Southern Pacific Railroad (SPRR) eastward. By 1877, the SPRR had reached the Colorado River at Yuma, while the Atlantic and Pacific Railroad (later the Atchison, Topeka, and Santa Fe, or AT&SF) crossed through central San Bernardino County. By 1885, connections linked Barstow to San Diego, San Bernardino to Los Angeles, and Barstow to the eastern states via Needles. These routes gave rise to new communities, generally spaced at intervals of 15 to 20 miles along the rail lines (SWCA 2024a, p. 33).

Two smaller railroads also served the Mojave Desert in the early twentieth century: the Tonopah and Tidewater Railroad (T&T) and the San Pedro, Los Angeles, and Salt Lake Railroad (SPLA&SL). The T&T, operating from 1904 to 1940, transported borax from Death Valley and ran north from Ludlow, California, to Goldfield, Nevada. The line had stops near the project site at Rasor and Soda Lake, as well as in Baker, located seven miles northeast. SPLA&SL, incorporated in 1901 by mining magnate William A. Clark, was intended to connect the port of San Pedro with Salt Lake City in support of mining and agriculture. The railroad had a stop near Soda Springs at Crucero, approximately five miles south of the project site. Development of the line was instrumental in the founding of Las Vegas, Nevada. In 1916, it became the Los Angeles and Salt Lake Railroad, later incorporated into the Union Pacific system, where it operated until 1976 (SWCA 2024a, p. 34).

Highways. By the late nineteenth and early twentieth centuries, both federal and state governments began to invest in improved and more interconnected road systems. The California State Bureau of Highways, established in 1895, and the State Highway Commission, created in 1921, oversaw the early development of the state's highway network. Legislation passed during the 1910s and 1920s provided funding for road construction, much of which was concentrated in northern California to promote

recreation and tourism. In 1973, the Highway Commission was reorganized as the California Department of Transportation (Caltrans) (SWCA 2024a, p. 34).

The first major highways across the Mojave Desert followed the route established by the Southern California Railway and the Atchison, Topeka, and Santa Fe (AT&SF), stretching from Cajon Pass through Barstow and Needles. In 1912, the Ocean-to-Ocean Highway—later known as the National Old Trails Road—was completed from Baltimore, Maryland, to California. Through the Mojave Desert, this highway aligned with the historic Mojave River/Old Spanish Trail, passing through Needles and Barstow before continuing west to San Bernardino. In 1926, U.S. Route 66 was designated along much of the Ocean-to-Ocean Highway alignment, becoming one of the most iconic highways in the United States. After Route 66 was decommissioned in 1985, portions of it were replaced by Interstate 40 (I-40) and Interstate 15 (I-15), while surviving segments were preserved as part of the National Trails Highway. Other significant regional highways included the Randsburg–San Bernardino Road, added to the state system of secondary highways in 1933 as State Route (SR) 145 and redesignated U.S. Route 395 in 1935 (SWCA 2024a, p. 34).

Interstate 15

A segment of I-15 passes directly through the project site. Today, I-15 serves as a major transportation corridor linking California and Nevada and is the primary state highway connecting San Bernardino County to Nevada. The alignment has had several designations since the early twentieth century. Its earliest designation was Legislative Route Number (LRN) 31, established in 1915, though the Barstow segment was not initially constructed as part of the state system. Between 1917 and 1920, the route was improved as part of the Arrowhead Trail Highway. In 1925, it was extended to the Nevada state line from Barstow and codified as LRN 31, also co-signed as U.S. Route 91 (U.S. 91) and U.S. Route 466 (U.S. 466). Originally routed through Daggett, the highway was redirected through Barstow by 1931 (SWCA 2024a, p. 35).

With the completion of modern freeway construction, U.S. 91 and U.S. 466 were replaced by I-15. Portions of the historic Arrowhead Trail remain visible, though the original alignment has been heavily altered by successive freeway projects. Construction of the present-day four-lane interstate between Barstow and Baker—including the segment adjacent to the project site—was completed between 1964 and 1965. Associated highway infrastructure near the project site includes on- and off-ramps as well as the Rasor Road overcrossing (SWCA 2024a, p. 35).

Mining

Mining in the western Mojave Desert began during the late 1880s in the decades following the California Gold Rush. In San Bernardino County, gold was the most significant mineral resource, with mining activity continuing at notable levels through World War I. Although gold was rumored to have been discovered near Salt Springs in the 1820s, the first confirmed discovery occurred there in 1849. In addition to gold, boron became an important resource, with a principal deposit identified in the Calico

Mountains in 1882 and mined into the early twentieth century. Other minerals extracted in the region included silver, copper, iron, tungsten, and talc (SWCA 2024a, p. 36).

Mining activity declined in the 1920s, influenced by falling metal prices, postwar inflation, and shifting economic and mining policies, including the abandonment of the gold standard. The 1930s brought a resurgence of activity in San Bernardino County, driven largely by increases in the price of gold and limited employment opportunities during the Great Depression (SWCA 2024a, p. 36).

By the mid-twentieth century, mining had diminished in economic importance, and regional development shifted toward recreation and tourism as primary industries. Nonetheless, limited mining operations continue in portions of the Mojave Desert today (SWCA 2024a, p. 36).

Community Development

The project site is in north-central San Bernardino County within California's Mojave Desert. The name "San Bernardino" was first applied in 1810 by missionaries from Mission San Gabriel, who dedicated the area to Saint Bernardino of Siena. In 1819, a mission outpost was established near present-day Redlands. Following Mexico's independence from Spain in 1821, the Mexican government distributed large land grants, including the 35,509-acre Rancho San Bernardino, which was granted in 1842 to José del Carmen Lugo, José Maria Lugo, Vicente Lugo, and Diego Sepulveda (SWCA 2024a, p. 36).During the Mexican period, non–Native American settlement of California increased with the arrival of explorers, trappers, and ranchers. Among the earliest Americans to travel through the Mojave Desert was Jedediah Smith, who crossed the area in 1826 and referred to the Mojave River as the "Inconstant River" because of its tendency to vanish below the surface (SWCA 2024a, p. 36).

The Mexican-American War (1846–1848) concluded with the Treaty of Guadalupe Hidalgo, bringing California under U.S. control. California achieved statehood in 1850 as part of the Compromise of 1850, which also designated the Utah and New Mexico territories (including present-day Nevada and Arizona). San Bernardino County was officially organized in April 1853 from portions of Los Angeles and San Diego counties, with the City of San Bernardino incorporated as the county seat in 1854. Though Riverside County was later carved out of parts of San Bernardino and San Diego counties in 1893, San Bernardino County remains the largest county in both California and the United States (SWCA 2024a, p. 36).

During the mid-to-late nineteenth century, transportation corridors, irrigated agriculture, and mining fostered the transformation of isolated desert stops into permanent communities. Barstow grew as a supply center for nearby mines and as a hub along the Santa Fe Railroad, supporting a post office, stage services, telegraph and telephone lines, general stores, and a large hotel by the 1890s, despite its small population of approximately 300 residents. Mojave similarly developed into a transportation center for shipping borax and other minerals from Death Valley to

markets across southern California. Victorville originated as both a mining supply depot and a railroad stop. In addition to these larger towns, numerous smaller camps and supply stations—including Baker, California—evolved into small communities during the late nineteenth and early twentieth centuries. With the rise of the automobile, many of these early wagon and railroad stops became popular roadside destinations for automobile travelers (SWCA 2024a, p. 36).

Baker. The project is located near Baker, California, situated approximately seven miles to the northeast. Baker originated in 1908 as a stop along the Tonopah and Tidewater Railroad (T&T), named for the railroad's president, Richard C. Baker. In 1929, prospector and entrepreneur Ralph Jacobus Fairbanks formally established the town at this location. Fairbanks was also instrumental in founding several other desert communities during this period (SWCA 2024a, p. 37).

Soon after its founding, Baker developed a number of businesses catering to motorists and tourists traveling between Los Angeles and Las Vegas. By the 1930s, notable establishments included The Big Blue Service Station, owned by Fairbanks; Failing's Service Station and Café; and Hardy's Service Station, Bar, and Café. Throughout its history, Baker has functioned as an important stopover point for travelers bound for Las Vegas, Mojave National Preserve, or Death Valley National Park (SWCA 2024a, p. 37).

Despite its historic role as the last service stop along major desert travel routes, Baker has experienced significant decline in recent years. Between 2010 and 2020, the community's population decreased by nearly 40 percent (SWCA 2024a, p. 37).

Beacon Station. Beacon Station currently consists of a gas and service station, an adjacent single-family residence, and several manufactured homes located on a single parcel southeast of I-15. The earliest reference to Beacon Station—then identified as Beacon Service Station—appears in a 1927 issue of the *Desert Dispatch*. The name "Beacon" is believed to have originated from the presence of a Federal Aviation Administration (FAA) beacon in the area. A 1983 U.S. Geological Survey map documents an "Old FAA Beacon" northeast of the settlement, which was one of many navigational aids established for pilots traveling across the Mojave Desert. Aviation activity in the vicinity dates back to at least 1929, when a landing field was recorded northeast of Baker (SWCA 2024a, p. 37).

Beacon Station developed in the 1920s as a stopover for highway travelers, centered on the establishment of the gas and service station. Over time, the site expanded modestly to include residential structures but has remained a small roadside community serving motorists along the I-15 corridor (SWCA 2024a, p. 37).

Recreation and Tourism

From the mid-nineteenth through the early twentieth centuries, the Mojave Desert saw the establishment of hospitality businesses and traveler services in small towns that developed along wagon and railroad routes. As highways replaced earlier transportation

corridors and tourism gradually supplanted mining, these traveler-oriented enterprises remained common, providing food, fuel, lodging, and other necessities to motorists. In addition to businesses clustered in towns, isolated roadside establishments also appeared along major highways. Beacon Station, never large enough to be considered a town, is a representative example of this type of commercial development (SWCA 2024a, p. 37).

Recreational tourism in the Mojave Desert began prior to World War II but expanded dramatically in the postwar era, driven by the rising popularity of off-highway vehicles, increasing national leisure time, and state-sponsored initiatives to promote recreation. One of the earliest organized recreational enterprises in the area that would become Mojave National Preserve was established in the 1930s by Los Angeles businessman Jack Mitchell, who operated tours of three limestone caverns. He advertised his venture with signs along Route 66, and the caves were later incorporated into the California State Park system in 1956, remaining a popular attraction today. Other notable mid-twentieth-century destinations included the Zzyzx Mineral Springs and Health Resort. The California Department of Fish and Game (CDF&G) further supported recreational use of the desert beginning in the 1940s by introducing non-native deer and, later, chukar birds for hunting (SWCA 2024a, p. 37).

By the mid-twentieth century, off-roading had emerged as one of the most popular recreational pursuits in the Mojave Desert. Its widespread popularity prompted the first major federal management of desert recreation lands. Off-roading remains central to regional tourism, and one of the most popular routes is the Mojave Road, an early overland migration trail that now traverses the Mojave National Preserve. From the service station within the project site, Rasor Road extends east as an unpaved route that intersects the Mojave Road and provides one of the few access points into the western Mojave National Preserve from Interstate 15. For westbound travelers, this service station is the last facility along the highway before reaching Baker, California (SWCA 2024a, p. 38).

Today, recreation and tourism in the Mojave Desert encompass a wide range of activities, including sightseeing, nature exploration, camping, hunting, biking, horseback riding, hiking, off-roading, and educational tourism at visitor centers and the Desert Studies Center. The Mojave National Preserve remains a major draw; in 2022, it attracted approximately 773,000 visitors, generating $51 million in local spending and supporting nearly 600 jobs. Visitor expenditures included $15.6 million for hotels, $11.8 million for restaurants, $8 million for gas, $5.5 million for retail shopping, $4.3 million for recreation, $2.8 million for groceries, and $1.5 million each for transportation and camping (SWCA 2024a, p. 38).

Regulatory

Federal

Because the project falls on federal land the Bureau of Land Management is the federal lead agency responsible for federal regulator conformance under Section 106 of the National Historic Preservation Act.

State

California Register of Historical Resources (Pub. Resources Code § 5024.1). The California Register of Historical Resources (CRHR) establishes the following criteria for listing as a historical resource:

1. is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
2. is associated with the lives of persons important to our past.
3. embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
4. has yielded, or may be likely to yield, information important in prehistory or history.

The CRHR also includes the following:

- properties determined eligible for or listed in the National Register of Historic Places.
- a resource included in a local register of historical resources or identified in a historical resources survey.
- any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant.
- Points of Historical Interest and State Historical Landmarks with a number greater than No 770.

California Environmental Quality Act (Pub. Resources Code, § 21084.1). Requires that lead agencies determine if a project could have a significant impact on historical or unique archaeological resources. The California Environmental Quality Act (CEQA) establishes that an impact that results in a substantial adverse change in the significance of a historical resource is considered a significant impact on the environment. A substantial adverse change could result from physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the historical resource would be materially impaired (Cal. Code Regs., tit. 14, § 15064.5 (b)(1)). Material impairment is defined as demolition or alteration in an adverse manner [of] those characteristics of a historical resource that convey its historical significance and that justify its inclusion in, or eligibility for inclusion in, the CRHR or a local register (Cal. Code Regs., tit. 14, § 15064.5(b)(2)(A)).

In 2014, CEQA was expanded to include the category tribal cultural resource. A project with an effect 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). It further states the CEQA lead agency shall, when feasible, avoid damaging effects to any tribal cultural resource (Pub. Resources Code, § 21084.3).

Unique Archaeological Resources (Pub. Resources Code, § 21083.2). If an archaeological resource does not qualify as a historical resource, it may meet the definition of a "unique archaeological resource." The Public Resources Code, section 21083.2(g) defines a unique archaeological resource as an artifact, object, or site about which 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.

Health and Safety Code, § 7050.5. In the event of the discovery of human remains outside of the context of a formal cemetery, the California Health and Safety Code, section 7050.5 requires that construction be halted and that the coroner be notified. Requires the coroner to notify the Native American Heritage Commission (NAHC) if remains are determined to be Native American in origin.

Public Resources Code, § 5097.98. In the event human remains are discovered, the Public Resources Code, section 5097.98 authorizes the NAHC to assign a Most Likely Descendant (MLD). Requires that the landowner ensure the discovery is not further damaged and the MLD then may, with the landowner's permission, inspect the find and make recommendations for the culturally appropriate treatment or disposition of the human remains and any associated grave goods. The landowner shall confer with the MLD all reasonable options regarding the MLD's preferences for treatment. Where the parties are unable to agree on the appropriate treatment measures, the Native American human remains and associated items shall be reinterred on the property with appropriate dignity.

Additional Considerations

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

Even if a resource is not listed or determined to be eligible for listing in the CRHR, CEQA requires the lead agency to decide 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 the resource 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 the resource 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, staff analyzes the proposed project's potential to cause a substantial adverse change in the significance of historical or unique archaeological resources. The magnitude of an impact depends on:

- the affected historical resource(s);
- the specific historic significances of any potentially impacted historical resource(s);
- how the 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) defines a "substantial adverse change" as the "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."

Local

San Bernardino County

San Bernardino County's goals and policies pertaining to historical, paleontological, and archaeological resources are described in the Cultural Resources Element of the Countywide Plan, County Policy Plan, September 2022 (San Bernardino County 2022). The relevant policies are provided below.

Goal CR-1 Tribal Cultural Resources. Tribal cultural resources that are preserved and celebrated out of respect for Native American beliefs and traditions.

- *Policy CR-1.1. Tribal Notification and Coordination.* We notify and coordinate with tribal representatives in accordance with state and federal laws to strengthen our

working relationship with area tribes, avoid inadvertent discoveries of Native American archaeological sites and burials, assist with the treatment and disposition of inadvertent discoveries, and explore options of avoidance of cultural resources early in the planning process.

- *Policy CR-1.2 Tribal Planning.* We will collaborate with local tribes on countywide planning efforts and, as permitted or required, planning efforts initiated by local tribes.
- *Policy CR-1.3 Mitigation and Avoidance.* We consult with local tribes to establish appropriate project-specific mitigation measures and resource-specific treatment of potential cultural resources. We require project applicants to design projects to avoid known tribal cultural resources, whenever possible. If avoidance is not possible, we require appropriate mitigation to minimize project impacts on tribal cultural resources.
- *Policy CR-1.4 Resource Monitoring*. We encourage active participation by local tribes as monitors in surveys, testing, excavation, and grading phases of development projects with potential impacts on tribal resources.

Goal CR-2 Historic and Paleontological Resources. Historic resources (buildings, structures, or archaeological resources) and paleontological resources that are protected and preserved for their cultural importance to local communities as well as their research and educational potential.

- *Policy CR-2.1 National and State Historic Resources.* We encourage the preservation of archaeological sites and structures of state or national significance in accordance with the Secretary of Interior's standards.
- *Policy CR-2.2 Local Historic Resources.* We encourage property owners to maintain the historic integrity of resources on their property by (listed in order of preference): preservation, adaptive reuse, or memorialization.
- *Policy CR-2.4 Partnerships.* We encourage partnerships to champion and financially support the preservation and restoration of historic sites, structures, and districts.
- *Policy CR-2.5 Public Awareness and Education.* We increase public awareness and conduct education efforts about the unique historic, natural, tribal, and cultural resources in San Bernardino County through the County Museum and in collaboration with other entities.

Cumulative

Preparation of the 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 proposed 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 proposed project, combined with the effects of other projects, is "cumulatively considerable," and therefore potentially significant (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, § 15130(b)(1)).

This geographic scope of the cumulative analysis for cultural and tribal cultural resources is 10 miles surrounding the PAA. This geographic scope of analysis is appropriate because the cultural resources within this area are expected to be similar to those that occur in the PAA. Their proximity and similarity in environments would result in similar land use, and thus, site types. Cumulative impacts could occur if other projects, in conjunction with the proposed project, would have impacts on cultural resources that, when considered together, would be significant.

For the purposes of this cumulative impact analysis, **Appendix A, Table A-1** and **Figure A-1** shows six projects that are located within an approximately 10-mile radius closest to the PAA where there is the potential for impacts related to cultural resources to combine with those of the proposed project: Project 1 (Brightline West-Las Vegas to Victor Valley), Project 2 (Ivanpah Control Transmission Line Project), Project 3 (I-15 Mojave Wildlife Crossings Restoration Project R129.750, Project 4 (Loves Travel Stop and Manufactured Home Park Project), Project 5 (I-15 Mojave Wildlife Crossings Restoration Project R116.70), and Project 7 (I-15 Mojave Wildlife Crossings Restoration Project R168.05). Cumulative projects are identified as past projects, current projects, or reasonably foreseeable future projects that, when viewed in connection with the proposed project, cause its effect(s) on cultural and tribal cultural resources to be potentially significant.

5.4.2 Environmental Impacts

This section describes the environmental setting and regulatory background and discusses the impacts associated with the construction and operation of the proposed project with respect to cultural and tribal cultural resources. These impacts are summarized as follows.

CULTURAL AND TRIBAL CULTURAL RESOURCES	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Would the proposed project cause a substantial adverse change in the significance of a historical resource pursuant to Public Resources Code, section 15064.5?	☐	☒	☐	☐
b. Would the proposed project cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Public Resources Code, section 15064.5?	☐	☒	☐	☐

CULTURAL AND TRIBAL CULTURAL RESOURCES	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
c. Would the proposed project disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☒	☐	☐
d. Would the proposed project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code, section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code, section 5020.1(k), or	☐	☒	☐	☐
ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code, section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code, section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix G, cultural resources and tribal cultural resources.

5.4.2.1 Methodology and Thresholds of Significance

In addition to the above environmental checklist, staff used the following methodology and thresholds of significance to evaluate the project. (Cal. Code Regs., tit. 14, §§ 15064.5 and 15064.7)

Methodology

Literature Review and Record Search

The applicant's consultant completed confidential cultural resources records searches through the California Historical Resources Information System (CHRIS) at the South Central Coastal Information Center (SCCIC), located on the campus of California State

University, Fullerton, which maintains records for San Bernardino County. Initial searches were conducted on January 11 and 17, 2023, with supplemental searches performed on November 4 and 11, 2024, respectively (SWCA 2024a, p. 46). Although these searches predate the inclusion of Zyzzx Road route option for construction and operation access, the additional footprint falls within the previous searches buffer and did not require an additional supplemental search.

The updated records searches were performed to supplement earlier efforts completed as part of the original Class III inventory (Duke and Patterson 2009). Their purpose was to identify previously recorded cultural resources and prior survey coverage within the project site, including an evaluation of resources' potential eligibility for the California Register of Historical Resources (CRHR). The CHRIS centers house records of archaeological sites, historic resources, and prior technical studies, as well as the Office of Historic Preservation's (OHP) portion of the statewide Historic Resources Inventory. For this effort, the search encompassed the project site itself, plus a 1.0-mile (1.6-km) buffer, and a 0.25-mile (0.4-km) buffer around the linear gen-tie line.

Results of these records searches were used by the applicant's consultant to identify previously documented cultural resources within the PAA and to inform the assessment of archaeological sensitivity. Because the results contain specific locational and descriptive information on sensitive archaeological sites, they are considered confidential and exempt from public disclosure under the Freedom of Information Act (SWCA 2024a, p. 46).

The following sources were also consulted:

- Built Environment Resource Directory
- Online Archive of California
- Mojave River Valley Museum
- Mojave Desert Heritage & Cultural Association
- Western American Railroad Museum
- Daggett-Calico Historical Society
- Desert Discovery Center
- Historic Aerials
- Historical Newspapers

Tribal Consultation

Applicant's Correspondence. The applicant's consultant contacted the Native American Heritage Commission (NAHC) on January 4, 2023 and requested a review of their Sacred Lands File (SLF) for the proposed project and a 0.5-mile radius. The NAHC responded on January 24, 2023 (NAHC Ref. No. 2023-000316; response on file at the CEC). The SLF consists of a database of known Native American cultural resources. The

specific locations are confidential and exempt from public disclosure under Government Code section 7927.705 and California Code of Regulations, title 14, section 15120(d). These resources may not be included in the SCCIC database.

CEC Consultation. The CEC, pursuant to their responsibilities under CEQA, contacted the NAHC to obtain an updated contact list and the NAHC responded on March 13, 2023 (TN 263783) and an updated request sent on August 7, 2024. The CEC staff emailed project notifications and request for comments on September 27, 2024 (TN 259334), with hard copy letters mailed on July 31, 2025 (TN 265240), to the following:

- Kern Valley Indian Community
- Morongo Band of Mission Indians
- Quechan Tribe of the Fort Yuma Reservation
- San Manuel Band of Mission Indians
- Serrano Nation of Mission Indians
- Twenty-Nine Palms Band of Mission Indians

Initial consultation letters were mailed to the individuals and tribes listed on the NAHC contact list on August 1, 2025, with e-mail copies of the letters sent on August 19, 2025.

Archaeological Survey

The applicant's consultant conducted reconnaissance and intensive pedestrian surveys of the PAA in 2023 and 2024 (FA-680-23-0009, FA-680-25-0004, FA-680-24-0023). Fieldwork was completed under the consultant's BLM Cultural Resources Use Permit (CA-20-28 and CA-23-21) as the project site is wholly on BLM land (SWCA 2024a, p. 48).

Between February 13 and 15, 2023, the applicant's consultant completed a reconnaissance survey of the 1,490-acre project site and adjacent lands, for a total of 1,849 acres. This included four solar array fields connected by access roads and an associated gen-tie line. During this effort, previously mapped archaeological resources within the project area were revisited to assess their current condition. In addition, a 100-meter (328-foot) radius around each recorded location was intensively surveyed using 15-meter (49-foot) transects.

Following the reconnaissance survey, the project boundary around the southern edge of the solar array was expanded to 2,670 acres. Review of the revised boundary indicated that two small sections of land totaling 54 acres extended beyond the areas previously surveyed. To address this, the applicant's consultant conducted a supplemental intensive pedestrian survey of the 54-acre area along the southern project boundary on June 17 and 18, 2024. During this effort, one previously documented archaeological resource (P-36-020720), a historic complex with temporary workers encampment and roadside service station, was revisited. Survey transects were spaced at 15 meters (49

feet), with transect intervals reduced to 3–5 meters (10–16 feet) in the vicinity of P-36-020720 to adequately define and document the resource.

Historic Architectural – Built Environment Survey

On June 20, 2024, the applicant's consultant conducted an intensive pedestrian survey of selected built environment resources within the PAA. Fieldwork included digital photography and detailed field notes to document each resource and its setting. Two properties were surveyed at the intensive level: the utility facility (former AT&T facility) on APN 054330103 (MR #1) and the gas/service station and residential property on APN 054330201 (MR #2). A reconnaissance-level survey was also conducted for the Boulder Dam–San Bernardino Electrical Transmission Line (MR #3; previously recorded resource P-36-010315, determined eligible for the NRHP and listed in the CRHR) and Transmission Line GG-001 (MR #5; previously recorded resource P-36-028522).

A supplemental reconnaissance survey on November 26, 2024, identified and documented additional built environment features within the built environment PAA based on desktop review. These included the Rasor Road segment (MR #7), BLM roads AC8825 (MR #8), AC8826 (MR #9), and CL8845 (MR #10); transmission lines within BLM ROWs R02879 (MR #11), CACA53944 (MR #12), and CACA53937 (MR #16); a telephone line within BLM ROW CACA57955 (MR #13); and a pipeline and BLM road CL8837 (MR #14).

Several features within PAA were not intensively surveyed because they had already been documented between 2020 and 2021 as part of the Ivanpah–Control Project built environment survey by Urbana Preservation & Planning in 2021. These included Interstate 15 (MR #4), the Arrowhead Trail Highway segment (U.S. 91/U.S. 466; MR #6), and the Southern California Edison (SCE) access road segments (MR #15).

Finally, several built environment features were noted but not recorded because they are less than 45 years old and are therefore not typically considered historic resources under CEQA. These include the Mead–Adelanto transmission line, an aircraft runway located south of MR #2, a communications facility situated on a hill east of MR #2, various rural unpaved roads, and BLM ROWs CACA20105 and CACA21604, which are likely associated with underground fiber optic cables installed circa 1990 (SWCA 2024b, p. 35).

Results

Literature Review

A total of 23 cultural resource studies has been completed within the defined records search area, 14 of which intersect the project area (Table 5.4-1). Of these, one study is an ethnographic assessment (Bean et al. 1981), while the remaining 13 consist of archaeological surveys, including one with an architectural/historic component.

As noted, the majority of the project area had been previously surveyed by Duke and Patterson (2009) and McCabe (2013). Summaries of these two studies are provided below.

TABLE 5.4-1 PREVIOUSLY CONDUCTED STUDIES

Study Number	Author/Year (Citation)	Proximity to Project Area
SB-00046	Grosscup and Smith 1960	Within
SB-00874	Barker et al. 1979	Within
SB-01080	Hammond 1981	Within
SB-01219	Hall et al. 1981	Within
SB-01220	Bean et al. 1981	Within
SB-01381	Musser and Sutton 1983	Within
SB -01413	Smith 1983	Outside
SB-01479	Dames & Moore 1985	Outside (within 0.25 mile)
SB-01551	UC Riverside Archaeological Research Unit 1986	Within
SB-01734	Shackley et al. 1987	Within
SB-01825	Peak & Associates 1988	Outside (within 0.25 mile)
SB-01834*	Bouey and Hall 1988	Within
SB-02220	BLM 1978	Outside (within 0.25 mile)
SB-02315	Cook and Pallette 1991a	Outside (within 0.25 mile)
SB-02470	Cook and Pallette 1991b	Outside (within 0.25 mile)
SB-02597	Dames and Moore 1991	Within
SB-03163/ SB-03673	Brian F. Mooney and Associates 1996	Outside (within 0.25 mile)
SB-03668	York et al. 1995	Within
SB-06489	Wilkens 2009	Outside (within 0.25 mile)
SB-06730	Jones 2010	Outside (within 0.25 mile)
SB-06731	Duke and Patterson 2009	Within
SB-07573	McCabe 2013	Within
SB-07980	Heidelberg 2005	Within

Notes: Abbreviations: BLM = Bureau of Land Management; et al. = *et alia* (and others); SB = San Bernardino County; UC = University of California

SB-06731. Report SB-06731 documents a Class III inventory of approximately 6,775 acres of BLM-managed land conducted by Far Western in 2009 for the current project (Duke and Patterson 2009). The survey identified 12 archaeological sites (seven precontact and five historic-period) and 70 isolated artifacts (19 precontact and 51 historic-period). Among these, one resource, the Boulder Dam–San Bernardino 115-kilovolt transmission line (CA-SBR-10315H), is listed on both the NRHP and CRHR.

Of the remaining resources, Far Western recommended three archaeological sites as eligible for the NRHP/CRHR and seven as not eligible. One additional resource was not evaluated because it was located outside the project area. The Arrowhead Trail Highway (P-36-007689) was recommended eligible under NRHP Criteria A/1 and C/3; however, the portion of the alignment within the APE was determined to lack sufficient

integrity to convey its significance and was therefore considered a non-contributing element of the overall historic property.

None of the isolated artifacts, most of which were transportation-related and associated with the historic period, were recommended eligible for the NRHP or CRHR (SWCA 2024a, p. 42).

SB-07573. Report SB-07573 presents the results of a supplemental Class III survey conducted by Far Western in 2013 for the current project (McCabe 2013). The survey encompassed approximately 355 acres, including four small parcels and two linear road corridors. During this effort, Far Western relocated two previously recorded historic-period sites (P-36-007689 and P-36-020720) and documented seven new isolated finds (two precontact and five historic-period). No historic properties were identified within the supplemental Class III survey area, and none of the isolated finds were recommended eligible for the NRHP or CRHR (SWCA 2024a, p. 43).

Previously Recorded Cultural Resources. A total of 68 cultural resources have been recorded within the records search area for the project, 44 of which intersect the project area (Table 5.4-2). The 44 previously documented resources within the project area include two historic-period transmission lines (P-36-010315 and P-36-028522); one archaeological site consisting of a historic-period road with associated historic and precontact artifacts (P-36-007689); one additional historic-period archaeological site (P-36-020720); and 40 isolated finds (four precontact and 36 historic-period artifacts).

TABLE 5.4-2 PREVIOUSLY RECORDED CULTURAL RESOURCES

SCCIC Primary Number and Trinomial	Age	Type	Description	Year Recorded	Proximity to Project Area
P-36-007689 CA-SBR-7689/H	Precontact, historic	Structure, site	Arrowhead Trail Highway with associated features and refuse scatters that include precontact and historic artifacts	1993, 1997, 2001, 2009, 2010, 2011, 2012, 2013, 2014, 2016, 2020	Within
P-36-010315 CA-SBR-10315H	Historic	Structure, site	Edison Company Boulder Dam-San Bernardino Electrical Transmission Line	1988, 1989, 1993, 1997, 2006, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2018	Within
P-36-020718 CA-SBR-13346	Precontact	Site	Trail or footpath and an associated cleared circle	2009	Outside
P-36-020719 CA-SBR-13347	Precontact	Site	Rock alignment of 12 stones	2009	Outside
P-36-020720 CA-SBR-13348H	Historic	Site	Artifact assemblage dating from the 1910s to 1970s with four loci and several features and dumps	2009, 2012	Within

TABLE 5.4-2 PREVIOUSLY RECORDED CULTURAL RESOURCES

SCCIC Primary Number and Trinomial	Age	Type	Description	Year Recorded	Proximity to Project Area
P-36-020721 CA-SBR-13349	Precontact	Site	A cleared circle located on a desert pavement surface	2009	Outside
P-36-023488	Precontact	Isolate	Lithic flake	2009	Outside
P-36-024396	Historic	Isolate	Gas can	2009	Within
P-36-024397	Historic	Isolate	Rock alignment	2009	Within
P-36-024398	Precontact	Isolate	Chert unifacial flaked tool	2009	Within
P-36-024399	Historic	Isolate	Quart-sized can	2009	Within
P-36-024400	Precontact	Isolate	Core reduction flake	2009	Outside
P-36-024401	Historic	Isolate	Remnant of wooden billboard	2009	Outside
P-36-024403	Precontact	Isolate	Lithic flake	2009	Within
P-36-024404	Precontact	Isolate	Single reduction locus of 13 white cryptocrystalline silicate reduction flakes	2009	Within
P-36-024406	Historic	Isolate	Glass insulator	2009	Outside
P-36-024407	Precontact	Isolate	Core reduction flake	2009	Outside
P-36-024408	Precontact	Isolate	Lithic flake	2009	Outside
P-36-024409	Historic	Isolate	Vent-hole evaporated milk can	2009	Within
P-36-024410	Historic	Isolate	Vent-hole evaporated milk can	2009	Within
P-36-024411	Historic	Isolate	Vent-hole evaporated milk can	2009	Within
P-36-024412	Historic	Isolate	Lid	2009	Within
P-36-024413	Historic	Isolate	1955 benchmark sitting within a rock cairn	2009	Within
P-36-024414	Historic	Isolate	Vent-hole evaporated milk can	2009	Within
P-36-024415	Historic	Isolate	Multi-serve sanitary food can	2009	Within
P-36-024416	Historic	Isolate	Gas can top with metal spout	2009	Within
P-36-024417	Precontact	Isolate	Rose Spring projectile point	2009	Within
P-36-024418	Historic	Isolate	Disintegrating rubber tire	2009	Within
P-36-024419	Historic	Isolate	Powder can	2009	Within
P-36-024420	Historic	Isolate	Knife-opened paint can	2009	Within
P-36-024421	Historic	Isolate	Knife-opened sanitary food can	2009	Within
P-36-024422	Historic	Isolate	Knife-opened food can	2009	Within
P-36-024423	Historic	Isolate	Church key-opened beverage can	2009	Within
P-36-024424	Historic	Isolate	Church key-opened beverage can	2009	Within
P-36-024425	Historic	Isolate	3-gallon fuel can	2009	Within
P-36-024426	Historic	Isolate	Single-serve sanitary food can	2009	Within
P-36-024427	Historic	Isolate	Starter fluid can with screw-top spout	2009	Within
P-36-024428	Historic	Isolate	5-gallon fuel can	2009	Within

TABLE 5.4-2 PREVIOUSLY RECORDED CULTURAL RESOURCES

SCCIC Primary Number and Trinomial	Age	Type	Description	Year Recorded	Proximity to Project Area
P-36-024429	Historic	Isolate	Single-serve sanitary food can (opened with can opener)	2009	Within
P-36-024430	Historic	Isolate	Miscellaneous domestic appliance part/ mechanical part	2009	Within
P-36-024431	Historic	Isolate	Vent-hole evaporated milk can	2009	Within
P-36-024432	Historic	Isolate	Baby milk can (dating from 1917 to 1930)	2009	Within
P-36-024433	Historic	Isolate	Fuel can	2009	Within
P-36-024434	Historic	Isolate	Vent-hole evaporated baby milk can	2009	Within
P-36-024435	Historic	Isolate	Automatic glass chemical bottle	2009	Within
P-36-024436	Historic	Isolate	Baby milk can (dating from 1917 to 1930)	2009	Within
P-36-024437	Historic	Isolate	A three tab-top bottle with metal lid	2009	Within
P-36-024438	Historic	Isolate	Vent-hole evaporated baby milk can	2009	Within
P-36-024439	Historic	Isolate	Military refuse	2009	Outside
P-36-024449	Precontact	Isolate	Lithic flake	2009	Outside
P-36-024450	Precontact	Isolate	Obsidian biface	2009	Outside
P-36-024451	Historic	Isolate	Metal milk can	2009	Outside
P-36-024452	Precontact	Isolate	Cryptocrystalline biface	2009	Outside
P-36-024453	Precontact	Isolate	Unifacial ground stone	2009	Outside
P-36-024454	Historic	Isolate	Rock cairn	2009	Outside
P-36-024455	Historic	Isolate	Evaporated milk can	2009	Outside
P-36-024456	Precontact	Isolate	Single reduction locus of white cryptocrystalline lithics	2009	Outside
P-36-024457	Historic	Isolate	1-gallon glass-lined metal thermos	2009	Outside
P-36-025535	Historic	Isolate	Hole-in-cap can	2009	Within
P-36-025536	Historic	Isolate	Blown, brown alcohol bottle break	2012	Within
P-36-025537	Historic	Isolate	Hole-in-cap can	2012	Within
P-36-025538	Historic	Isolate	Two hole-in-cap cans	2012	Within
P-36-028478	Historic	Isolate	Church key-opened flat-top beverage can	2012	Outside
P-36-028479	Historic	Isolate	Caltrans survey marker	2012	Outside
P-36-028480	Historic	Isolate	Three-piece beverage can	2012	Outside
P-36-028481	Historic	Isolate	Clear glass insulator attached to a wooden dowel	2012	Outside
P-36-028516 CA-SBR-28516H	Historic	Site	Sparse refuse scatter made up of six flat-top steel beverage cans and a single 1-quart oil can	2012	Outside

TABLE 5.4-2 PREVIOUSLY RECORDED CULTURAL RESOURCES

SCCIC Primary Number and Trinomial	Age	Type	Description	Year Recorded	Proximity to Project Area
P-36-028522 CA-SBR-28522H	Historic	Structure	Altered overhead electrical transmission line that is currently in active service	2012	Within

Notes: Abbreviations: CA = California; Caltrans = California Department of Transportation; SBR = San Bernardino County; SCCIC = South Central Coastal Information Center

Tribal Consultation: Applicant's Findings

Prior to the CEC becoming the lead agency under the Opt-in process (Pub. Res. Code §§ 25545–25545.13), on October 4, 2022, the California Department of Fish and Wildlife (CDFW) requested an AB 52 consultation list from the NAHC. On October 22, 2022, CDFW sent letters to 35 individuals representing 29 tribal groups on the NAHC contact list (NAHC Ref. No. 2022-005725). CDFW received three responses. These responses are summarized below.

Nicole Raslich, Archaeological Technician at the Agua Caliente Band of Cahuilla Indians Tribal Historic Preservation Office, responded via email on November 7, 2022. N. Raslich stated that a records check of the Tribal Historic Preservation Office's cultural registry revealed that the project is not located within the Tribe's traditional use area. Therefore, the Agua Caliente Band of Cahuilla Indians defers to the other tribes in the area and concludes consultation with the CDFW.

Jill McCormick, Historic Preservation Officer for the Fort Yuma Quechan Tribe, responded via email on November 28, 2022. J. McCormick noted that the Fort Yuma Quechan Tribe does not wish to comment on the project and defers to more local tribes and supports their determination on this matter.

Deneen Pelton, Cultural Resources Department Coordinator for the Rincon Band of Luiseño Indians (Rincon Band), responded via email on November 29, 2022. D. Pelton stated that the project area is not within the Rincon Band's area of historic interest. At this time, the Rincon Band has no additional information to provide and recommended that tribes closer to the project area be contacted for pertinent information.

Following the applicant's January 4, 2023, SLF request the NAHC replied via email on January 24, 2023, stating that the SLF search was completed with negative results. The NAHC additionally provided a list of five Native American individuals and/or tribal organizations that should be contacted for more information on potential tribal sensitivities regarding the currently proposed project.

- Kern Valley Indian Community
- Morongo Band of Mission Indians
- Quechan Tribe of the Fort Yuma Reservation
- San Manuel Band of Mission Indians

- Serrano Nation of Mission Indians
- Twenty-Nine Palms Band of Mission Indians

Tribal Consultation: CEC Summary

A brief summary of specific CEC tribal consultation findings for the proposed project are as follows. Initial consultation letters were mailed to the individuals and tribes listed on the NAHC contact list on August 1, 2025, with e-mail copies of the letters sent on August 19, 2025. Responses were received from the Yuhaaviatam of San Manuel Nation (San Manuel Band of Mission Indians), the Quechan Tribe of the Fort Yuma Reservation, and the Twenty-Nine Palms Band of Mission Indians.

On August 19, 2025, the CEC received an e-mail from the tribal archaeologist representing the Yuhaaviatam of San Manuel Nation requesting more information on the project and any reports that had been produced. This email constitutes initiation of formal consultation under Gov. Code § 65352.3(c). The CEC responded on August 22, 2025, with the reports, however they were returned undelivered due to file size and resent via Kiteworks on September 19, 2025. The Yuhaaviatam responded on October 10, 2025, after reviewing the reports and expressed their desire to consult on the project because of the potential cultural sensitivity of the area; and they provided language to be incorporated into the conditions for the project as well as a request that tribal monitoring take place during construction.

On August 19, 2025, the CEC received an e-mail from the Cultural Resources Specialist representing the Twenty-Nine Palms Band of Mission Indians thanking the CEC for the information provided and informing CEC staff about changes to the tribal contacts. The CEC sent a response on August 19, 2025, acknowledging receipt of their e-mail and that we were updating our contact list for the tribe.

On August 23, 2025, an e-mail was received from the Historic Preservation Officer representing the Quechan Tribe of the Fort Yuma Reservation stating that the Quechan does not wish to comment on the project and defers to the more local tribes and that they support those tribe's determinations on the matter.

There has been some concern expressed by the tribes about the cultural sensitivity of the area and possibility of buried cultural deposits; however no additional sites or Tribal Cultural Resources have been identified at this time. Consultation is ongoing. This observation is consistent with the definition of a Tribal Cultural Resource in Pub. Res. Code § 21074.

Results of Surveys

Archaeological Survey. The project area is characterized primarily by an alluvial desert plain with several ephemeral drainages. Sediments consist of light brown, coarse silty sand derived from alluvial deposits. Vegetation is sparse and dominated by creosote bush, grasses, and scattered Joshua trees, typical of the Mojave Desert geomorphic province. Ground surface visibility during survey averaged between 80 and

95 percent across the project area with all drainages and rodent burrows being inspected for buried artifacts or deposits.

Within the PAA, the applicant's consultant documented two previously recorded archaeological sites and 15 newly identified sites. In addition, one previously recorded isolate (P-36-024425) was reclassified as a site following the discovery of additional associated artifacts and retains the same identification number. Most of the newly identified sites consist of historic-period refuse scatters dating to the 1960s and 1970s, concentrated near I-15, likely associated with roadside activities, maintenance staging, or traveler discard during mid-twentieth-century highway expansion. At the time of Far Western's 2009 survey, these materials were not yet of sufficient age for consideration under the NRHP or CRHR. Other newly identified sites include remnants of a construction staging area associated with I-15 and two possible historic-period mining locales.

In addition to the site discoveries, 89 isolated finds were recorded within the PAA, including nine previously documented and 80 newly identified isolates. Many of the isolates noted during Far Western's 2009 survey likely have been displaced downslope or buried by natural processes such as sheetwash, episodic flooding, and movement by wind. Most of the newly identified isolates consist of individual historic-period cans, often observed in secondary depositional contexts.

Descriptions and NRHP/CRHR eligibility recommendations for each archaeological resource are provided in the following section. All evaluations are based solely on surface observations (SWCA 2024a, p. 62).

Historic Architectural Survey. A total of 16 built environment properties and features within the PAA were analyzed by the applicant's consultant and CEC staff as part of this study (Table 5.4-3). Each property is briefly described below, including a concise history and eligibility summary. These resources were evaluated for listing on the CRHR, however NRHP evaluations could vary if a BLM review becomes necessary. Additional documentation is provided in the DPR 523 series forms. Of these, nine properties/features were newly recorded and evaluated for CRHR eligibility: MR #2, MR #8, MR #9, MR #10, MR #11, MR #12, MR #13, MR #14, and MR #16. Three previously recorded resources (MR #1, MR #5, and MR #7) were revisited and Update DPR forms were prepared. One previously recorded resource, MR #3, already has a SHPO determination of eligibility; therefore, no further DPR 523 form was prepared by the applicant's consultant. The remaining three properties/features (MR #4, MR #6, and MR #15) were recorded and evaluated within the last five years, so no additional documentation was prepared as part of this effort.

TABLE 5.4-3 SUMMARY OF BUILT ENVIRONMENT PROPERTIES ANALYZED IN THE PAA

Map Reference	Common Name	Address or APN	Resource Type	Construction Date(s)	Proximity to Project Area
#1	Unknown	APN 054330103	Utility (former AT&T) facility	1962	Outside

TABLE 5.4-3 SUMMARY OF BUILT ENVIRONMENT PROPERTIES ANALYZED IN THE PAA

Map Reference	Common Name	Address or APN	Resource Type	Construction Date(s)	Proximity to Project Area
#2	Shell gas station, Rasor Road Services	66150 Rasor Road, APN 054330201	Gas/service station, single-family residence, and two manufactured homes	1961, single-family residence 1962, gas/service station 1982, manufactured homes	Within
#3	Edison Company Boulder Dam-San Bernardino Electrical Transmission Line (P-36-010315)	N/A	Transmission line	1930–1931	Within
#4	I-15	N/A	Interstate highway	1964–1965	Within
#5	GG-001 (P-36-028522)	N/A	Transmission line	Unknown (between 1938 and ca. 1973)	Within
#6	Arrowhead Trail (U.S. 91/U.S. 466)	N/A	Highway	Circa 1917-1920	Within
#7	Rasor Road	N/A	Road	Undetermined (pre-1948)	Within
#8	BLM Road AC8825	N/A	Road	Circa 1975	Outside
#9	BLM Road AC8826	N/A	Road	Circa 1975	Within
#10	BLM Road CL8845	N/A	Road	Circa 1950	Within
#11	Transmission Line within BLM ROW R02879	N/A	Transmission line	Circa 1964	Outside
#12	Transmission Line within BLM ROW CACA53944	N/A	Transmission line	Circa 1976	Within
#13	Telephone Line within BLM ROW CACA57955	N/A	Telephone line	Circa 1976	Within
#14	Pipeline and BLM Road CL8837	N/A	Pipeline and access road	Circa 1970	Within
#15	SCE Access Road System	N/A	Access road system	Circa 1930 with later additions	Within
#16	Transmission Line within BLM ROW CACA53937	N/A	Transmission line	Circa 1976	Within

Notes: Abbreviations: APN = Assessor's Parcel Number; BLM = Bureau of Land Management; I-15 = Interstate 15; ROW = right of way; SCE = Southern California Edison

The CEC staff concurs with the applicant's consultant's recommendations for CRHR findings with one exception, MR #4. In-depth research conducted by the CEC staff has

determined that the I-15 appears ineligible to the CRHR in accordance with California Historical Resource Status Code 3CS. Additional information is provided below.

A brief description of each resource mentioned above and CRHR evaluations summaries identified within the PAA.

Resource Descriptions and Significance

Site P-36-007689 (CA-SBR-7689/H) – Arrowhead Trail Highway

Site P-36-007689 (CA-SBR-7689/H) represents a multicomponent resource consisting of the Arrowhead Trail Highway, with both historic-period and precontact elements (Duke and Patterson 2009). SWCA revisited the portion of the resource within the PAA in 2023. The site consists of an unpaved gravel road approximately 6–8 meters (20–25 feet) wide. Although portions of the roadway have been impacted by erosional processes, its overall condition remains largely unchanged since its last assessment in 2012. No associated archaeological materials were identified during the 2023 revisit. The segment intersecting the current project PAA is consistent with descriptions provided by Duke and Patterson (2009) and McCabe (2013).

NRHP/CRHR Evaluation. The Bureau of Land Management (BLM) and San Bernardino County previously determined that Site P-36-007689 is eligible for listing in the National Register of Historic Places (NRHP) and the California Register of Historical Resources (CRHR) under Criteria A/1 and C/3, recognizing its significance in early automotive transportation and the construction techniques employed. The California State Historic Preservation Officer (SHPO) concurred with this determination (SWCA 2024a, p. 64). However, the portion of the roadway within the project PAA was identified as a non-contributing element due to a lack of integrity (SWCA 2024a, p. 64). Additionally, this does not qualify as a unique archaeological resource.

Site P-36-020720 (CA-SBR-13348H)

Site P-36-020720 (CA-SBR-13348H) was first recorded by Far Western in 2009 and described as a historic- to modern-period complex containing several features, including a temporary worker's tent camp, the remains of a roadside service station and garage, a privy, a gravel processing area with a sorter foundation, and multiple historic refuse dumps composed primarily of automobile parts, building materials, and household debris intermixed with modern trash (Duke and Patterson 2009). A 2012 update by Far Western (McCabe 2013) added several additional refuse dumps and reinterpreted the previously recorded privy as a motor oil dump pit feature (a cement-capped, wood-lined pit).

The applicant's consultant revisited the site in 2024, inspecting several of the features previously documented by Far Western and noting them to be in similar condition. During this revisit, a number of historic-period artifacts were identified outside the earlier recorded boundary, prompting an expansion of the southern boundary to include these resources. The updated site area now measures approximately 466 × 570 meters

(1,530 × 1,870 feet). Newly documented artifacts include approximately 40 bimetal pull-tab beverage cans, 20 steel quart-size oil cans, 10 steel ends of paper-sided quart oil cans, and 10 rotary-opened sanitary food cans. The low-density scatter suggests displacement by wind and water erosion, and the area is heavily disturbed by vehicular activity, recreational use, and modern refuse dumping.

NRHP/CRHR Evaluation. The Bureau of Land Management (BLM) and San Bernardino County previously determined that Site P-36-020720 was not eligible for listing in the NRHP or CRHR under any criteria, citing low integrity and limited information potential. The California State Historic Preservation Officer (SHPO) concurred with this determination (BLM 2016b). SWCA's 2024 revisit supports this conclusion, as no significant features were identified on the surface as no subsurface testing was warranted. The additional artifacts observed appear to represent secondary deposits transported downslope by natural processes. CEC staff concurs with prior evaluations that Site P-36-020720 lacks sufficient integrity due to physical deterioration and ongoing modern disturbance, and it retains little to no informational value. Additionally, this does not qualify as a unique archaeological resource.

Site P-36-024425

Site P-36-024425 was originally documented in 2009 by Far Western as an isolated historic-era artifact, specifically a three-gallon kerosene/gas can with a threaded cap (Duke and Patterson 2009). During a revisit in November 2024, SWCA relocated the isolate and identified additional historic-period artifacts. Based on the presence of multiple cultural materials, the resource was reclassified as a site.

The site measures approximately 30 × 17 meters (100 × 55 feet) and consists of a low- to moderate-density scatter of historic refuse. Artifacts include seven metal cans (two steel flat-top beverage cans, three bimetal pull-tab beverage cans, and two fuel/gasoline cans) and one oil filter. The site lies roughly 85 meters (280 feet) east of the Arrowhead Trail Highway. The assemblage likely reflects late-twentieth-century roadside debris deposited by travelers or recreationists accessing the nearby roadway and lacks evidence of prolonged occupation or reuse. The scatter is confined to the surface, with no evidence of buried archaeological deposits, and has been partially displaced by erosional processes.

NRHP/CRHR Evaluation. Site P-36-024425 does not appear eligible for listing in the NRHP or CRHR under any criterion. While the resource may be broadly associated with late-twentieth-century transportation and recreational use of the Mojave Desert, it cannot be directly tied to events that made a significant contribution to broad patterns of history and therefore does not meet Criterion A/1. It lacks associations with individuals of historical importance (Criterion B/2) and does not embody distinctive characteristics of a type, period, or method of construction, nor does it represent the work of a master, possess artistic values, or constitute a significant entity with unifying qualities (Criterion C/3). Finally, because the artifact assemblage is composed of common, nondistinctive materials and lacks diversity or evidence of subsurface

deposits, the site has little potential to yield data important to regional or broader research questions. For this reason, the site is also not eligible under Criterion D/4. Additionally, the roadway segment does not qualify as a unique archaeological resource.

Site SWCA-68347-S-002

Site SWCA-68347-S-002 is a historic-period archaeological resource consisting of a borrow area, a paved asphalt access road, and associated refuse. The site measures approximately 200 × 112 meters (655 × 369 feet) and is located roughly 61 meters (200 feet) east of I-15. It includes a cleared area covered with a thin layer of concrete and imported gravel, a two-track unpaved road, and a scatter of historic-period construction and roadside debris.

The central cleared area measures approximately 61 × 70 meters (200 × 230 feet) and appears to have been graded and leveled, with an uneven layer of concrete and gravel distributed across its surface. Along the eastern boundary of the site is a 130-meter (426-foot) segment of an abandoned access road, approximately 4 meters (14 feet) wide. Aerial imagery suggests that this road once connected directly to I-15, intersecting the highway at both its northern and southern termini adjacent to the Marl Ditch Bridge.

Most artifacts were identified within the cleared portion of the site. Construction-related materials include 58 wooden planks and fragments; a bulldozer part; seven large threaded bolts; three threaded metal flanges embossed "C.P. Concrete Equip. Co. 201"; a piece of tar paper; a paint bucket; a 55-gallon metal drum lid; two pieces of metal strapping; 10 wire fragments; and between 500 and 1,000 metal nails. Roadside debris consists of 38 bimetal pull-tab cans; 12 sanitary cans; nine steel flat-top beverage cans opened with a church key; one gallon-sized steel oil can; five quart-sized oil cans; a car battery; and 20–30 fragments of clear, aqua, and amber glass bottles. Six bottle bases bearing maker's marks date the assemblage to the 1960s and 1970s.

No evidence was found to indicate the presence of intact subsurface deposits. The site has been affected by erosional processes that have displaced some artifacts. Aerial photographs indicate that the borrow area and access road were constructed between 1953 and 1978. Given its age and proximity to I-15, the site is likely associated with Caltrans highway improvements undertaken between 1964 and 1965 for the expansion of I-15 and construction of the Marl Ditch Bridge.

NRHP/CRHR Evaluation. Site SWCA-68347-S-002 does not meet the criteria for listing in the NRHP or CRHR. Although the resource appears to be associated with mid-twentieth-century highway improvements, it cannot be directly tied to significant national or statewide events and therefore does not meet Criterion A/1. The site lacks associations with persons of historical importance (Criterion B/2). The access road, borrow area, and artifact scatter reflect common and conventional design, construction, and refuse types from the mid-twentieth century; thus, the site does not embody

distinctive characteristics of a type, period, or method of construction, represent the work of a master, possess artistic value, or constitute a significant and distinguishable entity, and therefore is not eligible under Criterion C/3. Finally, given the absence of subsurface deposits, limited artifact diversity, and the prevalence of similar refuse scatters in the Mojave Desert, the site does not retain sufficient data potential to address important research questions and is not eligible under Criterion D/4. Additionally, this does not qualify as a unique archaeological resource.

Site SWCA-68347-S-003

Site SWCA-68347-S-003 is a historic-period refuse scatter located immediately east of the Arrowhead Trail Highway. The scatter measures approximately 56 × 26 meters (185 × 85 feet) and consists of a low- to moderate-density assemblage of historic-era debris. Documented artifacts include five metal cans (three steel flat-top beverage cans, one bimetal pull-tab beverage can, and one quart-sized steel oil can), one shotgun shell cartridge, a metal pocketknife, and 154 fragments of bottle glass (61 clear, 42 green, 33 aqua, 17 amber, and one sun-colored amethyst). Six diagnostic beverage bottle bases were identified (two Pepsi-Cola, one Coca-Cola, one Dr. Pepper, one 7 Up, and one unidentified), dating to the early 1960s.

The scatter likely represents mid-twentieth-century roadside refuse deposited by travelers or recreationists using the adjacent Arrowhead Trail Highway. The site appears to be a surface scatter only, with no evidence suggesting the presence of intact subsurface archaeological deposits. Some displacement of artifacts is evident, likely due to erosional processes.

NRHP/CRHR Evaluation. Site SWCA-68347-S-003 is recommended not eligible for listing in the NRHP or CRHR. While associated with mid-twentieth-century transportation and recreation, the resource cannot be directly linked to events that significantly contributed to broad historical patterns and therefore does not meet Criterion A/1. It has no documented associations with important individuals (Criterion B/2). The artifact assemblage consists of common, mass-produced materials typical of the period and does not embody distinctive characteristics of a type, period, or method of construction, represent the work of a master, or possess artistic value, thus failing to meet Criterion C/3. Finally, given the absence of subsurface deposits, limited artifact diversity, and the prevalence of similar historic refuse scatters in the Mojave Desert, the site has little potential to yield data important to research questions and therefore does not meet Criterion D/4.

Site SWCA-68347-S-004

Site SWCA-68347-S-004 is a low-density scatter of historic-period refuse located approximately 0.5 mile east of I-15. The site measures 43 × 12 meters (140 × 40 feet) and contains seven metal cans, including three sanitary cans, three bimetal pull-tab beverage cans, and one steel flat-top beverage can. The scatter is situated within a large southeast-trending wash that originates near the Opah Ditch Bridge along I-15. Based on its location and artifact content, the site likely represents a secondary deposit

of late-twentieth-century roadside refuse associated with use of the interstate. No evidence was identified to suggest the presence of substantial buried archaeological deposits.

NRHP/CRHR Evaluation. Site SWCA-68347-S-004 is recommended not eligible for the NRHP or CRHR. While broadly associated with the late-twentieth-century use of I-15, the resource cannot be directly tied to events of national or statewide significance and therefore does not meet Criterion A/1. It is not associated with persons of historical importance (Criterion B/2). The artifact assemblage consists of common, mass-produced materials that do not embody distinctive characteristics of a type, period, or method of construction, represent the work of a master, or exhibit artistic value, and therefore does not meet Criterion C/3. Finally, the limited artifact diversity, lack of subsurface deposits, and prevalence of similar trash scatters in the Mojave Desert suggest the resource lacks sufficient data potential to address significant research questions. As such, the site is also not eligible under Criterion D/4. Additionally, this does not qualify as a unique archaeological resource.

Site SWCA-68347-S-005

Site SWCA-68347-S-005 is a historic-period refuse scatter located approximately 46 meters (150 feet) east of the Arrowhead Trail Highway. The site measures 61 × 49 meters (200 × 160 feet) and contains a dense artifact concentration surrounded by a broader, lower-density scatter. The concentration, approximately 2 × 4 meters (6 × 12 feet) in size, includes 12 complete and fragmentary glass bottles, more than 140 metal cans, wood plank fragments, rubber tire pieces, a metal exhaust pipe, and a coat hanger.

The can assemblage consists of over 125 whole and crushed steel flat-top beverage cans, 12 sanitary cans, three oil cans, and one kerosene/fuel can. The glass assemblage includes four complete amber beer bottles, two amber beer bottle bases, two colorless glass bottles, two colorless glass bottle bases, and two aqua bottle bases. The surrounding scatter consists of 23 metal cans, including 11 steel flat-top beverage cans, three bimetal pull-tab beverage cans, seven sanitary cans, one milk can, and one oil can.

The artifact concentration is situated on a small rise between two shallow seasonal drainages. The resource likely represents an episode of roadside dumping associated with the use of the Arrowhead Trail Highway during the mid- to late-twentieth century. No evidence was found to indicate substantial buried deposits, and erosional processes appear to have displaced some artifacts downslope.

NRHP/CRHR Evaluation. Site SWCA-68347-S-005 is recommended not eligible for the NRHP or CRHR. Although associated with mid- to late-twentieth-century roadside use of the Arrowhead Trail Highway, the resource cannot be directly tied to events that significantly contributed to broad historical patterns and does not meet Criterion A/1. It is not associated with individuals of historical importance (Criterion B/2). The artifact

assemblage consists of common, mass-produced materials and does not embody distinctive construction methods, represent the work of a master, or possess artistic value, and therefore does not meet Criterion C/3. Finally, given the absence of subsurface deposits, limited artifact diversity, and the prevalence of similar trash scatters in the Mojave Desert, the site lacks sufficient data potential to address significant research questions and is not eligible under Criterion D/4. Additionally, this does not qualify as a unique archaeological resource.

Site SWCA-68347-S-006

Site SWCA-68347-S-006 is a historic-era refuse scatter located approximately 36 meters (118 feet) east of I-15. The site measures 206 × 94 meters (675 × 310 feet) and consists of a low- to moderate-density distribution of artifacts. A total of 166 metal cans were documented, including 99 bimetal pull-tab beverage cans, 31 steel flat-top beverage cans, 22 oil cans, eight bimetal juice cans, and six sanitary goods cans. Two diagnostic glass bottles were identified: one complete amber beer bottle and one fragmented colorless liquor bottle.

The scatter likely reflects mid- to late-twentieth-century roadside refuse associated with vehicular travel along I-15. Many of the artifacts appear to have been redeposited downslope by erosional processes. No evidence was observed to suggest that subsurface archaeological deposits are present.

NRHP/CRHR Evaluation. Site SWCA-68347-S-006 is recommended not eligible for listing in the NRHP or CRHR. Although it is associated with mid- to late-twentieth-century roadside use of I-15, the resource cannot be directly tied to significant national or statewide historic events and therefore does not meet Criterion A/1. The site is not associated with any persons of historical importance (Criterion B/2). The artifact assemblage consists of common, mass-produced items typical of the period and lacks distinctive characteristics of a type, method of construction, or design, and therefore does not meet Criterion C/3. Finally, as the assemblage is limited in diversity, consists of common materials, and shows no evidence of intact subsurface deposits, the site lacks data potential to address important research questions and is not eligible under Criterion D/4. Additionally, this does not qualify as a unique archaeological resource.

Site SWCA-68347-S-007

Site SWCA-68347-S-007 is a historic-era refuse scatter located approximately 0.25 mile east of I-15. The site measures 81 × 38 meters (265 × 125 feet) and consists of a low-density scatter of 19 metal cans. The assemblage includes three oil cans, one cone-top can, seven bimetal beverage cans, six steel flat-top beverage cans, one crushed hole-in-cap can, and one rectangular-shaped fuel can.

The scatter is situated within a large wash extending southeast from the Opah Ditch Bridge along I-15. The resource likely represents a secondary deposit of late-twentieth-century roadside refuse transported downslope by water and erosion. No evidence was identified to suggest that intact subsurface archaeological deposits are present.

NRHP/CRHR Evaluation. Site SWCA-68347-S-007 is recommended not eligible for the NRHP or CRHR. While the resource is associated with late-twentieth-century roadside use of I-15, it cannot be directly linked to events that significantly contributed to broad historical patterns and therefore does not meet Criterion A/1. It is not associated with individuals of historical importance (Criterion B/2). The artifact assemblage consists of common, mass-produced items lacking distinctive characteristics of construction, design, or artistic merit, and thus does not meet Criterion C/3. Finally, given the absence of subsurface deposits, limited artifact diversity, and prevalence of similar scatters across the Mojave Desert, the site does not possess research potential sufficient to meet Criterion D/4. Additionally, this does not qualify as a unique archaeological resource.

Site SWCA-68347-S-010

Site SWCA-68347-S-010 consists of a possible historic-era mining prospect with associated refuse, measuring 143 × 39 meters (470 × 127 feet). A prospect pit and adjacent spoils pile are located at the northern extent of the site. The pit measures 9 × 3 meters (31 × 10 feet) with a depth of 0.7 meters (2.5 feet), and the spoils pile immediately to the south measures 5 × 5 meters (15 × 17 feet) with a height of 0.8 meter (2.6 feet).

Artifacts identified in association with these mining features include 63 metal cans, one metal bucket, and three pieces of scrap metal. The can assemblage is composed of 42 oil cans, 12 bimetal pull-tab beverage cans, two church key–opened cans, two juice cans, two kerosene/fuel cans, one sanitary food can, one paint can, and one antifreeze can. Based on the diagnostic materials, the refuse dates to the later twentieth century. A 1983 USGS topographic quadrangle map depicts a prospect in the northern portion of the site; however, a review of the BLM's Mineral & Lands Record System and the Diggings.com database revealed no evidence of mining claims associated with this locale. The site remains in fair condition, though scattered modern trash was observed, and no evidence was found to suggest the presence of substantial buried archaeological deposits.

NRHP/CRHR Evaluation. Site SWCA-68347-S-010 is recommended not eligible for the NRHP or CRHR. While the resource may be associated with small-scale prospecting during the late twentieth century, it cannot be directly linked to significant national or statewide historical events and therefore does not meet Criterion A/1. The site has no association with individuals of historical importance and is not eligible under Criterion B/2. The prospect pit, spoils pile, and associated artifact scatter are typical of small-scale mining features of the period and do not embody distinctive construction methods, design attributes, or artistic value; thus, the site does not meet Criterion C/3. Finally, due to the lack of feature and artifact diversity, the absence of subsurface deposits, and the prevalence of similar small-scale mining prospects across the Mojave Desert, the site is unlikely to yield data capable of addressing research questions important to regional history. Therefore, the site is not recommended eligible under

Criterion D/4 (SWCA, 2024a, p. 72). Additionally, this does not qualify as a unique archaeological resource.

Site SWCA-68347-S-012

Site SWCA-68347-S-012 consists of a possible historic-era mining prospect measuring 38 × 14 meters (125 × 45 feet). The site includes a prospecting trench in the eastern portion and an associated spoils pile to the west. The trench measures 18 × 9 meters (60 × 28 feet) with a maximum depth of 1.5 meters (5 feet). The adjacent spoils pile measures 9 × 9 meters (30 × 30 feet) and rises to a height of approximately 1 meter (3.5 feet). No artifacts were observed in association with the features.

The age of the mining features is uncertain. A 1983 USGS topographic quadrangle map depicts a prospect location in the northern portion of the site; however, a review of BLM's Mineral & Lands Record System and the Diggings.com database found no indication that any mining claims were filed for this locale. No evidence was identified to suggest that substantial buried archaeological deposits are present within the site.

NRHP/CRHR Evaluation. Site SWCA-68347-S-012 is recommended not eligible for the NRHP or CRHR. While the resource may be associated with small-scale prospecting during the late twentieth century, it cannot be directly tied to significant historical events at the state or national level and therefore does not meet Criterion A/1. The site is not associated with any persons of recognized importance and is not eligible under Criterion B/2. The prospect trench and spoils pile are typical of small-scale mining features of the period and lack distinctive design attributes, association with a master, or artistic value; therefore, the site does not meet Criterion C/3. Due to the absence of artifact assemblage diversity, lack of associated features, and no evidence of subsurface deposits, the site is unlikely to contribute meaningful data to regional research questions. Accordingly, the site is not recommended eligible under Criterion D/4 (SWCA, 2024a, p. 72). Additionally, this does not qualify as a unique archaeological resource.

Site SWCA-68347-S-013

Site SWCA-68347-S-013 consists of a low-density scatter of historic-era refuse located approximately 30 meters (100 feet) east of I-15. The site measures 137 × 82 meters (450 × 270 feet) and contains 32 metal cans and three glass bottles. The can assemblage includes 20 pull-tab beverage cans, six church key-opened juice cans, three church key–opened oil cans, two knife-opened oil cans, and one paper-side oil can. The glass assemblage consists of a colorless condiment jar, a complete amber beer bottle, and the base of an amber beer bottle.

The refuse scatter lies within a wash that trends southeast and likely represents a secondary deposit of late-twentieth-century roadside refuse associated with travel along I-15. No evidence was identified to suggest that substantial buried archaeological deposits are present.

NRHP/CRHR Evaluation. Site SWCA-68347-S-013 is recommended not eligible for listing in the NRHP or CRHR. Although the site is associated with the late-twentieth-century use of I-15, it cannot be directly connected to any significant statewide or national historical events and therefore does not meet Criterion A/1. The site is not associated with persons of historical significance and does not meet Criterion B/2. The assemblage consists of common artifact types that lack distinctive construction methods, artistic qualities, or representation of a significant entity; thus, the site does not meet Criterion C/3. Finally, the low artifact density, absence of subsurface deposits, and limited assemblage diversity indicate that the site has little potential to contribute important information to regional research questions. Therefore, the site does not meet Criterion D/4 (SWCA, 2024a, p. 73). Additionally, this does not qualify as a unique archaeological resource.

Site SWCA-68347-S-014

Site SWCA-68347-S-014 consists of an extensive scatter of historic-era refuse that covers approximately 1,597 × 183 meters (5,240 × 600 feet). The site is characterized by a low-density distribution of more than 1,700 artifacts, including metal cans, glass bottles, and automotive parts. Two distinct features were identified: a concentration of six beer and liquor bottles, and a separate concentration of historic car parts. The site likely reflects the accumulation of roadside debris associated with mid- to late-twentieth-century travel along I-15. Portions of the scatter appear to have been redeposited downslope by erosional processes. No evidence was identified to suggest the presence of substantial buried archaeological deposits.

One previously recorded artifact, a metal baby milk can (P-36-024436), is mapped within the boundaries of the site. This item was not relocated during the current investigation and may have been transported farther downslope since its original documentation.

NRHP/CRHR Evaluation. Site SWCA-68347-S-014 is recommended not eligible for listing in the NRHP or CRHR. While the site is associated with mid- to late-twentieth-century use of I-15, it cannot be directly tied to any statewide or national events of significance and therefore does not meet Criterion A/1. It lacks associations with persons of recognized historical significance and does not meet Criterion B/2. The assemblage, although large, is composed of common twentieth-century artifact types and lacks distinctive construction, artistic qualities, or representation of a significant and distinguishable entity, and thus does not meet Criterion C/3. Finally, the limited artifact diversity, absence of subsurface deposits, and lack of research potential suggest that the site does not meet Criterion D/4 (SWCA, 2024a, p. 75). Additionally, this does not qualify as a unique archaeological resource.

Site SWCA-68347-S-015

Site SWCA-68347-S-015 consists of a low-density scatter of historic-era refuse located approximately 96 meters (316 feet) east of I-15. The site measures 24 × 11 meters (80 × 35 feet) and contains nine metal beverage cans, including five bimetal pull-tab cans

and four steel flat-top cans. The scatter lies within a southeast-trending wash and likely represents a secondary deposit of late-twentieth-century roadside refuse associated with travel along I-15. No evidence was identified to suggest the presence of substantial buried archaeological deposits.

NRHP/CRHR Evaluation. Site SWCA-68347-S-015 is recommended not eligible for listing in the NRHP or CRHR. While the site is associated with late-twentieth-century use of I-15, it cannot be directly tied to significant statewide or national historical events and therefore does not meet Criterion A/1. It is not associated with persons of recognized historical importance and does not meet Criterion B/2. The artifact assemblage consists of common twentieth-century artifact types and lacks distinctive construction methods, artistic qualities, or representation of a significant entity, and thus does not meet Criterion C/3. Finally, the limited assemblage diversity and absence of subsurface deposits indicate the site lacks the research potential necessary to address important questions about regional history, and therefore it does not meet Criterion D/4 (SWCA 2024a, p. 76). Additionally, this does not qualify as a unique archaeological resource.

Site SWCA-68347-S-016

Site SWCA-68347-S-016 is a low-density scatter of historic-era refuse located approximately 61 meters (200 feet) east of I-15. The site measures 99 × 20 meters (325 × 65 feet) and contains 22 metal cans, including 12 bimetal pull-tab beverage cans, six steel flat-top beverage cans, three oil cans, and one juice can. The scatter is situated within a southeast-trending ephemeral wash and most likely represents a secondary deposit of late-twentieth-century roadside refuse associated with travel along I-15. No evidence was identified to suggest the presence of substantial buried archaeological deposits.

NRHP/CRHR Evaluation. Site SWCA-68347-S-016 is recommended not eligible for listing in the NRHP or CRHR. Although the site is associated with the late-twentieth-century use of I-15, it cannot be directly tied to significant national or statewide historical events and therefore does not meet Criterion A/1. It is not associated with persons of recognized historical importance and does not meet Criterion B/2. The artifact assemblage consists of common twentieth-century artifact types and lacks attributes that would embody the distinctive characteristics of a type, period, or method of construction, represent the work of a master, or possess artistic value, and thus does not meet Criterion C/3. The absence of feature diversity, subsurface deposits, and research potential indicates the site is unlikely to contribute meaningfully to our understanding of history in the region, and therefore it does not meet Criterion D/4 (SWCA 2024a, p. 77). Additionally, this does not qualify as a unique archaeological resource.

Site SWCA-68347-S-017

Site SWCA-68347-S-017 is a low- to moderately dense scatter of historic-era refuse located approximately 12 meters (40 feet) east of I-15. The site measures 127 × 91

meters (418 × 300 feet) and contains 95 metal cans, nine complete glass bottles or bottle bases, and 281 glass bottle fragments. Many of the artifacts were observed within ephemeral washes extending eastward from I-15. The site likely represents a secondary deposit of late-twentieth-century roadside refuse associated with highway travel. No evidence was identified to suggest the presence of substantial buried archaeological deposits.

NRHP/CRHR Evaluation. Site SWCA-68347-S-017 is recommended not eligible for listing in the NRHP or CRHR. Although the site is associated with late-twentieth-century use of I-15, it cannot be directly tied to significant statewide or national historical events and therefore does not meet Criterion A/1. It is not associated with individuals of historical importance and does not meet Criterion B/2. The artifact assemblage consists of common twentieth-century artifact types and lacks attributes that would embody the distinctive characteristics of a type, period, or method of construction, represent the work of a master, or exhibit artistic value, and thus does not meet Criterion C/3. The lack of feature or assemblage diversity and absence of subsurface deposits indicates the site lacks research potential to address important regional historical questions, and therefore it does not meet Criterion D/4 (SWCA 2024a, p. 78). Additionally, this does not qualify as a unique archaeological resource.

Site SWCA-68347-S-018

Site SWCA-68347-S-018 is a low-density scatter of historic-era refuse located approximately 69 meters (225 feet) east of I-15. The site measures 110 × 32 meters (360 × 105 feet) and contains 30 metal cans: 19 bimetal pull-tab beverage cans, six steel flat-top beverage cans, three sanitary food cans, one oil can, and one juice can. The scatter is situated along the northern edge of Opah Ditch, which flows southeast from I-15. The site most likely represents a secondary deposit of late-twentieth-century roadside refuse associated with highway travel. No evidence was identified to suggest the presence of substantial buried archaeological deposits.

NRHP/CRHR Evaluation. Site SWCA-68347-S-018 is recommended not eligible for listing in the NRHP or CRHR. While the site is associated with late-twentieth-century use of I-15, it cannot be directly tied to significant national or statewide historical events and therefore does not meet Criterion A/1. The site is not associated with persons of historical importance and thus does not meet Criterion B/2. The assemblage consists of common artifact types from the period and lacks distinctive design or construction attributes; it does not embody the characteristics of a type, period, or method of construction, nor does it represent the work of a master or exhibit artistic value, making it ineligible under Criterion C/3. Historic-era roadside scatters are common in the Mojave Desert, and the site lacks the diversity, integrity, and subsurface potential necessary to address significant research questions. Consequently, it does not meet Criterion D/4 (SWCA 2024a, p. 79). Additionally, this does not qualify as a unique archaeological resource.

Site SWCA-68347-S-019

Site SWCA-68347-S-019 is a low-density scatter of historic-era refuse located approximately 15 meters (50 feet) east of I-15. The site measures 116 × 53 meters (380 × 175 feet) and contains 32 metal cans and three glass bottles. The metal assemblage consists of bimetal pull-tab beverage cans, church key–opened beverage cans, and oil cans. The glass artifacts include one complete amber beer bottle, one complete colorless condiment bottle, and one amber bottle base. The site is situated within a drainage and likely represents a secondary deposit of roadside debris associated with the use of I-15. No evidence was found to suggest the presence of substantial buried archaeological deposits.

NRHP/CRHR Evaluation. Site SWCA-68347-S-019 is recommended not eligible for listing in the NRHP or CRHR. Although the site is associated with late-twentieth-century use of I-15, it cannot be directly linked to significant national or statewide historical events and therefore does not meet Criterion A/1. The site has no known association with individuals of historical importance, making it ineligible under Criterion B/2. The artifact assemblage consists of common mid-to-late twentieth-century materials and lacks distinctive characteristics of type, period, or construction method. It does not represent the work of a master or exhibit high artistic values and therefore does not qualify under Criterion C/3. Historic-era roadside scatters such as this are common across the Mojave Desert, and the site lacks assemblage diversity, integrity, and subsurface deposits necessary to inform significant research questions. Accordingly, the site does not meet Criterion D/4 (SWCA 2024a, p. 80). Additionally, this does not qualify as a unique archaeological resource.

Newly Recorded Isolated Finds

The applicant's consultant identified and documented 80 new isolated finds within the PAA. The majority of these consist of historic-era cans and glass bottles, which represent general discard of common food and beverage containers, along with precontact unassociated lithic debitage made from chalcedony, a raw material frequently encountered throughout the region. These isolates are defined by their physical separation from larger artifact scatters and their lack of association with broader cultural deposits.

Because they are not part of more extensive or intact archaeological contexts, the isolated finds provide limited interpretive value and do not contribute significantly to the archaeological record or to the understanding of the region's cultural history. For these reasons, SWCA recommends that all isolated finds be considered not eligible for listing in the NRHP or CRHR.

MR#1 – APN 054330103/Former AT&T Facility

The former utility facility occupies a roughly 12-acre parcel on the west side of I-15, accessed from the northwest end of Rasor Road. Constructed in 1962, the complex includes a small one-story concrete block building on a concrete foundation, a paved

parking area, and four associated concrete structures, all enclosed by a chain-link fence. The building has a rectangular plan with a low-pitched, side-gabled roof and metal louvered vents on its primary elevations. Openings include a pedestrian door and a garage door on the southeast façade, though both doors are missing. Associated features include a rectangular open concrete basin, a vertical cylindrical concrete structure with a domed top, a concrete structure with metal doors and railing suggesting subterranean access, and a concrete structure with exhaust pipes. The property appears to be abandoned.

San Bernardino County records confirm construction in 1962, with aerial photographs indicating the parcel was vacant before that time. AT&T owned and operated the facility as an underground equipment vault from at least 1982 through 2006, as part of a larger utility corridor containing major coaxial communication cables. The building reportedly housed equipment, generators, and fuel. Ownership transferred to TSG Investments in 2007 and, as of 2023, the property is owned by Powerstation Blythe LLC.

Eligibility Summary. The former AT&T facility (MR #1) was previously evaluated in the *Historic-Era Built Environment Survey Report for the Proposed Transmission Line Rating and Remediation Program, Ivanpah-Control Project* (Urbana Preservation & Planning 2021, p. 45), where it was recommended ineligible for the NRHP and CRHR and assigned a Status Code 6Z. Based on research and field observations completed for this study, SWCA concurs with that determination. Constructed in 1962, the facility consists of a utilitarian building and ancillary concrete structures of vernacular design, with no association to significant events or persons in national, state, or local history. The property does not embody distinctive architectural characteristics, represent the work of a master, or demonstrate the potential to yield important information about history or prehistory. As such, the former AT&T facility lacks historical, architectural, and informational significance and is recommended not eligible for the CRHR, and it does not qualify as a historical resource under CEQA (SWCA 2024b, pp. 37–39).

MR#2 – APN 054330201/66150 Rasor Road/Shell Station and Single-Family Residence

This property lies on a 20-acre parcel southeast of I-15 at Rasor Road and contains a gas/service station, single-family residence, and two manufactured homes. The service station, built in 1962 with later additions in the 1980s and 2000s, is a one-story vernacular commercial building. The residence, built in 1961, resembles a typical post-war tract home with stucco siding, a low-pitched gabled roof, and an arcaded entry porch. The parcel also includes trailers, cargo containers, parked vehicles, and a landing strip to the south.

Roadside services in this area date back to the late 1920s, when William Foley operated a service station later managed by Ray and Stella Cooley as Cooley's Beacon Station. After a 1939 fire and the construction of I-15 in the 1960s, the station was relocated and rebuilt at its current location. The property changed ownership multiple times and

operated under various business names, including Rasor Road Towing, Beacon Station Towing, and currently Shell Oil/Beacon Station Inc. Subsequent modifications included manufactured homes (1982), new canopies and fuel facilities (1980s–2000s), and an airstrip developed by the 1990s.

Eligibility Summary. The gas/service station and residence are vernacular buildings that lack distinctive design, association with significant events, or connection to notable individuals. Their construction reflects common roadside development patterns during the mid-twentieth century and later, but they do not embody architectural or historical significance. The property is therefore recommended not eligible for the CRHR and does not qualify as a historical resource under CEQA (SWCA 2024b, pp. 39–41).

MR#3 – Edison Company Boulder Dam–San Bernardino Transmission Line (P-36-010315)

A small segment of the Boulder Dam–San Bernardino Transmission Line crosses the northwestern end of the project site on the west side of I-15 and continues into portions of the CEQA Impact Area. The line consists of steel H-frame towers supporting three electrical conductors and appears consistent with prior documentation.

Constructed between 1930 and 1931 by the Southern Sierras Power Company, the transmission line originally supplied electricity for Boulder City and the construction of Boulder (Hoover) Dam. Since 1937, it has carried power generated at Hoover Dam to San Bernardino and other parts of southern California.

Eligibility Summary. The Boulder Dam–San Bernardino Transmission Line (SBR-010315H) is listed in the ADOE as eligible for the NRHP and therefore automatically listed in the CRHR. It is significant under Criterion A for its association with Hoover Dam's construction and early power distribution, and under Criterion C as a rare example of early long-distance electrical transmission. Character-defining features include its linear alignment, standardized tower spacing, and steel-lattice tower designs. The segment within the project site retains sufficient integrity of design, materials, and setting to contribute to the overall historical resource, which continues in use today (SWCA 2024b, pp. 41–43).

MR #4 – Interstate 15

Interstate 15 (I-15) within the CEQA Impact Area is a divided highway oriented southwest–northeast with two lanes in each direction. Near the project site, Rasor Road crosses the highway via an overpass, with on- and off-ramps forming a diamond interchange. The surrounding setting is largely undeveloped desert and mountain terrain, with sparse built environment features including a utility facility (MR #1), the Beacon Station property (MR #2), transmission lines, and unpaved roads.

Constructed between 1964 and 1965, I-15 replaced the earlier U.S. 91/U.S. 466 and included the Rasor Road overpass, on- and off-ramps, and multiple wash bridges.

Approximately 5 miles of I-15 cross the CEQA Impact Area, with a 450-foot segment within the project site where the proposed gen-tie line would pass under the highway.

Eligibility Summary. The I-15 Freeway segment between Barstow and the Nevada state line, part of the Dwight D. Eisenhower System of Interstate and Defense Highways established in 1956, is not considered historically significant under CEQA or the CRHR. Constructed between 1958 and 1966 by Caltrans and various contractors, the freeway is a standard example of mid-20th-century highway design with no unique engineering, architectural, or associative value. It is not linked to any individuals important in history, has been heavily modified over time, and does not retain integrity of design or setting. Its history is well documented, and it is unlikely to yield additional information important to history or prehistory. Consequently, the I-15 Freeway does not meet the criteria for listing in the CRHR or for local designation (SWCA 2024b, pp. 43-45).

MR #5 – Edison Company Transmission/Distribution Line (GG-001 / P-36-028522)

The alignment of this transmission or distribution line, located west of and parallel to I-15, was observed near the former AT&T facility (MR #1) and northeast along Rasor Road. Google Street View images from 2023 show the line intact, but by SWCA's 2024 field survey, many poles were down or missing wire.

Originally recorded in 2012 by Chambers Group, the line was believed to be in service, though already heavily altered with missing crossbars and insulators replaced by other mounting systems. Its construction date is uncertain, but it was estimated to fall between 1938 and the early 1970s. The line does not appear on USGS maps from the 1930s–1970s, and its precise alignment could not be confirmed in BLM Master Title Plat maps. This absence suggests construction postdates early federal mapping and may reflect private utility development not documented in public datasets. Based on available SCE data, it may have been part of the Inn 12-kV circuit or the Kramer 220/115 system. Today, the line appears defunct and in poor condition with extensive deterioration.

Eligibility Summary. The transmission line segment (GG-001/P-36-028522) lacks significance under CRHR Criteria 1–4. It is not associated with important historical events or persons, is not the work of a master, and its construction methods are commonplace and well documented. Furthermore, its deteriorated condition and missing features diminish its integrity. As such, MR #5 is recommended not eligible for the CRHR and does not qualify as a historical resource under CEQA (SWCA 2024b, pp. 45–47).

MR #6 – Arrowhead Trail (U.S. 91/U.S. 466) (P-36-007689)

Discontinuous segments of the Arrowhead Trail are present within the project site and CEQA Impact Area, generally between the Rasor Road and Zzyzx Road I-15 exits. Within the project site, the road begins near a low pass of the Soda Mountains where it

parallels I-15 before crossing south of the interstate, then extends for about 3.2 miles before meeting Rasor Road, continuing for just over a mile as part of Rasor Road. Additional parallel segments lie west of I-15. Portions of the roadway are paved but obscured by sand and gravel, with sections eroded or impacted by OHV activity and pavement removal near the interstate.

The Arrowhead Trail was first developed around 1917, incorporating earlier travel corridors such as the Mormon Trail. Its alignment shifted multiple times during its early development, resulting in discontinuous segments across the Mojave Desert and beyond. Initially a graded road, the route was later improved with an oiled gravel surface. Stretching over 850 miles between Los Angeles and Salt Lake City, the Arrowhead Trail was among the first automobile highways in the region, spurring tourism, long-distance travel, and community development along its route. By 1926, much of the trail had been absorbed into U.S. 91/U.S. 466, and later into I-15.

Eligibility Summary. The Arrowhead Trail as a whole has been determined eligible for listing in the NRHP and CRHR under Criteria A/1 and C/3 for its significance in early automotive transportation and construction methods. However, the segments within the current PAA lack integrity due to erosion, OHV damage, and other disturbances, and have been evaluated as non-contributing elements (SWCA 2024b, pp. 47–49).

MR #7 – Rasor Road

Rasor Road is an approximately 3.5-mile-long segment beginning near Beacon Station and extending east/southeast toward the Rasor OHV Area. A short paved section lies west of I-15, terminating at a former utility facility, before the road crosses the interstate via an overpass and continues southeast. Beyond providing access to a commercial and residential property, the road extends northeast through undeveloped land toward the OHV area. Roughly 1.5 miles of Rasor Road follows the Arrowhead Trail alignment before branching east/southeast. Portions of the road are in deteriorated condition and largely covered by sand and gravel.

Rasor Road historically provided access to Rasor Station, a stop along the Tonopah and Tidewater Railroad, and to the nearby Rasor Ranch, established by Clarence M. Rasor and his father. The station appeared on maps by 1908, and a north-south access road paralleled the railroad by 1921. However, Rasor Road itself was developed later, between 1930 and 1939, as it is absent from maps of the 1920s and 1933 but appears on the 1939 USGS quadrangle. It eventually connected U.S. 91/U.S. 466 southeast to Rasor.

Eligibility Summary. Rasor Road was previously recorded and recommended eligible for the NRHP/CRHR under Criterion A/1 for its association with historic transportation pathways. However, additional research suggests the road was developed more than 25 years after Rasor's establishment and was not integral to the community's initial growth. It also lacks associations with significant persons, does not reflect distinctive engineering or design, and was built using common materials and methods. As such,

Rasor Road is recommended not eligible for the CRHR and does not qualify as a historical resource under CEQA (SWCA 2024b, pp. 49–51).

MR #8 – BLM Road AC8825

BLM Road AC8825 is an approximately 0.5-mile dirt road segment east of I-15, southeast of the gas/service station at 66150 Rasor Road. The road trends southwest through an area used for parking and vehicle storage, with varying widths averaging about 10 feet. BLM markers are present along its alignment, and it is classified as a "primitive road" requiring four-wheel drive and high clearance. The total mapped length of the road is about 2.5 miles, extending south from Rasor Road toward the Rasor OHV area.

The road does not appear on early twentieth-century maps or 1950s–1970s topographic maps but is visible in aerial imagery by 1978 and appears on the 1983 USGS West of Soda Lake map. Available data suggests it was developed around the 1970s to provide access to recreational areas, specifically the Rasor OHV area.

Eligibility Summary. BLM Road AC8825 is a utilitarian dirt road constructed in the late twentieth century for recreational access. It is not associated with significant historical events, persons, or engineering methods, and it does not embody distinctive design or construction techniques. As such, it lacks historical significance and is recommended not eligible for listing in the CRHR and does not qualify as a historical resource for CEQA purposes (SWCA 2024b, pp. 51–53).

MR #9 – BLM Road AC8826

BLM Road AC8826 is an approximately 0.65-mile dirt road segment east of I-15, southeast of the gas/service station at 66150 Rasor Road. The alignment trends southeast through undeveloped desert, with intermittent BLM markers. A parallel track joins from the northeast and then runs alongside AC8826. Road width varies; inspected portions are about 10 feet wide.

Available evidence indicates the road was created in the 1970s. It does not appear on Thompson's 1921 Mohave Desert map, a late-1920s Automobile Club of Southern California map, 1952 aerials, or the 1956, 1960, or 1978 USGS Soda Lake maps. It is faintly visible on a 1978 aerial and is mapped on the 1983 USGS West of Soda Lake 7.5-minute quadrangle. BLM data classifies it as a "primitive road" requiring high clearance and 4WD, labeled AC8826, with a total length of roughly 2.4 miles, much of it outside the current study area. It appears to serve access to the Rasor OHV area.

Eligibility Summary. AC8826 is a utilitarian, 1970s dirt road providing recreational access. It is not associated with significant events or persons (Criteria 1–2), exhibits no distinctive design or work of a master (Criterion 3), and offers no potential to yield important information (Criterion 4). AC8826 is recommended not eligible for the CRHR and does not qualify as a historical resource under CEQA (SWCA 2024b, pp. 53–55).

MR#10 – BLM Road CL8845

BLM Road CL8845 is located on the west side of I-15, about 2.7 miles northeast of Beacon Station. The road extends northwest from the highway, ascending in elevation before splitting into two branches: one continuing northwest and the other northeast for about 0.35 mile. Both end within washes where the alignments fade. The road spans roughly 1.6 miles from I-15 to its northwest terminus, with widths ranging between 15 and 70 feet. Although it may once have been paved, much of the alignment is now covered by sediment and gravel from wind and sheet wash.

The road was likely constructed in the early 1950s. It is absent from 1947 aerials and a 1948 USGS map but appears in a 1952 aerial photograph and subsequent USGS maps from 1956, 1960, and 1978 as an unimproved dirt road leading northwest from U.S. 91/U.S. 466 (now I-15) into the foothills. In 1958, the BLM issued a 7-foot-wide right-of-way. By the early 1980s, a fork was created near the northern end to access the Caltrans Opah Ditch pit mine, which operated from the late 1970s through the mid-1980s. This extension may have involved some paving, though any such improvements are now obscured. Today, the road is classified as a "primitive road" requiring high clearance and four-wheel drive.

Eligibility Summary. BLM Road CL8845 was a utilitarian dirt road developed in the 1950s and later modified to serve a Caltrans material mine. It is not associated with significant historic events or persons (Criteria 1–2), does not exhibit distinctive engineering or represent the work of a master (Criterion 3), and provides no unique information value (Criterion 4). For these reasons, the road is recommended not eligible for the CRHR and does not qualify as a historical resource under CEQA (SWCA 2024b, pp. 55–57).

MR #11 – Transmission Line within BLM ROW R02879

This transmission or distribution line is located on the west side of I-15 near Rasor Road. Based on BLM Master Title Plat maps, the line segment begins near the former AT&T facility at the northern end of Rasor Road and extends about 2,000 feet to the northeast. The line consists of wooden poles with one or two crossarms.

Records indicate that the 15-foot right-of-way (ROW R02879) was originally authorized by Congress in 1911, though the line itself was not built until much later. Construction was likely completed between 1963 and 1964, following a recorded action in 1963 and proof of construction filed in early 1964. The line does not appear on mid-twentieth-century USGS maps or 1952 aerial imagery but is visible by the late 1970s. At its northern end, the line connects to another segment within ROW CACA53937, and both are associated with Southern California Edison's Inn 12kV circuit serving the Baker area.

Eligibility Summary. The transmission line is a short, local rural line built in the 1960s with standard techniques and materials. It is not associated with significant historical events or persons (Criteria 1 and 2), does not exhibit distinctive engineering or the work of a master (Criterion 3), and offers no unique research value (Criterion 4).

Accordingly, the transmission line is recommended not eligible for the CRHR and does not qualify as a historical resource under CEQA (SWCA 2024b, pp. 57–59).

MR #12 – Transmission Line within BLM ROW CACA53944

This transmission/distribution line spans from the east side to the west side of I-15. The southern end appears to originate within the property containing the Beacon Station gas/service station and adjacent residence. From there, the line runs northeasterly, generally parallel to the northbound I-15 on-ramp, before turning northwest to cross the interstate and continuing north into the foothills. The line is constructed of wood poles with one or two crossarms.

BLM Master Title Plat maps show that this relatively short line spans across two sections, from the south-central portion of Section 11 to the north-central portion of Section 14 (T12N, R7E). The 15-foot ROW, labeled CACA 53944, covers about 2.55 acres and was originally granted by an act of Congress on October 21, 1976. The most recent action on the ROW was issued on February 20, 2013, with a grant term ending December 31, 2042. The line likely dates to the mid-1970s when the ROW was first established.

Eligibility Summary. The transmission line is a short, utilitarian rural feature built with standard materials and techniques. It does not have significant associations with historical events or persons (Criteria 1 and 2), nor is it an example of distinctive engineering or the work of a master (Criterion 3). As a common type of infrastructure, it does not provide unique research potential (Criterion 4). Therefore, the line is recommended not eligible for listing in the CRHR and does not qualify as a historical resource under CEQA (SWCA 2024b, pp. 59–61).

MR #13 – Telephone Line within BLM ROW CACA57955

This underground telephone or fiber optic cable line is in the Beacon Station area on the east side of I-15. It extends from near the Rasor Road/I-15 northbound on-ramp toward a nearby communication facility. Above-ground markers were observed along the alignment, which parallels Rasor Road across undeveloped land before curving southeast to the hilltop communication facility. Mapping of the underground line is approximate and based on BLM Master Title Plat records.

The line is situated within ROW CACA57955, which covers approximately 0.93 acres and was granted on October 21, 1976. The line likely dates to that time, though its presence is not shown on the 1983 USGS West of Soda Lake quadrangle. The associated communication facility and access road were built between 1995 and 2005. Evidence from markers suggests the line may have been converted from a telephone line to a fiber optic cable line over time. The most recent ROW action was issued in April 2019, extending the grant through December 31, 2038.

Eligibility Summary. The telephone/fiber optic line is a small, utilitarian feature with no demonstrated historical significance. It is not associated with important events or

persons (Criteria 1 and 2), nor is it the work of a master or an example of distinctive engineering (Criterion 3). As a common type of infrastructure, it does not provide unique research potential (Criterion 4). Accordingly, the line is recommended not eligible for listing in the CRHR and does not qualify as a historical resource under CEQA (SWCA 2024b, pp. 61–63).

MR #14 – Pipeline and BLM Road CL8837

This feature includes an approximately 4.7-mile segment of underground pipeline and an adjacent access road located on the west side of I-15. The unpaved road varies from about 50 to 100 feet wide along its alignment. Due to the underground nature of the pipelines and the length and terrain of the feature, the segment was not intensively surveyed. Available mapping and BLM records indicate the presence of two pipelines, though the precise location of the second line is unclear.

Two pipeline rights-of-way (ROW) traverse the CEQA Impact Area. ROW LA0168999 was first issued in 1920 and amended in 1963, while ROW S5597 was issued in 1920 and updated in 1974, with proof of construction noted in 1977. These ROW are associated with the Calnev Pipeline system, which was developed in the 1960s and 1970s to transport petroleum products between Colton, California, and Las Vegas, Nevada, also serving Edwards and Nellis Air Force Bases. The system included an 8 5/8-inch pipeline built in the early 1960s and a 14-inch line added in the mid-1970s. Although the older pipeline was shut down after the larger one entered service, it was reactivated a decade later due to increased demand. Kinder Morgan acquired the system in 2001, and by 2013 it spanned over 200 miles, with later expansion increasing its network to more than 560 miles. Portions of the access road are mapped on USGS quadrangles and in federal pipeline mapping systems under the identifier CL8837.

Eligibility Summary. The Calnev pipelines were important in supporting regional energy distribution and the development of Las Vegas and nearby military facilities; however, the system has been subject to significant expansion, replacement, and ongoing maintenance that diminish its integrity. Neither the pipelines nor the access road are associated with significant events or persons (Criteria 1 and 2), nor do they represent distinctive engineering, construction, or the work of a master (Criterion 3). As commonplace utility infrastructure, they also lack research potential (Criterion 4). Accordingly, the segment of the Calnev pipeline and its access road within the project area are recommended not eligible for the CRHR and do not qualify as historical resources for CEQA purposes (SWCA 2024b, pp. 63–65).

MR #15 – SCE Access Roads

The SCE access road system for the Boulder Dam–San Bernardino Transmission Line consists of numerous unpaved spurs and access roads extending roughly 225 miles from San Bernardino County to Nevada. Most of the roads parallel Interstate 15 and serve to connect or provide access to transmission line towers. Within the CEQA Impact Area, several spurs are present in the foothills west of I-15. The primary road generally follows the transmission line's alignment, with smaller branches extending outward.

The main access road was established between 1930 and 1931, coinciding with or preceding construction of the Boulder Dam–San Bernardino Transmission Line. Additional spur roads were developed in subsequent years to maintain and expand access to transmission towers along the line.

Eligibility Summary. While the Boulder Dam–San Bernardino Transmission Line itself is recognized as eligible for the NRHP and CRHR, the associated system of access roads is considered a supporting feature without independent historical significance. The roads are utilitarian in nature, developed solely to facilitate transmission line construction and maintenance, and lack distinctive engineering, design, or associations with significant events or individuals. As such, the SCE access roads were previously recommended not eligible for the NRHP or CRHR under all criteria and do not qualify as historical resources for CEQA purposes (SWCA 2024b, pp. 65–67).

MR #16 – Transmission Line within BLM ROW CACA53937

This transmission line segment is located on the west side of I-15 within the CEQA Impact Area, extending approximately five miles in a northeast–southwest alignment. Based on BLM Master Title Plat maps, the southern portion begins near the Boulder Dam–San Bernardino Transmission Line, turns southeast, and then runs northeast parallel to I-15. The line is supported by wooden poles with one or two cross-arms. The alignment is approximate, derived from maps and aerial imagery, as the full segment was not intensively surveyed.

The 20-foot right-of-way (ROW) for this line, labeled CACA53937, covers about 55.19 acres and was granted on October 21, 1976. Although the precise construction date is uncertain, it is assumed to have occurred the same year the ROW was issued. The line does not appear on the 1978 or 1983 USGS quadrangle maps. The most recent ROW action was recorded on March 21, 2013, with a term extending through 2042. Available records indicate that the transmission line connects with another line within ROW R02879 near Rasor Road and forms part of the Southern California Edison Inn 12kV circuit serving the Baker area.

Eligibility Summary. The transmission line is a typical rural utility feature constructed with standard materials and techniques. It does not appear to have contributed significantly to national, state, regional, or local history, nor is it associated with persons of historical importance. The line is not the work of a master engineer or builder and does not reflect distinctive design or construction methods. As such, it does not have the potential to yield information important to history. The transmission line within ROW CACA53937 lacks significant historical associations and distinctive characteristics. It is recommended ineligible for listing in the CRHR and does not qualify as a historical resource under CEQA (SWCA 2024b, pp. 67–69).

Buried Archaeological Site Sensitivity

The project PAA lies on an alluvial desert plain with ephemeral drainages, coarse silty sands, and sparse Mojave Desert vegetation. Ground surface visibility averaged 80–95

percent. The geomorphic setting reflects both high-energy fan deposits with low potential for preservation and finer-grained distal deposits with moderate potential for buried sites. Natural processes such as flooding, sheetwash, and aeolian activity contribute to burial and displacement of cultural material.

Survey results identified two previously recorded sites, 15 newly recorded sites, and one isolate (P-36-024425) reclassified as a site. Most consist of historic-period refuse scatters dating to the 1960s–1970s, along with staging and possible mining features. A total of 89 isolated finds were documented, the majority displaced historic-period cans observed in secondary contexts.

Overall, the PAA is assessed as having moderate sensitivity for buried archaeological resources, particularly within finer-grained, lower-energy fan and dune deposits.

Tribal Cultural Resources

Consultation has resulted in tribal concerns for the sensitivity of the area and the possibility of resources being buried; however no tribal cultural resources have been identified at this time. Consultation is ongoing and will continue as coordination with interested tribes progresses, with updates to be provided in the final staff assessment/final environmental impact report.

Thresholds of Significance for Historical Resources

For a cultural resource to be a historical resource and thus subject to the requirements of CEQA, it must meet one of the four criteria for listing in the CRHR. The CEC staff have determined that two historic age properties, a segment of the Arrowhead Trail (P-36-007689) and the Boulder Dam-San Bernardino Transmission Line (P-36-010315), are within the built environment PAA. The significance criteria listed below are used to determine whether a proposed project or alternatives would result in significant impacts under CEQA related to cultural resources. These criteria are also from CEQA Appendix G. Under CEQA, the proposed project would cause a significant impact if it caused a substantial adverse change in the significance of a historical resource, an archeological resource, or a tribal cultural resource as defined under the California Code of Regulations, Title 14, Chapter 3, Section 15064.5.

The proposed project would have a significant impact on these cultural resources if it would:

- Physically alter, damage, or cause destruction of all or a part of a historical or archaeological resource.

  Demolish or materially alter in an adverse manner those physical characteristics of a historical resource that convey its significance and that justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources, or a local register of historical resources. Such an action would be significant if it affects a property that has been determined to be a historical resource by a CEQA lead agency.

- Demolish or materially alter in an adverse manner those physical characteristics of an archaeological artifact, site, or object that enable it to meet the definition of a unique archaeological resource under CEQA.
- Disturb any human remains, including those interred outside of formal cemeteries.

5.4.2.2 Direct and Indirect Impacts

Criteria for determining if a proposed project will have a significant impact on an identified historical resource are whether the project will alter the integrity of the historical resource in an adverse manner such that it would no longer be eligible to the NRHP, the CRHR, or any other local landmark programs. Under CEQA, the proposed project would cause a significant impact if it caused a substantial adverse change in the significance of a historical resource, an archeological resource, or a tribal cultural resource as defined in Public Resources Code § 21084.1 and further implemented by California Code of Regulations, Title 14, Chapter 3, section 15064.5.

The proposed project would have a significant impact on cultural resources if it would:

- Physically alter, damage, or cause destruction of all or a part of a historical or archaeological resource.
- Demolish or materially alter in an adverse manner those physical characteristics of a Historical Resource that convey its significance and that justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources, inclusion in a local register of historical resources, or its determination to be a historical resource by a CEQA lead agency.
- Demolish or materially alter in an adverse manner those physical characteristics of an archaeological artifact, site, or object that enable it to meet the definition of a unique archaeological resource under CEQA.
- Disturb any human remains, including those interred outside of formal cemeteries.

Direct and indirect impacts to significant Historical Resources are considered herein as follows.

- Direct or primary impacts are caused by the project and occur at the same time and place (Cal. Code Regs., tit. 14, § 15358 (a)(1)).
- Indirect impacts, or secondary effects, are reasonably foreseeable and caused by a project but occur at a different time or place (Cal. Code Regs., tit. 14, § 15358 (a)(2)).

a. Would the proposed project cause a substantial adverse change in the significance of a historical resource pursuant to Public Resources Code, section 15064.5?

Construction

Less Than Significant Impact with Mitigation Incorporated. Based on the analysis below, the proposed project would not cause a substantial adverse change in the significance of a historical resource that could not be mitigated.

Jurisdictional Project Components

As described in **Section 3, Project Description**, construction of the solar facility, BESS, project substation, gen-tie line, utility switchyard, transmission line, and water supply fall under Jurisdictional Project Components. As described above, no archaeological resources eligible or listed on the CRHR or local listing have been identified within the PAA. Two built environment resources, a segment of the Arrowhead Trail (P-36-007689) and the Boulder Dam-San Bernardino Transmission Line (P-36-010315) are located within the built environment PAA that are eligible to the CRHR and are considered historical resources under CEQA.

The segment of the Arrowhead Trail within the PAA has been determined to lack integrity and does not contribute to the resource's significance. Therefore, the project would have a less than significant impact on the Arrowhead Trail as a whole.

The project would not directly alter or physically impact the Boulder Dam–San Bernardino Transmission Line (P-36-010315). However, construction of project components, including the solar arrays, BESS, substation, switchyard, and fencing, would introduce new visual elements that slightly modify the resource's setting. The utility switchyard located approximately 0.8-mile northwest of I-15 and adjacent to the existing Mead-Adelanto 500-kV line, would be the nearest new project feature. The transmission line's setting has already undergone substantial alteration since its construction in 1930–1931, including the development of I-15 and its interchanges, nearby utility and residential facilities, and additional transmission infrastructure built between the 1960s and 1990s. Despite these changes, the line continues to convey its historical significance through its original linear alignment, regular tower spacing, and intact steel-lattice structures. Therefore, this new visual element would have a less than significant impact on the Boulder Dam–San Bernardino Transmission Line (P-36-010315).

As mentioned previously, no archaeological resources meeting eligibility criteria have been identified within the PAA; therefore, the proposed project will not impact known archaeological resources. However, due to the undisturbed nature of large portions of the project area, and the presence of alluvial deposits, there remains a moderate potential for encountering buried archaeological deposits that meet the definition of a historical resource under CEQA within the PAA.

If buried historical resources are damaged during construction, it would be considered a significant impact. The applicant proposes cultural and tribal cultural measures, APM-1 through APM-3, that form a monitoring program for inadvertent discoveries of historic properties during project implementation. However, the CEC staff has determined that

the applicant's proposed measures are not sufficient to appropriately mitigate for unanticipated discoveries in accordance with CEQA requirements as they are solely focused on federal requirements. Therefore, staff proposes implementation of Conditions of Certification (COCs) **CUL-1** through **CUL-8,** in coordination with the CEC's compliance proposed project manager (CPM). With implementation of COCs **CUL-1** through **CUL-8,** impacts to unknown historical resources would be reduced to a less than significant level with mitigation incorporated.

Non-Jurisdictional Project Components

As described in **Section 3, Project Description**, construction of the network upgrades at existing Marketplace and Adelanto substations falls under the Non-Jurisdictional Project Components, and includes line tuners, wave traps, microwave telecom links, relay protection equipment, and metering and controls equipment with no ground disturbing activity proposed.

As described above, no archaeological resources eligible or listed on the CRHR or local listing have been identified within the PAA. Two built environment resources, a segment of the Arrowhead Trail (P-36-007689) and the Boulder Dam-San Bernardino Transmission Line (P-36-010315) are located within the built environment PAA that are eligible to the CRHR and are considered historical resources under CEQA. However, network upgrades at the existing Marketplace and Adelanto substations will not impact these two historical resources because the upgrades are confined to existing developed substation footprints outside the viewshed and physical extent of either resource. Additionally, impacts to unknown buried archaeological resources are not anticipated as no ground disturbing activity is proposed; thus, no mitigation measures are recommended for Non-Jurisdictional Project Components during construction.

Operation

No Impact. Ground-disturbing activities and the building of new structures do not appear to be part of the standard operational or maintenance profile of the proposed project. Therefore, impacts on historical resources are not expected.

Jurisdictional and Non-Jurisdictional Project Components

Ground-disturbing activities and the building of new structures do not appear to be part of the standard operational or maintenance profile of the proposed project. Impacts on historical resources are therefore not expect*ed* during normal operation and maintenance of both Jurisdictional and Non-Jurisdictional operational components of this proposed project.

b. Would the proposed project cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Public Resources Code, section 15064.5?

Construction

Less Than Significant Impact with Mitigation Incorporated. Based on the analysis below, the proposed project would not cause a substantial adverse change in the significance of a unique archaeological resource that could not be mitigated with incorporation of staff proposed COCs.

Jurisdictional Project Components

As described in **Section 3, Project Description**, construction of the solar facility, BESS, project substation, gen-tie line, utility switchyard, transmission line, and water supply fall under Jurisdictional Project Components. As described above, no unique archaeological resources have been identified within the PAA.

To reduce impacts that would cause an adverse change in the significance of an unknown buried unique archaeological resource, CEC staff recommend implementation of COCs, **CUL-1** through **CUL-8,** in coordination with the CEC's CPM. With implementation of COCs **CUL-1** through **CUL-8,** impacts to unique archaeological resources would be reduced to a -significant level with mitigation incorporated.

Non-Jurisdictional Project Components

As described in **Section 3, Project Description**, construction of the network upgrades at existing Marketplace and Adelanto substations falls under the Non-Jurisdictional Project Components and include line tuners, wave traps, microwave telecom links, relay protection equipment, and metering and controls equipment with no ground disturbing activity proposed. Therefore, construction would have no impact that would cause a substantial adverse change in the significance of a unique archaeological resource.

Operation

No Impact. Ground-disturbing activities and the building of new structures do not appear to be part of the standard operational or maintenance profile of the proposed project. Therefore, impacts on unique archaeological resources are not expected.

Jurisdictional and Non-Jurisdictional Project Components

With no ground disturbing activities anticipated during operations, impacts on unique archaeological resources are therefore not expected during normal operation and maintenance of both Jurisdictional and Non-Jurisdictional operational components of this proposed project.

c. Would the proposed project disturb any human remains, including those interred outside of dedicated cemeteries?

Construction

Less Than Significant Impact with Mitigation Incorporated. Based on the analysis below and with incorporation of staff proposed COCs, impacts associated with potential project disturbance to human remains would be mitigated to less than significant.

Jurisdictional Project Components

As described in **Section 3, Project Description**, construction of the solar facility, BESS, project substation, gen-tie line, utility switchyard, transmission line, and water supply fall under Jurisdictional Project Components. As described above, no human remains have been identified within the PAA. However, it is possible that the ground disturbance proposed for construction could impact unknown human remains, which would constitute a significant impact without mitigation. CEC staff recommend implementation of COCs **CUL-1** through **CUL-8,** in coordination with the CEC's CPM. With implementation of COCs **CUL-1** through **CUL-8,** impacts to unknown buried human remains would be reduced to a less-than-significant level with mitigation incorporated.

Non-Jurisdictional Project Components

As described in **Section 3, Project Description**, construction of the network upgrades at existing Marketplace and Adelanto substations falls under the Non-Jurisdictional Project Components and include line tuners, wave traps, microwave telecom links, relay protection equipment, and metering and controls equipment with no ground disturbance proposed. With no ground disturbing activities proposed, there would be no impacts to unknown buried human remains.

Operation

No Impact. Ground-disturbing activities do not appear to be part of the standard operational profile of the proposed project, therefore impacts on human remains are not expected.

Jurisdictional and Non-Jurisdictional Project Components

With no ground disturbance during operations, impacts on human remains are therefore not expectable during normal operation and maintenance of both Jurisdictional and Non-Jurisdictional operational components of this proposed project.

d. Would the proposed project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code, section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code, section 5020.1(k), or

Construction

Less Than Significant Impact with Mitigation Incorporated. Based on the analysis below, the proposed project would not cause a substantial adverse change in the significance of a tribal cultural resource that is listed or eligible for listing that cannot be mitigated with incorporation of staff proposed COCs.

Jurisdictional Project Components

As described in **Section 3, Project Description**, construction of the solar facility, BESS, project substation, gen-tie line, utility switchyard, transmission line, and water supply fall under Jurisdictional Project Components. Based on the information provided during formal tribal consultation, background research, and record searches, project construction would have a less than significant impact on tribal cultural resources listed or eligible for listing in the CRHR with mitigation incorporated. No tribal cultural resources eligible for listing in the CRHR have been documented within the PAA. However, large portions of the project site remain undisturbed, and alluvial deposits along seasonal drainages create a moderate potential for encountering buried archaeological deposits that meet CEQA's definition of a tribal cultural resource.

Therefore, staff proposes COCs **CUL-1** through **CUL-8,** in coordination with the CEC's CPM. With implementation of COCs **CUL-1** through **CUL-8**, impacts to a resource of value to a California Native American tribe, that is listed or eligible for listing in the CRHR would be reduced to a less than significant level with mitigation incorporated.

Non-Jurisdictional Project Components

As described in **Section 3, Project Description**, construction of the network upgrades at existing Marketplace and Adelanto substations falls under the Non-Jurisdictional Project Components and include line tuners, wave traps, microwave telecom links, relay protection equipment, and metering and controls equipment with no ground disturbance proposed. With no ground disturbing activities proposed, no impacts to a resource of value to a California Native American tribe that is listed or eligible for listing in the CRHR would be anticipated.

Operation

No Impact. Ground-disturbing activities do not appear to be part of the standard operational profile of the proposed project. Therefore, impacts on tribal cultural resources are not expected.

Jurisdictional and Non-Jurisdictional Project Components

With no ground disturbing activities anticipated, impacts on tribal cultural resources listed or eligible for listing in the CRHR would therefore not occur during normal

operation or maintenance as no resources meeting the criteria have been identified within the PAA of both Jurisdictional and non-jurisdictional operational components of this proposed project.

ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code, section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code, section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Construction

Less Than Significant Impact with Mitigation Incorporated. Based on the analysis below, the proposed project would not cause a substantial adverse change in the significance of a tribal cultural resource that the CEQA lead agency has determined to be that cannot be mitigated. Staff proposes COCs to mitigate impacts to any resource of value to a California Native American tribe that is determined to be a tribal cultural resource.

Jurisdictional Project Components

As described in **Section 3, Project Description**, construction of the solar facility, BESS, project Substation, gen-tie line, utility switchyard, transmission line, and water supply fall under Jurisdictional Project Components. Based on the information provided during formal tribal consultation, background research, and record searches, there are no documented tribal cultural resources that CEC has determined to be a tribal cultural resource in the PAA, therefore, no known resources would be impacted. However, due to the undisturbed nature of large portions of the project site, and the presence of alluvial deposits along seasonal drainages, there remains moderate potential for encountering buried archaeological deposits that CEC could determine to be a tribal cultural resource in consultation with local tribes, within the PAA.

Therefore, staff proposes COCs **CUL-1** through **CUL-8,** in coordination with the CEC's CPM. With implementation of COCs **CUL-1** through **CUL-8**, impacts to a resource of value to a California Native American tribe that CEC determines to be a tribal cultural resource, would be reduced to a less than significant level with mitigation incorporated.

Non-Jurisdictional Project Components

As described in **Section 3, Project Description**, construction of the network upgrades at existing Marketplace and Adelanto substations falls under the Non-Jurisdictional Project Components and include line tuners, wave traps, microwave telecom links, relay protection equipment, and metering and controls equipment with no ground disturbance proposed. With no ground disturbing activities proposed, there would be no impacts to a resource of value to a California Native American tribe that CEC determines to be a tribal cultural resource.

Operation

No Impact. Ground-disturbing activities do not appear to be part of the standard operational profile of the proposed project, therefore, impacts to tribal cultural resources are not expected.

Jurisdictional and Non-Jurisdictional Project Components

With no ground disturbance during operations, impacts on tribal cultural resources listed or eligible for listing in the CRHR would therefore not occur during normal operation or maintenance as no resources meeting the criteria have been identified within the PAA of both jurisdictional and non-jurisdictional operational components of this proposed project.

5.4.2.3 Cumulative Impacts

Cumulative impacts of the project must be discussed if the incremental effect of the project, combined with the effects of other projects is "cumulatively considerable" (Cal. Code Regs., tit. 14, § 15130[a]).

In accordance with CEQA Guidelines, section 15130(b), "…the discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as much detail as is provided for the effects attributable to the project alone. The discussion should be guided by standards of practicality and reasonableness and should 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]).

"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[a]).

Construction

Less Than Significant with Mitigation Incorporated. There is a possibility that there might be impacts to an unknown resource or unanticipated impacts to a known resource for the cumulative projects and the SMSP. Therefore, staff proposes COCs to reduce project-specific impacts to less than significant.

Jurisdictional Project Components

Of the six projects identified in the cumulative setting section, three have found no significant impacts to cultural or tribal cultural resources, while the remaining three are still under environmental review and their impact conclusions remain pending. Despite this, there is always a possibility that there might be impacts to an unknown resource or unanticipated impacts to a known resource. As discussed under applicable plans, policies, and regulations, the County of San Bernardino requires notification of archaeological discoveries for any permitted project. State law requires specific steps to

happen in the case of identification of human remains. As explained earlier in this document, implementation of COCs **CUL-1** through **CUL-8** would reduce any project-specific impacts. CEC has concluded that these COCs are sufficient to reduce impacts, and the proposed project would not contribute to a cumulatively considerable impact.

Non-Jurisdictional Project Components

No ground disturbance would occur for construction of the non-jurisdictional project components. Therefore, there would be no cumulative impacts.

Operation

No Impact. Ground-disturbing activities do not appear to be part of the standard operational profile for the non-jurisdictional components of the SMSP, thus no cumulative impacts are anticipated.

Jurisdictional and Non-Jurisdictional Project Components

With no ground disturbance during operations of the non-jurisdictional components of the SMSP, no cumulative impacts are anticipated.

5.4.3 Project Consistency with Applicable Plans, Policies, and Regulations

Although the project is on BLM land, this staff assessment covers conformance with the various state and local plans, policies, and regulations that apply to the proposed project.

Table 5.4-4 below details CEC staff's determination of consistency with applicable plans, policies, and regulations, including any proposed COCs, where applicable, to ensure the proposed project is consistent with plans, policies, and regulations. As detailed below, staff conclude that with implementation of specific conditions of certification, the proposed project would appear to be consistent with all applicable State and local plans, policies, and regulations as compliance with federal regulation fall under BLM's ROW agreement.

TABLE 5.4-4 PROJECT CONFORMANCE WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS

Applicable Plans, Policies, and Regulations	Consistency and Basis For Determination
State	
California Register of Historical Resources (Pub. Resources Code, § 5024.1)	
Establishes criteria for listing a cultural resource as a historical resource.	**Yes.** No known historical resources are anticipated to be impacted by the project within the PAA. Despite that, there is a possibility undocumented cultural resources or tribal cultural resources might be discovered during construction. COCs **CUL-1** through **CUL-6** will establish adequate staffing and procedures to follow to evaluate any discovery.

TABLE 5.4-4 PROJECT CONFORMANCE WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS	
Applicable Plans, Policies, and Regulations	**Consistency and Basis For Determination**
California Environmental Quality Act (Pub. Resources Code, § 21084.1)	
Requires that lead agencies determine if a project could have a significant impact on historical or unique archaeological resources, or tribal cultural resources and mitigate such impacts.	**Yes.** No known historical or unique archaeological resources are anticipated to be impacted by the project within the PAA. Despite that, there is a possibility undocumented cultural resources or tribal cultural resources might be discovered during construction. COCs **CUL-1** through **CUL-6** will establish adequate staffing and procedures to follow to evaluate any discovery.
Unique Archaeological Resource (Pub. Resources Code, § 21083.2)	
Defines a unique archaeological resource.	**Yes.** While this is applicable, there are no "unique" archaeological resources identified within the project PAA. Should any be identified during construction, COCs **CUL-1** through **CUL-6** will establish adequate staffing and procedures to follow to evaluate any discovery.
California Health and Safety Code, § 7050.5	
In the event of discovery of human remains, requires work to be halted and the coroner be notified. The coroner then must notify the NAHC if the remains are Native American in origin.	**Yes.** While this is applicable, there are no human remains identified within the project PAA. Despite this, there is a possibility, albeit remote, that human remains may be identified during construction. COCs **CUL-1** through **CUL-7** will establish adequate staffing and procedures to follow in the event of a discovery.
Public Resources Code, § 5097.98	
In the event human remains are discovered, authorizes the NAHC to assign a Most Likely Descendant (MLD) who is authorized to make recommendations for the treatment of the remains.	**Yes.** While this is applicable, there are no known human remains identified within the project PAA. Despite this, there is a possibility, albeit remote, that human remains may be identified during construction. COCs **CUL-1** through **CUL-7** will establish adequate staffing and procedures to follow in the event of a discovery.
Assembly Bill 205 Opt-In Regulations	
Provide specific information regarding cultural resources and tribal cultural resources as part of the application process.	**Yes.** This information has been provided during the application process.
San Bernardino County	
General Plan	
Cultural Resources Element of the San Bernardino County General Plan Policy CR-1.1 Tribal notification and coordination. We notify and coordinate with tribal representatives in accordance with state and federal laws to strengthen our working relationship with area tribes, avoid inadvertent discoveries of Native American archaeological sites and burials, assist with the treatment and disposition of	**Yes.** No known cultural resources are anticipated to be impacted by the project within the PAA. Despite that, there is a possibility that unknown or adjacent cultural resources might be discovered or impacted during construction. COCs **CUL-1** through **CUL-7** will establish adequate staffing and procedures to follow to evaluate any discovery.

TABLE 5.4-4 PROJECT CONFORMANCE WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS

Applicable Plans, Policies, and Regulations	Consistency and Basis For Determination
inadvertent discoveries, and explore options of avoidance of cultural resources early in the planning process. Policy CR-1.2 Tribal planning. We will collaborate with local tribes on countywide planning efforts and, as permitted or required, planning efforts initiated by local tribes. Policy CR-1.3 Mitigation and avoidance. We consult with local tribes to establish appropriate project- specific mitigation measures and resource-specific treatment of potential cultural resources. We require project applicants to design projects to avoid known tribal cultural resources, whenever possible. If avoidance is not possible, we require appropriate mitigation to minimize project impacts on tribal cultural resources. Policy CR-1.4 Resource monitoring. We encourage active participation by local tribes as monitors in surveys, testing, excavation, and grading phases of development projects with potential impacts on tribal resources. Policy CR-2.1 National and state historic resources. We encourage the preservation of archaeological sites and structures of state or national significance in accordance with the Secretary of Interior's standards. Policy CR-2.2 Local historic resources. We encourage property owners to maintain the historic integrity of resources on their property by (listed in order of preference): preservation, adaptive reuse, or memorialization. Policy CR-2.4 Partnerships. We encourage partnerships to champion and financially support the preservation and restoration of historic sites, structures, and districts. Policy CR-2.5 Public awareness and education. We increase public awareness and conduct education efforts about the unique historic, natural, tribal, and cultural resources in San Bernardino County through the County Museum and in collaboration with other entities.	

5.4.4 Conclusions and Recommendations

As discussed above, with implementation of COCs **CUL-1** through **CUL-8**, the project would have a less than significant impact related to cultural and tribal cultural resources and would conform with applicable plans, policies, and regulations. Staff recommends adopting the conditions of certification as detailed in subsection "5.4.5 Proposed Conditions of Certification" below. The COCs below are enforceable as part of the CEC's certificate for the portions of the project constituting the site and related facilities. No mitigation measures are recommended for non-jurisdictional project components for cultural and tribal cultural resources.

5.4.5 Proposed Conditions of Certification

The following proposed COCs include measures to mitigate environmental impacts and ensure conformance with applicable plans, policies, and regulations to the extent possible. With implementation of the COCs, the proposed project will have a less than significant impact with mitigation incorporated. Prior to and throughout construction in implementing the following COCs, the applicant shall communicate as directed below with the CEC's CPM.

CUL-1 Appointment and Qualifications of Cultural Resources Personnel

Cultural Resource Specialist The project owner shall assign a Cultural Resource Specialist (CRS) to the project. The project owner may elect to assign one or more alternate CRSs as well. The project owner shall submit the resumes of the proposed CRS and Alternative CRS(s), with at least three references and their contact information, to the CEC's 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:

A background in anthropology, archaeology, history, architectural history, or a related field, and

- At least 10 years of archaeological or historical experience (as appropriate for the project site), experience conducting resource mitigation and fieldwork;
- At least one year of field experience in California; and
- 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.

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 and tribal cultural resource COCs. The CRS shall serve as the primary point of contact on all cultural resource matters for the CEC. The CRS shall retain Native American Monitors and may elect to obtain the services of Cultural Resource Monitors (CRMs) and other technical specialists, if needed, to assist in monitoring, mitigation, and curation activities. The project owner shall ensure that the CRS makes recommendations regarding the CEQA significance of any cultural or tribal 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 and tribal cultural resource COCs, the project owner may request CPM approval to formally release the CRS from further duties.

Cultural Resource Monitors Prior to the commencement of construction, the applicant will secure the services of qualified archaeological specialists and Native American monitors. The applicant shall secure the services of Native American monitors and archaeologists to observe excavations of native soil. Cultural Resources Monitors (CRMs). CRMs shall have the following qualifications:

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

Native American Monitors Tribal monitor(s) authorized to represent the Yuhaaviatam of San Manuel Nation (YSMN) and other consulting tribes (should they wish to participate) shall be given preference. Ideally the Native American monitors will have:

1. Traditional ties to the area being monitored.
2. Knowledge of local historic and prehistoric Native American tribal cultural resources.
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 proposed 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 of CEQA mitigation provisions.
9. Ability to read a topographical map and be able to locate site and reburial locations for future inclusions in the Native American Heritage Commission's Sacred Lands Inventory.
10. Knowledge and understanding of archaeological practices, including phases of archaeological investigation.

Verification: The project owner shall submit the prospective CRS's and any Alternate CRS's qualifications at least 75 days prior to the start of ground disturbance associated with site mobilization and construction.

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.

At least 20 days prior to site mobilization, the CRS shall provide proof of qualifications for any anticipated CRMs and additional specialists for the project to the CPM.

Prior to signing a contract with a qualified archaeological specialists and Native American monitor(s), the Applicant shall provide a copy of the contract to the CEC's compliance proposed project manager (CPM) for review, including the qualification of the proposed monitors, proposed number of monitors to be employed, proposed construction schedule/hours during which monitors would be present on site, and other relevant details of the proposed cultural monitoring program for approval.

CUL-2 Information to Be Provided to The CRS Prior to the start of ground disturbance, the project owner shall provide the CRS with copies of the Opt-In application, data responses, confidential cultural resources reports, all supplements, the cultural and tribal cultural resources section from the CEC's updated staff assessment (USA), and the cultural and tribal cultural resources COCs from the CEC's order certifying the project, if the CRS does not already

possess copies of these materials. The project owner shall also provide the CRS and the CPM with maps and drawings showing the footprints of the power plant, all linear facility routes, all access roads, and all laydown areas. Maps shall include the appropriate United States Geological Survey 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 cultural and tribal cultural resources, including any historic built environment resources, identified in the USA's 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 if the approved CRS is terminated or resigns.

Verification: At least 15 days prior to the start of ground disturbance, the project owner shall provide the CPM notice that the Opt-In application, data responses, confidential cultural resources documents, all supplements, USA, and CEC's order certifying the project 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.

At least 15 days prior to the start of ground disturbance, if there are changes to any project-related footprint, the project owner shall provide revised maps and drawings for the changes to the CRS and CPM.

At least 15 days prior to the start of each phase of a phased project, the project owner shall submit the appropriate maps and drawings, if not previously provided, to the CRS and CPM.

Weekly, during ground disturbance, a schedule of the next week's anticipated project activity shall be provided to the CRS and CPM by letter, e-mail, or fax.

Within 5 days of changing the scheduling of phases of a phased project, the project owner shall provide written notice of the changes to the CRS and CPM.

If a new CRS is approved by the CPM as provided for in CUL/TRI-1, the project owner shall provide the CPM notice that the Opt-In application, data responses, confidential cultural resources documents, all supplements, USA, CEC's order certifying the project, and maps and drawings have been provided to the new CRS within 10 days of such approval.

CUL-3 Cultural and Tribal Cultural Resources Mitigation and Monitoring Plan

Prior to the start of ground disturbance, the project owner shall submit the CTRMMP, as prepared by or under the direction of the CRS in coordination with the consulting tribes, to the CPM for review and approval. The CTRMMP shall follow the content and organization of the draft model CTRMMP, provided by the CPM, and the authors' name(s) shall appear on the title page of the CTRMMP. The CTRMMP shall identify measures to minimize potential impacts to cultural and tribal cultural resources. Implementation of the CTRMMP shall be the responsibility of the CRS and the project owner. Copies of the CTRMMP 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 CTRMMP, unless such activities are specifically approved by the CPM. Portions of the CTRMMP that describe or map the location(s) of cultural and tribal cultural resources shall be designated as confidential.

The CTRMMP shall include the following elements and measures.

- The following statement included in the Introduction: "Any discussion, summary, or paraphrasing of the Conditions of Certification (COCs) in this CTRMMP is intended as general guidance and as an aid to the user in understanding the COCs and their implementation. The COCs, as written in the Commission Decision, shall supersede any summarization, description, or interpretation of the conditions in the CTRMMP. The Cultural and Tribal Cultural Resources COCs from the staff assessment and CEC's order certifying the project are contained in Appendix A."
- A proposed general research design that includes a discussion of cultural 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 cultural or tribal cultural resource is avoidance. A specific mitigation plan shall be prepared for any unavoidable impacts to any historical resources, unique archaeological resources, or tribal cultural resources (as defined in the California Environmental Quality Act and

determined by the CPM). A prescriptive treatment plan may be included in the CTRMMP for limited data types. 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.

- 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.
- A description of how Native American observers or monitors will be included, the procedures to be used for selecting them, and their role and responsibilities.
- A statement regarding the disposition of artifacts that includes the identification of potential on-site reburial location(s) for Native American archaeological materials collected because of project activities. Reburial shall not occur until all ground-disturbing activities associated with the project have been completed, all monitoring has ceased, cataloguing and recording of cultural resources have been completed, and final reports issued to the CPM, CHRIS, and consulting tribes. All Native American archaeological materials not subject to the provisions of Public Resources Code, section 5097.98 et seq. are subject to a reburial agreement that shall be developed between the project owner and the consulting tribes. The reburial agreement shall be appended to the CTRMMP and outline the determined reburial process and location(s) and include provisions to protect the reburial area(s) from future impacts and to provide access to culturally affiliated California Native American descendants. The CTRMMP shall also include provisions to accommodate culturally appropriate treatment of Native American human remains and associated items that could be preferred by a designated most likely descendent, should Native American human remains be encountered. A description of all impact-avoidance measures (such as flagging or fencing) to prohibit or otherwise restrict access to cultural or tribal cultural resources 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. A statement that all encountered cultural and tribal cultural resources over 50 years old shall be recorded on Department of Parks and Recreation (DPR) 523 forms and mapped and photographed. In addition, all archaeological materials retained during 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.

- A statement that all cultural and tribal cultural resources encountered will be subject to the protocols detailed within the CTRMMP.
- A statement that the removal of any Native American cultural materials shall be conducted in the presence of a tribal monitor representing the consulting tribes unless otherwise decided by cultural resources representatives of the consulting tribes, and all removed materials shall be temporarily curated on-site.
- A statement that the project owner will pay all curation fees for recovered artifacts and for related documentation produced during cultural and tribal cultural resource investigations conducted for the project. The project owner shall identify three possible curation facilities that meet American Association of Museums (AAM)-accreditation that can accept archaeological materials resulting from project activities into their permanent collections and provide for the proper care of these objects in accordance with the SHRC's Guidelines for the Curation of Archaeological Collections (1993, or future updated guidelines from the SHRC). The project owner shall coordinate with the consulting tribes to identify at least one facility located within San Bernardino County willing to curate Native American archaeological materials in their permanent collections. Should it occur that avoidance, preservation in place, and on-site reburial are not an option for the treatment and disposition of Native American archaeological material, the project owner shall release control of those items to the identified facility.
- A statement demonstrating when and how the project owner will comply with Health and Human Safety Code, section 7050.5(b), and Public Resources Code, section 5097.98(b) and (e), including the statement that the project owner will notify the CPM and the NAHC of the discovery of human remains.
- A statement that the CRS has access to equipment and supplies necessary for site mapping, photography, and recovery of any archaeological materials that are encountered during ground disturbance and cannot be treated prescriptively.
- A description of the contents, format, and review and approval process of the final Cultural and Tribal Cultural Resources Report (CTRR), which shall be prepared according to *Archaeological Resource Management Report (ARMR)* guidelines.

Verification: 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 CTRMMP for the CRS.

At least 90 days prior to the start of ground disturbance, the project owner shall submit the CTRMMP to the CPM for review and approval.

The CEC will disseminate the plan to the YSMN, which will have 14 days to review and comment on the plan. The CEC must approve the plan before construction can begin.

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 during archaeological investigations (survey, testing, data recovery).

Within 90 days after completion of ground disturbance (including landscaping), if archaeological 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 SHRC's *Guidelines for the Curation of Archaeological Collections* (1993, or future updated guidelines from SHRC), to accept the archaeological materials from this project. Any agreements concerning curation will be retained and available for audit for the life of the project.

CUL-4 Worker Environmental Awareness Program (WEAP) Prior to and for the duration of ground disturbance, the project owner shall provide 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 and tribal cultural resources part of this training shall be prepared by the CRS, may be conducted by any member of the cultural and tribal cultural resources team, and may be presented in the form of a video. The CRS shall collaborate with the YSMN and any other consulting California Native American tribal members in preparing and presenting the training. 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:

- A discussion of the cultural sensitivity of the project area;
- A discussion of applicable laws and penalties under law;
- Samples or visuals of artifacts that might be found in the project vicinity;
- A discussion of what such artifacts may look like when partially buried, or wholly buried and then freshly exposed;
- 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;
- Instruction that the CRS, Alternate CRS, and CRMs have the authority to halt ground disturbance around a discovery to an extent sufficient to ensure that the resource is protected from further impacts, as determined by the CRS;

- 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 or tribal cultural resource 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;
- An informational brochure that identifies reporting procedures in the event of a discovery;
- An acknowledgement form signed by each worker indicating that they have received the training; and
- A sticker that shall be placed on hard hats indicating that environmental training has been completed.

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

Verification: At least 30 days prior to the beginning of ground disturbance, the CRS shall provide the draft text and/or training video for the cultural and tribal cultural resources WEAP, including Native American participation, and graphics and the informational brochure to the CPM for review and approval.

At least 15 days prior to the beginning of ground disturbance, the CPM will provide to the project owner a WEAP Training Acknowledgement form for each WEAP-trained worker to sign.

Monthly, until ground disturbance is completed, the project owner shall provide in the Monthly Compliance Report (MCR) the WEAP Training Acknowledgement forms of workers who have completed the training in the prior month and a running total of all persons who have completed training to date.

CUL-5 Cultural Resources Survey of Zzyzx Road and Previously Unsurveyed Areas Prior to the commencement of construction, a pedestrian cultural resources survey of Zzyzx Road within the PAA including a 50 ft. buffer will be conducted. Background research of the road has already been completed. Should additional changes to the project site occur (e.g., addition of access roads, new or modified staging areas, or other work areas) and these new areas ae not covered by previous surveys within the last 5 years, the applicant will conduct additional pedestrian surveys to ensure all proposed work areas have recent survey coverage in accordance with CEC Appendix B Guidelines and BLM regulations. Any newly identified resources will be managed in accordance with COC CUL-3, CUL-6, and CUL-7. Additionally, a supplemental technical report will be required and submitted to the CEC for approval.

Verification: The applicant will provide a copy of the supplemental technical study to CEC for review and approval prior to conducting any ground disturbing activity within the newly identified area.

CUL-6 Unanticipated Discoveries The project owner shall ensure that a CRS, alternate CRS, or CRM and Native American Monitor shall be on site for any ground disturbance associated with construction of the project.

Prior to the start of ground disturbance, the project owner shall notify the CPM and all interested California Native American tribes of the date on which ground disturbance will begin. Where excavation equipment is actively removing dirt and hauling the excavated material farther than 50 feet from the location of active excavation, full-time archaeological monitoring shall require at least two monitors per excavation area. In this circumstance, one monitor shall observe the location of active excavation, and a second monitor shall inspect the dumped material. For excavation areas where the excavated material is dumped no farther than 50 feet from the location of active excavation, one monitor shall observe both the location of active excavation and inspect the dumped material.

If 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 research design in the CTRMMP shall govern the collection, treatment, retention/disposal, and curation of any archaeological materials encountered. On forms provided by the CPM, monitors shall keep a daily log of any monitoring and other cultural and tribal cultural resource activities and any instances of non-compliance with the COCs or Pub. Resources Code, § 5024.1, Pub. Resources Code, § 21084.1, Pub. Resources Code, § 21083.2, California Health and Safety Code, § 7050.5, and Public Resources Code, § 5097.98. The daily monitoring logs shall at a minimum include the following information.

- First and last name of the monitors
- 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 cultural or tribal cultural resource(s). Specify if work conducted within 1,000 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., SODA-WL-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 workday

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 monitors 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 did not occur.

The Cultural and Tribal Cultural Resources section of the MCR shall be prepared in coordination with the CRS and shall include a monthly summary report of cultural and tribal cultural resources-related monitoring. The summary shall:

- List the number of monitors daily, as well as provide monthly monitoring-day totals
- Give an overview of cultural and tribal cultural resource monitoring work for that month and discuss any issues that arose
- Describe fulfillment of requirements of each cultural and tribal cultural resource mitigation measure
- Summarize the confidential appendix to the MCR, without disclosing any specific confidential details
- Include the artifact concordance table (as discussed below), but with removal of UTMs

Each MCR, prepared under supervision of the CRS, shall be accompanied by a confidential appendix that contains:

- Completed DPR 523A forms for all artifacts recorded or collected in that month. For any artifact without a corresponding DPR form, the CRS shall specify why the DPR form is not applicable or pending (i.e. as part of a larger site update).
- A concordance table that matches field artifact numbers with the artifact numbers used in the DPR 523 forms shall be included. The sortable table shall contain each artifact's date of collection and UTM coordinates and note if an artifact has been deaccessioned or otherwise does not have a corresponding DPR 523 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 location (near each other or an existing resource) are collected month after month, and if agreed upon with the CPM, a final updated

DPR 523 form for the resource may be submitted at the completion of monitoring. The monthly concordance table shall note that the DPR 523 form for the included artifacts is pending.

The CRS or alternate CRS shall report daily to the CPM on the status of the project's cultural and tribal cultural resource-related activities, unless reducing or ending daily reporting is requested by the CRS and approved by the CPM. If the CRS believes that the current level of monitoring is not appropriate in certain locations, a letter or e-mail detailing the justification for changing the level of monitoring shall be provided to the CPM for review and approval prior to any change in the level of monitoring. The CRS, at his or her discretion, or at the request of the CPM, may informally discuss cultural and tribal cultural resource monitoring and mitigation activities with CEC technical staff.

Cultural and tribal 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 COCs.

Upon becoming aware of any incidents of non-compliance with the Conditions and/or Pub. Resources Code, § 5024.1, Pub. Resources Code, § 21084.1, Pub. Resources Code, § 21083.2, California Health and Safety Code, § 7050.5, and Public Resources Code, § 5097.98., 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 COCs. When the issue is resolved, the CRS shall write a report describing the issue, the resolution of the issue, and the effectiveness of the resolution measures. This report shall be provided in the next MCR for the review of the CPM.

Verification: At least 30 days prior to the start of ground disturbance, the CPM will notify all Native Americans with whom the CEC communicated during the project review of the date on which the project's ground disturbance will begin.

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

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.

The CRS and/or project owner shall notify the CPM of any incidents of non-compliance with the conditions and/or Pub. Resources Code, § 5024.1, Pub.

Resources Code, § 21084.1, Pub. Resources Code, § 21083.2, California Health and Safety Code, § 7050.5, and Public Resources Code, § 5097.98. by telephone or email within 24 hours.

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.

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

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 CTRMMP.

Final updated DPR 523 forms with sites (where artifacts are collected month after month) can be submitted at the completion of monitoring, as agreed upon with the CPM.

At least 24 hours prior to implementing a proposed change in monitoring level, the project owner shall submit to the CPM, for review and approval, a letter or e-mail (or some other form of communication acceptable to the CPM) detailing the CRS's justification for changing the monitoring level.

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

The archaeological and Native American monitors shall provide their initial assessment of resource significance to the CPM within 48 hours of completing their initial assessment of the inadvertently discovered cultural or tribal cultural resource.

CUL-7 Discovery of Human Remains In the event human remains are uncovered during ground-disturbing activities on private or state owned land (including construction, operations and maintenance, and decommissioning), the applicant or its contractor shall immediately halt work within a 100-foot radius, contact the San Bernardino County Coroner to evaluate the remains, and follow the procedures and protocols pursuant to the California Code of Regulations, title 14, section 15064.5(e)(1). The Health and Safety Code, section 7050.5, requires that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to the Public Resources Code, section 5097.98. If the remains are determined to be of Native American descent, the coroner has 24 hours to notify the Native American Heritage Commission (NAHC). The NAHC will then identify the most likely descendant of

the deceased Native American. The most likely descendant will make recommendations for means of treating, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code Section 5097.98.

Inadvertent discovery of human remains on federal land. If potential human remains are discovered during any Project activity on lands administered by federal agencies, all activities within 100-feet that will cease immediately. The applicant shall take appropriate steps to secure and protect human remains and any funerary objects from further disturbance. The applicant will notify the BLM and the County Coroner (California Health and Safety Code 7050.5(b)) immediately. If the remains are determined to be Native American or if Native American cultural items pursuant to the Native American Graves Protection and Repatriation Act (NAGPRA) are uncovered, the remains shall be treated in accordance with the provisions of NAGPRA (43 CFR 10) and the Archaeological Resources Protection Act (43 CFR 7).

Verification: Should human remains be discovered, the archaeological specialist and Native American Monitor(s) shall comply with state law. The archaeological specialist shall notify CPM within 24 hours of the discovery and invite CEC's participation in the resolution of the find.

CUL-8 Final Cultural and Tribal Cultural Resources Report (CTTR) The project owner shall submit the final CTTR to the CPM for approval. The final CTRR shall be written by or under the direction of the CRS and shall be provided in the ARMR format. The final CTRR 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 CTRR.

If the project owner requests a suspension of all construction activities for more than 30 days, then a draft CTRR that covers all cultural and tribal cultural resources activities associated with the project shall be prepared by the CRS and submitted to the CPM for review and approval on the same day as the suspension/extension request. The draft CTRR shall be retained at the project site in a secure facility until construction resumes or the project is withdrawn. If the project is withdrawn, then a final CTRR shall be submitted to the CPM for review and approval at the same time as the withdrawal request.

Verification: Within 30 days after requesting a suspension of construction activities, the project owner shall submit a draft CTRR to the CPM for review and approval.

Within 90 days after completion of ground disturbance (including landscaping), the project owner shall submit the final CTRR to the CPM for review and approval. If any reports have previously been sent to the CHRIS, then receipt

letters from the CHRIS or other verification of receipt shall be included in an appendix.

Within 10 days after CPM approval of the CTRR, the project owner shall provide documentation to the CPM confirming that copies of the final CTRR have been provided to the CHRIS, the curating institution, if archaeological materials were collected, and to the tribal chairpersons of any California Native American tribes that request copies of project-related reports.

5.4.6 Recommended Mitigation Measures

No mitigation measures for non-jurisdictional project components are recommended for cultural and tribal cultural resources.

5.4.7 References

Barker et al. 1979 – James P. Barker, Carol H. Rector, and Philip J. Wilke. *An Archaeological Sampling of the Proposed Allen-Warner Valley Energy System, Western Transmission Line Corridors, Mojave Desert, Los Angeles and San Bernardino Counties, California and Clark County, Nevada*. Confidential Report on File at South Central Coastal Information Center, California Historical Resources Information System, Fullerton. Study SB-00874. Archaeological Research Unit, University of California, Riverside, 1979

Bean et al. 1981 – Lowell J. Bean, Sylvia Brakke Vane, and Jackson Young. *The Ivanpah Generating Station Project: Ethnographic (Native American) Resources*. Confidential Report on File at South Central Coastal Information Center, California Historical Resources Information System, Fullerton. Study SB-01220. Cultural Systems Research, Inc., 1981

BLM 1978 – Bureau of Land Management. *Archaeological Sites of the California Desert Area (Owlshead, Amargosa Mojave Basin Planning Unit, Phase I-III): Archaeological Sample Unit Records*. Confidential Report on File at South Central Coastal Information Center, California Historical Resources Information System, Fullerton. Study SB-02220.

Bouey and Hall 1988 – Paul E. Bouey and M. C. Hall. *Class II Archaeological Survey of the Rasor Off-Highway Vehicle Area, San Bernardino County, California*. Confidential Report on File at South Central Coastal Information Center, California Historical Resources Information System, Fullerton. Study SB-01834* Far Western Anthropological Research Group, Inc., Davis, CA, 1988

Brian F. Mooney and Associates 1996 – Brian F. Mooney and Associates. *A Cultural Resources Assessment of Three Proposed Air Touch Microwave Tower Sites at Rasor Road, San Bernardino County, and Corn Springs Road and Wiley's Well Road, Riverside County, California*. Confidential Report on File at South Central Coastal Information Center, California Historical Resources Information System, Fullerton. Study SB-03163/ SB-03673.

Cook and Pallette 1991a – John Cook and Drew Pallette. *A Cultural Resource Assessment for Ten Proposed Pac Tel Microwave Tower Sites I-15/Barstow to Mountain Pass*. Confidential Report on File at South Central Coastal Information Center, California Historical Resources Information System, Fullerton. Study SB-02315. Brian F. Mooney and Associates, 1991

Cook and Pallette 1991b – John Cook and Drew Pallette. *A Cultural Resource Assessment for Thirteen Proposed Pac Tel Microwave Tower Sites I-15/Barstow to Mountain Pass*. Confidential Report on File at South Central Coastal Information Center, California Historical Resources Information System, Fullerton. Study SB-02470. Brian F. Mooney and Associates, 1991

Dames & Moore 1985. – Dames & Moore. *Mead/Mccullough-Victorville/Adelanto Transmission Project Technical Report: Volume IV, Cultural Resources*. Confidential Report on File at South Central Coastal Information Center, California Historical Resources Information System, Fullerton. Study SB-01479.

Dames and Moore 1991 – Dames & Moore. *Kern River Cultural Resources Survey Report Cima Road and Rasor Road Stockpile Areas San Bernardino County, California*. Confidential Report on File at South Central Coastal Information Center, California Historical Resources Information System, Fullerton. Study SB-02597.

Duke and Patterson 2009 – *Cultural Resources Inventory of 6,775 Acres for the Soda Mountain Solar Project, San Bernardino County, California*. Confidential Report on File at South Central Coastal Information Center, California Historical Resources Information System, Fullerton. Study SB-06731. Desert Branch, Far Western Anthropological Research Group, Inc., Las Vegas, 2009

Grosscup and Smith 1960 – Gordon L. Grosscup and Jack E. Smith. *Mohave Desert Pipeline Survey*. Confidential Report on File at South Central Coastal Information Center, California Historical Resources Information System, Fullerton. Study SB-00046.

Hall et al. 1981 – Matthew C. Hall, Philip J. Wilke, Doran L. Cart, and James D. Swenson. *An Archaeological Survey of the Proposed Southern California Edison Ivanpah Generating Station, Plant Site, and Related Rail, Coal Slurry, Water and Transmission Line Corridors, San Bernardino County, California, and Clark County, Nevada*. Confidential Report on File at South Central Coastal Information Center, California Historical Resources Information System, Fullerton. Study SB-01219. Archaeological Research Unit, University of California, Riverside, 1981

Hammond 1981 – Stephen R. Hammond. *Archaeological Survey Report: Three Material Source Sites Along I-15 in the Eastern Mojave Desert*. Confidential Report on File at South Central Coastal Information Center, California Historical Resources Information System, Fullerton. Study SB-01080.

Heidelberg 2005 – Kurt Heidelberg. *Archaeological Survey Report for the Interstate 15 Median Regrade Project from East Yermo Crossing to the Nevada State Line, San Bernardino County, California EA 0C040*. Confidential Report on File at South

Central Coastal Information Center, California Historical Resources Information System, Fullerton. Study SB-07980. California Department of Transportation, 2005

Jones 2010 – Gary Jones. *Seismic Retrofit of Three Bridges on Interstate 15 in San Bernardino County: Afton Canyon Road, Basin Road and Rasor Road*. Confidential Report on File at South Central Coastal Information Center, California Historical Resources Information System, Fullerton. Study SB-06730. California Department of Transportation, 2010

McCabe 2013 – Allen McCabe. *Cultural Resources Inventory of an Additional 335 Acres for the Soda Mountain Solar Project, San Bernardino County, California (Addendum to Duke, Daron C., and Brandon Patterson [2009] Cultural Resources Inventory of 6,775 Acres for the Soda Mountain Solar Project, San Bernardino County, California)*. Confidential Report on File at South Central Coastal Information Center, California Historical Resources Information System, Fullerton. Study SB-07573 Desert Branch, Far Western Anthropological Research Group, Inc., Las Vegas, 2013

Musser and Sutton 1983 – Ruth A. Musser and Mark Q. Sutton. *An Archaeological Survey of the Proposed Barstow to Las Vegas Race Course*. Confidential Report on File at South Central Coastal Information Center, California Historical Resources Information System, Fullerton. Study SB-01381.

Peak & Associates 1988 – Peak & Associates, Inc. *Cultural Resource Survey and Clearance for AT&T's Proposed Construction 29 Vault Locations along Portions of the Socorro to Mojave "A" Cable Line from Needles, California to Kramer Junction, California*. Confidential Report on File at South Central Coastal Information Center, California Historical Resources Information System, Fullerton. Study SB-01825.

RE 2025k – Resolution Environmental (TN 261595). Chapter 2_Project Description, dated February 7, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025l – Resolution Environmental (TN 261596). Section 3.5, Cultural Resources, dated February 7, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

San Bernardino County 2022 – Countywide Plan, County Policy Plan, September 2022. Available at: https://countywideplan.sbcounty.gov/wp-content/uploads/sites/125/2021/01/CWP_PolicyPlan_HardCopy_MainText_Tables_2022_Sept_Adopted.pdf?x23421. Accessed November 13, 2024.

Shackley et al. 1987 – M. Steven Shackley, Rebecca McCorkle Apple, Jan Wooley, and Robert E. Reynolds. *Cultural and Paleontological Resources Survey: US Sprint Fiber Optic Cable Project, Rialto, California To Las Vegas, Nevada*. Confidential Report on File at South Central Coastal Information Center, California Historical Resources Information System, Fullerton. Study SB-01734. Dames & Moore, 1987.

Smith 1983 – Gerard Smith *Cultural Resource Assessment for MCI Telecommunications Proposed Soda Lake Area Microwave Tower Site and Access Road*. Confidential Report on File at South Central Coastal Information Center, California Historical Resources Information System, Fullerton. Study SB-01413.

SWCA 2024a – SWCA Environmental Consultants, Archaeological Resources Assessment of the Soda Mountain Solar Project for an Environmental Impact Report, San Bernardino County, California, dated December 2024.

SWCA 2024b – SWCA Environmental Consultants, Historical Resources Assessment Report for the Soda Mountain Solar Project, San Bernardino County, California, San Bernardino County, California, dated December 2024.

Warren and Crabtree 1986 – The Prehistory of the Southwestern Great Basin. In *Handbook of North American Indians,* Vol. 11: *Great Basin.* Smithsonian Institute, Washinton D.C.

UC Riverside Archaeological Research Unit 1986. – UC Riverside Archaeological Research Unit. *Class III Archaeological Survey of Pro-Peace Proposed Lunch and Camp Sites, San Bernardino County, California*. Confidential Report on File at South Central Coastal Information Center, California Historical Resources Information System, Fullerton. Study SB-01551.

Urbana Preservation & Planning, LLC 2021 Historic-Era Built Environment Survey Report, Proposed Transmission Line Rating and Remediation Program, Ivanpah-Control Project, Inyo, Kern and San Bernardino Counties, California. On file with SWCA Environmental Consultants, Pasadena, California. Confidential.

Wilkens 2009 – Robert Wilkens. *Rasor Road, Rasor Road and I-15, Baker, San Bernardino County, California*. Confidential Report on File at South Central Coastal Information Center, California Historical Resources Information System, Fullerton. Study SB-06489. IVI Due Diligence Services, Inc., 2009

York et al. 1995. – Andrew York, W. G. Spaulding, D. Powers, L. Peterson, G. Davis, and T. Wahoff. *Class III Cultural Resources Inventory for LA Dept of Water & Power-Mead to Adelanto Transmission Line Project: Stateline & Baker Divisions*. Confidential Report on File at South Central Coastal Information Center, California Historical Resources Information System, Fullerton. Study SB-03668. Dames & Moore, 1995

5.5 Efficiency and Energy Resources

5.5.1 Environmental Setting

Existing Conditions

The proposed Soda Mountain Solar Project (SMSP or project) would generate electricity utilizing solar energy. The project would be located on undeveloped federally owned land managed by the Bureau of Land Management in San Bernardino County. The project would consist of hundreds of solar panel single-axis trackers, each approximately 400 feet long and capable of supporting 45 to 120 solar photovoltaic (PV) panels (RE 2025ee, Section 2.2). The total power generation capacity of the solar PV panels would be approximately 300 megawatts (MW) (RE 2024uuu, Section 1.1.4). Power generation would contribute to charging the project's battery energy storage system (BESS) or would be provided to the electrical grid. The BESS would have the capacity to store and discharge up to 300 MW of electricity for up to four hours (RE 2024uuu, Section 1.3). Grid electricity would support the operations and maintenance (O&M) facility, and critical loads, in stand-by mode, when the solar PV panels and the BESS are unavailable to provide electricity. See **Section 2, Introduction,** for a description of the jurisdictional project components and non-jurisdictional project components.

The project would not include any permanent diesel, natural gas, or liquid petroleum-powered emergency generators to support critical loads during operations. Instead, the project would rely on the solar plant, BESS, or local 12 kilovolt circuit as backup during outages to support critical loads (RE 2024zzz).

Regulatory

Federal

There are no applicable federal plans, policies, and regulations that govern the efficiency of the utilization of solar PV panels and BESS.

State

California 2022 Energy Efficiency Standards for Residential and Nonresidential Buildings—Green Building Standards Code, California Code of Regulations, Title 24. The California Green Building Standards Code (California Code of Regulations, Title 24, Part 11) applies to the planning, design, operation, construction, use, and occupancy of newly constructed power plants and their ancillary facilities and requires the installation of energy efficient indoor infrastructure.

Senate Bill 100—The 100 Percent Clean Energy Act of 2018. Senate Bill (SB) 100 (Chapter 312, Statutes of 2018) requires that retail sellers and local publicly owned electric utilities procure a minimum quantity of electricity products from eligible

renewable energy resources so that the total kilowatt-hours of those products sold to their retail end-use customers achieve 44 percent of retail sales by December 31, 2024, 52 percent by December 31, 2027, and 60 percent by December 31, 2030. The bill also requires the Public Utilities Commission, California Energy Commission, and State Air Resources Board to utilize programs authorized under existing statutes to meet the state policy goal of 100 percent of total retail sales of electricity in California provided by eligible renewable energy resources and zero-carbon resources by December 31, 2045**.**

Local

San Bernardino County General Plan. The Renewable Energy and Conservation Element of the General Plan promote the conservation of energy, utilization of renewable energy resources, and energy efficiency (San Bernardino 2019). The applicable policies to the proposed project are summarized below:

- RE Policy 1.1: Continue implementing the energy conservation and efficiency measures identified in the County of San Bernardino Greenhouse Gas Emissions Reduction Plan.
- RE Policy 1.2: Optimize energy efficiency in the built environment.
    - RE 1.2.6: Encourage new development to comply with the optional energy efficiency measures of the CALGreen Code.

Cumulative

Section 15130 of the CEQA Guidelines (Cal. Code Regs., tit. 14) requires a discussion of cumulative environmental impacts. Cumulative impacts are two or more individual impacts that, when considered together, are considerable or that compound or increase other environmental impacts. The CEQA Guidelines require that the discussion reflect the severity of the impacts and the likelihood of their occurrence but need not provide as much detail as the discussion of the impacts attributable to the project alone.

There is no project in **Appendix A**, **Table A-1**, that could affect efficiency and energy resources cumulatively.

5.5.2 Environmental Impacts

EFFICIENCY AND ENERGY RESOURCES Would the project:	**Significant and Unavoidable Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐

EFFICIENCY AND ENERGY RESOURCES Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☒

Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix G, energy

5.5.2.1 Methodology and Thresholds of Significance

Methodology

The above environmental checklist constitutes the methodology for this analysis.

Thresholds of Significance

There are no thresholds of significance applicable to this project. However, the project would have a significant impact if its construction and operation significantly impact the available energy resources.

5.5.2.2 Direct and Indirect Impacts

a. Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Construction

Less Than Significant Impact. Based on the analysis below, the construction of the project would have a less than significant impact on local and regional energy supplies and would not consume energy resources in a wasteful, inefficient, or unnecessary manner.

Jurisdictional and Non-Jurisdictional Project Components

Construction would take approximately 18 months to complete (RE 2024fff, Section 1.5). Construction activities would include site preparation, solar array assembly and construction, generation interconnection line installation, substation and switchyard construction, and electrical construction activities (RE 2025k, Section 2.5). Through these construction activities, various equipment, such as bulldozers, excavators, cranes, and trucks would consume nonrenewable energy resources, primarily fossil fuels such as gasoline and diesel. It is anticipated that fossil fuels used by this equipment during construction would be used efficiently and would not result in significant long-term depletion of these energy resources or permanently increase the project's reliance on them.

The project would implement best management practices to reduce waste production during construction. For example, the idling time of construction equipment during the

construction phase would be minimized by either shutting off equipment when not in use or reducing the idling time to a maximum of five minutes (RE 2024ii, Section 5.4). Nonhazardous construction waste would be recycled or disposed at a permitted landfill (RE 2024yyy, Section 1.1.3).

Operation

Less Than Significant Impact. Based on the analysis below, the project's use of fuel during operations would have a less than significant impact on energy supplies and resources. Furthermore, project operations would not consume energy in a wasteful, inefficient or unnecessary manner.

Jurisdictional and Non-Jurisdictional Project Components

The project would use solar energy to generate electricity through solar PV panels. Solar energy is an abundant resource that cannot be depleted. In addition, the project would include a BESS to store and discharge electricity.

Commercially available solar PV panels have an efficiency between 15 and 20 percent. The inefficiency of a solar PV cell can be attributed to the sunlight's wavelength, reflection, and operating temperature of the solar cell (EERE 2024).

Light composition (photons) has different wavelengths and by the time sunlight reaches the surface of the solar cell its wavelength changes from ultraviolet to infrared. Some of the photons are reflected, passed through, or converted to heat when they hit the surface of the cell. The remaining photons have the right amount of light energy for the cell to produce electric current.

Solar cells operate efficiently at low temperatures. High temperatures can cause the cell's material (semiconductor) properties to change. This change slightly increases electric current and largely decreases voltage. Inconsistent current and voltage affect the cell's ability to efficiently convert energy to electricity (EERE 2024).

For energy storage systems, the round-trip efficiency is a useful measure of energy consumption from the grid. A higher round-trip efficiency indicates less energy is lost in the processes of storing and discharging electricity. The round-trip efficiency is calculated as the ratio of useful energy output divided by useful energy input. A BESS has a high round-trip efficiency of approximately 85 percent, meaning most of energy stored is returned for use (NREL 2024). Their inefficiency can be attributed to heat and electrical transmission losses.

As discussed above, the project would not include any permanent diesel, natural gas, or liquid petroleum-powered emergency generators to support critical loads. Therefore, the project's operation would contribute to the consumption of fossil fuel resources such as diesel or liquefied petroleum gas (LPG) in minimal amounts, resulting in a less than significant impact on available fossil fuel resources of California. Furthermore, the

project's energy demand would be limited to electricity usage during battery charging operation, solar plant operation, and facility maintenance, which would be negligible.

b. Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Construction

No Impact. Based on the analysis below, construction of the project would neither conflict with nor obstruct a state or local plan for renewable energy or energy efficiency, and therefore, would have no impact on those plans.

Jurisdictional and Non-Jurisdictional Project Components

The project is committed to energy-efficient construction and would implement measures to reduce energy consumption during construction (RE 2024y, Section 3.6.3.4). The project would recycle construction and demolition debris in compliance with Assembly Bill 341 and State Bill 1018 (RE 2024yyy, Section 1.5.2.4). Moreover, the project would also comply with the California Green Building Code.

Operation

No Impact. Based on the analysis below, project operations would not impact a state or local plan for renewable energy or energy efficiency.

Jurisdictional and Non-Jurisdictional Project Components

During operation, the project would utilize solar energy to generate up to 300 MW of electricity, which would be used to charge the BESS and supply power to the grid. Should the project contract to provide electricity, it would be with Los Angeles Department of Water and Power (LADWP) (RE 2024qq). LADWP is the electricity service provider to the City of Los Angeles and some surrounding communities.

LADWP has committed to meeting California's Renewable Portfolio Standard through its Strategic Long-Term Resource Plan (LADWP 2022). LADWP's 2022 Power Content Label's Base Plan includes 39.5 percent Eligible Renewable, which includes 0.1 percent biomass and biowaste, 9.5 percent geothermal, 2.4 percent eligible hydroelectric, 14 percent solar, and 13.5 percent wind (LADWP 2023). The project would increase renewable energy generation capacity in LADWP and the State's portfolio. Furthermore, the project would be consistent with SB 100.

The project would comply with the California Green Building Code through conformance with the California Building Standard Codes.

The project would not include permanent diesel, natural gas, or LPG emergency generators and, therefore, would consume minimal fossil fuels.

Through energy-efficient design and increased renewable electricity generation, the project would neither conflict with nor obstruct state or local plans for renewable energy or energy efficiency and, therefore, would have no impact on those plans.

5.5.2.3 Cumulative Impacts

No Impact. The project would not significantly consume diesel, natural gas, or liquid petroleum energy resources. Therefore, the project would have no cumulative efficiency and energy resource impact with past, present, or probable future projects.

5.5.3 Project Consistency with Applicable Plans, Policies, and Regulations

Table 5.5-1 below details staff's determination of consistency with applicable plans, policies, and regulations. As shown in this table, staff concludes that the jurisdictional components of the proposed project would be consistent with all applicable plans, policies, and regulations.

TABLE 5.5-1 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS

Applicable Plans, Policies, and Regulations	Consistency and Basis For Determination
State	
Senate Bill 100—The 100 Percent Clean Energy Act of 2018.	**Yes.** The project would be consistent with SB100 through its energy-efficient design and increasing renewable electricity generation.
California 2022 Energy Efficiency Standards for Residential and Nonresidential Buildings—Green Building Standards Code, California Code of Regulations, Title 24.	**Yes.** The project would be consistent with the California Green Building Code through conformance with the California Building Standard Codes.
San Bernardino County General Plan.	**Yes.** The project would be consistent with the County's General Plan since the project would conserve energy, utilize renewable energy resources and energy efficiently.

5.5.4 Conclusions and Recommendations

As discussed above, the jurisdictional and non-jurisdictional project components would have a less than significant impact related to efficiency and energy resources and the jurisdictional project components would be consistent with applicable plans, policies, and regulations.

5.5.5 Proposed Conditions of Certification

There are no proposed conditions of certification for efficiency and energy resources. CEC retains discretion to impose a verification condition if later design submittals differ materially from those analyzed herein.

5.5.6 Recommended Mitigation Measures

There are no recommended mitigation measures non-jurisdictional project components for efficiency and energy resources.

5.5.7 References

EERE 2024 – Office of Energy Efficiency & Renewable Energy (EERE). Solar Performance and Efficiency. Accessed on: August 8, 2024. Accessed online at: https://www.energy.gov/eere/solar/solar-performance-and-efficiency

LADWP 2022 – Los Angeles Department of Water and Power (LADWP). 2022 Power Strategic Long-Term Resource Plan. Accessed on: April 23, 2025. Accessed online at: https://www.ladwp.com/sites/default/files/2023-08/2022%20LADWP%20Power%20Strategic%20Long-Term%20Resource%20Plan_0.pdf

LADWP 2023 – Los Angeles Department of Water and Power (LADWP). 2023 Power Content Label. Accessed on: April 23, 2025. Accessed online at: https://www.ladwp.com/sites/default/files/2024-11/2024_connections-PowerContentPage_01.pdf

NREL 2024 – National Renewable Energy Laboratory (NREL). Annual Technology Baseline. Utility-Scale Battery Storage. Accessed on: August 8, 2024. Accessed online at: https://atb.nrel.gov/electricity/2024/utility-scale_battery_storage

RE 2024fff – Resolution Environmental (TN 259693). Chapter 1 Executive Summary, dated October 25, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2024ii – Resolution Environmental (TN 257935). Chapter 5 Other CEQA Considerations, dated July 23, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2024qq – Resolution Environmental (TN 257943). Appendix V Supplemental Information, dated July 23, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2024uuu – Resolution Environmental (TN 259708). Appendix A1 Engineering Generation Facility Description, Design and Operation - October 2024 - Revision 1, dated October 25, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2024y – Resolution Environmental (TN 257924). Section 3-6 Energy, dated July 23, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2024yyy – Resolution Environmental (TN 259712). Appendix R Waste Management Plan - October 2024 - Revision 1, dated October 25, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2024zzz – Resolution Environmental (TN 259876). CEC Data Request Response Set #1, dated November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025ee – Resolution Environmental (TN 264864). Appendix B Visual Resources Technical Report - Revised July 2025, dated July 18, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025k – Resolution Environmental (TN 261595). Chapter 2_Project Description, dated February 7, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

San Bernardino 2019 – County of San Bernardino Ganeral Plan Renewable Energy Conservation Element. Adopted August 8, 2017, Amended February 2019. https://lus.sbcounty.gov/wp-content/uploads/sites/48/Renewable/2019_WEBSITE/REC-Element.pdf

SWRCB 2024 – California State Water Resources Control Board. Land Disposal Program. dated March 29, 2023. Accessed online at: https://www.waterboards.ca.gov/water_issues/programs/land_disposal/treated_wood_waste.html#:~:text=Class%20III%20and%20II/III,found%20on%20the%20About%20page.

US DOE 2024 – U.S. Department of Energy. Energy Efficiency & Renewable Energy (EERE). Alternative Fuels Data Center. Propane Production and Distribution. Accessed on: August 8, 2024. Accessed online at: https://afdc.energy.gov/fuels/propane-production

5.6 Geology, Paleontology, and Minerals

Section 5.6.1 describes the environmental and regulatory setting related to geology, paleontology, and minerals. Section 5.6.2 evaluates if project construction and operation may impact existing geologic hazards, paleontological resources, mineral resources, and geologic resources of commercial, recreational, and scientific value. The section also evaluates if geologic hazards would impact project construction and operation. Mitigation would reduce the identified potential impacts to less than significant.

Section 5.6.3 evaluates the project's consistency with applicable plans, policies, and regulations regarding geology, paleontology, and minerals. Section 5.6.4 provides staff's recommendation to adopt the Conditions of Certification (COCs) provided in Section 5.6.5. Section 5.6.6 provides staff's recommended Mitigation Measures. Section 5.6.7 lists references cited in Section 5.6.

This section analyzes the jurisdictional and non-jurisdictional project components. The jurisdictional project components include the construction and operation of the solar photovoltaic (PV) facility, battery energy storage system (BESS), project substation and generation intertie line (gen-tie) and construction of the utility switchyard and section of transmission loop in lines that would connect to the existing Mead-Adelanto Transmission Line. The non-jurisdictional project components include the construction and operation of the protection setting upgrades to the Marketplace and Adelanto substations and operation of the utility switchyard and section of transmission loop in lines.

5.6.1 Environmental Setting

Existing Conditions

The Soda Mountain Solar Project (project) proposes to disturb about 2,059 acres of the proposed 2,670-acre project site in the Mojave Desert geomorphic province. The proposed project site is in eastern San Berardino County, on land that the Bureau of Land Management (BLM) administers. The project site is mostly undeveloped rural desert land. Two unimproved BLM public access roads, Rasor Road and Arrowhead Trail, intersect the project site (RE 2025ii).

Major project components include an up to 300-megawatt (MW) solar PV facility that would include four solar arrays, an up to 300 MW/1,200 MW-hour (MWh) BESS, a 140,000 square-foot (ft^2) high-voltage project substation, a 500kV gen-tie, a 234,300 ft^2 switchyard, and 500 kV transmission loop-in lines (RE 2025ii, 2025eeee). The project would produce power and transmit it through an interconnection to the regional electrical grid to the existing Marketplace substation in Boulder City, NV, and Adelanto

substation in Adelanto, CA (RE 2025ii). For more information, see **Section 3, Project Description**.

Geological Hazards and Resources

Regional Geology

The proposed project site is in the eastern part of the Mojave Desert geomorphic province of southern California. The Mojave Desert geomorphic province is part of the North American and Pacific transform tectonic plate boundary. The Mojave Desert is wedge shaped. The Mojave Desert's northern boundary is the Garlock fault. The SW-NE -striking Garlock fault separates the Mojave Desert from the southern Sierra Nevada and southern Basin and Range geomorphic provinces. The Mojave Desert's southwestern boundary is the NW-SE-striking San Andreas fault, which separates the Mojave Desert from the Transverse Range and Colorado Desert geomorphic provinces. The Mojave Desert geomorphic province's eastern boundary is the California-Nevada Stateline (CDOC 2002).

Topography in the Mojave Desert is comprised of isolated mountain ranges, expansive desert plains, and dry lake beds, or playas. Faulting controls topography. Most dominant faults are oriented approximately NW-SE, parallel or subparallel to the plate boundary. Secondary faults are oriented approximately E-W, parallel with the Transverse Ranges. The Mojave Desert is hydrologically enclosed. Streams drain internally, forming playas (CDOC 2002).

Local Geology and Stratigraphy

The proposed project site is in an intermontane alluvial valley, where Interstate-15 (I-15) transits the southeastern part of the Soda Mountains. The geologic units described below are mapped at the surface within two miles of the project (CDOC 2012).

Staff uses California Department of Conservation (CDOC) (2012) geologic mapping, including spatial extents, map unit names, and map unit descriptions, for Quaternary surficial deposits and rock formations.

- Quaternary[1] surficial deposits underlay the project site and are found within two miles of the project. These deposits are recent in age, presumably Holocene[2] through Pleistocene[3], and unconformably overlie older rock formations (CDOC 2012; GSA 2022).

1 The Quaternary period began 2.58 million years ago (Ma) and continues today (GSA 2022).
2 The Holocene epoch began 11.7 thousand years ago (ka) and continues today (GSA 2022).
3 The Pleistocene epoch began 2.58 Ma and ended 11.7 ka (GSA 2022).

- Mapped Late Holocene (≤ 500 years old) surficial deposits include (CDOC 2012),
  - Alluvial Fan Deposits (Qf) occur at the surface at the project site (RE 2024ooo). CDOC (2012) described the map unit as unconsolidated sediments (boulders, cobbles, gravel, sand, and silt) that were recently deposited in a fan-shaped cone where a stream flows from a confined valley or canyon. Gravelly sediments are more common than sandy sediments (CDOC 2012).
  - Undifferentiated Surfacial Deposits (Qsu) occur at the surface within two miles of the project (CDOC 2012). CDOC (2012) described the map unit as colluvium, slope wash, talus deposits, and other surface deposits of all ages. Sediments are generally unconsolidated but may locally contain contain consolidated layers (CDOC 2012).
  - Landslide Deposits (Qls) occur at the surface within two miles of the project (CDOC 2012). CDOC (2012) described the map unit as landslides, debris flows, and older landslides of various materials and types of mass wasting events. Sediments are unconsolidated to moderately well-consolidated (CDOC 2012).
  - Lacustrine, Playa, and Estuarine (paralic) Deposits (Ql) occur at the surface within two miles of the project (CDOC 2012). CDOC (2012) described the map unit as mostly unconsolidated fine-grained sand, silt, mud, and clayfrom fresh water (lacustrine) and saline (playa) lakes that periodically flood, and estuaries. Sediments may contain evaporites, including salt (CDOC 2012).
- Mapped Holocene to Late Pleistocene surficial deposits include,
  - Young Alluvial Fan Deposits (Qyf) occur at the surface at the project site (RE 2024ooo). CDOC (2012) described the map unit as as unconsolidated to slightly consolidated, undissected to slightly dissected sediments (boulders, cobbles, gravel, sand, and silt) that were deposited where a stream flowed from a confined valley or canyon.
  - Young Eolian and Dune Deposits (Qye) occur at the surface at the project site (RE 2024ooo). CDOC (2012) described the map unit as unconsolidated to slightly consolidated, undissected to slightly dissected wind-blow sands.
- Late to Middle Pleistocene Old Alluvial Fan Deposits (Qof) occur at the surface at, adjacent to, the project site (CDOC 2012; RE 2024ooo). CDOC (2012) described the map unit as as slightly to moderately consolidated, moderately dissected sediments (boulders, cobbles, gravel, sand, and silt) that were deposited where a stream flowed from a confined valley or canyon.

  - Middle to Early Pleistocene Very Old Alluvial Fan Deposits (Qvof) occur at the surface within two miles of the project (CDOC 2012; GSA 2022). CDOC (2012) described the map unit as moderately to well-consolidated, highly dissected sediments (boulders, cobbles, gravel, sand, and silt) that were deposited where a stream flowed from a confined valley or canyon.

- Tertiary[4] coarse-grained sedimentary rocks (Tss) occur at the surface within two miles of the project (CDOC 2012; GSA 2022). CDOC (2012) described the map unit as an undifferentiated grouping of sedimentary rock formations, mostly sandstone and conglomerate.
- Tertiary volcanic rocks (Tv) occur at the surface within two miles of the project (CDOC 2012). CDOC (2012) described the map unit as an undifferentiated grouping of volcanic rocks.
- Mesozoic[5], and older, granite and other instrusive igneous rocks of all ages (gr) occur at the surface within two miles of the project (CDOC 2012; RE 2024ooo).
- Cretaceous[6] and Pre-Cretaceous (≥ 145 Ma) metamorphic rock formations of sedimentary and volcanic origin (pKm) occur at the surface within two miles of the project (CDOC 2012; GSA 2022).

At the proposed project site, the known geologic map units at the surface are mostly Late Holocene, Holocene to Late Pleistocene (young), and Late to Middle Pleistocene (old) Alluvial Fan Deposits. Holocene to Late Pleistocene Young Eolian and Dune Deposits also occur at the project site.

Subsurface Soils

The applicant submitted a preliminary site-specific geotechnical investigation that Diaz Yourman & Associates (DYA) completed in 2010 for a previous version of the proposed project. The purpose of the geotechnical investigation was to evaluate shallow soil and Quaternary surficial deposits and make preliminary facility design recommendations to mitigate potential geologic hazards. DYA completed 16 borings. Six borings were south of I-15 and are within the current proposed project site. Ten borings were north of I-15 and are not in the current proposed project site (RE 2025uuu).

Borings DYB10-06 and DYB10-10 through DYB10-12 were conducted, from north to south, along Arrowhead Trail. Borings DYB10-13 and DYB10-14 were conducted along

4 The Tertiary period began 66.0 Ma and ended 2.58 Ma.
5 The Mesozoic period began 251.9 Ma and ended 66.0 Ma (GSA 2022).
6 The Cretaceous epoch began 145.0 Ma ended 66.0 Ma

Rasor Road, from east to west, in the southeastern area of the current proposed project site (RE 2025uuu).

DYB10-06 was drilled to a depth of 18.5 feet (ft) below ground surface (bgs). The predominant soil type was poorly graded sand with silt and gravel. At 5 ft bgs, in-situ permeability was measured at 0.3 inches per hour (in/hr). DYB10-10 was drilled to a depth of 18.5 ft bgs. The predominant soil type was well graded sand with silt and gravel. Down-hole seismicity testing was performed at the bottom of this boring. DYB10-11 was drilled to a depth of 19.5 ft bgs. The predominant soil type was poorly graded sand with silt and gravel. At 5ft bgs, in-situ permeability was measured at 0.8 in/hr. DYB10-12 was drilled to a depth of 20.5 ft bgs. The predominant soil type was poorly graded sand with silt and gravel. Down-hole seismicity testing was performed at the bottom of this boring (RE 2025uuu).

DYB10-13 was drilled to a depth of 19.5 ft bgs. The predominant soil type was silty sand with gravel. In-hole permeability testing was performed in this boring. DYB10-14 was drilled to a depth of 100.5 ft bgs. The predominant soil type was poorly graded sand with silt (RE 2025uuu).

The applicant submitted a groundwater well test report that Panorama Environmental completed in 2014 for a previous version of the proposed project. In 2014, about 1.5 miles to 2 miles north of the current proposed project site, the groundwater well test drilled two wells to depths of 555 ft bgs. At approximate depths of 0 ft to 200 ft bgs, the test observed sand and gravel alluvium. At approximate depths of 200 ft to 350 ft bgs and 230 ft and 360 ft bgs, the wells observed clay. At approximate depths of 360 ft to 400 ft bgs, the wells observed clayey sands transitioning with depth to well-graded sands. At approximate depths of 400 ft bgs to 505 ft bgs, the wells observed groundwater in alluvial sands. At approximate depths of 505 ft bgs, the wells encountered granitic bedrock (RE 2025aaaa).

Faulting and Seismicity

The Soda Mountains and San Bernardino County are in a tectonic plate boundary containing many Holocene-active faults that produce high-magnitude earthquakes. Modeling predicts there is a 93 percent chance of a magnitude (M) ≥ 6.7 earthquake in the Southern California region, which includes San Bernardino County, during 2014 to 2043 (USGS 2015). The potential for seismic hazards to impact a project depends on the proximity to, and length of, nearby Holocene-active and potentially active faults, local geologic and topographic conditions, and earthquake magnitudes. Potential seismic hazards include ground rupture along fault traces, strong ground motion, seismically induced ground failure, including liquefaction, and landslides (CBC 2022).

In accordance with the 1972 Alquist-Priolo Earthquake Fault Zone Act and 1990 Seismic Hazards Mapping Act, the California Geological Survey (CGS) delineates Zones of Required Investigation to reduce human and property losses from fault rupture,

liquefaction, and earthquake-induced landslides (CDOC 2008, 2018, 2024). To mitigate fault rupture, the CGS delineates Earthquake Fault Zones to prevent the construction of buildings for human occupancy on Holocene-active faults and fault zones. Earthquake Fault Zones are regulatory boundary zones surrounding well defined Holocene-active faults or fault zones. Holocene-active faults are those that have ruptured in the past 11,700 years (CDOC 2018).

The CGS also delineates Pre-Holocene faults. Pre-Holocene faults show evidence of rupture in the past 1.6 million years, but do not show evidence of rupture in the past 11,700 years. Evidence that Pre-Holocene faults may rupture in the future should be considered (CDOC 2018). For the evaluation in this section, Pre-Holocene faults showing evidence of rupture in the past 1.6 million years are termed "potentially active".

According to the CGS Earthquake Zones of Required Investigation online mapping application, the CGS has not evaluated the 7.5' topographic quadrangle containing the proposed project for Zones of Required Investigation, including for Earthquake Fault Zones for fault rupture. Adjacent topographic quadrangles are also unevaluated (CDOC 2024).

According to the United States Geological Survey (USGS) Quaternary Fault and Fold Database of the United States and the CGS Fault Activity Map of California, there are no Holocene-active or potentially active faults intersecting the project site. Table 5.6-1 lists many Holocene-active and potentially active faults that exist within 25 miles of the project (USGS 2017; CDOC 2022).

There are several significant Holocene-active fault zones within 25 miles of the project. The closest Holocene-active fault to the project is the NW-striking Red Pass fault, which is about two to three miles west of the project. The Manix fault is about 12 miles southwest of the project. The Mule Springs fault, a segment of the Garlock fault zone, is about 18 miles north of the project (USGS 2017; CDOC 2022).

The closest potentially active fault to the project is the NNW-striking Baker fault, which is two to three miles north and east of the project. Segments of the Baker fault are concealed under Quaternary sedimentary deposits. A NNW-striking segment of the Baker fault is about three miles north of the northern project boundary. The fault segment may extend further south toward the project under Quaternary sedimentary deposits. As listed in Table 5.6-1, there are other potentially active faults within 25 miles of the project site, including many that are unnamed (USGS 2017; CDOC 2022).

TABLE 5.6-1 QUATERNARY FAULTS WITHIN 25 MILES TO THE PROJECT SITE

Fault or Fault Zone Name	Status	Approximate Distance from the Project Site
Red Pass fault	Holocene-active	2 to 3 miles west
Baker fault	Potentially active	3 to 4 miles north and east

Fault or Fault Zone Name	Status	Approximate Distance from the Project Site
Unnamed NE-SW striking fault in Cronise Valley	Potentially active	4 miles southwest
Soda Mountain fault	Potentially active	5 miles northwest
Unnamed NNW-SSE striking fault west of Red Pass fault	Potentially active	11 miles northwest
Manix fault	Holocene-active	12 miles southwest
Ludlow fault	Potentially active	11 miles southwest
Tiefort Mountains fault zone	Potentially active	17 miles northwest
Unnamed faults in Cady Mountains Wilderness study area	Potentially active	15 to 17 miles southwest
Coyote Lake fault	Potentially active	18 miles west
Mule Springs fault, Garlock fault zone	Holocene-active	18 miles north
Bitter Springs fault	Potentially active	19 miles west-northwest
Bicycle Lake fault zone	Potentially active	20 miles west-northwest
Cady fault	Potentially active	20 miles southwest
Granite Mountains fault zone	Potentially active	21 miles northwest
Garlic Spring fault	Potentially active	25 miles west-northwest

Sources: USGS 2017 and CDOC 2022

Strong Ground Motion

The intensity of ground motion depends upon the magnitude of an earthquake, the distance from the epicenter, and the geology between the epicenter and the project site. In softer materials, such as unconsolidated soil, ground motion is likely to amplify because the seismic wave velocity decreases and the wave amplitude increases. In comparison, in harder materials, such as bedrock, ground motion may lessen because seismic wave velocity increases, wave amplitude decreases, and ground shaking intensity decreases.

Numerous Holocene-active faults in San Bernardino County and the Southern California Region, have ruptured in the recent past and will produce significant earthquakes again. Earthquake rupture forecast modeling predicts, between 2014 and 2043, probabilities of 100 percent for a M ≥ 6.0 earthquake, 93 percent for a M ≥ 6.7 earthquake, 75 percent for a M ≥ 7.0 earthquake, and 36 percent for a ≥ M 7.5 earthquake (USGS 2015).

CGS Map Sheet 48: Earthquake Shaking Potential for California shows the level of shaking with a 2 percent probability of being exceeded in 50 years, which is equivalent to a 2,475-year average recurrence interval (CDOC 2025c). CDOC (2025c) predicts very strong to violent shaking may impact eastern San Bernardino County, including the project site. Very strong shaking, defined as a Modified Mercalli Intensity (MMI) 7, potentially damages buildings, depending on the type and quality of construction. Violent shaking, defined as MMI 9, cracks, tilts, and shifts buildings off their foundations, cracks the ground, and breaks underground pipes (CDOC 2025c).

As evaluated in **Section 4.2, Facility Reliability**, the project site is in area that is classified as seismic design category D. The approximate range of peak ground acceleration (PGA) with a 2 percent probability of occurring in the next 50 years is 0.30 units of gravity (g) to 0.40 g for the southern project site and 0.20 g to 0.40 g for the northern project site. An earthquake on the Red Pass fault, the closest Holocene-active fault to the project, could produce a PGA of 0.50 g (RE 2024ooo).

Liquefaction and Lateral Spreading

Liquefaction is a geologic hazard that causes potentially damaging ground deformation. Liquefaction is a phenomenon in which dynamic forces, such as intense and prolonged ground shaking, cause saturated and cohesionless soils, such as sand, silt, and gravel, to temporarily lose their strength and act as a fluid. Liquefaction depends on the depth to water, grain size distribution, relative soil density, degree of saturation, and intensity and duration of the earthquake. Soils most susceptible to liquefaction are loose, uniformly graded, saturated, fine-grained sands that lie close to the ground surface (Youd and Idriss 2001).

The term liquefaction is typically used to describe materials that spread vertically. Lateral spreading is a type of liquefaction in which liquefied materials spread horizontally toward a free face (Youd and Idriss 2001).

According to the CGS Earthquake Zones of Required Investigation online mapping application, the 7.5' topographic quadrangle containing the project has not been evaluated for Zones of Required Investigation, including liquefaction. Adjacent topographic quadrangles are also unevaluated (CDOC 2024).

In 2010, DYA completed a preliminary site-specific geotechnical investigation for a previous version of the proposed project. In August and September 2010, the geotechnical investigation did not encounter groundwater in the 16 borings they excavated. Fifteen borings were drilled to a depth of about 20 ft bgs. One boring was drilled to a depth of about 100 ft bgs (RE 2025uuu).

In 2011, Terra Physics completed a site-specific geophysical investigation for a previous version of the proposed project. The geophysical investigation collected data in August and September 2010 and did not observe evidence of groundwater shallower than 386 ft bgs (RE 2025zzz).

In 2014, Panorama Environmental completed a well test report for a previous version of the proposed project. In October 2014, the groundwater well test measured the depth to groundwater at an observation well about 1.5 miles to 2 miles north of the current proposed project footprint. The well test observed the depth to groundwater at about 425 ft to 438 ft bgs, which was more than 200 ft deeper than assumed in a groundwater model of the alluvial aquifer (RE 2025zzz).

Landslides

Mass wasting, including landslides or slope creep, is a mass of rock, soil, or debris that slides, flows, or falls downslope. Slope creep is a slow-moving type of mass wasting that occurs when plastic soils, such as clays, shrink and swell with seasonal changes in saturation.

The potential for naturally occurring landslides or slope creep depends on the shear strength of soil and rock in natural and cut slopes, saturation, and the occurrence of triggering events, such as seismic shaking or intense precipitation. Shear strength of slopes decreases if soil and rock are saturated. Seismic shaking and saturation, such as intense precipitation, can also trigger landslides.

According to the CGS Earthquake Zones of Required Investigation online mapping application, the 7.5' topographic quadrangle containing the project has not been evaluated for Zones of Required Investigation, including for landslides. Adjacent topographic quadrangles are also unevaluated (CDOC 2024).

According to the CGS Landslide Maps and Reports online mapping application, the CGS has not evaluated the 7.5' topographic quadrangle containing the project for landslides. Adjacent topographic quadrangles are also unevaluated (CDOC 2025b).

The CGS Map Sheet 58: Deep-Seated Landslide Susceptibility online mapping application classifies the landslide susceptibility of areas, from class 0 to 10 for low to high. The landslide susceptibility ratings are based on rock strength and slope steepness. Most of the project is underlain by relatively flat Quaternary sedimentary deposits, which are rated class 0 and are not susceptible to landslides. In the southern and eastern areas of the project, there are slopes that are rated class 3 to 9 and are moderately to highly susceptible to landslides. Beyond the project's western, southern, and eastern borders, slopes are also rated as moderately to highly susceptible to landslides (CDOC 2011).

Soil Erosion

Grading natural and artificial and slopes, and constructing and operating new structures, may alter existing natural flow pathways and increase the potential for water and wind to erode soils, alluvium, and rock. The impact of a project on erosion depends on the erodibility of subsurface materials, grading, construction, and operation methods, and schedule.

The project is sited on eastward sloping Late Holocene and Holocene to Late Pleistocene alluvial fan deposits. The alluvial fans drain the Soda Mountains, which are west of the project. Late to Middle Pleistocene alluvial fan deposits occur near the project's margins. At the project site, streamflow through alluvial fans is ephemeral and typically consolidates in existing natural channels, known as washes (RE 2024ooo). See **Section 5.16, Water Resources** for more information.

Alluvial fan soils are sand- and gravel-rich and are excessively drained to well-drained. Intermediate-age alluvial fans have surfaces of desert pavement. Desert pavement is a phenomenon in arid environments where a surficial layer of closely fitted rock fragments overlies finer silt and sand. Desert pavement is relatively resistant to soil erosion (RE 2024ooo).

Initial hydrologic and hydraulic modeling results concluded that, during a 100-year storm event, stormwater flowing through the project site would be mostly slow, less than 4 ft per second, and shallow, less than 1.5 ft deep. In some project areas, the results showed that flow velocities could reach 3 ft per second through 6 ft per second, depending on the design storm, with depths rarely exceeding 2 ft. These flow velocities and depths are mostly non-erosive (RE 2025jjjj).

Subsidence

Subsidence is the gradual settling of the ground surface in response to the movement of material belowground. Natural processes that may cause subsidence include soil compaction, sinkhole formation, and earthquakes. Artificial activities that may cause subsidence include removal or addition of material belowground, such as groundwater pumping, hydraulic fracturing, oil extraction, and mining. The project proposes pumping groundwater from five on-site groundwater supply wells (RE 2025ddd).

The proposed project is in the Soda Mountain subbasin of the Soda Lake Valley groundwater basin. According to the USGS (2018) Areas of Land Subsidence in California online mapping application, the project site is not a location where artificial subsidence has occurred or is occurring. See **Section 5.16, Water Resources** for more information.

The applicant submitted a water supply report that Rincon Consultants completed in 2025 for the proposed project. The water supply report estimated that during construction and decommissioning, the project would pump 319 acre-feet (AF) of groundwater per year. During operation for 40 years, the project would pump 5.6 AF of groundwater per year. The project expects to pump 862 AF of groundwater over the lifetime of the project. The Soda Mountain subbasin's safe yield is calculated at 357 AF per year (AFY) (RE 2025ddd).

Geologic and Mineral Resources of Recreational, Commercial, and Scientific Value

In the context of the California Environmental Quality Act (CEQA), mineral resources are land areas or deposits deemed significant by the California Department of Conservation (CDOC). A mineral resource is a concentration of natural inorganic materials or fossilized organic material occurring in such form, quantity, or quality that there are reasonable prospects for economic extraction. Inorganic mineral resources include non-fuel materials such as aggregate (sand and gravel), metals (gold, silver, and iron), and

industrial minerals (clays, limestone, and gypsum). Petroleum resources include fuel materials such as coal, crude oil, and natural gas.

Extraction of these resources significantly contributes to San Bernardino County's economy. Several issues influence the extraction of mineral resources in San Bernardino County, including the location of the mineral resource, commercial value, potential impacts to the environment, and land use conflicts. Actively mined mineral resources in San Bernardino County are aggregates (gravel, sand, and silt), decorative rock, feldspar, iron ore, limestone, gold, gypsum, rare earth elements, salt, silica, silver, talc, and volcanic cinders (CDOC 2016). Actively mined petroleum resources in the county include oil and natural gas deposits (CDOC 2025a).

According to the CGS Information Warehouse: Mineral Land Classification Maps (SMARA Study Areas) online mapping application, the CGS has not completed Mineral Resources Zones mapping for the project's location in San Bernardino County (CDOC 2019).

According to the CDOC Division of Mine Reclamation's list of mines, referred to as the AB 3098 List and regulated under the Surface Mining and Reclamation Act (SMARA), there are about fifty active or potentially active mines in San Bernardino County (CDOC 2025d). According to the CDOC Division of Mine Reclamation's Mines Online mapping application, there are seven active or potentially active mines within 25 miles of the project. Five mines are open pits and extract decorative rock, iron ore, sand and gravel, and talc. There are two mines, one open pit and one quarry, that extract volcanic cinders. The closest active mine to the project is an open pit mine about eight miles northeast of the project (CDOC 2016). According to the USGS Mineral Resources online mapping application, the closest inactive mines to the project are one open pit mine and four prospect pits in the southwestern part of the project site (USGS 2011).

According to the CDOC Geologic Energy Management Division (CalGEM) Well Finder online mapping application, there are no energy production related wells at the project site. There are two wells within 25 miles of the project. There is one idle well about 12 miles southeast of the project. There is one plugged well about 24 miles southwest from the project (CDOC 2025a).

At the project site, the known or interpreted geologic units at the surface and shallow subsurface are Holocene and Pleistocene alluvial fan, eolian, and dune deposits.

Paleontological Resources

Paleontological resources are fossils and fossiliferous deposits consisting of vertebrate fossils, invertebrate fossils, plant, trace fossils and other data. Paleontological resources are typically found in rock formations and Quaternary sedimentary deposits. Paleontological resources are usually, but not always, older than recorded human history (SVP 2010).

Fossils are important scientific and educational resources because of their use in documenting the present and evolutionary history of extant and extinct organisms. Fossils help us understand geologic conditions and events that occurred in the past. For example, fossils provide information on the past marine or terrestrial environment that existed at the time and location in which the organism lived. Fossils help determine the relative ages of the rock formations in which they occur (SVP 2010).

Fossils are considered a nonrenewable scientific resource and are afforded protection under several federal, state, and local plans, policies, and regulations because most of the organisms they represent are extinct (SVP 2010).

Paleontological Potential

The Bureau of Land Management (BLM) and Society for Vertebrate Paleontology (SVP) developed systems for evaluating the potential to encounter paleontological resources in rock formations and Quaternary sedimentary deposits (SVP 2010; BLM 2022). Staff uses both systems to evaluate the paleontological potential of rock formations and Quaternary sedimentary deposits within one (1) mile of the project site.

Bureau of Land Management

The BLM's Potential Fossil Yield Classification (PFYC) System for Paleontological Resources on Public Lands is a BLM-wide standard for assessing paleontological potential during consideration of land management actions. The PFYC System provides preliminary guidance to determine where further evaluation of potential paleontological resources and impacts may be needed.

The PFYC considers mapped geologic units to evaluate the potential for paleontological resources and potential impacts. The PFYC System uses the following categories: Class 1 – Very Low, Class 2 – Low, Class 3 - Moderate, Class 4 – High, and Class 5 – Very High (BLM 2022). The categories are described in **Table 5.6-2**.

TABLE 5.6-2 BUREAU OF LAND MANAGEMENT: POTENTIAL FOSSIL YIELD CLASSIFICATION SYSTEM

Rating	Definition	Management and Mitigation
Class 1 – Very Low	Geologic units that are not likely to contain recognizable paleontological resources. Units assigned to Class 1 typically have one or more of the following characteristics: • Geologic units are igneous or metamorphic, excluding airfall and reworked volcanic ash units. • Geologic units are Precambrian in age.	An assignment of Class 1 normally does not trigger further analysis unless paleontological resources are known or found to exist. Management concerns for paleontological are usually negligible or not applicable. Paleontological mitigation is unlikely to be necessary except in very rare or isolated circumstances that result in the unanticipated presence of

TABLE 5.6-2 BUREAU OF LAND MANAGEMENT: POTENTIAL FOSSIL YIELD CLASSIFICATION SYSTEM

Rating	Definition	Management and Mitigation
		paleontological resources, such as unmapped geology contained within a mapped geologic unit. Standard stipulations should be put in place prior to authorizing any land use action to accommodate an unanticipated discovery.
Class 2 - Low	Geologic units that are not likely to contain paleontological resources. Units assigned to Class 2 typically have one or more of the following characteristics: • Sediments exhibit significant physical and chemical changes (i.e., diagenetic alteration) that make fossil preservation unlikely. • Units are generally younger than 10,000 years before present. • Geologic units are recent aeolian deposits. • Field surveys have verified that significant paleontological resources are not present or are very rare.	An assignment of Class 2 may not trigger further analysis unless paleontological resources are known or found to exist. Except where paleontological resources are known or found to exist, management concerns are generally low and further assessment is usually unnecessary except in occasional or isolated circumstances. The probability of impacting significant paleontological resources is low. Localities containing important paleontological resources may exist but are occasional and should be managed on a case-by-case basis. Paleontological mitigation is only necessary where paleontological resources are known or found to exist. Standard stipulations should be put in place prior to authorizing any land use action to accommodate unanticipated discoveries.
Class 3 - Moderate	Sedimentary geologic units where fossil content varies in significance, abundance, and predictable occurrence. Units assigned to Class 3 have some of the following characteristics: • They are marine in origin with sporadic known occurrences of paleontological resources. • Common invertebrate or plant fossils may be found in the area, and opportunities may exist for casual collecting.	An assignment of Class 3 includes geologic units of moderate or infrequent occurrence of paleontological resources. Management concerns are moderate because the existence of significant paleontological resources is known to be low. Management considerations cover a broad range of options that may include record searches, pre-disturbance surveys, monitoring, mitigation, or avoidance. Surface-disturbing activities may require assessment by a qualified paleontologist to determine whether significant

TABLE 5.6-2 BUREAU OF LAND MANAGEMENT: POTENTIAL FOSSIL YIELD CLASSIFICATION SYSTEM

Rating	Definition	Management and Mitigation
	• Units may contain significant paleontological resources, but these occurrences are widely scattered. • Paleontological resources may occur intermittently, but abundance is known to be low.	paleontological resources occur in the area of a proposed action, and whether the action could affect the paleontological resources. Paleontological mitigation strategies will be proposed based on the nature of the proposed activity.
Class 4 - High	Geologic units that are known to contain a high occurrence of paleontological resource. Units assigned to Class 4 typically have the following characteristics: • Rare or uncommon fossils, including nonvertebrate (such as soft body preservation) or unusual plant fossils, may be present. • Significant paleontological resources have been documented but may vary in occurrence and predictability. • Surface-disturbing activities may adversely affect paleontological resources. • Illegal collecting activities may impact some areas.	An assignment of Class 4 indicates the likelihood of impacting significant paleontological resources is moderate to high and is dependent on the proposed action. Management concerns are moderate to high, depending on the proposed action. Paleontological mitigation strategies will depend on the nature of the proposed activity, but field assessment by a qualified paleontologist is normally needed to assess local conditions. Mitigation plans must consider the nature of the proposed disturbance, such as removal or penetration of protective surface alluvium or soils, potential for future accelerated erosion, or increased ease of access that could result in looting. Detailed field assessment is normally required, and on-site monitoring or spot checking may be necessary during land-disturbing activities. In some cases, avoidance of known paleontological resources may be necessary.
Class 5 – Very High	Highly fossiliferous geologic units that consistently and predictably produce significant paleontological resources. Units assigned to Class 5 have some or all the following characteristics: • Significant paleontological resources have been documented and occur consistently. • Paleontological resources are highly susceptible to adverse impacts from surface-disturbing activities.	An assignment of Class 5 indicates the likelihood for impacting significant paleontological resources is high. Management concerns for paleontological resources in Class 5 areas are high to very high. A field survey by a qualified paleontologist is almost always needed. Paleontological mitigation may be

TABLE 5.6-2 BUREAU OF LAND MANAGEMENT: POTENTIAL FOSSIL YIELD CLASSIFICATION SYSTEM

Rating	Definition	Management and Mitigation
	• Unit is frequently the focus of illegal collecting activities.	necessary before or during surface-disturbing activities. The area should be assessed prior to land tenure adjustments. Pre-work surveys are usually needed, and on-site monitoring may be necessary during land use activities. Avoidance or resource preservation through controlled access, designation of areas of avoidance, or special management designations should be considered.

Source: BLM 2022

Society of Vertebrate Paleontology

SVPpublished professional standards for assessing the paleontological potential of geologic units and mitigating potential impacts to paleontological resources during ground disturbing activities. Each geologic unit's paleontological potential determines the mitigation needed to reduce potential impacts to paleontological resources during ground disturbing activities (SVP 2010).

SVP paleontological potential considers the potential for a geologic unit to yield abundant or significant vertebrate fossils or to yield a few significant vertebrate, invertebrate, plant, or trace fossils. A geologic unit is assumed to contain fossils of similar quantity and quality to those previously recorded in the unit elsewhere in the region. Therefore, potential fossil yield is inferred from the quality and quantity of fossil specimens at recorded fossil sites in that geologic unit in the region and from recorded sites in similar geologic units in similar geological settings (SVP 2010).

Paleontological potential also considers the importance of recovered fossils for stratigraphic interpretations, age determinations of geologic units, paleoenvironmental and paleoclimatic reconstructions, or for understanding evolutionary histories. SVP standards classify the paleontological potential of geologic units as High, Low, Undetermined, and None (SVP 2010). These categories are described in **Table 5.6-3**.

TABLE 5.6-3 SOCIETY OF VERTEBRATE PALEONTOLOGY DEFINITIONS OF PALEONTOLOGICAL POTENTIAL

Rating	Definition
High	Geologic units from which vertebrate or significant invertebrate, plant, or trace fossils have been recovered are considered to have a high potential for containing additional scientifically important paleontological resources. Geologic units that contain potentially datable organic remains older than late Holocene, including deposits associated with animal nests or middens, and geologic units which may contain new vertebrate deposits, traces, or trackways, are also classified as having High Potential.

TABLE 5.6-3 SOCIETY OF VERTEBRATE PALEONTOLOGY DEFINITIONS OF PALEONTOLOGICAL POTENTIAL

Rating	Definition
Low	Geologic units with low potential are known to produce significant fossils only on rare occasions, and only preserve fossils in rare circumstances such that the presence of fossils is the exception not the rule, for example, basalt flows or recent colluvium.
Undetermined	Geologic units for which little information is available concerning their geologic context (depositional environment, age) and potential to contain paleontological resources are considered to have undetermined potential. The paucity of data is usually from a lack of study in that unit or because of high variability in the unit's lithology. Typically, further study is necessary to determine whether these units have high, low, or no potential to contain scientifically significant paleontological resources. In cases where no subsurface data are available, paleontological potential can sometimes be determined by strategically located excavations into subsurface stratigraphy.
None	Geologic units with no potential are those that formed at high temperatures and pressures, deep within the Earth, such as plutonic igneous rocks, and high-grade metamorphic rocks. Since the environment in which these rocks formed is not conducive to the preservation of biological remains, they do not contain fossils. Manmade fill also is considered to possess no paleontological potential.

Source: SVP 2010

Observed Paleontological Resources

The applicant completed a site-specific paleontological investigation to analyze the paleontological potential of geologic formations at, and near, the project site. The applicant's 2024 paleontological investigation reviewed geologic mapping, geotechnical reports, scientific literature, BLM mapping, museum records, and a 2010 paleontological survey that was completed for an earlier version of the proposed project (RE 2024cccc).

Searches of online museum paleontological databases identified several recorded Pleistocene-age fossils at sites within 5 miles to 11 miles of the proposed project site. Fossils were recorded at the surface down to at least 25 ft bgs. The 2010 paleontological survey identified four fossil sites adjacent to the project site. The fossils included nonsignificant burrow and root casts and unidentified fossilized bone fragments (RE 2024cccc).

The BLM's PFYC online mapping application classifies most surficial Quaternary alluvial fan deposits at the project site as low paleontological potential (PFYC Class 2). Some Quaternary alluvial fan deposits at the project site are classified as unknown paleontological potential (PFYC Class U) (BLM 2023).

The 2024 paleontological investigation completed pedestrian and windshield field surveys to verify available geologic mapping, evaluate known paleontological sites near the proposed project, and check the paleontological potential of geologic formations at the project site. Areas that were previously identified as low paleontological potential (PFYC Class 2) were evaluated with pedestrian and windshield surveys. Pedestrian

surveys evaluated areas that the BLM (2023) identified as unknown paleontological potential (PFYC Class U). The surveys did not observe paleontological resources at the project site (RE 2024cccc).

Regulatory

The project would be required to comply with all applicable federal, state, and local plans, policies, and regulations, and would need to obtain building permits that would be issued by the California Energy Commission (CEC). The issuance of the building permits and oversight provided by the CEC via the CEC's delegate chief building official (DCBO) would confirm that the project complies with the applicable regulatory framework.

Federal Geologic Hazards, Geologic and Mineral Resources

The following federal plans, policies, and regulations related to geologic hazards and geologic and mineral resources apply to the proposed project.

Federal Clean Water Act and California's Porter-Cologne Water Quality Control Act

The State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards (RWQCB) are responsible for the regulation and enforcement of the water quality protection requirements of the federal Clean Water Act (CWA) and the state's Porter-Cologne Water Quality Control Act (Porter-Cologne) (SWRCB 2025).

As required under Section 402 of the CWA and implemented in the Code of Federal Regulations (CFR), Title 40, Chapter I, Subchapter D, Part 127, the National Pollutant Discharge Elimination System (NPDES) is the permitting program that allows point source dischargers to comply with the CWA and Porter-Cologne laws. This regulatory framework protects the beneficial uses of the state's surface and groundwater resources for public benefit and environmental protection. Compliance with applicable NPDES permits from the SWRCB or local RWQCB ensures the proposed project protects water quality (CFR 2019; SWRCB 2025).

As required under Section 404(a) of the CWA and implemented in the CFR, Title 40, Chapter I, Subchapter D, Part 121, the U.S. Army Corp of Engineers is the authority to issue permits for the discharge of fill and dredging material into navigable waters, defined as waters of the United States (CWA Section 502). Under Section 401(a) of the CWA, any applicant of a permit under the CWA must provide a State certification to the Federal permitting agency. In California, the local RWQCB is the Section 401 certifying agency (CFR 2023, SWRCB 2025).

As required under Section 303(d) of the CWA and implemented in the CFR, Title 40, Chapter I, Subchapter D, Part 127, states are required to identify impaired surface water bodies and develop total maximum daily loads (TMDLs) for contaminants of

concern. A TMDL is the quantity of pollutant that can be assimilated by a water body without violating water quality standards. Listing of a water body as impaired does not necessarily suggest that the water body cannot support the beneficial uses. The intent is to identify the water body as requiring future development of a TMDL to maintain water quality and reduce the potential for future water quality degradation (CFR 2017; SWRCB 2025).

U.S. Bureau of Reclamation Engineering Geology Field Manual

The U.S. Bureau of Reclamation (USBR) Engineering Geology Field Manual, Volumes I and II, provide field-oriented geotechnical engineering guidance to USBR staff. The guidance is also recommended for industry practitioners because it emphasizes applying geology to solve engineering problems (USBR 2001ab).

Federal Paleontological Resources

The following federal plans, policies, and regulations related to paleontological resources apply to the proposed project.

Antiquities Act

As described in the CFR, Title 43, Subtitle A, Part 3, the 1906 Antiquities Act requires the U.S. Department of Agriculture, U.S. Department of Defense, and the U.S. Department of the Interior to permit collection of objects of historic and scientific interest on federal lands. Collections must be stored in public museums. The U.S. Department of the Interior permits collecting on federally owned lands that are not managed by the U.S. Department of Agriculture or the U.S. Department of Defense (CFR 2024).

Paleontological Resources Preservation Act

As regulated in the CFR, Title 43, Subtitle A, Part 49, the 2009 Paleontological Resources Preservation Act requires the U.S. Department of the Interior to permit collection of paleontological resources on federal land. Bureaus must develop plans and procedures to inventory and monitor paleontological resources on federal land. Bureaus are required to preserve, manage, and protect paleontological resources that are collected on federal land. Bureaus may transfer ownership or administration of paleontological resources to federal or non-federal educational institutions (CFR 2022).

BLM Permanent Instruction Memorandum (PIM) 2022-009 implements the above regulations for federal land the BLM manages. PIM 2022-009 established a single paleontological permit and application process, a BLM-wide standard for releasing paleontological locality data, and clarified common collection. PIM 2022-009 states the BLM's PFYC System will be used for assessing paleontological potential on federal land owned that the BLM manages (BLM 2022).

State Geologic Hazards

The following state plans, policies, and regulations related to geologic hazards and resources apply, or may apply, to the proposed project.

Alquist Priolo Earthquake Fault Zoning Act

The 1972 Alquist-Priolo Earthquake Fault Zone Act, found in California Public Resources Code (CPRC), Division 2, Chapter 7.5, requires the CGS to delineate Earthquake Fault Zones to prevent the construction of buildings for human occupancy on active faults. Earthquake Fault Zones are regulatory boundary zones surrounding well defined Holocene-active faults or fault segments (CDOC 2018; CPRC 2024).

The Alquist-Priolo Earthquake Fault Zone Act recognizes three types of faults. Holocene-active faults are those that have ruptured in the Holocene Epoch, or the past 11,700 years. Pre-Holocene faults are those that have not ruptured in the past 11,700 years and not regulated under the Alquist-Priolo Earthquake Fault Zone Act. Evidence that Pre-Holocene faults may rupture in the future should be considered. Age-undetermined faults are those in which the most recent rupture is unknown. The Alquist-Priolo Earthquake Fault Zone Act considers age-undetermined faults as Holocene-active faults, until proven otherwise (CDOC 2018; CPRC 2024).

California Building Code

The 2022 California Building Code (CBC), California Code of Regulations (CCR), Title 24, Part 2, prescribes standards for constructing safer buildings and contains provisions for earthquake safety based on factors including occupancy type, soil and rock profile, ground strength, and distance to seismic sources (CBC 2022).

The 2022 CBC, Section 1803 requires that a geotechnical and geohazard report be prepared for most development projects to evaluate seismic and geologic conditions, such as surface fault ruptures, ground shaking, liquefaction, differential settlement, lateral spreading, expansive soils, and slope stability. These reports help determine the final grading, engineering, and building designs for the project. The CBC is updated every three years, with the 2022 CBC effective on January 1, 2023 and updated with a July 2024 Supplement (CBC 2022).

Seismic Hazards Mapping Act

The 1990 Seismic Hazards Mapping Act, found in the PRC, Division 2, Chapter 7.8, requires the CGS to publish maps identifying Zones of Required Investigation that are subject to the effects of strong ground shaking, such as liquefaction, landslides, tsunamis, and seiches. The Seismic Hazards Act requires a geotechnical report be prepared that defines and delineates any seismic hazard prior to approval of a project in a seismic hazard zone (CDOC 2008; CPRC 2017).

State Geologic, Mineral, and Paleontological Resources

Paleontological Resources

The following state plans, policies, and regulations related to paleontological resources may apply to the proposed project.

The CPRC, Section 5097.5, found in Division 5, Chapter 1.7, prohibits the unpermitted removal or damage to any paleontological site or feature from land that is under the jurisdiction of the state, or any city, county, district, authority, or public corporation, or any agency thereof (CPRC 2011).

The CEQA lead agency having jurisdiction over a project is responsible for ensuring that paleontological resources are protected in compliance with CEQA and other applicable statutes. The CEC is the lead agency with the responsibility to ensure that fossils are protected during project construction and operation (CPRC 2025).

CPRC Section 21081.6, found in Division 13, Chapter 2.6, requires that the CEQA lead agency demonstrate project compliance with mitigation measures developed during the environmental impact review process (CPRC 1994).

Surface Mining and Reclamation Act

The 1975 Surface Mining and Reclamation Act (SMARA), found in the CPRC, Division 2, Chapter 9, provides a comprehensive surface mining and reclamation policy for the regulation of surface mining operations to assure that adverse environmental impacts are minimized and mined lands are reclaimed to a usable condition. The SMARA also encourages the production, conservation, and protection of the State's mineral resources. County governments enact ordinances to implement the SMARA at the local level and hold reclamation financial assurances (CPRC 2022).

The CPRC, Division 2, Chapter 9, Article 4 requires that the State Geologist classify land into areas of statewide or regional significance (CPRC 2022). To implement Article 4, the State Geologist classifies mineral lands into Mineral Resource Zones (MRZs). MRZs are defined as the following (CDOC 2000):

- MRZ-1: Areas where adequate geologic information indicates that no significant mineral deposits are present, or where it is judged that little likelihood for their presence exists (CDOC 2000).
- MRZ-2a: Areas underlain by mineral deposits where geologic data show that significant measured or indicated resources are present. Areas classified MRZ-2a contain discovered mineral deposits that are either measured or indicated reserves as determined by such evidence as drilling records, sample analysis, surface exposure, and mine information. Land included in the MRZ-2a category is of prime importance because it contains known economic mineral deposits (CDOC 2000).

- MRZ-2b: Areas underlain by mineral deposits where geologic information indicates that significant inferred resources are present. Areas classified MRZ-2b contain discovered deposits that are either inferred reserves or deposits that are presently sub-economic as determined by limited sample analysis, exposure, and past mining history. Further exploration work and/or changes in technology or economics could result in upgrading areas classified MRZ-2b to MRZ-2a (CDOC 2000).
- MRZ-3a: Areas containing known mineral deposits that may qualify as mineral resources. Further exploration work within these areas could result in the reclassification of specific localities into the MRZ-2a or MRZ-2b categories. MRZ-3a areas are considered to have a moderate potential for the discovery of economic mineral deposits (CDOC 2000).
- MRZ-3b: Areas containing inferred mineral deposits that may qualify as mineral resources. Land classified MRZ-3b represents areas in geologic settings which appear to be favorable environments for the occurrence of specific mineral deposits. Further exploration work could result in the reclassification of all or part of these areas into the MRZ-3a category or specific localities into the MRZ-2a or MRZ-2b categories. MRZ-3b is applied to land where geologic evidence leads to the conclusion that it is plausible that economic mineral deposits are present (CDOC 2000).
- MRZ-4: Areas where geologic information does not rule out either the presence or absence of mineral resources. The distinction between the MRZ-1 and MRZ-4 categories is important for land-use considerations. It must be emphasized that MRZ-4 classification does not imply that there is little likelihood for the presence of mineral resources, but rather there is a lack of knowledge regarding mineral occurrence. Further exploration work could well result in the reclassification of land in MRZ-4 areas to MRZ-3 or MRZ-2 categories (CDOC 2000).

Local Geologic Hazards

Numerous active and potentially active faults in, and near, San Bernardino can produce high-magnitude earthquakes and moderate-to-severe ground shaking throughout the county. Geologic hazards associated with seismicity include surface rupture, ground shaking, ground failure, slope instability, subsidence, and liquefaction (San Bernardino County 2022b).

The following local plans, policies, and regulations related to geologic hazards apply, or may apply, to the proposed project.

San Bernardino County Policy Plan

The San Bernardino County Policy Plan (County Policy Plan) contains some of the San Bernardino County Board of Supervisors' statements for principles, goals, and policies to protect the county from geologic, seismic, soil erosion, and wastewater hazards. In the Built Environment Section, the Land Use (LU) Element may contain a relevant goal and

policy related to minimizing geologic hazards. Goal LU-4 is to preserve and enhance unique community identities and their relationship with the natural environment. Policy LU-4.4 requires new development in the Mountain region to retain natural topography and minimize grading (San Bernardino County 2022a).

In the Built Environment Section, the Infrastructure and Utilities (IU) Element contains relevant goals and policies related to soil erosion and wastewater treatment. Goal IU-2 is to provide residents and businesses in unincorporated areas with safe and sanitary wastewater collection, treatment, and disposal systems. Policy IU-2.1 may require sewer service for lots exceeding 0.5 acres, depending on local conditions (San Bernardino County 2022a).

Goal IU-3 is to provide unincorporated areas with stormwater drainage and local stormwater facilities to reduce flooding risk. Policy IU-3.1 states the county will maintain, evaluate, and upgrade a regional flood control system. The policy requires new private projects to "address and mitigate any adverse impacts on the carrying capacity and stormwater velocity of regional stormwater drainage systems". Policy IU-3.2 requires new construction to construct and maintain facilities that manage stormwater while maintaining hydrologic and hydraulic conditions that existed prior to development (San Bernardino County 2022a).

In the Resources and Conservation Section, the Natural Resources (NR) Element contains a relevant goal and policies related to soil erosion and wastewater treatment. Goal NR-2 is to provide clean and safe water for "human consumption and the natural environment". Policy NR-2.1 states the county collaborates with government agencies, watermasters, and water purveyors at all levels. Policy NR-2.4 states the county requires developments to implement federal and state federal and state water quality standards for wastewater discharge requirements. Policy NR-2.5 requires new developments to comply with the county's Municipal Stormwater NPDES Permit through site design, source controls, stormwater treatment, runoff reduction measures, best management practices, low impact development strategies, and technological advances (San Bernardino County 2022a).

Goal NR-3 is to maintain parks, trails, and open spaces to preserve the natural environment. Policy NR-3.1 states the county will regulate land use to preserve open space areas as buffers against natural hazards (San Bernardino County 2022a).

In the Safety and Security Section, the Hazards (HZ) Element contains a relevant goal and relevant policies to minimize geologic, seismic, and soil erosion hazards. Goal HZ-1 is to minimize the impact that natural hazards have on people, property, and economic and social activity. Policy HZ-1.2 requires new development to be sited outside of flood, geologic, and fire hazard areas. Projects that cannot be sited outside of hazard areas are required to have adequate mitigation. Policy HZ-1.6 requires the siting of new critical and essential facilities outside of hazard areas, when feasible. Policy HZ-1.7 requires underground utilities be designed to mitigate seismic shaking and ground

settlement. Policy HZ-1.8 requires new development in medium-high or high wind erosion hazard areas to mitigate wind erosion through appropriate design and construction methods. Policy HZ-1.12 requires compliance with the goals, objectives, and actions in the Multi-Jurisdictional Hazard Mitigation Plan (San Bernardino 2022a).

San Bernardino County Multi-Jurisdictional Hazard Plan

In addition to the County Policy Plan, the San Bernardino County Multi-Jurisdictional Hazard Plan contains the Board of Supervisors' statements for goals, objectives, and actions to protect the county from geologic, seismic, and soil erosion hazards (San Bernardino County 2022ab).

The Earthquake Goal is to "minimize exposure to structural and contents damage" from seismic shaking. Earthquake Objective 1 is to educate the public on methods for reducing earthquake risk. Earthquake Action 1.1 is to improve education and training for the public regarding earthquake risk. Earthquake Objective 2 is to protect people and structures from surface ground rupture during earthquakes. Earthquake Action 2.2 is to complete seismic strapping for existing water tanks and water tanks in future developments. Earthquake Objective 3 is to continue mapping geologic hazards. Earthquake Action 3.1 is to map liquefaction hazard areas outside of the county's existing geologic hazard overlay districts (San Bernardino County 2022b).

Earthquake Objective 4 is to protect people and property from poor soil conditions, expansive soils, and seismically induced, and non-seismically induced, landslides. Earthquake Action 4.1 requires development on hillside to minimize soil erosion and changes to natural hillslopes. Earthquake Objective 6 is to continue the county's Special Districts Projects relating to earthquake hazards. Earthquake Action 6.1 is to continue funding and support for the Special District Projects program, related to earthquake hazards and water supply and wastewater treatment infrastructure (San Bernardino County 2022b).

Flood Objective 2 directs the county to evaluate findings from its Alluvial Fan Task Force. Flood Action 3.4 is to stabilize soils on road shoulders and dirt roads to prevent soil erosion during flood conditions (San Bernardino County 2022b).

San Bernardino County Code of Ordinances

Title 3, Division 5 of the San Bernardino County Code of Ordinances establishes requirements to control non-stormwater discharges to stormwater conveyance systems and reduce pollutants in stormwater discharges. Division 5 includes requirements for construction to comply with NPDES permits issued by the United States Environmental Protection Agency, SWRCB, or local RWQCB (San Bernardino County 2025).

Title 6, Division 3, Chapter 1 of San Bernardino County Code of Ordinances adopts and amends the 2021 International Building Code and 2022 California Building Code (IBC 2021; CBC 2022; San Bernardino County 2025). Chapter 1 requires new construction

projects to mitigate potential impacts from geologic hazards (San Bernardino County 2025).

Title 8, Division 8 of the San Bernardino County Code of Ordinances establishes requirements for geologic hazard investigations and mitigation of soil erosion. Chapter 82.15 requires geotechnical investigations for specific areas in the county where geologic hazards may occur. Chapter 88.02 requires construction of new development to minimize soil erosion (San Bernardino 2025).

Local Geologic, Mineral, and Paleontological Resources

San Bernardino County Policy Plan

The County Policy Plan contains principles, goals, and policies regarding geologic resources of commercial, recreational, and scientific value, mineral resources, and paleontological resources. In the Resources and Conservation Section, the Natural Resources (NR) Element contains relevant goals and policy related to protecting geologic, mineral, and paleontological resources. Goal NR-3 is to maintain parks, trails, and open spaces for recreation and to preserve the natural environment. Policy NR-3.1 states the county will regulate land use to preserve open areas that protect natural resources. Policy NR-3.3 states the county will coordinate with non-governmental agencies to sustainably manage and conserve land adjacent to federally designated open space or resource conservation areas (San Bernardino 2022a).

Goal NR-6.1 is to support economically important mining operations while minimizing negative impacts on people and the natural environment. Policy NR-6.1 prioritizes land conservation to preserve areas classified as MRZ-2a, MRZ-2b, or MRZ-3a for potential future mining development. Policy NR-6.2 states the county implements SMARA's mining, monitoring, and mine reclamation requirements. Policy NR-6.3 encourages continued operating aggregate mining and streamlined permitting for new aggregate mining to ensure the county has sufficient supply for 50 years of demand (San Bernardino County 2022a).

In the Safety and Security Section, the Hazards Element contains a relevant goal and policy related to managing legacy abandoned mines. Goal HZ-2 is to protect people and the environment from exposure to hazardous materials and human-generated hazards. Policy HZ-2.11 states the county inventories abandoned mines and requires property owners to eliminate abandoned mine hazards that may threaten people or contaminate the environment (San Bernardino County 2022a).

In the Resources and Conservation Section, the Cultural Resources (CR) Element contains a relevant goal and policy related to protecting paleontological resources. Goal CR-2 is to protect and preserve paleontological resources for their cultural importance and educational potential. Policy CR-2.3 requires new development to avoid or mitigate potential impacts to paleontological resources (San Bernardino County 2022a).

San Bernardino County Code of Ordinances

Title 8, Division 8 of the San Bernardino County Code of Ordinances establishes requirements for operation and reclamation of surface mines and protection of paleontological resources. Chapter 88.17 establishes requirements for surface mine operation and reclamation to minimize conflicts with incompatible land uses. Chapter 88.03 regulates surface mining and reclamation in compliance with SMARA and protects mineral resources for ongoing and future use. Chapter 88.20 establishes criteria for new developments to evaluate and mitigate potential impacts to paleontological resources (San Bernardino 2025).

Professional Standards

The following professional standards apply to this project.

Paleontological Resources

Society of Vertebrate Paleontology (SVP), an international organization of professional paleontologists, has established guidelines and standard procedures that outline acceptable professional practices in the conduct of paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, and specimen preparation, identification, analysis, and curation (SVP 2010).

Cumulative

Cumulative projects are identified as past, current, or reasonably foreseeable future projects that, when viewed in connection with the proposed project, cause its effect(s) on geology, paleontology, and minerals to be potentially significant. A master list of cumulative projects located within San Bernardino County is provided in **Appendix A**, **Table A-1.**

The cumulative project setting for geology, paleontology, and minerals includes all projects which may expose people or property to geologic hazards or destroy geologic, mineral, and paleontological resources of commercial, scientific, or recreational value. A project may have these potential impacts if it includes construction, excavation of native materials, groundwater pumping, or fossil fuel production.

5.6.2 Environmental Impacts and Mitigation

Consistent with CEQA Guidelines Section 15126.2, an agency's environmental analysis shall focus on the significant effects of the proposed project on the environment. An agency is not required to analyze the impact of existing environmental conditions on a project or its future users unless a proposed project might cause or risk exacerbating

environmental hazards or conditions that already exist7 (Cal. Code Regs., tit. 14, § 15126.2).

For purposes of assessing geological hazards and consistent with CEQA Guidelines Section 15126.2, staff identified existing geological hazards and then assessed whether the project would cause or exacerbate an existing geological hazard causing a significant environmental impact (Cal. Code Regs., tit. 14, § 15126.2.). Even though the project would not exacerbate existing geological hazards, and thus there is no significant impact under CEQA, COCs are included to ensure the project's design, grading, construction, and operation are consistent with applicable plans, policies, and regulations to protect human life, property, and grid reliability.

GEOLOGY, PALEONTOLOGY, AND MINERALS Would the project:	**Significant and Unavoidable Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☒	☐	☐
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☒	☐	☐
ii. Strong seismic ground shaking?	☐	☒	☐	☐
iii. Seismic-related ground failure, including liquefaction?	☐	☒	☐	☐
iv. Landslides?	☐	☒	☐	☐
b. Result in substantial soil erosion or the loss of topsoil?	☐	☒	☐	☐
c. Be located on geologic units or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☒	☐	☐

7 *California Bldg. Indus. Assn. v. Bay Area Air Quality Mgmt. Dist.* (2015) 62 Cal. 4th 369.

GEOLOGY, PALEONTOLOGY, AND MINERALS Would the project:	**Significant and Unavoidable Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
d. Be on expansive soil, as defined in Section 1803.5.3 of the California Building Code (2022), creating substantial direct or indirect risks to life or property?*	☐	☒	☐	☐
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of waste water?	☐	☒	☐	☐
f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐
g. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?	☐	☐	☒	☐
h. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☒	☐

Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix G, geology and soils and minerals (CCR 2018). *****Geology and Soils question (d) reflects the current 2022 CBC, effective January 1, 2023, which is based on the International Building Code (2021).

5.6.2.1 Methodology and Thresholds of Significance

Geologic Hazards

Staff reviewed regional geologic mapping and evaluations of geologic hazards, including hazard mapping, performed by the CGS and USGS. Staff reviewed site-specific geophysical, geotechnical, and groundwater investigations.

The 2022 CBC provides geotechnical and geological investigation and design guidelines that engineers shall follow when designing a facility. The criterion used to assess impact significance includes evaluating both potential geologic hazards impact on the project and if the project causes, or exacerbates, existing geological hazards. Potential geologic hazards include faulting and seismicity, liquefaction, dynamic compaction, hydrocompaction, subsidence, expansive soils, landslides, tsunamis, seiches, and others, as site-specific conditions may determine (CBC 2022).

The applicant provided a geophysical investigation that Terra Physics completed in 2010 for a previous version of the proposed project. Terra Physics completed five types of geophysical surveys to measure the physical properties of soils, sedimentary deposits,

and rock formations underlaying the project site. Terra Physics conducted transient electromagnetic electrical resistivity sounding, seismic refraction compressional wave velocity profiling, seismic downhole compressional and shear wave velocities sounding, seismic surface wave - shear wave velocity sounding, and direct current electrical resistivity sounding (RE 2025zzz).

The applicant provided a preliminary site-specific geotechnical investigation that DiazYourman & Associates (DYA) completed in 2010 for a previous version of the proposed project. The 2010 geotechnical investigation collected initial geotechnical data and proposed mitigation for geologic hazards. In August and September 2010, DYA excavated 14 shallow soil borings to depths of 14 ft to 21 ft bgs and one deep soil boring to a depth of 100 ft bgs. In six of the borings, down-hole seismic tests were completed. In six of the borings, in-hole permeability tests were completed (RE 2025uuu).

Six borings, DYB10-06 and DYB10-10 through DYB10-14, overlap with the current proposed project. Down-hole seismicity testing was performed in two borings, DYB10-10 and DYB10-12. In-hole permeability testing was performed in two borings, DYB10-06 and DYB10-11 (RE 2025uuu).

DYA completed field and laboratory testing on representative samples. Samples were tested for moisture content, grain-size distribution, percent passing the No. 200 sieve, specific gravity, sand equivalent, compaction characteristics, and corrosion potential. Gravel and cobbles were present in some samples. The large sediment grain sizes prevented meaningful field tests for density, shear strength, and consolidation and laboratory tests for permeability (RE 2025uuu).

The applicant provided a groundwater well test report that Panorama Environmental completed in 2014 for a previous version of the proposed project. Panorama Environmental drilled a groundwater test well, an observation well, and a monitoring well at the project site. Panorama Environmental performed and evaluated a well test, sampled and evaluated groundwater quality, and used the new information to validate a groundwater model (RE 2025aaaa).

Geologic and Mineral Resources of Recreational, Commercial, and Scientific Value

Staff reviewed regional geologic and mineral resource mapping performed by the CalGEM, California Division of Mine Reclamation, CGS and USGS to assess the project's potential impacts on geologic and mineral resources of recreational, commercial, and scientific value.

Paleontological Resources

Staff reviewed regional geologic mapping, paleontological databases, and the project owner's site-specific paleontological investigation to evaluate the project's potential impacts on paleontological resources.

The applicant's paleontological consultant, SWCA Environmental Consultants (SWCA), developed a baseline paleontological resources inventory of the project area. SWCA reviewed geologic mapping, the BLM's PFYC online mapping application, literature, and preliminary site-specific geotechnical investigations. SWCA reviewed a 2010 paleontological investigation that was conducted for a previous version of the proposed project. SWCA searched online paleontological collection databases of the National History Museum of Los Angeles County (NHMLA) and San Bernardino County Museum (SBCM) for fossil localities near the project. SWCA completed a pedestrian and windshield survey of the project site to field check geologic units and search for rock outcrops and paleontological resources (RE 2024cccc).

SWCA used this information to evaluate the paleontological potential of each geologic unit that is mapped at the surface within one mile of the project site (RE 2024cccc).

Staff used BLM (2022) and SVP (2010) guidelines to independently evaluate the paleontological potential of geologic formations that occur at the surface at the project site or may be encountered in the subsurface. Ratings consider how project construction and operation may impact potential nonrenewable paleontological resources. Construction-related impacts that affect, or may affect, paleontological resources are ground disturbing activities, such as mass excavation operations, drilling and borehole excavations, trenching, tunneling, and grading.

5.6.2.2 Direct and Indirect Impacts

a. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

Construction

Less Than Significant Impact with Mitigation Incorporated. As discussed below, compliance with COC **GEO-1** would mitigate potential impacts from rupture of a known Holocene-active or potentially active fault on human life, property, and grid reliability to less than significant.

Jurisdictional Project Components

When a fault ruptures and produces an earthquake, the ground surface may rupture. The Soda Mountains are in the Mojave Desert geomorphic province, an area of high seismic activity (CDOC 2002; USGS 2015). According to the CGS Earthquake Zones of Required Investigation online mapping application, the CGS has not evaluated the 7.5' topographic quadrangle that contains the project for Alquist-Priolo earthquake fault zones (CDOC 2024).

Regional geologic mapping does not show evidence of known Holocene-active nor potentially active faults intersecting the project site (CDOC 2012; USGS 2017; CDOC 2022). There are at least three known Holocene-active faults and thirteen known potentially active faults within 25 miles of the project site (USGS 2017; CDOC 2022, RE 2024ooo). The Holocene-active NW-striking Red Pass fault is two to three miles west of the project. The potentially active NW-striking Baker fault is three to four miles north and east of the project. The closest Holocene-active fault with the most significant seismic potential is the Garlock fault zone, which is 18 miles north of the project (USGS 2017; CDOC 2022).

The applicant proposed mitigation measures APM GEO-2 and GEO-5 to mitigate potential impacts from surface fault rupture (RE 2024ooo).

To inform the project's final grading and design, COC **GEO-1** requires the project owner to complete and submit a geotechnical and geohazard report to the CEC for review and approval. The report should include a site-specific evaluation of fault rupture potential at the project site. If a fault rupture hazard is identified at the project site, the report should include final grading and grading refinements to mitigate hazards from surface fault rupture. COC **GEO-1** requires the project owner to incorporate the report's recommended mitigation into the final project design.

Due to the distance to known and mapped Holocene-active and potentially active faults, and through compliance with COC **GEO-1**, impacts from construction of jurisdictional project components on human life, property, and grid reliability due to rupture of known and mapped Holocene-active or potentially active faults would be less than significant.

Non-Jurisdictional Project Components

Less Than Significant Impact. Construction of non-jurisdictional project components would occur at existing structures within the Adelanto and Marketplace switchyards. The Adelanto switchyard in Adelanto, CA does not intersect any known and mapped Holocene-active and potentially active faults (USGS 2017; CDOC 2022).

The Marketplace switchyard, about 17 miles southwest of Boulder City, NV does not intersect any known and mapped Holocene-active and potentially active faults (USGS 2017). Staff notes that the Marketplace switchyard is about 5 miles to 7 miles

southwest of, and on the strike of, the southern terminus of the NE-striking Black Hills fault, a Holocene-active fault (USGS 2017).

Potential impacts from the rupture of known and mapped Holocene-active or potentially active faults on construction of the non-jurisdictional project components, including on human life, property, and grid reliability would be less than significant.

Operation

Less Than Significant Impact. Based on the analysis above, impacts from operation of the jurisdictional and non-jurisdictional project components on human life, property, and grid reliability due to rupture of known and mapped Holocene-active or potentially active faults would be less than significant.

ii. Strong seismic ground shaking?

Construction

Less Than Significant Impact with Mitigation Incorporated. As discussed below, compliance with COCs **GEO-1** and Facility Design COCs **CIVIL-1**, **GEN-1**, and **STRUC-1** (see **Section 4.1, Facility Design**) would mitigate potential impacts from strong seismic ground shaking on human life, property, and grid reliability to less than significant.

Jurisdictional Project Components

Less Than Significant Impact with Mitigation Incorporated. Strong seismic ground shaking can result in structural damage and can trigger other geologic hazards, such as liquefaction and landslides. Holocene-active and potentially active faults within 25 miles of the project, as well as more distal faults, may produce high magnitude earthquakes that impact the project (USGS 2017; CDOC 2022). In the next 50 years, there is a 2 percent probability that very strong (MMI 7) to violent (MMI 9) ground shaking will impact eastern San Bernardino County (CDOC 2025c). In the next 50 years, there is a 2 percent probability that strong seismic ground shaking of 0.20 g to 0.40 g will impact the project. An earthquake on the Red Pass fault could produce a PGA of 0.50 g (RE 2024ooo). As described in **Section 4.2, Facility Reliability**, the project site is classified as seismic design category D.

The applicant proposed mitigation measure APM GEO-5 to mitigate potential impacts from strong seismic ground shaking (RE 2024ooo). The 2022 CBC, Section 1803, requires new construction to evaluate the potential, and propose mitigation, for strong seismic ground shaking.

To inform the project's final design, COC **GEO-1** requires the project owner to complete and submit a geotechnical and geohazard report to the CEC for review and approval. The report should include final grading and facility design refinements to mitigate

hazards from strong seismic ground shaking. COC **GEO-1** requires the project owner to incorporate the report's recommended mitigation into the final project design.

Compliance with COC **GEO-1**, and Facility Design COCs **CIVIL-1**, **GEN-1**, and **STRUC-1** should ensure the design, grading, and construction of jurisdictional project components would mitigate potential impacts from strong seismic ground shaking on the jurisdictional project components, including on human life, property, and grid reliability, to less than significant.

Non-Jurisdictional Project Components

Less Than Significant Impact with Mitigation Incorporated. Staff assumes the Adelanto and Marketplace switchyards were designed, graded, and constructed in compliance with applicable building codes and plans, policies and regulations, and thus mitigated any potential impacts from strong seismic ground shaking to less than significant. Staff recommends construction of non-jurisdictional project components at existing structures within the switchyards be consistent with applicable building codes and plans, policies, and regulations to mitigate potential impacts from strong seismic ground shaking.

With mitigation, the potential impacts from strong seismic ground shaking on construction of the non-jurisdictional project components, including on human life, property, and grid reliability, would be less than significant.

Operation

Less Than Significant Impact. Based on the analysis above, potential impacts from the operation of the jurisdictional and non-jurisdictional project components on human life, property, and grid reliability due to strong seismic ground shaking would be less than significant.

iii. Seismic-related ground failure, including liquefaction?

Construction

Less Than Significant with Mitigation Incorporated. As discussed below, compliance with COCs **GEO-1** and Facility Design COCs **CIVIL-1**, **GEN-1**, and **STRUC-1** would mitigate potential impacts from seismic-related ground failure on human life, property, and grid reliability to less than significant.

Jurisdictional Project Components

Less Than Significant with Mitigation Incorporated. Seismic-related ground failure, including liquefaction, is a geologic hazard that may occur when saturated sediments experience seismic shaking. Susceptibility to liquefaction depends on intensity of ground shaking, sediment density, and soil saturation. The CGS has not evaluated the 7.5' topographic quadrangle which contains the project for liquefaction zones (CDOC 2024).

The 2010 geotechnical investigation collected site-specific sediment profile and moisture content data but did not perform a liquefaction analysis. The investigation observed that, at depths of 0 ft to 20 ft bgs, soils were predominantly sand with silt and gravel (RE 2025uuu).

Liquefaction potential also depends on soil saturation and groundwater levels. In the current project area, the 2010 geotechnical investigation drilled five borings to depths of about 20 ft bgs and one boring to a depth exceeding 100 ft bgs. The borings did not encounter groundwater. The lack of shallow groundwater reduces liquefaction potential (RE 2025uuu).

CEC staff notes that only one of six borings in the current proposed project site was drilled to a depth of greater than about 20 ft bgs. Materials deeper than 20 ft bgs can liquefy during seismic ground shaking. Additionally, groundwater levels fluctuate over time. Zones of perched groundwater may exist at depths less than 50 ft bgs. More and deeper soil borings at the current proposed project site are needed to evaluate current groundwater conditions (RE 2024ooo).

The 2010 geophysical investigation did not find evidence of groundwater down to a depth of 386 ft bgs (RE 2025zzz). At an observation well about 1.5 miles to 2 miles north of the project site, the 2014 groundwater well test report measured the depth to groundwater at 425 ft to 438 ft bgs (RE 2025aaaa).

The application concludes that the potential for liquefaction is likely low for several reasons. Permanent groundwater depths are probably 180 ft to 350 ft bgs. Intermediate and older alluvial fans have dense soils with a high percentage of gravel, cobbles, and boulders, which are less prone to liquefaction. In some Quaternary sedimentary deposits, such as intermediate-age alluvial fans, calcium carbonate cementation has occurred (RE 2024ooo).

Staff agrees that the initial evidence indicates that the liquefaction potential of alluvial fan sediments and soils at the project site is low. However, more and deeper soil borings and other geotechnical tests of the current proposed project site are required to more accurately evaluate liquefaction potential.

The applicant proposed mitigation measure APM GEO-5 to mitigate potential impacts from seismic-related ground failure, including liquefaction (RE 2024ooo).

To inform the project's final design, COC **GEO-1** requires the project owner to complete and submit a geotechnical and geohazard report to the CEC for review and approval. The report must evaluate liquefaction potential and include final grading and facility design refinements to reduce, to the extent needed and feasible, hazards from seismically induced ground failure, including liquefaction. COC **GEO-1** requires the project owner to incorporate the report's recommended mitigation into the final project design.

Compliance with COC **GEO-1** and Facility Design COCs **GEN-1, CIVIL-1,** and **STRUC-1** would ensure the project's design, grading, and construction mitigate potential impacts from seismically induced ground failure on the project, including on human life, property, and grid reliability, to less than significant.

Non-Jurisdictional Project Components

Less Than Significant Impact. Staff assumes the Adelanto and Marketplace switchyards were designed, graded, and constructed in compliance with applicable building codes and plans, policies, and regulations and thus mitigated any potential impacts from seismic-related ground failure to less than significant. Therefore, the potential impacts from seismic-related ground failure on construction of the non-jurisdictional project components at existing structures within the switchyards, including on human life, property, and grid reliability, would be less than significant.

Operation

Less Than Significant Impact. Based on the analysis above, impacts from seismic-related failure, including liquefaction, on operation of the jurisdictional and non-jurisdictional project components on human life, property, and grid reliability would be less than significant.

iv. Landslides?

Construction

Less Than Significant with Mitigation Incorporated. As discussed below, compliance with COCs **GEO-1** and Facility Design COCs **CIVIL-1**, **GEN-1**, and **STRUC-1** would mitigate potential impacts from landslides on human life, property, and grid reliability to less than significant.

Jurisdictional Project Components

Less Than Significant Impact with Mitigation Incorporated. Mass wasting, including landslides and slope creep, is a potential geologic hazard that occurs when slopes fail. Susceptibility to mass wasting depends on soil and rock strength, the presence or absence of support, ground saturation, and triggering events, such as seismic shaking or intense precipitation.

According to the CGS Earthquake Zones of Required Investigation online mapping application, the CGS has not evaluated the 7.5' topographic quadrangle that contains the project (CDOC 2024). The project site is mostly underlain by relatively flat Quaternary sedimentary deposits that are not susceptible to landslides. In the southern and easter areas of the project, the margins of Quaternary alluvial fans have slopes that are rated moderately to highly susceptible to landslides (CDOC 2024; RE 2024ooo).

The applicant proposed mitigation measure APM GEO-5 to mitigate potential impacts from seismically induced landslides (RE 2024ooo).

To inform the project's final design, COC **GEO-1** requires the project owner to complete and submit a geotechnical and geohazard report to the CEC for review and approval. The report should include final grading and facility design refinements to reduce, to the extent needed, hazards to the project from naturally occurring mass wasting, such as landslides and slope creep. COC **GEO-1** requires the project owner to incorporate the report's recommended mitigation into the final project design.

Compliance with COC **GEO-1**, and Facility Design COCs **GEN-1**, **CIVIL-1**, and **STRUC-1,** should ensure the project's design, grading, and construction would mitigate potential impacts from mass wasting, including landslides, on the project, including on human life, property, and grid reliability, to less than significant.

Non-Jurisdictional Project Components

Less Than Significant Impact. Staff assumes the Adelanto and Marketplace switchyards were designed, graded, and constructed in compliance with applicable building codes, plans, policies, and regulations, and thus mitigated any potential impacts from mass wasting to less than significant. Therefore, the potential impacts from mass wasting on construction of the non-jurisdictional project components at existing structures within the switchyards, including on human life, property, and grid reliability, would be less than significant.

Operation

Less Than Significant Impact. Based on the analysis above, impacts from mass wasting, including landslides, on operation of jurisdictional and non-jurisdictional project components would have a less than significant impact on human life, property, and grid reliability.

b. Would the project result in substantial soil erosion or the loss of topsoil?

Construction

Less Than Significant with Mitigation Incorporated. As discussed below, compliance with Water Resources COCs **WATER-1** and **WATER-4** would mitigate potential impacts from project construction on soil erosion and topsoil loss to less than significant.

Jurisdictional Project Components

Less Than Significant with Mitigation Incorporated. The project is proposed on active alluvial fans that have shallow braided stream channels that may migrate and erode during storms (RE 2024ooo, 2025jjjj). The project would be constructed on alluvial fan sediments and soil that are susceptible to erosion.

The applicant proposed mitigation measures AIR-4, GEO-1, GEO-3, GEO-4, and GEO-6, HWQ-1, and HYD-1 to mitigate potential impacts from water and wind erosion on soil resources, which includes desert pavement (RE 2024ooo, 2025kkkk, 2025jjjj). The applicant submitted a revised drainage plan that would remove the berms, drainage channels, box culverts, and temporary sediment basins that had previously been proposed. To instead mitigate potential soil erosion impacts related to streamflow and stormwater, the applicant proposed HYD-1. Applicant proposed mitigation HYD-1 states the applicant would develop and implement a Fluvial Geomorphic Stormwater Design Plan (FGSDP) during project design, grading, and construction (RE 2025jjjj).

The FGSDP would implement fluvial geomorphic design principles to maintain or mimic the flow and function of ephemeral stream channels. The FGSDP would include minimal grading between solar panels to maintain, to the extent possible, flow patterns to within existing conditions and maintain flow-through conditions for streamflow onto the project site (RE 2025jjjj).

The FGSDP would include hydrologic and hydraulic modeling to determine design needs. Initial hydrologic and hydraulic modeling, for a 100-year storm event, calculated that, for most of the project site, stormwater velocities and depths would not exceed 4 ft per second and 1 ft, respectively. In some areas, stormwater velocities of 3 ft per second to 6 ft per second and depths of mostly between 1 ft to 2 ft, and rarely exceeding 2 ft, would occur (RE 2025jjjj).

The FGSDP would include design and infrastructure to protect project components from soil erosion. The BESS, substation, and switchyard would be constructed on graded pads that would be elevated 1 ft to 2 ft above flood elevations and protected with rip-rap (RE 2025jjjj). The FGSDP would also include construction of stormwater ponds and box culverts to manage stormwater and protect infrastructure, including roads (RE 2025llll).

Most solar arrays would not require protection from flooding and soil erosion. However, some solar arrays might require protection from soil erosion, depending on the results of hydrologic and hydraulic modeling. Initial hydraulic modeling results showed that vertical scour of up to 2 ft may occur at some solar array pile foundations, which led to the conclusion that the piles should be driven an extra 2 ft bgs to account for the potential increase in scour rates (RE 2025jjjj).

The solar arrays would be mounted on driven pile foundations that are 6 ft to 12 ft bgs. The solar arrays would be elevated at least 1 ft above the design flood elevation. For more information, see **Section 3, Project Description.**

Mitigation is required to reduce potential impacts from construction of jurisdictional project components related to soil erosion and topsoil loss. COC **WATER-1** requires the project owner to fulfill the requirements in a State Water Resources Control Board National Pollutant Discharge Elimination System (NPDES) General Permit for

Stormwater Discharges Associated with Construction and Land Disturbance Activities. COC **WATER-4** requires the project owner to apply to the Lahontan Regional Water Quality Control Board to satisfy dredge and fill waste discharge requirements. COC **WATER-9** requires the project owner to prepare and implement a FGSDP to incorporate fluvial geomorphic design principes into the final project design. The FGSDP should incorporate fluvial geomorphic design principles to both preserve and create stable, self-sustaining stream channels and floodplains that maintain and/or mimic natural hydrologic and sediment transport processes. For more information, see **Section 5.16, Water Resources**.

During construction of jurisdictional project components, compliance with COCs **WATER-1**, **WATER-4**, and **WATER-9** would mitigate potential impacts related to substantial soil erosion or loss of topsoil to less than significant.

Non-Jurisdictional Project Components

No Impact. Staff assumes the Adelanto and Marketplace switchyards were designed, graded, and constructed in compliance with applicable building codes and plans, policies, and standards and thus mitigated any potential impacts on soil erosion or topsoil loss to less than significant.

Operation

Less Than Significant Impact with Mitigation Incorporated. As discussed below, compliance with Water Resources COCs **WATER-2** and **WATER-3** would mitigate potential impacts from project operation on substantial soil erosion and topsoil loss to less than significant.

Jurisdictional Project Components

Less Than Significant Impact with Mitigation Incorporated. During operation of the jurisdictional project components, maintenance of flood and erosion protection infrastructure is required to mitigate ongoing potential impacts related to substantial soil erosion and topsoil loss.

COC **WATER-2** requires the project owner to prepare and implement a site-specific Drainage, Erosion, and Sedimentation Control Plan (DESCP). COC **WATER-3** requires the project owner to develop and implement a Channel Maintenance Program to protect the integrity of the project's stormwater channels. For more information, see **Section 5.16, Water Resources**.

During operation of jurisdictional project components, implementation of COCs **WATER-2** and **WATER-3** would mitigate potential impacts from substantial soil erosion or loss of topsoil to less than significant.

Non-Jurisdictional Project Components

Less Than Significant Impact. Based on the analysis above, operation of the non-jurisdictional project components is expected to have a less than significant impacts on soil erosion and topsoil loss. However, staff recommends compliance with **MM WATER-1** during operation of non-jurisdictional project components to mitigate potential impacts on soil erosion and topsoil to less than significant.

c. Would the project be located on geologic units or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

Soil Settlement

Construction

Less Than Significant Impact with Mitigation Incorporated. Based on the analysis below, compliance with COC **GEO-1** and Facility Design COCs **CIVIL-1**, **GEN-1**, and **STRUC-1** would mitigate potential impacts from project construction on soil settlement hazards to less than significant.

Jurisdictional Project Components

Less Than Significant with Mitigation Incorporated. Soil settlement, including differential soil settlement, is a geologic hazard where soils compress by varying amounts across a site. Differential settlement can damage a site's foundation, utilities, and more. The potential for soil settlement depends on soil thickness, soil characteristics, including stiffness modulus and compression indices, grading and construction methods, and static and dynamic loading.

Soil settlement, including differential soil settlement, is a potential geologic hazard to the proposed project because alluvial fan sediments and soils of varying ages and compositions underlay the project site (RE 2024ooo). Project construction and operation would place soils across the project site under varying static loads. Seismic shaking may cause differential soil settlement because the heterogeneous soils across the project site may not react homogenously to strong seismic ground shaking.

The applicant proposed mitigation measure APM GEO-5 to mitigate potential impacts that project may have on soil settlement (RE 2024ooo).

To inform the project's final design, COC **GEO-1** requires the project owner to complete and submit a geotechnical and geohazard report to the CEC for review and approval. The report should include final grading and facility design refinements to further reduce, to the extent needed and feasible, hazards from soil settlement. COC **GEO-1**

requires the project owner to incorporate the report's recommended mitigation into the final project design.

Compliance with COC **GEO-1** and Facility Design COCs **GEN-1**, **CIVIL-1**, and **STRUC-1**, should ensure the design, grading, and construction of jurisdictional project components would mitigate potential impacts from, and on, soil settlement hazards to less than significant.

Non-Jurisdictional Project Components

Less Than Significant Impact. Staff assumes the Adelanto and Marketplace switchyards were designed, graded, and constructed in compliance with applicable building codes, plans, policies, and regulations, and thus mitigated any potential impacts on soil settlement to less than significant. Construction of the non-jurisdictional project components at existing structures within the switchyards would have less than significant impacts on soil settlement hazards.

Operation

Less Than Significant Impact. Based on the analysis above, operation of the jurisdictional and non-jurisdictional project components would have a less than significant impacts related to soil settlement.

Landslide

Construction

Less Than Significant Impact with Mitigation Incorporated. Based on the analysis below, compliance with COC **GEO-1** and Facility Design COCs **CIVIL-1**, **GEN-1**, and **STRUC-1** would mitigate potential impacts from project construction on landslide hazards to less than significant.

Jurisdictional Project Components

Less Than Significant with Mitigation Incorporated. As discussed earlier, there is potential for naturally occurring mass wasting to impact the southern and eastern areas of the project. A project can increase the potential for mass wasting if inappropriate grading and construction methods are used. Poor grading and construction methods, such as loading the top of a slope, removing support from the sides or bottom of a slope, or saturating a slope, can increase the potential for mass wasting.

The applicant proposed mitigation measure APM GEO-5 to mitigate potential impacts that project may have on slope stability (RE 2024ooo).

To inform the project's final design, COC **GEO-1** requires the project owner to complete and submit a geotechnical and geohazard report to the CEC for review and approval. The report should include final grading and facility design refinements to further

reduce, to the extent needed and feasible, hazards construction of jurisdictional project components on slope stability. New permanent slopes should be designed, graded, and constructed for slope stability, including appropriate minimum safety factures during static and seismic conditions. COC **GEO-1** requires the project owner to incorporate the report's recommended mitigation into the final project design.

Compliance with COC **GEO-1**, and Facility Design COCs **GEN-1**, **CIVIL-1**, and **STRUC-1**, should ensure the design, grading, and construction of jurisdictional project components would mitigate potential impacts from, and on, mass wasting hazards to less than significant.

Non-Jurisdictional Project Components

Less Than Significant Impact. Staff assumes the Adelanto and Marketplace switchyards were designed, graded, and constructed in compliance with applicable building codes and plans, policies, and regulations and thus mitigated any potential impacts on landslides hazards to less than significant. Construction of the non-jurisdictional project components at existing structures within the switchyards would have less than significant impacts on landslide hazards.

Operation

Less Than Significant Impact. Based on the analysis above, operation of the jurisdictional and non-jurisdictional project components would have a less than significant impact on mass wasting hazards.

Lateral Spreading and Liquefaction

Construction

Less Than Significant Impact with Mitigation Incorporated. As discussed below, compliance with COC **GEO-1** and Facility Design COCs **CIVIL-1**, **GEN-1**, and **STRUC-1** would mitigate potential impacts from project construction on lateral spreading and liquefaction hazards to less than significant.

Jurisdictional Project Components

Less Than Significant with Mitigation Incorporated. As discussed earlier, the initial evidence indicates that the alluvial fan sediments and soils that underlay the project site have a low potential for liquefaction (RE 2024ooo, 2025uuu). However, more geotechnical investigations are required to evaluate the potential for the project to increase geologic hazards associated with lateral spreading and liquefaction.

The applicant proposed mitigation measure APM GEO-5 to mitigate potential impacts that project may have on lateral spreading and liquefaction hazards (RE 2024ooo).

To inform the project's final design, COC **GEO-1** requires the project owner to complete and submit a geotechnical and geohazard report to the CEC for review and approval. The report should include final grading and facility design refinements to further reduce, to the extent needed and feasible, impacts from construction of jurisdictional project components on lateral spreading and liquefaction hazards. COC **GEO-1** requires the project owner to incorporate the report's recommended mitigation into the final project design.

Compliance with COC **GEO-1** and Facility Design COCs **GEN-1**, **CIVIL-1**, and **STRUC-1**, should ensure the design, grading, and construction of jurisdictional project components would mitigate potential impacts from, and on, lateral spreading and liquefaction hazards to less than significant.

Non-Jurisdictional Project Components

Less Than Significant Impact. Staff assumes the Adelanto and Marketplace switchyards were designed, graded, and constructed in compliance with applicable building codes and, plans, policies, and regulations and thus mitigated any potential impacts on lateral spreading and liquefaction hazards to less than significant. Construction of the non-jurisdictional project components at existing structures within the switchyards would have less than significant impacts on lateral spreading and liquefaction hazards.

Construction of non-jurisdictional project components would have a less than significant impact on lateral spreading and liquefaction hazards.

Operation

Less Than Significant Impact. Based on the analysis above, operation of the jurisdictional and non-jurisdictional project components would have a less than significant impact on lateral spreading and liquefaction hazards.

Subsidence

Construction

Less Than Significant Impact with Mitigation Incorporated. As discussed below, compliance with Water Resources COCs **WATER-5** through **WATER-7** would mitigate potential impacts from project construction on subsidence hazards to less than significant.

Jurisdictional Project Components

Less Than Significant. Subsidence is the gradual settling of the ground surface in response to the movement of material belowground. Natural processes that may cause subsidence include soil compaction, sinkhole formation, and earthquakes. Artificial activities that may cause subsidence include removal or addition of material

belowground, such as groundwater pumping, hydraulic fracturing, oil extraction, and mining.

The project site is not in a location where artificial subsidence has occurred or is occurring (USGS 2018). To supply water for construction and decommissioning of the jurisdictional project components, the project owner proposed pumping 319 AFY of groundwater from five new on-site groundwater wells. The safe yield of the Soda Mountain subbasin is calculated at 357 AFY (RE 2025ddd). The volume of groundwater withdrawal for construction and decommissioning of jurisdictional project components is not expected to substantially lower the groundwater table and thus would not cause land subsidence.

However, staff recommends compliance with COCs **WATER-5** through **WATER-7** to reduce potential impacts from groundwater pumping on potential subsidence hazards. COC **WATER-5** requires the project owner to develop and implement a Groundwater Well Installation Workplan for the drilling of production and monitoring wells. COC **WATER-6** requires the project owner to develop and implement a Groundwater Monitoring and Reporting Plan. COC **WATER-7** requires the project owner to report annual groundwater pumping data. For more information, see **Section 5.16, Water Resources**.

Compliance with COCs **WATER-5** through **WATER-7** would ensure that groundwater pumping during project construction and decommissioning has a less than significant impact on potential subsidence hazards.

Non-Jurisdictional Project Components

No Impact. Construction of the non-jurisdictional project components would not include groundwater pumping or other activities that may cause subsidence. Construction of non-jurisdictional project components would have no impact on subsidence hazards.

Operation

As discussed below, compliance with Water Resources COCs **WATER-6** and **WATER-7** would mitigate potential impacts from project operation on subsidence hazards to less than significant.

Jurisdictional Project Components

Less Than Significant Impact with Mitigation Incorporated. To supply water for the operation of the jurisdictional project components, the project owner proposed pumping 5.6 AFY of groundwater from five on-site groundwater wells. The safe yield of the Soda Mountain subbasin is calculated at 357 AFY (RE 2025ddd). The volume of groundwater withdrawal for operation of jurisdictional project components is too small compared to the safe yield of the basin and is not expected to cause land subsidence.

However, compliance with **WATER-6** and **WATER-7** would ensure potential impacts from groundwater pumping on potential subsidence hazards are mitigated to less than significant. For more information, see **Section 5.16, Water Resources**.

Non-Jurisdictional Project Components

No Impact. Operation of the non-jurisdictional project components would not include ground pumping or other activities that may cause subsidence. Operation of non-jurisdictional project components would have no impact on subsidence hazards.

d. Would the project be located on expansive soil, as defined in Section 1803.5.3 of the California Building Code (2022), creating substantial direct or indirect risks to life or property?

Construction

Less Than Significant Impact with Mitigation Incorporated. As discussed below, compliance with COC **GEO-1** and Facility Design COCs **CIVIL-1**, **GEN-1**, and **STRUC-1** would mitigate potential impacts from project construction on expansive soil hazards, including direct or indirect risks to human life, property, and grid reliability, to less than significant.

Jurisdictional Project Components

Less Than Significant with Mitigation Incorporated. Expansive soils and rock formations swell with wetting and shrink with drying. Untreated expansive soil and rock can damage future buildings and pavements at the project. Mitigation methods for expansive soil and rock include draining, grading, soil amendments, removal and replacement with non-expansive soils, to mention just a few measures.

The 2011 preliminary site-specific geotechnical investigation visually classified sampled soils as non-expansive and did not perform laboratory expansion index tests (RE 2025uuu). Staff agrees that initial evidence indicates that the potential for expansive soils in the alluvial fan sediments and soils that underlay the project site is probably low. However, more, and deeper, soil borings and geotechnical tests are required to better evaluate expansive soil potential at the project site.

The applicant proposed mitigation measure APM GEO-5 to mitigate potential impacts from expansive soils (RE 2024ooo).

To inform the project's final design, COC **GEO-1** requires the project owner to complete and submit a geotechnical and geohazard report to the CEC for review and approval. The report should include final grading and facility design refinements to reduce, to the extent needed and feasible, hazards from expansive soils. COC **GEO-1** requires the project owner to incorporate the report's recommended mitigation into the final project design.

Compliance with COC **GEO-1** and Facility Design COCs **GEN-1**, **CIVIL-1**, and **STRUC-1**, would ensure the design, grading, and construction of jurisdictional project components would mitigate potential impacts from expansive soils on the project, including direct and indirect risks to human life, property, and grid reliability, to less than significant.

Non-Jurisdictional Project Components

Less Than Significant Impact. Staff assumes the Adelanto and Marketplace switchyards were designed, graded, and constructed consistent with applicable building codes, and plans, policies, and regulations and thus mitigated any potential impacts from expansive soils on human life, property, and grid reliability to less than significant. Construction of the non-jurisdictional project components at existing structures within the switchyards would have less than significant direct or indirect impacts related to expansive soil hazards.

Operation

Less Than Significant Impact. Based on the analysis above, operation of the jurisdictional and non-jurisdictional project components would have a less than significant impact on human life, property, and grid reliability related to expansive soil hazards.

e. Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of waste water?

Construction

Less Than Significant Impact with Mitigation Incorporated. As discussed below, compliance with COC **WATER-8** (see **Section 5.16, Water Resources**) would mitigate potential impacts from wastewater disposal and septic tanks on soils to less than significant.

Jurisdictional Project Components

Less Than Significant Impact with Mitigation Incorporated. During construction of jurisdictional project components, septic wastewater production would be limited to temporary toilet and sanitary facilities, which would be serviced by a third-party contractor. Septic wastewater would be disposed offsite. No septic wastewater would be discharged at or near the project site (RE 2024ooo).

During construction of the jurisdictional project components, compliance with Water Resources COC **WATER-8** would mitigate potential impacts from wastewater disposal and septic tanks on soils to less than significant.

Non-Jurisdictional Project Components

No Impact. Staff assumes the Adelanto and Marketplace switchyards, where non-jurisdictional project components would be constructed, have existing toilet and sanitary facilities. Construction of non-jurisdictional project components would have no impact related to wastewater disposal.

Operation

Less Than Significant Impact with Mitigation Incorporated. As discussed below, compliance with COC **WATER-8** would mitigate potential impacts from wastewater disposal and septic tanks on soils to less than significant.

Jurisdictional Project Components

Less Than Significant Impact with Mitigation Incorporated. During project operation, septic waste from the operation and maintenance building would be directed to an underground septic tank. The septic tank would be periodically emptied and trucked to an offsite approved disposal facility (RE 2024ooo, 2025ii).

During operation of the jurisdictional project components, compliance with Water Resources COC **WATER-8** would mitigate potential impacts from wastewater disposal and septic tanks on soils to less than significant.

Non-Jurisdictional Project Components

No Impact. Operation of the non-jurisdictional project components at the existing Adelanto and Marketplace switchyards would have no impact related to wastewater disposal because toilet and sanitary facilities already exist at these switchyards.

f. Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Construction

Less Than Significant Impact with Mitigation Incorporated. As discussed below, compliance with COC **PAL-1** through **PAL-8** would mitigate potential impacts from project construction on paleontological resources and unique geologic features of recreational or scientific value to less than significant.

Jurisdictional Project Components

Less Than Significant with Mitigation Incorporated. Staff evaluated the paleontological potential of geologic units that occur at the surface, or may be encountered in the subsurface, at the project site. The site-specific paleontological investigation reviewed online paleontological collection databases (PBDB 2024; UCMP 2024), reviewed geologic and geotechnical information, consulted primary literature, and conducted a field survey of the project site (RE 2024vvv, 2024cccc). Staff reviewed this information and used the

BLM (2022) PFYC system to assign a paleontological potential rating to each geologic unit that may be encountered during project construction. Paleontological potential ratings are summarized in Table 5.6-4.

Late Holocene Alluvial Fan (Qf), Lacustrine, Playa, and Estuarine (paralic) (Ql), and Undifferentiated Surficial deposits (Qsu) have low potential for paleontological resources near the surface (PFYC Class 2) because they are likely too young. With increasing depth and age, these deposits have higher potential for paleontological resources (PFYC Class 4) (RE 2024cccc).

Holocene to Late Pleistocene Alluvial Fan Deposits (Qyf) have low paleontological potential (PFYC Class 2) at the surface and increase to high paleontological potential (PFYC Class 4) with depth and age. Late to Middle Pleistocene Old Alluvial Fan Deposits (Qof) have high paleontological potential (PFYC Class 4). Vertebrate and invertebrate fossils have been found in alluvial fan deposits of these ages within 5 miles to 11 miles of the project site and elsewhere in the Mojave Desert and eastern San Bernardino County. Vertebrate fossils found in Holocene and Pleistocene alluvial fans in the region include remains of amphibians, badger, bison, camel, cougar, ground sloth, hare, horse, jaguar, mammoth, pronghorn, reptiles, rodents, saber-toothed cat, and sheep (RE 2024cccc).

Holocene to Late Pleistocene Young Eolian and Dune (Qve) deposits have a low paleontological potential (PFYC Class 2). Windblown deposits are a poor depositional setting for fossil preservation. Surface windblown deposits are likely too young to contain paleontological resources (RE 2024cccc).

Rock formations that are considered bedrock are Tertiary Coarse-grained Sedimentary Rocks (Tss), Tertiary Volcanic Rocks (Tv), and Mesozoic, and older, intrusive igneous rocks (gr). Geologic mapping and geophysical, geotechnical, and groundwater well test investigations suggest that, at the project site, bedrock formations are hundreds of feet below the ground surface (CDOC 2012; RE 2025uuu, 2025zzz, RE 2025aaaa). Bedrock formations are not expected to be encountered at the surface or in the subsurface during project grading and construction.

Staff conservatively assigns paleontological potentials to each bedrock formation in the event they are encountered. Tertiary Coarse-grained Sedimentary Rocks (Tss) have high paleontological potential (PFYC Class 4) because fossils are commonly preserved in sedimentary rocks. Tertiary Volcanic Rocks (Tv) have low paleontological potential (PFYC Class 2) because fossils are uncommonly preserved in volcanic rocks that erupt at the surface. Mesozoic, and older, intrusive igneous rocks (gr) have very low paleontological potential (PFYC Class 1) because fossils are not found in molten rock that solidifies deep underground.

Table 5.6-4 presents the paleontological potential of geologic units, using the BLM (2022) PFYC System, that may be impacted during ground-disturbing activities at the project site.

TABLE 5.6-4 PALEONTOLOGICAL POTENTIAL OF GEOLOGIC UNITS

Geologic Unit	Geologic Map Abbreviation	Paleontological Potential
Late Holocene Alluvial Fan Deposits	Qf	Low potential (PFYC Class 2) at surface increasing to high potential (PFYC Class 4) at depth.
Late Holocene Undifferentiated Surficial Deposits	Qsu	Low potential (PFYC Class 2) at surface increasing to high potential (PFYC Class 4) at depth.
Late Holocene Lacustrine, Playa, and Estuarine (paralic) Deposits	Ql	Low potential (PFYC Class 2) at surface increasing to high potential (PFYC Class 4) at depth.
Holocene to Late Pleistocene Young Alluvial Fan Deposits	Qyf	Low potential (PFYC Class 2) at surface increasing to high potential (PFYC Class 4) at depth
Holocene to Late Pleistocene Young Eolian and Dune Deposits	Qye	High potential (PFYC Class 4)
Late to Middle Pleistocene Old Alluvial Fan Deposits	Qof	High potential (PFYC Class 4)
Tertiary Coarse-grained Sedimentary Rocks	Tss	High potential (PFYC Class 4)
Tertiary Volcanic Rocks	Tv	Low potential (PFYC Class 2)
Mesozoic, or older, intrusive igneous rocks	gr	Very low potential (PFYC Class 1)

Source: Modified from RE 2024vvv

The applicant proposed mitigation measures APM GEO-7 through GEO-11 to mitigate potential impacts to paleontological resources (RE 2024vvv).

Compliance with COCs **PAL-1** through **PAL-8** would mitigate potential impacts to paleontological resources during ground disturbing activities related to grading and construction of jurisdictional project components in native soil, sedimentary deposits, and rock formations to less than significant.

Geological features are the result of geological processes, or actions that occur above and below the Earth's surface. Geological features that are unusual or out of the ordinary are unique. No unique geologic features were mapped or identified within the proposed project site. Construction of the jurisdictional project components is expected to encounter Quaternary alluvial fan deposits at the surface and in the shallow subsurface. These deposits are common in the Mojave Desert and eastern San Bernardino County (CDOC 2012). Potential impacts from construction of the jurisdictional project components on unique geological features of scientific or recreational value are considered less than significant.

Non-Jurisdictional Project Components

No impact. Construction of the non-jurisdictional project components would not include ground disturbing activities and thus would have no impact on paleontological resources and unique geological features of scientific or recreational value.

Operation

Jurisdictional and Non-Jurisdictional Project Components

Less Than Significant Impact. Ground disturbing activities would not occur during operation of the jurisdictional and non-jurisdictional project components. Project operation would have less than significant impacts on paleontological resources and unique geological features of scientific or recreational value.

g. Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?

Construction and Operation

Less Than Significant Impact. Production of mineral resources contributes significantly to San Bernardino County's economy. The project site is an area of San Bernardino County that the CDOC has not evaluated for mineral resource zones. The Quaternary alluvial fan deposits underlaying the project site are common in the Mojave Desert and eastern San Bernardino County (CDOC 2011). These geologic units are not unique in terms of commercial, scientific, and recreational value. Operation of the jurisdictional project components would not include ground disturbing activities.

Construction and operation of the non-jurisdictional project components at the existing Adelanto and Marketplace switchyards would not include ground disturbing activities.

Impacts from construction and operation of the jurisdictional and non-jurisdictional project components on known mineral resources of commercial value would be less than significant.

h. Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

Construction and Operation

Less Than Significant Impact. As described above, economically important mineral and fossil fuel resources are extracted in San Bernardino County. Consistent with the SMARA, the CDOC classifies mineral lands as MRZs based on the importance and availability of local mineral deposits (CDOC 2000). The project site is an area that the CDOC has not evaluated for MRZs (CDOC 2016). The San Bernardino County Policy Plan

defers to the CDOC. Specifically, NR-6.1 directs San Bernardino County to conserve lands that the CDOC has classified as MRZ-2a, MRZ-2b, or MRZ-3a for potential future mining development (San Bernardino County 2022a).

The closest active mine to the project is eight miles to the northeast (CDOC 2025d). There are four inactive prospect pits and one inactive open pit mine in the southwestern project site (USGS 2011). There are no energy production related wells at the project site and two wells within 25 miles of the project (CDOC 2025a).

The CDOC and San Bernardino County have not evaluated the project site for potential as a mineral recovery site. As described above, grading and construction of jurisdictional project components would disturb Quaternary sedimentary deposits that are abundant in the region. Staff concludes that grading and construction of jurisdictional project components would have less than significant impacts on potentially important mineral recovery sites. Operation of jurisdictional project components would not include ground disturbing activities and thus would have no impact on locally important mineral resource recovery sites.

Construction and operation of the non-jurisdictional project components at the existing Adelanto and Marketplace switchyards would not include ground disturbing activities and thus would have no impact on locally important mineral resource recovery sites.

Impacts from construction and operation of the jurisdictional and non-jurisdictional project components on locally important mineral resource recovery sites would be less than significant.

5.6.2.3 Cumulative Impacts

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 project. The proposed project may have cumulative impacts if the incremental effect of the project is considerable when viewed in connection with other past, present, and reasonably foreseeable future projects (PRC § 21083; CCR, Title 14, § 15064[h], 15065[c], 15130, and 15355).

Geologic Hazards

The proposed project would be constructed and operated in the Mojave Desert, a seismically active and arid environment. Geological hazards are generally site-specific and depend on localized geologic and soil conditions. Potential geologic hazards that may impact, or be impacted by the proposed project, include surface fault rupture, strong seismic ground shaking, seismically induced ground failure, landslides, unstable geologic units and soils, and soil erosion. Geologic hazards would be mitigated to less than significant through design, grading, and construction.

The applicant submitted preliminary geophysical (2025zzz), geotechnical (RE 2025uuu), and groundwater (RE 2025aaaa) investigations that were completed for a previous version of the proposed project. Additional geotechnical evaluations and design are needed to finalize the proposed project's design, grading, and construction methods. To inform the project's final design, COC **GEO-1** requires the project owner to complete and submit a geotechnical and geohazard report to the CEC for review and approval. The report should include final grading and facility design refinements to mitigate the impacts of geologic hazards on the project, and the project's impacts on geologic hazards, to less than significant. COC **GEO-1** requires the project owner to incorporate the report's recommended mitigation into the project's final design.

Compliance with COC **GEO-1**, Facility Design COCs **GEN-1**, **CIVIL-1**, and **STRUC-1**, Water Resources COCs **WATER-1** through **WATER-7**, and **WATER-9**, the CBC, San Bernardino Code of Ordinances, and consistency with all other applicable federal, state, and local plans, policies, and regulations, would mitigate the impacts from geologic hazards on the project, including on human life, property, and grid reliability, and the project's impacts on geologic hazards, to less than significant. With mitigation, this project's cumulative impacts would not be considerable.

Compliance with Water Resources COC **WATER-8**, and consistency with all applicable federal, state, and local plans, policies, and regulations, would mitigate potential impacts from wastewater disposal and septic tanks on soils. With mitigation, this project's cumulative impacts would not be considerable.

Similar to the proposed project, cumulative projects in the area are required to be consistent with applicable plans, policies, and regulations related to geological hazards. For other projects, adherence to all applicable plans, policies, and regulations pertaining to building safety and construction would mitigate cumulative impacts related to geologic hazards to less than significant.

Geologic, Mineral, and Paleontological Resources

There is potential for fossils to be encountered during grading, excavation, and construction. If significant paleontological resources are uncovered, they would be protected and preserved in accordance with COCs **PAL-1** through **PAL-8** and all other applicable federal, state, and local plans, policies, and regulations. With this mitigation, this project's cumulative impacts on paleontological resources would not be considerable.

No unique surface or near surface geologic features or resources of commercial, scientific, and recreational value, including mineral resources, were identified in the project area. Development of this project is not expected to lead to a significantly cumulative effect on geologic and mineral resources in the project area.

As is required for the project, cumulative projects in the area are required to be consistent with applicable plans, policies, and regulations related to geologic, mineral, and paleontological resources. For other projects, adherence to all plans, policies, and regulations pertaining to geologic, mineral, and paleontological resources would mitigate related cumulative impacts to less than significant.

5.6.3 Project Consistency with Applicable Plans, Policies, and Regulations

Table 5.6-5 lists staff's determination of consistency with applicable local, state, and federal plans, policies, and regulations, including any proposed Conditions of Certification to ensure that the project would be constructed and operated consistent with applicable plans, policies, and regulations. As shown in this table, staff concludes that, with implementation of specific COCs, the proposed project would be consistent with all applicable plans, policies, and regulations. The subsection below, "5.6.4 Staff Proposed Conditions of Certification", contains the full text of the referenced conditions of certification.

TABLE 5.6-5 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS

Applicable Plans, Policies, and Regulations	Consistency and Basis For Determination
Federal	
The 1906 **Antiquities Act** federal agencies to permit the collection of objects of historic and scientific interest. Collected objects must be stored in a public museum (CFR 2024).	**Yes.** Compliance with the following COCs should ensure the proposed project complies with the Antiquities Act's laws and regulations. COCs **PAL-1** through **PAL-8** were developed based upon the guidance provided by the BLM regulations and SVP standard 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. COCs **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.
The 2009 **Paleontological Resources Preservation Act** requires the U.S. Department of the Interior to permit collection of paleontological resources on federal lands. The U.S. Department of the Interior to owns collected paleontological resources and may transfer ownership or administration to federal or non-federal educational institutions (CFR 2025a).	**Yes.** Compliance with the following COCs should ensure the proposed project complies with the Paleontological Resources Preservation Act's laws and regulations. COCs **PAL-1** through **PAL-8** were developed based upon the guidance provided by the BLM regulations and SVP standards to ensure that, if present, paleontological resources would be

TABLE 5.6-5 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS	
Applicable Plans, Policies, and Regulations	**Consistency and Basis For Determination**
	properly identified and appropriate protection or salvage measures implemented to mitigate the loss of these resources due to construction. COCs **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.
The United States Bureau of Reclamation's published **Engineering Geology Field Manual, Volumes I and II** provides field-oriented geotechnical engineering guidance (USBR 2001ab).	**Yes.** Compliance with the COCs **GEO-1, GEN-1, CIVIL-1,** and **STRUC-**1 should ensure the proposed project complies with the relevant and appropriate components of this USBR guidance.
State	
The 1972 **Alquist-Priolo Earthquake Fault Zoning Act** requires the California Geological Survey to designate Alquist-Priolo Fault Zones, which are active faults that have evidence of surface rupture in the past 11,000 years. The act mitigates against surface fault rupture of known active faults beneath occupied structures. The act requires disclosure to potential buyers of existing real estate and a 50-foot setback for new occupied buildings. Portions of the site and proposed ancillary facilities are located within designated Alquist-Priolo Fault Zones. The proposed site layout places occupied structures outside of the 50-foot setback zone (CPRC 2024).	**Yes.** Compliance with COCs **GEO-1, CIVIL-1,** and **STRUC-1,** should ensure the proposed project complies the Alquist-Priolo Earthquake Fault Zoning Act's laws and regulations.
The 2022 **California Building Code** includes a series of standards that are used in project investigation, design, and construction (including seismicity, grading and erosion control). The CBC has adopted provisions in the International Building Code (CBC 2022).	**Yes.** Compliance with COCs **GEO-1, GEN-1, CIVIL-1, STRUC-1,** and **WATER-1** through **WATER-9** should ensure the proposed project complies with the California Building Code's standards and provisions
The **California Public Resources Code, Division 5, Chapter 1.7 Archaeological, Paleontological, and Historical Sites** prohibits the removal of paleontological resources from public lands under the jurisdiction of the state, or any city, county, district, authority, or public corporation, or any agency thereof.	**Not applicable.** The project site is owned by the Bureau of Land Management, a federal agency.
The 1990 **Seismic Hazards Mapping Act** requires the California Geological Survey to 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	**Yes.** Compliance with COCs **GEO-1, CIVIL-1,** and **STRUC-1** should ensure the proposed project complies with the Seismic Hazards Mapping Act's laws and regulations.

TABLE 5.6-5 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS	
Applicable Plans, Policies, and Regulations	**Consistency and Basis For Determination**
defines and delineates any seismic hazard prior to approval of a project in a seismic hazard zone (CPRC 2017).	
The 1975 **Surface Mining and Reclamation Act** provides a comprehensive surface mining and reclamation policy for the regulation of surface mining operations to assure that adverse environmental impacts are minimized and mined lands are reclaimed to a usable condition (CPRC 2022).	**Less than significant impacts.** The project would have less than significant impacts on known valuable mineral resources or locally important mineral resource recovery sites,
Local	
San Bernardino County Policy Plan, Built Environment Section, Land Use Element (2022)	
Principle: New development should be focused in areas with low risks from natural and man-made hazards, and with fewer impacts on the natural environment.	**Yes.** Compliance with COCs **GEO-1, GEN-1, CIVIL-1, STRUC-1,** and **WATER-1** through **WATER-9** should ensure the proposed project complies with this principle of the San Berardino County Policy Plan.
Policy LU-4.4 Natural topography in the Mountain region. We require new development in the Mountain region to retain natural topography and minimize grading unless it is necessary to reduce exposure to natural hazards.	**Yes.** Compliance with COCs **GEO-1, GEN-1, CIVIL-1, STRUC-1, WATER-1** through **WATER-7,** and **WATER-9** should ensure the proposed project complies with this policy in the San Berardino County Policy Plan.
San Bernardino County Policy Plan, Built Environment Section, Infrastructure and Utilities Element (2022)	
Purpose: Provides guidance on where, when, and how infrastructure and utilities are improved and expanded.	**Yes.** Compliance with **WATER-1** through **WATER-9** should ensure the proposed project complies with these purposes, principles, goals, and policies of the San Berardino County Policy Plan.
Purpose: Establishes goals and policies to maintain an adequate supply of potable water and the safe disposal, treatment, and recycling of wastewater, and the recycling and safe disposal of solid waste.	
Purpose: Provides direction on system integration, resource conservation, and the protection of the natural environment.	
Principle: Reliable and cost-effective water, stormwater, wastewater, sanitary, power, and communications systems are critical for maintaining and improving our communities, institutions, and businesses.	
Principle: Reducing, treating, and safely disposing solid and liquid waste will protect public and environmental health and preserve our natural resources.	
Goal IU-2 Wastewater Treatment and Disposal: Residents and businesses in unincorporated areas have safe and sanitary systems for wastewater collection, treatment, and disposal.	

TABLE 5.6-5 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS	
Applicable Plans, Policies, and Regulations	**Consistency and Basis For Determination**
Policy IU-2.1 Minimum parcel size. We require new lots smaller than one-half acre to be served by a sewer system. We may require sewer service for larger lot sizes depending on local soil and groundwater conditions, and the County's Local Area Management Program.	
Goal IU-3 Stormwater Drainage: A regional stormwater drainage backbone and local stormwater facilities in unincorporated areas that reduce the risk of flooding.	
Policy IU-3.1 Regional flood control. We maintain a regional flood control system and regularly evaluate the need for and implement upgrades based on changing land coverage and hydrologic conditions in order to manage and reduce flood risk. We require any public and private projects proposed anywhere in the county to address and mitigate any adverse impacts on the carrying capacity and stormwater velocity of regional stormwater drainage systems.	
Policy IU-3.2 Local flood control. We require new development to install and maintain stormwater management facilities that maintain predevelopment hydrology and hydraulic conditions.	
San Bernardino County Policy Plan, Resources and Conservation Section, Natural Resources Element (2022)	
Purpose: Establishes policies that preserve and enhance the beauty and resiliency of our natural resources.	**Yes.** Compliance with **WATER-1** through **WATER-9** should ensure the proposed project complies with these purposes of the San Berardino County Policy Plan.
Purpose: Provides guidance on coordinating with others to manage, conserve, and protect natural resources such as watersheds, wildlife habitat areas and corridors, and other natural and open space areas.	
Purpose: Promotes clean air and a supply of water for human consumption and the natural environment.	
Purpose: Provides guidance and support for mining operations and the preservation of viable agricultural and grazing lands.	**Yes.** The project complies with this purpose in the San Berardino County Policy Plan.
Purpose: Provides guidance on the location and distribution of new development to protect natural resources.	**Yes.** Compliance with COCs **GEO-1, GEN-1, CIVIL-1, STRUC-1, WATER-1** through **WATER-9** should ensure the proposed project complies with this purpose and these principles of the San Berardino County Policy Plan.
Principle: Effective preservation, management, and enhancement of natural resources will ensure their environmental and economical sustainability and resiliency.	

TABLE 5.6-5 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS

Applicable Plans, Policies, and Regulations	Consistency and Basis For Determination
Principle: The County's primary role is to govern land use and establish development standards to ensure that new development has minimal impact on the natural environment in the unincorporated areas of the county.	
Principle: The County has a responsibility to maintain and make available information on natural resources to enable property owners to be better stewards of the land and natural resources.	
Goal NR-2 Water Quality: Clean and safe water for human consumption and the natural environment.	**Yes.** Compliance with **WATER-1** through **WATER-9** should ensure the proposed project complies with these goals and policies in the San Berardino County Policy Plan.
Policy NR-2.1 Coordination on water quality. We collaborate with the state, regional water quality control boards, watermasters, water purveyors, and government agencies at all levels to ensure a safe supply of drinking water and a healthy environment.	
Policy NR-2.2 Water management plans. We support the development, update, and implementation of ground and surface water quality management plans emphasizing the protection of water quality from point and non-point source pollution.	
Policy NR-2.4 Wastewater discharge. We apply federal and state water quality standards for wastewater discharge requirements in the review of development proposals that relate to type, location, and size of the proposed project in order to safeguard public health and shared water resources.	
Policy NR-2.5 Stormwater discharge. We ensure compliance with the County's Municipal Stormwater NPDES (National Pollutant Discharge Elimination System) Permit by requiring new development and significant redevelopment to protect the quality of water and drainage systems through site design, source controls, stormwater treatment, runoff reduction measures, best management practices, low impact development strategies, and technological advances. For existing development, we monitor businesses and coordinate with municipalities.	
Goal NR-3 Open Space, Parks, and Recreation. A system of well-planned and maintained parks, trails, and open space that provides recreation opportunities for residents, attracts visitors from across the region and	**Yes.** Compliance with COCs **GEO-1, GEN-1, CIVIL-1, STRUC-1,** and **WATER-1** through **WATER-9** should ensure the proposed project complies with this goal and policy of the San Berardino County Policy Plan.

TABLE 5.6-5 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS	
Applicable Plans, Policies, and Regulations	**Consistency and Basis For Determination**
around the country, and preserves the natural environment.	
Policy NR-3.1 Open space preservation. We regulate land use and coordinate with public and nongovernmental agencies to preserve open space areas that protect natural resources, function as a buffer against natural hazards or between land uses, serve as a recreation or tourist destination, or are central to the identity of an unincorporated community.	
Policy NR-3.3 Management of designated areas. We coordinate with public and nongovernmental agencies to sustainably manage and conserve land within or adjacent to locally-, state-, or federally-designated open space or resource conservation areas.	**Yes.** The project complies with these policies and goals in the San Berardino County Policy Plan.
Goal NR-6 Mineral Resources: Mineral resource zones that allow extraction industries to continue supporting the regional and national economy while minimizing negative impacts on the public and natural environment.	
Policy NR-6.1 Mineral resource areas. We prioritize the conservation of land area with mineral resources by prohibiting or discouraging development of land that would substantially preclude the future development of mining facilities in areas classified as Mineral Resource Zone (MRZ) 2a, 2b, or 3a.	
Policy NR-6.2 Mining operations and reclamation. We require and monitor mineral extraction activities to ensure that the operation and reclamation of mined lands is consistent with the State Surface Mining and Reclamation Act of 1975 (SMARA).	
Policy NR-6.3 Conservation of construction aggregate. We encourage the continued operation of existing mining facilities and streamline the permitting of new mining facilities (consistent with the Policy Plan and other local, state, and federal regulations) to establish aggregate resources that are sufficient to satisfy 50 years of county demand.	
San Bernardino Countywide Plan, Resources and Conservation Section, Cultural Resources Element (2022)	
Purpose: Establishes direction on notification, coordination, and partnerships to preserve and conserve cultural resources.	**Yes.** Compliance with the following COCs should ensure the proposed project complies with these

TABLE 5.6-5 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS

Applicable Plans, Policies, and Regulations	Consistency and Basis For Determination
Purpose: Provides guidance on how new development can avoid or minimize impacts on cultural resources.	purposes, principles, goal, and policy in the San Berardino Countywide Plan. COCs **PAL-1** through **PAL-8** were developed based upon the guidance provided by the BLM regulations 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. COCs **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.
Principle: Today's generations are stewards of the county's cultural history and are responsible for conserving it for future generations.	
Principle: Preserving and celebrating cultural resources enhances our understanding of the world in which we live.	
Principle: Cultural resources are valuable assets that attract visitors and support local businesses.	
Goal CR-2 Historic and Paleontological Resources: Historic resources (buildings, structures, or archaeological resources) and paleontological resources that are protected and preserved for their cultural importance to local communities as well as their research and educational potential.	
Policy CR-2.3 Paleontological and archaeological resources. We strive to protect paleontological and archaeological resources from loss or destruction by requiring that new development include appropriate mitigation to preserve the quality and integrity of these resources. We require new development to avoid paleontological and archeological resources whenever possible. If avoidance is not possible, we require the salvage and preservation of paleontological and archeological resources.	
San Bernardino Countywide Plan, Safety and Security Section, Hazards Element (2022)	
Purpose: Identifies potential natural and human-generated hazards, including increased risk due to climate change.	**Yes.** Compliance with COCs **GEO-1, GEN-1, CIVIL-1, STRUC-1,** and **WATER-1** through **WATER-9** should ensure the proposed project complies with these purposes, principles, goals, and policies in the San Berardino Countywide Plan.
Purpose: Provides direction to address risks to residents, businesses, workers, and visitors.	
Purpose: Prioritizes resources and reduce pollution exposure in unincorporated disadvantaged communities.	
Principle: A safe environment is necessary to build and maintain a sustainable and prosperous county.	
Principle: The County is proactive in lessening risks from natural and human-generated hazards.	
Principle: Reduction in the loss of life, injury, private property damage, infrastructure damage, economic losses, and social dislocation can be achieved through planning and preparedness.	

TABLE 5.6-5 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS

Applicable Plans, Policies, and Regulations	Consistency and Basis For Determination
Principle: Emergency response and recovery efforts contribute to a resilient county, given unavoidable emergencies and natural disasters.	
Principle: Those who live in unincorporated disadvantaged communities should not be burdened with elevated exposure to pollution risks and reduced access to public facilities and services.	
Goal HZ-1 Natural Environmental Hazards: Minimized risk of injury, loss of life, property damage, and economic and social disruption caused by natural environmental hazards and adaptation to potential changes in climate.	
Policy HZ-1.2 New development in environmental hazard areas. We require all new development to be located outside of the environmental hazard areas listed below. For any lot or parcel that does not have sufficient buildable area outside of such hazard areas, we require adequate mitigation, including designs that allow occupants to shelter in place and to have sufficient time to evacuate during times of extreme weather and natural disasters. • Flood: 100-year flood zone, dam/basin inundation area • Geologic: Alquist Priolo earthquake fault zone; County-identified fault zone; rockfall/debris-flow hazard area, medium or high liquefaction area (low to high and localized), existing and County-identified landslide area, moderate to high landslide susceptibility area) • Fire: high or very high fire hazard severity zone	
Policy HZ-1.6 Critical and essential facility location. We require new critical and essential facilities to be located outside of hazard areas, whenever feasible.	
Policy HZ-1.7 Underground utilities. We require that underground utilities be designed to withstand seismic forces, accommodate ground settlement, and hardened to fire risk.	
Policy HZ-1.8 Wind erosion hazards. We require new development in medium-high or high wind erosion hazard areas to minimize the effects of wind-blown soil through building and site design features such as fencing, surface treatment or pavement, attenuation or wind	

TABLE 5.6-5 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS

Applicable Plans, Policies, and Regulations	Consistency and Basis For Determination
barriers, architectural features, building materials, and drought resistant landscaping.	
Policy HZ-1.9 Hazard areas maintained as open space. We minimize risk associated with flood, geologic, and fire hazard zones or areas by encouraging such areas to be preserved and maintained as open space.	
Policy HZ-1.12 Local hazard mitigation plan implementation. We require adherence to the goals, objectives and actions in the Multi-jurisdictional Hazard Mitigation Plan and subsequent amendments to reduce and mitigate damages from hazards in the county.	
Goal HZ-2 Human-generated Hazards: People and the natural environment protected from exposure to hazardous materials, excessive noise, and other human-generated hazards.	
Policy HZ-2.11 Legacy abandoned mine lands. We inventory legacy abandoned mines and require private property owners to eliminate hazardous conditions that could threaten human life and environmental contamination. We pursue funding to address legacy abandoned mines on County-owned property.	**Yes.** The project complies with this policy in the San Berardino County Policy Plan.
San Bernardino County, Multi-Jurisdictional Hazard Mitigation Plan (2022)	
Goal 3. Earthquake/Geologic Hazards: Minimize exposure to structural and contents damage from geologic seismic conditions.	**Yes.** Compliance with COCs **GEO-1, GEN-1, CIVIL-1,** and **STRUC-1** should ensure the proposed project complies with these goals, objectives, and actions in the San Berardino County Multi-Jurisdictional Hazard Mitigation Plan.
EQ GOAL: Minimize exposure to structural and contents damage from geologic and seismic conditions.	
Earthquake Objective 1: Educate the public on reducing earthquake risk.	
EQ Action 1.1: Improve public education programs and practices to residents for earthquake risk.	
Earthquake Objective 2: Protect occupants and structures in proposed developments from high levels of risk caused by rupture of the ground surface during an earthquake.	
EQ Action 2.2: Seismic Strapping for existing water tanks and future construction.	
Earthquake Objective 3: Continue geologic hazard mapping projects to minimize and prevent damage caused by earthquakes and other geologic hazards.	
EQ Action 3.1: Identify liquefaction hazard areas outside the currently designated Geologic Hazard Overlay Districts.	

TABLE 5.6-5 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS

Applicable Plans, Policies, and Regulations	Consistency and Basis For Determination
Earthquake Objective 4: Protect life and property from risks resulting from gravity-derived and/or earthquake-triggered landslides, expansive soils and/or other poor soil conditions.	
EQ Action 4.1: Require development on hillsides to minimizes the extent of topographic alteration and erosion, to maintain slope stability, and to reduce the potential for offsite sediment transport	
Earthquake Objective 6: Special District Funding: Continue Special Districts Projects relating to earthquake hazards.	
EQ Action 6.1: Continue funding and support for Special Districts Projects relating to earthquake hazards in the categories of water systems, sewer systems, wastewater treatment, roads, TV districts, park districts, Big Bear Valley Recreation Park District and Bloomington Recreation and Park District.	
Flood Objective 2: Alluvial Task Force. Review and analyze the findings and recommendations from the recently released Alluvial Fan Task Force reports, as funding permits.	**Yes.** Compliance with COCs **WATER-1** through **WATER-4,** and **WATER-9,** should ensure the proposed project complies with this objective and action in the San Berardino County Multi-Jurisdictional Hazard Mitigation Plan.
FL Action 3.4: Soil Stabilization on Roadways and Along Roadway Shoulders: Soil stabilization on roadway shoulders and dirt roads. This will prevent erosion caused by flood conditions.	
San Bernardino County Code of Ordinances (2025)	
Title 3: Health and Sanitation and Animal Regulations, Division 5: Monitoring, Control, and Elimination of Pollutants into the Stormwater Drainage System controls non-stormwater discharges to the storm water conveyance system and reduces pollutants in storm water discharges. Establishes requirements for dischargers associated with construction activity that are subject to any NPDES permit issued by the United States Environmental Protection Agency, State Water Resources Control Board, or Regional Water Quality Control Board.	**Yes.** Compliance with COCs and **WATER-1** through **WATER-4,** and **WATER-9,** should ensure the proposed project complies with this title of the San Bernardino County Code of Ordinances.
Title 6: Building Regulations, Division 3: Building Regulations, Chapter 1: California Building Code adopts and amends the International Building Code (2021) and California Building Code (2022). Identifies building and construction requirements to reduce hazard potential that are applicable to all new construction, including the project.	**Yes.** Compliance with COCs **GEO-1, GEN-1, CIVIL-1, STRUC-1,** and **WATER-1** through **WATER-9** should ensure the proposed project complies with this title of the San Bernardino County Code of Ordinances.

TABLE 5.6-5 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS	
Applicable Plans, Policies, and Regulations	**Consistency and Basis For Determination**
Title 8: Development Code, Division 8: Resource Management and Conservation, Chapter 82.15 Geologic Hazard Overlay establishes investigation requirements for areas that are subject to potential geologic problems.	**Yes.** Compliance with COC **GEO-1** should ensure the proposed project complies with this title of the San Bernardino County Code of Ordinances.
Title 8: Development Code, Division 8: Resource Management and Conservation, Chapter 88.17 Mineral Resources Overlay establishes requirements for surface mine operation and reclamation in areas where surface mining is occurring, may occur in the future, and may conflict with incompatible land uses.	**Yes.** The project complies with this title of the San Bernardino County Code of Ordinances.
Title 8: Development Code, Division 8: Resource Management and Conservation, Chapter 88.20 Palaeontologic Resources Overlay establishes criteria for site evaluation for palaeontologic resources in areas where palaeontologic resources are known to occur or likely to be present.	**Yes.** Compliance with COC **PAL-1** through **PAL-8** should ensure the proposed project complies with this title of the San Bernardino County Code of Ordinances.
Title 8: Development Code, Division 8: Resource Management and Conservation, Chapter 88.02 Soil and Water Conservation establishes uniform standards for regulating development that disturbs land surfaces.	**Yes.** The project complies with this title of the San Bernardino County Code of Ordinances
Title 8: Development Code, Division 8: Resource Management and Conservation, Chapter 88.03 Surface Mining and Land Reclamation ensures continued availability of mineral resources, while regulating surface mining as required.	**Yes.** The project complies with this requirement in the San Bernardino County Code of Ordinances.
Standards	
Society for Vertebrate Paleontology (2010)	
The **Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Non-Renewable Paleontological Resources** is a set of procedures and standards for assessing and mitigating impacts to vertebrate paleontological resources developed by the Society for Vertebrate Paleontology (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 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,	**Yes.** Compliance with the following COCs should ensure compliance with Society for Vertebrate Paleontology standards. COC **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. COC **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

TABLE 5.6-5 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS	
Applicable Plans, Policies, and Regulations	**Consistency and Basis For Determination**
monitoring during disturbance, and preservation/mitigation of identified resources.	collection, documentation and archival of any significant paleontological resources identified.

5.6.4 Conclusions and Recommendations

Staff recommends adopting the COCs detailed below in "Proposed Conditions of Certification". The proposed COCs are enforceable as part of the CEC's certificate for the jurisdictional project components.

Implementation of the proposed COCs would mitigate potential impacts from construction and operation of the jurisdictional project components on, and from, geologic hazards to less than significant. Also, implementation of COCs **GEN-1**, **CIVIL-1**, and **STRUC-1** (**Section 4.1, Facility Design**) and **WATER-1** through **WATER-9** (**Section 5.16, Water Resources**) would mitigate potential impacts from construction and operation of the jurisdictional project components on geologic, palaeontologic, and mineral resources of commercial, recreational, and scientific value, to less than significant.

Since the project is unlikely to exacerbate an existing geologic hazard, the engineering related COCs primarily ensure the project is appropriately designed, constructed, and operated to withstand impacts from geologic hazards on human life, property, and grid reliability. For purposes of these COCs, references to the California Building Code and Code of Federal Regulations means the code in force at the time the project starts ground disturbing activities.

Construction and operation of the non-jurisdictional project components would have less than significant impacts from, and on, geologic hazards and geologic, palaeontologic, and mineral resources of commercial, recreational, and scientific value.

Finally, construction and operation of the jurisdictional project components would be consistent with applicable plans, policies, and regulations.

5.6.5 Proposed Conditions of Certification

GEO-1 As described in the CBC Sections 1803.2 to 1803.5, if the DCBO determines that investigative conditions exist, the project owner shall perform geotechnical investigations for questionable soils, expansive soils, shallow groundwater, deep foundations, rock strata, excavations near foundations, compacted fill material, controlled low-strength material, alternate setback and clearance, and structures assigned to Seismic Design Categories C through F. In accordance with the California Business and Professions Code and CBC Section 1803.1, the geotechnical investigations shall be conducted by a registered design professional.

As described in the CBC Section 1803.6, the project owner shall prepare a geotechnical report that documents the results from the geotechnical investigations and provide project design recommendations to mitigate geologic hazards. In accordance with the CBC Section 1803.1, the geotechnical report shall be prepared and signed by a California registered geotechnical engineer, certified engineering geologist, and a registered geophysicist, where applicable.

In accordance with the CBC Section 1803.7, the geotechnical investigation report shall include a geohazards report that considers seismic hazards. The geohazard report shall identify site-specific geologic and seismic conditions that may require mitigation. The report shall recommend project design criteria to mitigate geologic and seismic hazards. The project owner shall incorporate recommendations for project design criteria into the final project design. An appropriate qualified California-certified licensed engineering geologist, in consultation with a California registered geotechnical engineer, shall prepare the geohazards portion of the geotechnical report.

Verification The project owner shall provide to the CPM copies of the geotechnical investigations and geohazards report and any comments by the DCBO at least 60 days prior to ground disturbing activities.

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 demonstrate to the satisfaction of the CPM the appropriate education and experience to accomplish the required paleontological resource tasks. The PRS's resume shall also include the names and phone numbers of references that can be contacted to verify information.

As determined by the CPM, the PRS shall meet the minimum qualifications for a Qualified Professional Paleontologist as defined in the Code of Federal Regulations (CFR) Title 43, Subtitle A, Part 49 – Paleontological Resources Preservation and in the Society of Vertebrate Paleontology's Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources (SVP 2010). The qualifications of the PRS shall include the following:

1. A graduate degree in paleontology or geology, and/or a publication record in peer reviewed journals; and demonstrated competence in field techniques, preparation, identification, curation, and reporting in the state or geologic province in which the project occurs. An advanced degree is less important than demonstrated competence and regional experience.
2. 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.

3. Proficiency in recognizing fossils in the field and determining their significance.
4. Expertise in local geology, stratigraphy, and biostratigraphy.
5. Experience collecting vertebrate fossils in the field.

The project owner shall ensure that the PRS obtains qualified paleontological resource monitors (PRMs) to monitor as he or she deems necessary on the project. PRMs shall have the equivalent of the following qualifications:

1. B.S. or B.A. degree in geology or paleontology and a minimum of one year of relevant paleontological resource monitoring experience in California; or
2. A.S. or A.A. in geology, paleontology, or biology and a minimum of four years of relevant paleontological resource monitoring experience in California; or
3. Enrollment in upper division classes pursuing a bachelor's degree or a more advanced degree in the field of geology or paleontology and a minimum of three years of relevant paleontological resource monitoring experience in California; and
4. Demonstrated proficiency in recognizing various types of fossils, in collection methods, and in other paleontological field techniques.

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 for the replacement PRS. The project owner shall keep resumes on file for the qualified PRSs and 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: 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 for review and approval. CPM approval is required prior to the initiation of ground disturbing activities.

At least 30 days prior to ground disturbance, the PRS or project owner shall provide a letter with resumes naming anticipated PRMs for the project. The letter shall state that the identified PRMs meet the minimum qualifications for paleontological resource monitoring as required by this condition of certification. If additional PRMs 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.

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 the PRS and the CPM, for review and approval, maps and drawings showing the footprint of the power plant, construction laydown 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 (1:480) and 1 inch = 100 feet (1:1,200). 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: At least 30 days prior to the start of ground disturbance, the project owner shall provide maps and drawings to the PRS and CPM for review and approval.

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.

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 it 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 Bureau of Land Management (BLM)'s Potential Fossil Yield Classification (PFYC) System, as described in the BLM's Permanent Instruction Memorandum PIM2022-009, Implementing the Paleontological Resources Preservation Act of 2009 (BLM 2022). The PRMMP shall also be developed in accordance with the Society of Vertebrate Paleontology's Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources (SVP 2010). The PRMMP shall include, but not be limited to, the following:

1. Procedures for, and assurance, that those procedures would be followed in the performance and sequence of project-related tasks, such as any literature searches, pre-construction surveys, worker environmental training, field work, 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.
2. Identification of the person(s) expected to assist with each of the tasks required by the PRMMP and these COCs.
3. A thorough discussion of the 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 and in which geologic units. This shall include descriptions of the sampling procedures that shall be used for fine-grained and coarse-grained units.
5. A discussion of the locations where 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 how notifications shall 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 to inventory, prepare, and deliver fossil materials for curation in a retrievable storage collection at 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 shall be met, and the name and phone number of the contact person at the institution.
10. A copy of the paleontological resources COCs.
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 for review and approval. 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 palaeontologic resources and identify procedures they must follow to ensure there are no impacts to sensitive palaeontologic 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 palaeontologic potential at, or near, the project site.
3. Information that the PRS and PRM have the authority to stop or redirect construction in the event of a discovery or unanticipated impact on 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 they have 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 shall be used to present the WEAP and qualify workers to conduct ground disturbing activities that could impact paleontological resources.

Verification: At least 30 days prior to ground disturbance, the project owner shall submit the draft WEAP, including the brochure and sticker, to the CPM for review and comments. The submittal shall also include a draft training script and the set of reporting procedures for workers to follow.

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 the WEAP and training script.

PAL-5 No worker shall excavate or perform any ground disturbing 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 who 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: 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.

The resume and qualifications of the trainer shall be submitted to the CPM for review and approval prior to providing WEAP training.

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 were identified, both at the site and along any constructed linear facilities associated with the project. If 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 with the CPM.

The project owner shall ensure that the PRS and PRM(s) have the authority to stop or redirect construction if paleontological resources are encountered. The project owner shall ensure that there is no interference with monitoring activities unless directed by the PRS. Monitoring activities shall be conducted as follows:

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 MCR. The letter or email shall include the justification for the change in monitoring and be submitted to the CPM for review and approval.

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 MCR. The name and contact information of the PRS and PRM(s) who were making field observations shall be included in the daily log. The PRS may informally discuss paleontological resource monitoring and mitigation activities with the CPM at any time.

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 COCs. The PRS shall recommend corrective action to resolve the issues or achieve compliance with the COCs.

For any significant paleontological resources encountered, either the project owner or the PRS shall notify the CPM within 24 hours. If the resources are encountered on a weekend or holiday, notification shall occur on the morning of the next business day. In the event construction has been stopped because of a paleontological find, such notification shall be provided as soon as practical, but not later than 24 hours after a stop work order has been issued.

For excavations planned in material that is classified as having a moderate to high paleontological potential 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 shall 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 the 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 palaeontologic monitoring, including any incidents of non-compliance or any changes to the CPM-approved monitoring plan. 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: A copy of the daily monitoring log of paleontological resource activities shall be included in the MCR.

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 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 the 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's description of sensitivity and significance of those resources, and notes regarding if and how the 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 for review.

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 because 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 would be responsible for curating collected specimens. This documentation shall also show that fees were paid for curation and the owner relinquished control and ownership of all fossil material.

5.6.6 Recommended Mitigation Measures

Staff recommend compliance with **MM WATER-1,** which is described in **Section 5.16, Water Resources**, during operation of non-jurisdictional project components.

5.6.7 References

BLM 2022 – Department of the Interior, Bureau of Land Management (BLM). Implementing the Paleontological Resources Preservation Act of 2009 (PRPA), Attachment 1: National Potential Fossil Yield Classification. Permanent Instruction Memorandum PIM2022-009. August 1, 2022. Accessed on September 23, 2025. Accessed online at: https://www.blm.gov/policy/pim2022-009

BLM 2023 – Department of the Interior, Bureau of Land Management (BLM). BLM Natl PFYC Potential Fossil Yield Classification Geologic Formation Map Index 2022 Polygons. Published January 1, 2022. Last updated on April 7, 2023. Accessed on October 29, 2025. Accessed online at: https://gbp-blm-egis.hub.arcgis.com/datasets/813066f798704622ac8abf75d8786c69/about

CBC 2022 – California Building Code (CBC). 2022 California Building Code, Title 24, Part 2 (Volumes 1 & 2) with July 2024 Supplement. California Code of Regulations. Effective: January 1, 2023. Version: July 2024. Accessed on September 2, 2025. Accessed online at: https://codes.iccsafe.org/content/CABC2022P1/california-code-of-regulations-title-24

CCR 2005 – California Code of Regulations (CCR). Title 14. Natural Resources, Division 6. Resources Agency, Chapter 3. Guidelines for Implementation of the California Environmental Quality Act (Refs & Annos), Article 9. Contents of Environmental Impact Reports. Last amended on October 6, 2005. Accessed on: September 30,

2025. Accessed online at: https://govt.westlaw.com/calregs/Document/I894766585B4D11EC976B000D3A7C4BC3?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default)

CCR 2018 – California Code of Regulations (CCR). Title 14. Natural Resources, Division 6. Resources Agency, Chapter 3. Guidelines for Implementation of the California Environmental Quality Act (Refs & Annos), Appendix G. Last amended on December 18, 2018. Accessed on: September 30, 2025. Accessed online at: https://govt.westlaw.com/calregs/Document/I8EA91DA75B4D11EC976B000D3A7C4BC3?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default)#co_anchor_I4944C830EC7411EE882BDF58FB856748

CCR 2023 – California Code of Regulations (CCR). Title 20. Public Utilities and Energy, Division 2. Public Utilities Commission, Division 2. State Energy Resources Conservation and Development Commission. As effective: July 20, 2023. Accessed on September 30, 2025. Accessed online at: https://govt.westlaw.com/calregs/Document/I7BF908F02A2C11EEB88D8511838705AC?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default)

CDOC 2000 – California Department of Conservation (CDOC), State Mining and Geology Board and Division of Mines and Geology. Guidelines for Classification and Designation of Mineral Lands. Special Publication 52. January 2000. Accessed on August 22, 2025. Accessed online at: https://www.conservation.ca.gov/smgb/Guidelines/

CDOC 2002 – California Department of Conservation (CDOC), California Geological Survey (CGS). Note 36: California Geomorphic Provinces. Revised December 2002. Accessed on September 2, 2025. Available online at: https://www.conservation.ca.gov/cgs/documents/publications/cgs-notes/CGS-Note-36.pdf

CDOC 2008 – California Department of Conservation (CDOC). California Geological Survey (CGS). Special Publication 117A: Guidelines for Evaluating and Mitigating Seismic Hazards in California. 2008. Accessed on September 2, 2025. Available online at: https://www.conservation.ca.gov/cgs/Documents/Publications/Special-Publications/SP_117a.pdf

CDOC 2011 – California Department of Conservation (CDOC), California Geological Survey (CGS). Map Sheet 58: Deep-Seated Landslide Susceptibility. 2011. Accessed on September 2, 2025. Available online at: https://maps-cnra-cadoc.opendata.arcgis.com/maps/cadoc::cgs-map-sheet-58-deep-seated-landslide-susceptibility/about

CDOC 2012 – California Department of Conservation (CDOC), California Geological Survey (CGS). Special Report 217: Geologic Compilation of Quaternary Surficial

Deposits in Southern California. Prepared for the California Department of Water Resources. Revised December 2012. Accessed on September 2, 2025. Available online at: https://www.conservation.ca.gov/cgs/publications/sr217

CDOC 2016 – California Department of Conservation (CDOC), Division of Mine Reclamation. Mines Online. 2016. Accessed on October 22, 2025. Accessed online at: https://maps.conservation.ca.gov/mol/index.html

CDOC 2018 – California Department of Conservation (CDOC). California Geological Survey (CGS). Special Publication 42: Earthquake Fault Zones: A Guide for Government Agencies, Property Owners/Developers, and Geoscience Practitioners for Assessing Fault Rupture Hazards in California. Revised 2018. Accessed on September 2, 2025. Accessed online at: https://www.conservation.ca.gov/cgs/publications/sp42

CDOC 2019 – California Department of Conservation (CDOC), California Geological Survey (CGS). CGS Information Warehouse: Mineral Land Classification Maps (SMARA Study Areas). Published on June 4, 2019. Accessed September 9, 2025. Available online at: https://maps-cnra-cadoc.opendata.arcgis.com/datasets/cadoc::cgs-information-warehouse-mineral-land-classification-maps-smara-study-areas/about

CDOC 2022 – California Department of Conservation (CDOC), California Geological Survey (CGS). Fault Activity Map of California. Published on December 31, 2012. Last updated on April 11, 2022. Accessed on July 30, 2025. Available online at: https://maps-cadoc.opendata.arcgis.com/maps/cadoc::fault-activity-map-of-california/about?path=

CDOC 2024 – California Department of Conservation, California Geological Survey (CGS). Earthquake Zones of Required Investigation. Updated on November 21, 2024. Accessed on July 29, 2025. Accessed online at: https://maps.conservation.ca.gov/cgs/EQZApp/app/

CDOC 2025a – California Department of Conservation (CDOC), California Geologic Energy Management Division (CalGEM). Well Finder. Online mapping application last updated on February 20, 2025. Well Statewide Tracking and Reporting System (WellSTAR) database last updated on July 29, 2025. Accessed on July 30, 2025. Accessed online at: https://maps.conservation.ca.gov/doggr/wellfinder/

CDOC 2025b – California Department of Conservation (CDOC), California Geological Survey (CGS). Landside Maps and Reports. Published on July 16, 2015. Updated February 20, 2025. Accessed on July 30, 2025. Accessed online at: https://www.arcgis.com/home/item.html?id=998ea7bff3854164a5a227edd2c3d0de

CDOC 2025c – California Department of Conservation (CDOC). California Geological Survey (CGS). Map Sheet 48: Earthquake Shaking Potential for California.

Revised 2025. Accessed on September 9, 2025. Accessed online at: https://www.conservation.ca.gov/cgs/sh/earthquake-shaking-potential

CDOC 2025d – California Department of Conservation (CDOC), Division of Mine Reclamation. AB 3098 List. As effective July 30, 2025. Accessed on July 30, 2025. Accessed online at: https://www.conservation.ca.gov/smgb/Pages/AB-3098-List.aspx

CFR 2017 – Code of Federal Regulations (CFR). Title 40 – Protection of Environment, Chapter I – Environmental Protection Agency, Subchapter D – Water Programs, Part 130 – Water Quality Planning and Management. As published on January 3, 2017. Accessed on September 9, 2025. Accessed online at: https://www.ecfr.gov/current/title-40/part-130

CFR 2019 – Code of Federal Regulations (CFR). Title 40 – Protection of Environment, Chapter I – Environmental Protection Agency, Subchapter D – Water Programs, Part 127 – Criteria and Standards for the National Pollutant Discharge Elimination System. As amended on June 12, 2019. Accessed on September 9, 2025. Accessed online at: https://www.ecfr.gov/current/title-40/part-125

CFR 2022 – Code of Federal Regulations. Title 43 – Public Lands: Interior, Subtitle A – Office of the Secretary of the Interior II, Part 49 – Paleontological Resources Preservation. As amended: August 2, 2022. Accessed: September 23, 2025. Accessed online at: https://www.ecfr.gov/current/title-43/subtitle-A/part-49/subpart-A?toc=1

CFR 2023 – Code of Federal Regulations. Title 40 – Protection of Environment, Chapter I – Environmental Protection Agency, Subchapter D – Water Programs, Part 121 – State Certification of Activities Requiring a Federal License or Permit. As amended on November 27, 2023. Accessed on September 9, 2025. Accessed online at: https://www.ecfr.gov/current/title-40/part-121

CFR 2024 – Code of Federal Regulations. Title 43 – Public Lands: Interior, Subtitle A-Office of the Secretary of the Interior, Part 3 – Preservation of American Antiquities. As amended on January 25, 2024. Accessed: October 29, 2025. Accessed online at: https://www.ecfr.gov/current/title-43/subtitle-A/part-3

CPRC 1994 – California Public Resources Code (CPRC), Division 13. Environmental Quality, Chapter 2.6. General, Section 21081.6. As effective: October 1, 1994. Accessed on August 15, 2025. Accessed online at: https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?division=13.&chapter=2.6.&lawCode=PRC

CPRC 2011 – California Public Resources Code (CPRC), Division 5. Parks and Monuments, Chapter 1.7. Archaeological, Paleontological, and Historical Sites. As effective: January 1, 2011. Accessed on September 25, 2025. Accessed online at: https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=PRC&division=5.&title=&part=&chapter=1.7.&article=

CPRC 2017 – California Public Resources Code (CPRC), Division 2. Geology, Mines, and Mining, Chapter 7.8. Seismic Hazards Mapping Act. As effective: June 27, 2017. Accessed on August 15, 2025. Accessed online at: https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=PRC&division=2.&title=&part=&chapter=7.8.&article=

CPRC 2022 – California Public Resources Code (CPRC), Division 2. Geology, Mines, and Mining, Chapter 9. Surface Mining and Reclamation Act of 1975. As effective: January 1, 2022. Accessed on: August 22, 2025. Accessed online at: https://leginfo.legislature.ca.gov/faces/codes_displayexpandedbranch.xhtml?tocCode=PRC&division=2.&title=&part=&chapter=9.&article=

CPRC 2024 – California Public Resources Code (CPRC), Division 2. Geology, Mines, and Mining, Chapter 7.5. Alquist-Priolo Earthquake Fault Zoning Act. As effective on: January 1, 2024. Accessed on August 15, 2025. Accessed online at: https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?division=2.&chapter=7.5.&lawCode=PRC

CPRC 2025 – California Public Resources Code (CPRC), Division 15. Energy Conservation and Development, Chapter 6. Power Facility and Site Certification. As effective on: January 1, 2025. Accessed on September 30, 2025. Accessed online at: https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=PRC&division=15.&title=&part=&chapter=6.&article=

GSA 2022 – The Geological Society of America (GSA). Geologic Time Scale. Version 6.0. Updated October 2022. Accessed on December 1, 2025. Available online at: https://www.geosociety.org/GSA/GSA/timescale/home.aspx

IBC 2021 – International Building Code (IBC). Version: September 2021. Accessed on: September 2, 2025. Available online at: https://codes.iccsafe.org/content/IBC2021P2

RE 2024ooo – Resolution Environmental (TN 259702). Section 37 Geology and Soils - October 2024 - Revision 1, dated October 25, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2024vvv – Resolution Environmental (TN 259709). Section 3-22 Paleontological Resources, dated October 25, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2024cccc – Resolution Environmental (TN 257932). Appendix H Paleontological Resources Technical Report, dated July 23, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025ii – Resolution Environmental (TN 264913). Updated Project Description and Responses to REV 1 DR BIO-2 and REV 1 DR ES-1, dated July 18, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025ddd – Resolution Environmental (TN 265183). Onsite Water Supply - Revised July 31 2025, dated July 31, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025uuu – Resolution Environmental (TN 266145). Preliminary Geotechnical Investigation - 2011, dated September 25, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025zzz – Resolution Environmental (TN 266599). Geophysical Characterization of Subsurface Physical Properties, dated October 15, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025aaaa – Resolution Environmental (TN 266600). 2014 Groundwater Well Test Report, dated October 15, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025eeee – Resolution Environmental (TN 266918). Updated Figures. Docketed October 29, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025jjjj – Resolution Environmental (TN 267972). MM HYD-1, dated December 18, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025kkkk – Resolution Environmental (TN 267973). Mitigation and APM Summary, dated December 18, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025llll – Resolution Environmental (TN 267999). Final Data Responses, dated December 19, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

San Bernardino County 2022a – County of San Bernardino (San Bernardino County). County Policy Plan. Amended: September 2022. Accessed on September 2, 2025. Accessed online at: https://countywideplan.sbcounty.gov/policy-plan/

San Bernardino County 2022b – County of San Bernardino (San Bernardino County). Multi-Jurisdictional Hazard Mitigation Plan. 2022. Accessed on September 2, 2025. Accessed online at: https://www.sbcounty.gov/uploads/SBCFire/documents/EmergencyServices/Hazard-Mitigation-Plan-202212.pdf

San Bernardino County 2025 – County of San Bernardino (San Bernardino County). Code of Ordinances. Version: 2025 S-41 Supplement contains: Local Legislation current through Ord. 4484, passed April 8, 2025. Published by American Legal Publishing, Cincinnati, OH. Accessed on September 2, 2025. Accessed online at: https://codelibrary.amlegal.com/codes/sanbernardino/latest/sanberncty_ca/0-0-0-146479

SWRCB 2025 – California State Water Resources Control Board (SWRCB). Porter-Cologne Water Quality Control Act: Water Code Division 7 and Related Sections). As amended, including Statutes 2024. Published in February 2025. Accessed on September 9, 2025. Accessed online at: https://www.waterboards.ca.gov/laws_regulations/docs/portercologne.pdf

SVP 2010 – Society of Vertebrate Paleontology (SVP). Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources. 2010. Accessed on September 2, 2025. Available online at: https://vertpaleo.org/wp-content/uploads/2021/01/SVP_Impact_Mitigation_Guidelines.pdf

USBR 2001a – Department of the Interior, Bureau of Reclamation. Engineering Geology Field Manual, Second Edition, Volume I. 1998. Reprinted 2001. Accessed on: July 29, 2025. Accessed online at: https://geodata.geology.utah.gov/pages/view.php?ref=47736

USBR 2001b – Department of the Interior, Bureau of Reclamation. Engineering Geology Field Manual, Second Edition, Volume II. 1998. Reprinted 2001. Accessed on: July 29, 2025. Accessed online at: https://geodata.geology.utah.gov/pages/download_progress.php?ref=47737&size=&ext=pdf&k=

USGS 2011 – United States Geological Survey (USGS). Mineral Resources Online Spatial Data: Interactive Maps and Downloadable Data for Regional and Global Geology, Geochemistry, Geophysics, and Mineral Resources. 2011. Accessed on July 30, 2025. Available online at: https://mrdata.usgs.gov/general/map-us.html

USGS 2015 – United States Geological Survey (USGS). UCERF3: A New Earthquake Forecast for California's Complex Fault System. Prepared in cooperation with the California Earthquake Authority, California Geological Survey, and Southern California Earthquake Center. Fact Sheet 2015-3009. March 2015. Accessed on September 9, 2025. Accessed online at: https://pubs.usgs.gov/fs/2015/3009/pdf/fs2015-3009.pdf

USGS 2017 – United States Geological Survey (USGS). Quaternary fault and fold database for the United States. In cooperation with the California Department of Conservation (CDOC), California Geological Survey (CGS). Accessed on July 30, 2025. Accessed online at: https://www.usgs.gov/natural-hazards/earthquake-hazards/faults

USGS 2018 – United States Geological Survey (USGS). Areas of Land Subsidence in California. December 7, 2018. Accessed on August 13, 2025. Accessed online at: https://www.usgs.gov/tools/areas-land-subsidence-california

Youd and Idriss 2001 – Authors: Youd, T. L. and I. M. Idriss. Workshop Participants: T. L. Youd, I. M. Idriss, R. D. Andrus, I. Arango, G. Castro, J. T. Christian, R. Dobry, W. D. Liam Finn, L. F. Harder, M. E. Hynes, K. Ishihara, J. P. Koester, S. S.C. Liao, W. F. Marcuson, G. R. Martin, J. K. Mitchell, Y. Moriwaki, M. S. Power, P. K.

Robertson, R. B. Seed, and K. H. Stokoe. Liquefaction Resistance of Soils: Summary Report from the 1996 NCEER and 1998 NCEER/NSF Workshops on Evaluation of Liquefaction Resistance of Soils. American Society of Civil Engineers, Journal of Geotechnical and Geoenvironmental Engineering, Vol 127, No. 10. April 2001. Accessed on: August 12, 2025. Available online at: http://www.ce.memphis.edu/7137/PDFs/Reference2/Youd%20ad%20Idriss.pdf

5.7 Hazards, Hazardous Materials/Waste and Wildfire

This section analyzes the jurisdictional and non-jurisdictional project components. The jurisdictional project components include the construction and operation of the solar photovoltaic (PV) facility, battery energy storage system (BESS), project substation and generation intertie line (gen-tie) and construction of the utility switchyard and section of transmission loop in lines that would connect to the existing Mead-Adelanto Transmission Line. The non-jurisdictional project components include the construction and operation of the protection setting upgrades to the Marketplace and Adelanto substations and operation of the utility switchyard and section of transmission loop in lines.

5.7.1 Environmental Setting

Existing Conditions

This section discusses the environmental setting and regulatory background associated with the construction and operation of the project with respect to hazards and hazardous materials/waste and wildfire. In a remote desert location adjacent to Interstate 15 (I-15), the project includes solar PV panels, a BESS, and electrical infrastructure to connect to the existing Mead-Adelanto 500-kilovolt (kV) transmission line operated by Los Angeles Department of Water and Power (LADWP).

Hazardous Materials

Hazard Exposure

A hazardous material exposure route is the way a contaminant enters an individual or population. Typically, hazardous material exposure occurs by one of the three exposure routes: inhalation, ingestion, or dermal (U.S. EPA, 2024).

Hazardous Materials

Hazardous materials are defined by federal and state regulations that aim to protect public health and the environment. Hazardous materials have certain chemical, physical, or infectious properties that cause them to be considered hazardous. The term "hazardous materials" refers to both hazardous substances and hazardous wastes. Under federal and state laws, any material, including wastes, may be considered hazardous if it is specifically listed by statute as such or if it is toxic (causes adverse human health effects), ignitable (has the ability to burn), corrosive (causes severe burns or damage to materials), or reactive (causes explosions or generates toxic gases). Hazardous materials are defined in the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 101(14), and also in the California Code of Regulations, Title 22, Chapter 11, Article 2, Section 66261, which provides the following definition:

> *A hazardous material is a substance or combination of substances which, because of its quantity, concentration, or physical, chemical or infectious characteristics, may either (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of or otherwise managed.*

The project would involve limited transport, storage, use, and disposal of hazardous materials typically used for industrial facilities during construction, operation and maintenance, and decommissioning activities. Some examples of hazardous materials that would be handled during construction, operation and maintenance, and decommissioning activities would include unleaded gasoline, diesel fuel, oil, lubricants (for example, motor oil, transmission fluid, and hydraulic fluid), solvents, adhesives, paint materials, and lithium batteries. Operation and maintenance of the project would not require as many hazardous materials as construction or decommissioning. All hazardous materials would be transported, stored, handled, and used in accordance with applicable plans, policies, and regulations.

Summaries of hazardous materials that would be handled during construction and operation are presented in **Table 5.7-1.**

TABLE 5.7-1 HAZARDOUS MATERIALS USE DURING CONSTRUCTION AND OPERATION

Material	Uses	Toxicity	Maximum Storage Quantity
Gasoline and diesel fuel	Both would be used as fuel for construction and transportation equipment during construction and decommissioning. Diesel would also be used to power an emergency generator during operation, if needed.	Fuel oils are liquid mixtures produced from petroleum, and their use mostly involves burning them as fuels. Drinking or breathing fuel oils may cause nausea or nervous system effects, including long-term health effects. However, exposure under normal use conditions is not likely to be harmful.	1,000 gallons
Lubricating oils, grease, hydraulic fluids, gear oils	Lubricating oil would be present in the diesel engine of the emergency generator, and in engines of construction and transportation equipment.	Exposure to hydraulic fluids occurs mainly in the workplace. Very little is known about how mineral oil hydraulic fluids and polyalphaolefin hydraulic fluids will affect your health. There are reports of health effects in people exposed to these classes of hydraulic fluids. The Department of Health and Human Services (DHHS), the International Agency for Research on Cancer (IARC), and EPA have not classified mineral oil hydraulic fluids, polyalphaolefin hydraulic fluids, and organophosphate ester hydraulic fluids for carcinogenic effects.	Unused: <55 gallons per individual lubricant, < 275 gallons total Used: 55 gallons
Glycol-based antifreeze	Used in the diesel engine for the emergency generator.	Ethylene glycol is a clear liquid used in antifreeze and de-icing solutions. Exposure to large amounts of ethylene glycol can damage the kidneys, nervous system, lungs, and heart.	< 55 gallons
Lead-acid storage batteries and electrolyte solution	Present in construction and transportation equipment. Backup power source for control equipment.	The electrolyte solution in lead acid batteries contains sulfuric acid, which is highly corrosive and can cause severe chemical burns to the skin and can damage the eyes. The solution is also poisonous if ingested. In addition, overcharging a lead acid battery can produce hydrogen sulfide gas. The gas is heavier than air and will accumulate at the bottom of poorly ventilated spaces.	< 500 lbs (10 batteries at 50 lbs per battery)
Lithium-ion batteries	Used for project operations	Under normal usage conditions, the materials do not exhaust vapors. Cell electrolyte should not be encountered by anyone handling a battery, making the risk of a spill of electrolyte from any commercial battery pack very remote. Furthermore, in most commercial cells, the electrolyte is largely absorbed in electrodes, such that there is no free or "spillable" electrolyte within individual sealed cells. In those instances, severe mechanical damage (e.g., severe crushing) can cause a small fraction of total electrolyte quantity to leak out of a single cell; however, any released	7,980 tons

TABLE 5.7-1 HAZARDOUS MATERIALS USE DURING CONSTRUCTION AND OPERATION

Material	Uses	Toxicity	Maximum Storage Quantity
		electrolyte is likely to evaporate rapidly.	
Cleaning solvents	Organic solvents would be used for equipment cleaning and maintenance when water- based cleaning and degreasing solvents cannot be used.	Exposure to solvents and other organic liquids is one of the most common chemical health risk at places of work. Most of the organic solvents are combustible, often highly volatile, and extremely flammable, and they should always be handled with care. Some solvents produce vapors which are heavier than air. These may move on the floor or ground to a distant ignition source, such as a spark from welding or static electricity. The vapors may also explode from smoking. Vapors of solvents can also accumulate in confined places and stay there for a long time, presenting risks for health and property. Solvents enter the body by inhalation, by swallowing, and through the skin. The effect depends on several factors.	< 55 gallons per solvent
Dielectric fluids	Used in electrical transformers and other electric power management devices as an electrical insulator.	Mineral oil may cause allergic reactions. Primary routes of entry: Eye and skin contact, inhalation; Target organs: Eyes, skin, respiratory tract. Persons with preexisting skin and respiratory conditions may be more susceptible to the effects of this product. Mineral oil is not listed in the National Toxicology Program Annual Report on Carcinogens and not listed as an OSHA carcinogen.	15,000 gallons
Herbicides	May be used for vegetation control around facilities for fire safety.	If a large amount is swallowed, glyphosate can cause nausea and vomiting. It can be very irritating if it is left on skin or eyes. Glyphosate has been associated with respiratory effects (lung and nose), such as irritation in the nose or asthma in people using glyphosate products. Workers that use large amounts of glyphosate products for long periods of time may be more likely to develop respiratory effects. Studies in animals have shown that glyphosate can cause developmental effects (such as lower body weight and problems with bone and organ growth) when the pregnant animals were given very large amounts of glyphosate.	< 55 gallons

Sources: (RE 2025eeee), (ATSDR 2025)

Environmental Contamination

Existing and past land use activities are commonly used as indicators of sites or areas where hazardous material storage and use may have occurred or where potential environmental contamination may exist. For example, many historic and current industrial sites have soil or groundwater contaminated by hazardous substances. Other hazardous materials sources include leaking underground tanks in commercial and rural areas, contaminated surface runoff from polluted sites, and contaminated groundwater plumes.

A Phase I Environmental Site Assessment (ESA) was completed in 2022 by SWCA, and a Phase I ESA update was prepared in 2023 and 2024 (RE 2024sss). As part of these reports, a standard radius database search was conducted of federal, state, local, and proprietary records. The objective of the Phase I ESA was to identify Recognized Environmental Conditions (RECs), Historical RECs (HRECs), and Controlled RECs (CRECs) that affect the project site. RECs are defined by ASTM International (ASTM) as "the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment" (ASTM 2021). According to the ASTM Phase I ESA standard, the term *recognized environmental condition* is not intended to include de minimis conditions (minor things) that generally do not present a material risk or harm to public health or the environment. These generally would not be the subject of enforcement action if brought to the attention of appropriate government authorities.

Neither the Phase I ESA report completed in September 2022, nor the Phase I ESA update report completed in 2023 and 2024 identified any RECs, HRECs, or CRECs in connection with the project site. Both reports indicated that since 1933 there have been no known hazardous materials uses at the site or known environmental contamination.

The Shell Oil gas station on Rasor Road, located on the southwestern boundary of the project site, is listed on various Department of Toxic Substances Control (DTSC) databases. The facility contains an unspecified number of underground storage tanks (USTs) associated with a gasoline service station. No leaking USTs have been reported. Multiple environmental reporting violations are noted at this facility; violations except one are noted as "returned to compliance." The most recent violation was issued on March 4, 2022, during secondary containment certification for fill sump failure during testing. Given the location with respect to the project site and the status of the listings, and because testing as recently as March 2022 would have likely identified potential leaks, this is not considered a REC for the project site.

Hazardous Waste and Substance Sites

Staff reviewed the State Water Resources Control Board (SWRCB) Geotracker and the DTSC EnviroStar websites, which did not identify any known hazardous material or environmental contamination site within or close enough to affect the project site.

Land Use and Sensitive Receptors

Land use in the immediate vicinity of the project site is primarily undeveloped desert land. No sensitive receptors, including schools, hospitals, day-care facilities, emergency response facilities and long-term health care facilities are within a 1-mile radius of the project site.

Airports

There are no private airstrips within the vicinity of the project site. The closest airport to the project site is Baker Airport, approximately 9 miles northeast of the site.

Schools

There are no schools within 0.25 miles of the project site. The nearest schools, Baker Elementary, Middle, and High Schools, are over eight miles away in the northeastern part of Baker.

Emergency Evacuation Routes

Primary access to the project site during construction and operation would be from Rasor Road. Access associated with the proposed gen-tie line and switchyard on the north side of I-15 would be from Arrowhead Trail Highway or the Los Angeles Department of Water and Power (LADWP)/SCE transmission maintenance road, both of which run parallel to I-15. No emergency evacuation routes have been identified in the project vicinity.

Wildfire

Fire Hazard Severity Zones

The California Department of Forestry and Fire Protection (CAL FIRE) identifies and maps areas of significant fire hazards based on fuels, terrain, and other relevant factors. These maps categorize this information by Fire Hazard Severity Zones (FHSZ), which are progressively ranked as un-zoned, moderate, high, and very high zones (CAL FIRE 2025a).

Wildland FHSZ in California are divided into State, local, or Federal government responsibility areas. State Responsibility Areas (SRA) are designated lands in California where the state has the primary financial responsibility for fire protection and suppression. Local Responsibility Areas (LRA) are locations where financial responsibility of preventing and suppressing wildfires is not that of the State or federal government. Federal Responsibility Areas (FRA) are locations where the financial responsibility of

preventing and suppressing fires falls primarily on a federal agency; federal lands are not included in the CAL FIRE FHSZ mapping process.

The site is in an FRA and therefore does not have a FHSZ designation from CAL FIRE. Using USDA Forest Service Fire Modeling Institute data, **Figure 5.7-1** shows that the SMSP project site has a very low Wildfire Hazard Potential.

California Public Utilities Commission (CPUC) High Fire-Threat District Map

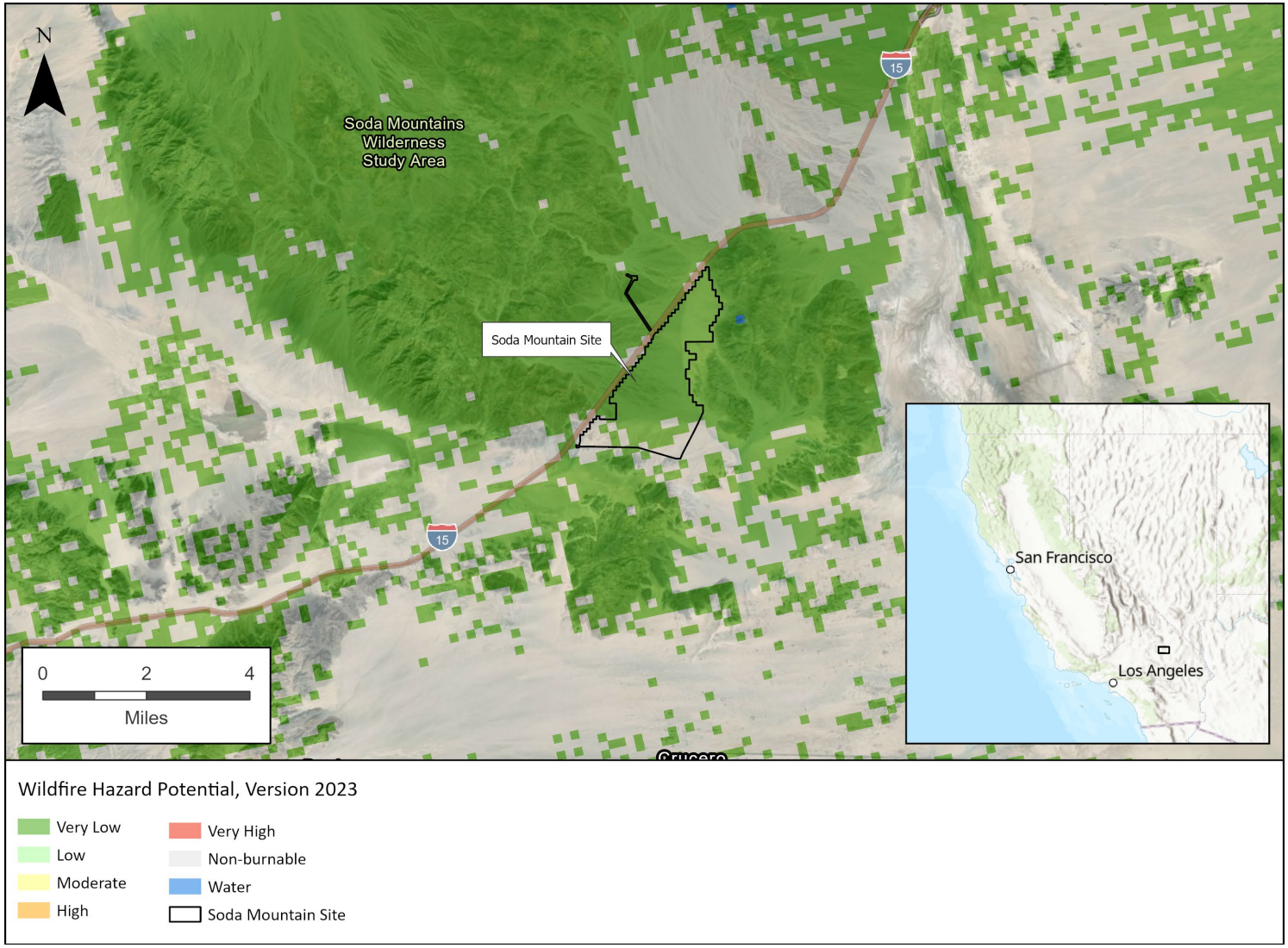
The CPUC has adopted over the last two decades a series of fire safety rules which includes the preparation of Fire-Threat and High Fire-Threat District (HFTD) Maps and the identification, evaluation, and adoption of more fire-safety regulations for the HFTDs. Areas mapped as high fire threat are required (under CPUC General Orders 95 165, and 166) to have increased patrols along overhead lines, increased vegetation clearances and frequency of vegetation clearance, increased inspections of aerial communications facilities, and increased maintenance and repairs to correct fire hazards. The HFTD maps identify three tiers of fire threat/risk: Tier 1 zones near communities, roads, and utility lines, and are a direct threat to public safety; Tier 2 fire-threat areas outline areas where there is a higher risk (including likelihood and potential impacts on people and property) from utility related wildfires; and Tier 3 fire-threat areas outline areas where there is an extreme risk (including likelihood and potential impacts on people and property) from utility related wildfires. The project is not within a HFTD zone and not adjacent to any HFTD zone (CPUC 2025).

Fire History

The Fire and Resource Assessment Program (FRAP) annually maintains and distributes an historical fire perimeter data set from across public and private lands in California. The GIS data is jointly developed with the cooperation of the United States Forest Service Region 5, the Bureau of Land Management, the National Park Service and the Fish and Wildlife Service.

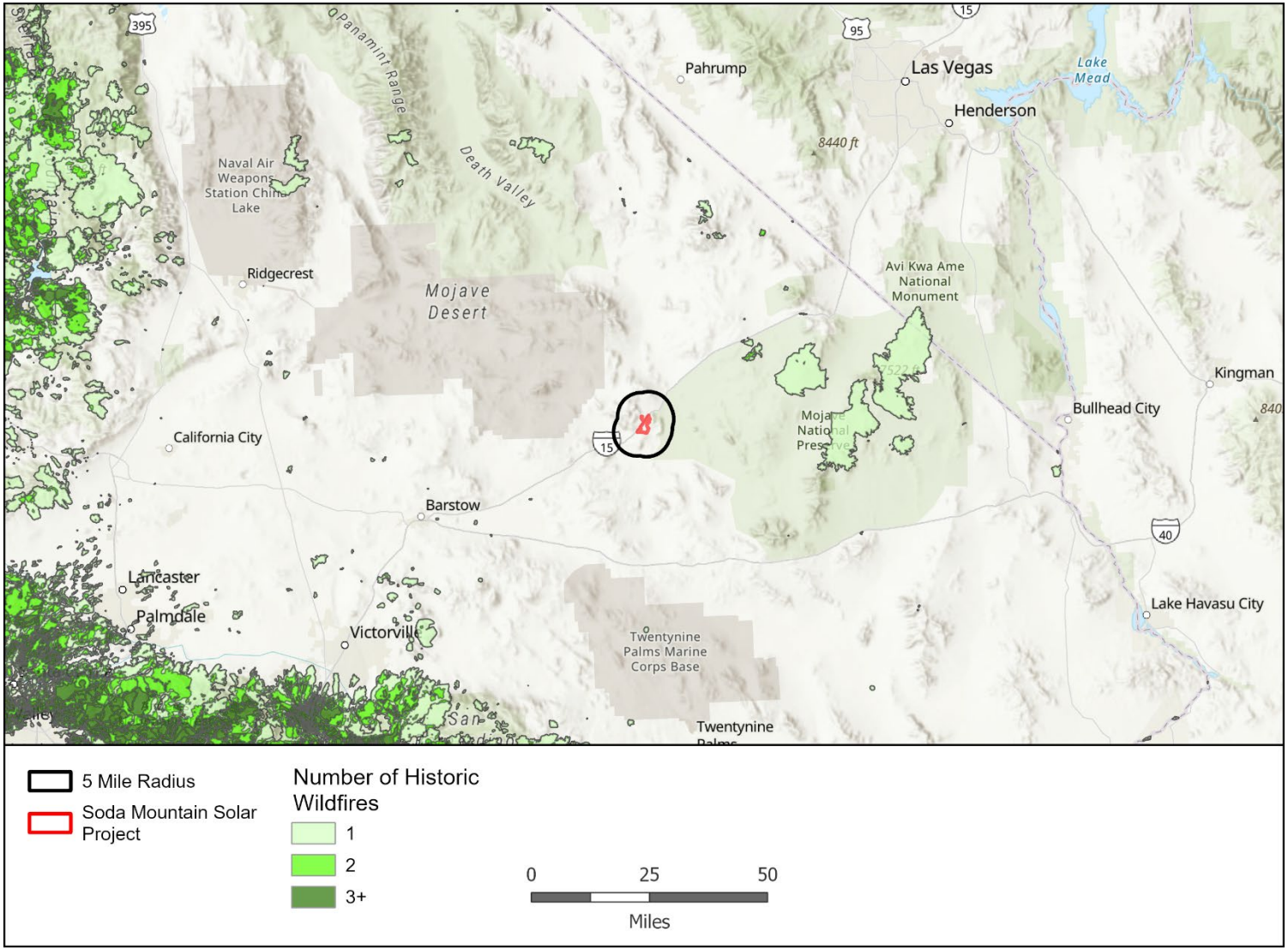
Data from FRAP shows no record of any wildfires based on data going back to 1984 within 10-miles of the project site (CAL FIRE, 2025b). **Figure 5.7-2** shows the FRAP historic fires in the region. The closest fire was the 2021 Mojave Fire, which, at its closest part of the fire perimeter, burned approximately 24 miles east of the project site. The Mojave Fire burned approximately 2,490 acres. In August 2020, the 44,211-acre Dome Fire burned through the Joshua Tree woodland of Cima Dome, approximately 40 miles east/northeast of the project site. In July 2023, the 93,078-acre York Fire burned through Joshua Tree woodland and into Clark County, Nevada, approximately 50 miles east-southeast of the project site.

Figure 5.7-1 Wildfire Hazard Potential



Source: USDA Forrest Service, Fire Modeling Institute

Figure 5.7-2 Historic Wildfires



Source: CALFIRE 2025

Regulatory

Plans, policies and regulations related to hazardous materials/waste, aviation safety, hazards, and wildfire are summarized below. Staff's analysis of project consistency with these plans, policies, and regulations is presented in **Tables 5.7-2** and **5.7-3**.

Federal

Resource Conservation and Recovery Act. The Resource Conservation and Recovery Act (RCRA) (42 U.S.C. § 6901 et seq.) authorizes the EPA to control hazardous waste from "cradle to grave" (generation, transportation, treatment, storage, and disposal). The EPA approved California's RCRA program, referred to as the Hazardous Waste Control Law (Health and Safety Code § 25100 et seq.) in 1992.

Toxic Substances Control Act. The Toxic Substances Control Act (TSCA) (15 U.S.C. § 2601et seq.) authorizes the EPA to require reporting, record-keeping, testing requirements, and restrictions related to chemical substances and/or mixtures. It also addresses production, importation, use, and disposal of specific chemicals, such as poly-chlorinated biphenyls (PCBs), asbestos-containing materials, lead-based paint, and petroleum.

Comprehensive Environmental Response, Compensation, and Liability Act. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C. § 9601 et seq.), including the Superfund program, provides broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment.

Department of Transportation. The United States Department of Transportation (DOT) is the primary federal agency responsible for regulating the proper handling and storage of hazardous materials during transportation (49 CFR §§ 171-177 and 350-399).

Clean Water Act. The Clean Water Act (CWA) is the principal federal statute protecting navigable waters and adjoining shorelines from pollution. The law was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the United States. Since its enactment, the CWA has formed the foundation for regulations detailing specific requirements for pollution prevention and response measures. The EPA implements provisions of the CWA through a variety of regulations, including the National Contingency Plan, and the Oil Pollution and Prevention Regulations. Implementation of the CWA is the responsibility of each state.

As part of the CWA, the U.S. EPA oversees and enforces the Oil Pollution Prevention regulation (Title 40, CFR, Part 112), which is often referred to as the Spill Prevention Control, and Countermeasure (SPCC) "SPCC rule" because the regulations describe the requirements for facilities to prepare, amend, and implement SPCC Plans. A facility is subject to SPCC regulations if the total above ground oil storage capacity exceeds 1,320

gallons, or the underground oil storage capacity exceeds 42,000 gallons, and if, due to its location, the facility could reasonably be expected to discharge oil into or upon the "navigable waters" of the United States. The rule specifies that proactive, and not passive, measures be used to respond to oil discharges.

Federal Aviation Administration. The Federal Aviation Administration (FAA) Part 77—Safe, Efficient Use, And Preservation of The Navigable Airspace (49 CFR Part 77) establishes standards and notification requirements for objects that may impact navigable airspace. Airports and navigable airspace that are not administered by the Department of Defense (DOD) are under the jurisdiction of the FAA. This regulation includes: (a) FAA notification requirements for proposed construction, or the alteration of existing structures, that meet specific standards; (b) the standards used to determine obstructions to air navigation, and navigational and communication facilities; (c) the process for aeronautical studies of obstruction to air navigation or navigational facilities to determine the effect on the safe and efficient use of navigable airspace, air navigation facilities or equipment; and (d) the process to petition the FAA for discretionary review of determinations, revisions, and extensions of determinations. Additionally, FAA standards and Advisory Circular 70/7460-1M generally require any temporary or permanent structure, including appurtenances, that exceeds an overall height of 200 feet above ground level (AGL) to meet the requirements to be marked and/or lighted.

Hazardous Materials Transportation Act. DOT, in conjunction with the EPA, is responsible for enforcement and implementation of federal laws and regulations pertaining to safe storage and transportation of hazardous materials under the Hazardous Materials Transportation Act (HMTA) (49 U.S.C. 5101-5128). DOT regulations implementing the Act (49 CFR parts 171-180), regulate the transportation of hazardous materials, types of material defined as hazardous, and the marking of vehicles transporting hazardous materials. This also includes regulations relevant to the storage of explosives, as well as the packaging, labeling, materials compatibility, driver qualificators, and safety of transported explosives.

State

California Environmental Protection Agency. The California Environmental Protection Agency (Cal EPA), created in 1991, unified California's environmental authority in a single cabinet-level agency and brought the California Air Resources Board (CARB), SWRCB, Regional Water Quality Control Boards (RWQCBs), Integrated Waste Management Board, DTSC, Office of Environmental Health Hazard Assessment, and Department of Pesticide Regulation under one agency. These agencies under the Cal EPA "umbrella" provide protection of human health and the environment and ensure the coordinated deployment of state resources. Their mission is to restore, protect and enhance the environment, to ensure public health, environmental quality, and economic vitality.

The California Hazardous Waste Control Law. CalEPA administers the California Hazardous Waste Control Law to regulate hazardous wastes. The Hazardous Waste Control Law lists 791 chemicals and about 300 common materials that may be hazardous; establishes criteria for identifying, packaging and labeling hazardous wastes; prescribes management controls; establishes permit requirements for treatment, storage, disposal and transportation; and identifies some wastes that cannot be disposed of in landfills.

Department of Toxic Substances Control. DTSC is a department of CalEPA and is the primary agency in California that regulates hazardous waste, clean-ups existing contamination, and looks for ways to reduce the hazardous waste produced in California. DTSC regulates hazardous waste in California primarily under the authority of RCRA and the California Health and Safety Code. The hazardous waste regulations overseen by DTSC establish criteria for identifying, packaging, and labeling hazardous wastes; prescribe management of hazardous waste; establish permit requirements for hazardous waste treatment, storage, disposal, and transportation; and identify hazardous waste that cannot be disposed of in landfills.

Unified Hazardous Waste and Hazardous Materials Management Regulatory Program. Regulations implementing a Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program) address six elements: hazardous waste generators and hazardous waste onsite treatment; underground storage tanks; aboveground storage tanks; hazardous materials release response plans and inventories; risk management and prevention programs; and Unified Fire Code hazardous materials management plans and inventories (Health and Safety Code §25404 et seq.). The Unified Program requires CalEPA to certify local government agencies, known as Certified Unified Program Agencies (CUPAs) as able to implement all the required environmental programs and to consolidate, coordinate and make them consistent within their jurisdiction. State partner agencies involved in the implementation of the Unified Program and providing technical assistance to CUPAs include CalEPA, CAL FIRE, DTSC, and SWRCB. The CUPA for the project area is the San Bernardino Fire Protection District Hazardous Materials Section.

California Department of Industrial Relations, Division of Occupational Safety and Health Administration. The California Occupational Safety and Health Administration (Cal/OSHA) is the primary agency responsible for worker safety. They oversee the handling and use of hazardous materials (Cal. Code Regs., tit. 8, Sections 5139-5223), and the protection of workers exposed to wildfire smoke (Cal. Code Regs., tit. 14, Section 5141.1). Cal/OSHA standards are generally more stringent than federal regulations. Under Sections 337-3339, employers are required to monitor worker exposure to listed hazardous substances and notify workers of exposure. The regulations under Sections 337-339 specify requirements for employee training, availability of safety equipment, accident-prevention programs, and hazardous substance exposure warnings. Section 5141.1 requires identification or harmful

exposures, a system for communicating wildfire smoke hazards, and training and instruction about wildfire smoke hazards.

California Public Utilities Commission. The California Public Utilities Commission (CPUC) regulates private investor-owned utilities in the state of California and sets some policies that apply to public utilities. The following CPUC General Orders are applicable to the project.

General Order 95. CPUC General Order 95 applies to construction and reconstruction of overhead electric lines. General Order 95 includes Rules which apply to overhead electric lines located in Tier 2 or Tier 3 High Fire Threat Districts (HFTDs), which include corrective actions, maintenance, increased inspection, vegetation management to establish clearances, and establishment of minimum vertical, horizontal, and radial clearances of wires from other wires.

General Order 165. CPUC General Order 165 establishes requirements for the inspection of electric distribution and transmission facilities that are not contained within a substation. A "Patrol" inspection, defined as a simple visual inspection of utility equipment and structures that is designed to identify obvious structural problems and hazards, must be performed at least once per year for each piece of equipment and structure. "Detailed" inspections, where individual pieces of equipment and structures are carefully examined, are required every 5 years for all overhead conductor and cables, transformers, switching/protective devices, and regulators/capacitors. A utility subject to this General Order must submit an annual report of its inspections by July 1 of each year for the previous year.

Defensible Space and the Fire Safe Regulations. State law requires a minimum clearance (defensible space) of 100-feet around structures (Pub. Res. Code §§ 4290, 4291). Implementing regulations (the "Fire Safe Regulations") provide related requirements to be implemented in a SRA including road standards for fire equipment access (Cal. Code Regs., tit 14, § 1273 et seq.); standards for signs identifying streets, roads, and buildings (Cal. Code Regs., tit 14 R § 1274 et seq.); requirements for minimum private water supply reserves for emergency fire use (Cal. Code Regs., tit 14§ 1275 et seq.); and requirements for fuel breaks such as defensible space and greenbelts (Cal. Code Regs., tit 14, §§ 1272, 1276 et seq.).

California Public Resources Code – Fire Protection. The California Public Resources Code (PRC) Division 4, Part 2 – Protection of Forest, Range, and Forage Lands includes prohibited activities, fire safety and prevention provisions that apply to SRAs, forested areas, timber harvesting areas, and high fire danger areas.

PRC Section 4292 states that any person that owns, controls, operates, or maintains any electrical transmission or distribution line has primary responsibility for fire protection of such areas, and shall maintain around and adjacent to any pole or tower which supports a switch, fuse, transformer, lightning arrester, line junction, or dead end or corner pole, a firebreak which consists of a clearing of not less than 10 feet in each

direction from the outer circumference of such a pole or tower. PRC section 4293 states that any person that owns, controls, operates, or maintains any electrical transmission or distribution line upon any mountainous land, or in forest-covered land, or grass covered land which has primary responsibility for the fire protection of such area, shall maintain a clearance of the respective distances.

PRC section 4119 authorizes CAL FIRE or its authorized agent to inspect properties to determine whether they would be consistent with state forest and fire laws, regulations, or use permits. Section 4427 limits the use of any motor, engine, boiler, stationary equipment, welding equipment, cutting torches, tarpots, or grinding devices which may generate a spark or flame if the equipment is located on or near forested land or land covered in bush or grass. It also establishes requirements such as clearing flammable material within 10 feet of the area of operation, as well as carrying fire response equipment such as a shovel, backpack pump water type fire extinguisher. Section 4428 requires certain firefighting equipment to be used when operating internal combustion engines on or near land covered by forest bush or grass between April 1 and December 1 of any year, or other times when ground litter and vegetation could sustain combustion and facilitate the spread of fire.

PRC section 4431 requires users of gasoline-fueled internal combustion-powered equipment located within 25 feet of forest, brush, or grass to keep firefighting tools at the immediate location of use. Section 4442 restricts the use and operation of any internal combustion engine that uses hydrocarbon fuels on any forest, brush, or grass areas unless the engine is equipped with a spark arrestor, as defined in PRC section 4442(c) and pursuant to PRC section 4443.

Porter-Cologne Water Quality Act. This state law provides a comprehensive water quality management system for the protection of California waters. The act designates the SWRCB as the ultimate authority over State water rights and water quality policy and also established nine RWQCBs to oversee water quality on a day-to-day basis at the local and regional level. The RWQCBs have the responsibility of granting NPDES permits and setting waste discharge requirements for stormwater runoff from construction sites.

Department of California Highway Patrol. The Department of California Highway Patrol is the primary agency responsible for enforcing the regulations related to the transport of hazardous materials on California roads and highways (Cal. Code Regs., tit. 13, §§ 1160-1167).

Hazardous Materials Release Response Plans and Inventory Law. The California Hazardous Materials Release Response Plan and Inventory Law of 1985 (Business Plan Act, Health and Safety Code § 25500 et seq.) requires businesses that store or use hazardous materials to prepare a Hazardous Materials Business Plan (HMBP) and submit it to the CUPA. An HMBP includes details of a facility and business conducted at the site, an inventory of hazardous materials that are handled and stored on-site, an emergency response plan, and a safety and emergency response training program for new employees with an annual refresher course.

California Accidental Release Program. Under the California Accidental Release Program (CalARP) regulations, facilities that store extremely hazardous substances or regulated substances above the threshold quantities must register with the CalARP Program and submit a Risk Management Plan (RMP).

Aboveground Petroleum Storage Act Program. The aboveground petroleum storage act (APSA) program requires tank facilities storing greater than 1,320 gallons of petroleum to develop and implement the SPCC Plan requirements (CFR 2023). A tank facility is any tank or tanks that are aboveground, including connected piping, that contain petroleum and are used by an owner or operator at a single location or site, is in secondary containment, and it is used to hold oil. The CUPA regulates businesses storing petroleum in aboveground containers or tanks (California Health & Safety Code, Chapter 6.67, Sections 25270-25270.13).

Local

The project is located on federally owned land managed by the BLM. While the project is not subject to County of San Bernardino land use plans and ordinances, local plans were reviewed for informational purposes.

Los Angeles Department of Water and Power (LADWP) Wildfire Mitigation Plan. LADWP has developed a Plan, consistent with State of California's Senate Bill 901 (SB 901) and Assembly Bill 1054 (AB 1054), to help safeguard and improve public safety. The Plan describes LADWP steps to mitigate the threat of wildfires caused by its electrical lines and equipment. This Plan complies with state law to prepare a wildfire mitigation plan annually (LADWP 2025). The Power Transmission and Distribution Division (PTD) is primarily responsible for the design, construction, inspection, and maintenance of LADWP's transmission and distribution lines.

San Bernardino County Hazardous Waste Management Plan. AB 2948, commonly known as the Tanner Bill, authorizes counties to prepare Hazardous Waste Management Plans (HWMPs) in response to the need for safe management of hazardous wastes (California Health & Safety Code sections 25135–25135.9). The HWMP was adopted by the County of San Bernardino Board of Supervisors and approved by the former California Department of Health Services in February 1990. The HWMP serves as the primary planning document for the management of hazardous waste in San Bernardino County. The HWMP identifies the types and amounts of waste generated in the county; establishes programs for managing these wastes; identifies an application review process for the siting of specified hazardous waste facilities; identifies mechanisms for reducing the amount of waste generated in the county; and identifies goals, policies, and actions for achieving effective hazardous waste management.

San Bernardino County Fire Protection District — Hazardous Materials Division. The Hazardous Materials Division of the San Bernardino County Fire Protection District is the local agency responsible for the enforcement of a variety of hazardous materials management requirements. It is the state-designated CUPA for San

Bernardino County. The purpose of the CUPA program is to provide a comprehensive approach to reduce the overlapping and sometimes conflicting requirements of different governmental agencies. The CUPA provides consolidation and consistency in reporting requirements, permit formats, inspection criteria, enforcement standards, and fees for various hazardous materials programs. The CUPA is required by state law to maintain a list of facilities within the county that are known to use, store, and/or generate hazardous materials or waste. Facilities that handle hazardous materials or generate hazardous waste must obtain a permit from the CUPA.

Hazardous Materials Business Plan (HMBP). To satisfy the California Health and Safety Code, Section 25500, et seq., and the related regulations of Cal. Code Regs., tit. 19**,** section 2620 et seq., a Hazardous Materials Business Plan (HMBP) would be required by the San Bernardino County Department of Environmental Health every year to the California Environmental Reporting System (CERS). The HMBP Program is administered throughout San Bernardino County and its incorporated cities and is used to protect public health, the environment and groundwater from risks or adverse effects associated with the improper storage and handling of hazardous materials.

California Accidental Release Program. Under the California Accidental Release Program (CalARP) regulations, facilities that store extremely hazardous substances or regulated substances above the threshold quantities must register with the CalARP Program and submit a Risk Management Plan (RMP).

San Bernardino County Fire Protection District Fire Prevention Standards. In accordance with the California Fire Code, the San Bernardino County Fire Protection District incorporated the Fire Apparatus Access Roads standard (No. 503.1) and Fire Personnel Key Boxes (Knox Box) standard (No. 506) into its operational standards. Under these standards, all required building plans must be submitted to the Fire Protection District for review and approval of access roads and points, and Knox Box mounting location, position, and operating standards prior to installation (San Bernardino County Fire Protection District 2023).

Baker Airport Comprehensive Land Use Plan. The Airport Comprehensive Land Use Plan (ACLUP) for Baker Airport defines the planning boundary for the airport as the Federal Aviation Regulation (FAR) Part 77 horizontal surface. Within this boundary, the area is designated into three Safety Review Areas—Areas 1, 2, and 3—that reflect a particular level and type of aviation-related hazard or risk within each safety area. No portion of the project would be located within any of the three Safety Review Areas for the airport (San Bernardino County 1992).

San Bernardino Countywide Plan. The San Bernardino Countywide Plan (San Bernardino County 2024), adopted by the Board of Supervisors in 2020, updates and expands the County's General Plan by addressing the physical, social, and economic issues facing the unincorporated portions of the county.

The following policies in the Hazards Element and Infrastructure and Utilities Element of the Countywide Plan are relevant to this analysis (San Bernardino County 2024).

Goal HZ-1 Natural Environmental Hazards. Minimize risk of injury, loss of life, property damage, and economic and social disruption caused by natural environmental hazards and adaptation to potential changes in climate.

Policy HZ-1.2 New development in environmental hazard areas. County requires all new development to be located outside of the environmental hazard areas listed below. For any lot or parcel that does not have sufficient buildable area outside of such hazard areas, County requires adequate mitigation, including designs that allow occupants to shelter in place and to have sufficient time to evacuate during times of extreme weather and natural disasters.

1. Flood: 100-year flood zone, dam/basin inundation area
2. Geologic: Alquist Priolo earthquake fault zone; County-identified fault zone; rockfall/debris-flow hazard area, medium or high liquefaction area (low to high and localized), existing and County-identified landslide area, moderate to high landslide susceptibility area)
3. Fire: high or very high fire hazard severity zone

Goal HZ-2 Human-generated Hazards. People and the natural environment protected from exposure to hazardous waste facilities to protect public health and avoid impacts on the natural environment.

Policy HZ-2.1 Hazardous waste facilities. County regulates and buffers hazardous waste facilities to protect public health and avoid impacts on the natural environment.

Policy HZ-2.2 Database of hazardous materials. County maintains up-to-date databases of the storage, use, and production of hazardous materials, based on federally- and state-required disclosure and notification, to appropriately respond to potential emergencies.

Policy HZ-2.3 Safer alternatives. County minimizes the use of hazardous materials by choosing and by encouraging others to use non-toxic alternatives that do not pose a threat to the environment.

Policy HZ-2.4 Truck routes for hazardous materials. County designates truck routes for the transportation of hazardous materials through unincorporated areas and prohibit routes that pass through residential neighborhoods to the maximum extent feasible.

Policy HZ-2.5 Community education. County engages with residents and businesses to promote safe practices related to the use, storage, transportation, and disposal of hazardous materials.

Policy HZ-2.6 Coordination with transportation authorities. County collaborates with airport owners, FAA, Caltrans, San Bernardino County Transportation Authority, Southern California Area Governments, neighboring jurisdictions, and other transportation providers in the preparation and maintenance of, and updates to transportation-related plans and projects to minimize noise impacts and provide appropriate mitigation measures.

San Bernardino County Fire Protection District. The San Bernardino County Fire Protection District Hazardous Materials Section is the designated CUPA for the County. The CUPA programs help prevent costly releases and spills that could endanger the community and damage the environment.

Cumulative

The California Environmental Quality Act (CEQA) requires a discussion of cumulative environmental impacts. (Cal. Code Regs., tit. 14, section 15130.) Cumulative impacts are two or more individual impacts that, when considered together, are considerable or that compound or increase other environmental impacts. The CEQA Guidelines (California Code of Regulations, title 14, section 15000 et seq.) require that the discussion reflects the severity of the impacts and the likelihood of their occurrence but need not provide as much detail as the discussion of the impacts attributable to the project alone.

Pursuant to CEQA, a cumulative impacts analysis can be performed by either 1) summarizing growth projections in an adopted general plan or in a prior certified environmental document, or 2) compiling a list of past, present, and probable future projects producing related or cumulative impacts. The second method has been utilized for the purposes of this analysis.

A master list of cumulative projects is provided in **Appendix A, Table A-1** and **Figure A-1**. The cumulative projects identified are different distances from various components of the project and the upgrades to the protection settings at the Marketplace (Boulder City, NV) and Adelanto (Adelanto, CA) substations.

The geographic extent for the analysis of cumulative impacts related to hazards, hazardous materials, and hazardous waste is limited to the immediate vicinity surrounding the project as the project hazards, hazardous materials, and hazardous waste impacts are limited to the project site and immediately adjacent areas. Similar impacts of other past, present, and reasonably foreseeable future projects that would have the potential to occur would also be limited to their respective project sites and immediately adjacent properties. The closest projects in the immediate vicinity are: Project 1 (Brightline West-Las Vegas to Victor Valley), Project 2 (Ivanpah Control Transmission Line Project), Project 3 (I-15 Mojave Wildlife Crossings Restoration Project R129.750).

The area for cumulative impacts related to wildfire is related to areas that are in or near lands classified as a very high FHSZ, or on land classified by the CPUC as having a fire threat. None of the cumulative projects are in or near lands classified as a very high FHSZ, or on land classified by the CPUC as having a fire threat.

5.7.2 Environmental Impacts

HAZARDS, HAZARDOUS MATERIALS, AND WILDFIRE	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☒	☐	☐
b. Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☒	☐	☐
c. Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d. Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code, section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☒	☐	☐
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
f. Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g. Would the project expose people or structures, either directly or indirectly, to a significant risk of loss,	☐	☒	☐	☐

HAZARDS, HAZARDOUS MATERIALS, AND WILDFIRE	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
injury or death involving wildland fires?				
h. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
i. Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
ii. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☒	☐	☐
iii. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☒	☐	☐
iv. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☒	☐	☐

Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix G, hazards and hazardous materials and wildfire.

5.7.2.1 Methodology and Thresholds of Significance

In addition to the above environmental checklist, staff used the following methodology and thresholds of significance to evaluate the project.

Methodology

Hazards, Hazardous Materials, and Hazardous Waste. The hazardous materials analyzed include those potentially existing on the site and those that would be used as part of project construction, and operations and maintenance. Potential existing hazards were assessed based on review of existing information including:

- The updated hazardous materials section analysis for the Soda Mountain Solar Project (October 25, 2024) (RE 2024mmm) and the Phase I Environmental Site Assessment, July 2024 (Revised September 2024) (RE 2024sss).
- Information from the Bureau of Land Management EIS/EIR (BLM 2015)
- State Water Resources Control Board (SWRCB) GeoTracker (SWRCB 2025).
- San Bernardino County Multi-Jurisdictional Hazard Mitigation Plan (San Bernardino County 2022).
- Department of Toxic Substances Control (DTSC) EnviroStor (DTSC 2025).
- List of solid waste disposal sites identified by the SWRCB with waste constituents above hazardous waste levels outside the waste management unit (Cal EPA 2024b).
- List of "active" Cease and Desist Orders and Cleanup Abatement Orders.

Some hazardous materials would be used on a short-term basis during construction. Others would be stored onsite for use during operations and maintenance. Therefore, this analysis examines the hazardous materials to be used (including the amount), how the project would use the hazardous materials, how they would be transported to the facility, and how the project plans to store the hazardous materials onsite.

The project is required to provide documentation of the nature of any existing or future releases of hazardous materials that would become hazardous waste from construction or operation. Potential or existing releases of 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.

Wildfire. Data on fire hazard potential in the project area and area wildfire history are used to help determine the potential for damaging impacts to occur as a result of a project-caused wildfire or project impacts on existing wildfire.

Additionally, fire detection and fire suppression information in the project description, and the availability and proximity of water sources for fire containment and suppression were included in the assessment.

To identify and assess potential impacts related to wildfire staff reviewed publicly available information including the following:

- CAL FIRE – Fire Hazard Severity Zones Maps.
- CAL FIRE – Historical Fire Perimeters Webmap.
- CPUC – High Fire-Threat District Map zones.
- FRAP – fire perimeter GIS data set.
- San Bernardino County – Multi-Jurisdictional Hazard Mitigation Plan (San Bernardino County 2022).

- Wildfire section analysis for the Soda Mountain Solar Project (RE 2024cc).

Thresholds of Significance

A threshold of significance is the line at which a project's environmental impact becomes severe enough that mitigation is required to reduce that impact below the significance line. Impact categories based on the CEQA Environmental Checklist, Appendix G, of the CEQA Guidelines are considered to evaluate if the relevant project impacts are to a degree requiring mitigation.

A threshold of significance may be an identifiable quantitative, qualitative or performance level of a particular environmental effect, and the non-compliance there with means the effect will normally be determined to be significant by the agency.

5.7.2.2 Direct and Indirect Impacts

a. Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Construction

Less Than Significant with Mitigation Incorporated. Based on the analysis below, construction of the project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials, and the impact would be less than significant with the implementation of Conditions of Certification (COCs) **HAZ-3, HAZ-4,** and **WORKER SAFETY-1**.

Jurisdictional Project Components

The project would use, store, transport, and dispose of hazardous materials used in the construction of the project in accordance with federal, state, and county regulations. No extremely hazardous substances (i.e., those governed pursuant to 40 CFR 335 and California Health & Safety Code, Section 2531) are anticipated to be produced, used, stored, transported, or disposed of as a result of the project's construction (RE 2024mmm).

Construction would involve the use of hazardous materials, as identified in **Table 5.7-1**. Hazardous materials used and stored on-site during construction would be securely stored in appropriate containers in compliance with 40 CFR Part 262, 40 CFR 1910.12, and California Code of Regulations, title 8, section 5192. Temporary containment berms and spill kits would also be used to help contain any spills during the construction of the project. These areas would be inspected weekly.

Hazardous materials would be transported on an intermittent basis to the site as needed by construction. Transportation of hazardous substances would occur with DOT-approved personnel and trucking/transport equipment.

Hazardous waste would be generated during construction of the project. Construction-related hazardous wastes may include waste paint, spent solvents, waste cleaners, waste oil, oily rags, spent batteries, excavation dewatering water, flushing and cleaning fluids, and welding materials.

Project construction activities would include the transport, use and storage of hazardous materials. The project would prepare an Injury and Illness Prevention Program (IIPP) for briefing all construction crews prior to starting work on the project. Fuels, fluids, and components with hazardous materials/wastes would be handled in accordance with applicable regulations. All such materials would be kept in segregated storage with secondary containment as necessary. Safety Data Sheets (SDSs) for all hazardous materials stored on-site shall be retained on-site during project construction and operation. The project would maintain records of storage and inspection and would provide for proper off-site disposal. Therefore, staff proposes COC **WORKER SAFETY-1** which would require the submission of an IIPP as part of the Construction Health and Safety Program to the CPM prior to the start of construction activities for review and approval.

Hazardous waste would be generated during construction of the project. The application indicates hazardous materials/wastes generated during construction would include BESS waste, waste oil, miscellaneous solvents (paint adhesives), fuels, oil filters, oily rags/sorbents, spent lead acid batteries, spent alkaline batteries, and aerosol cans.

The project owner would have to obtain a site-specific USEPA identification number and hazardous waste generator classification for the project. Hazardous waste generated at the project site would be stored on-site in accordance with accumulation time limits detailed in California Code of Regulations, Title 22, section 66262.34, before off-site disposal, treatment, or recycling.

Staff proposes COC **HAZ-3** to ensure that the project has obtained the project's USEPA identification number before the start of construction, reports the number to the Compliance Project Manager (CPM), and notifies the CPM of new or revised numbers.

Hazardous wastes would be accumulated according to the California Code of Regulations, title 22, Section 66262.15 requirements for hazardous waste satellite accumulation areas. Hazardous waste would be collected by a licensed hazardous waste hauler using a hazardous waste manifest. Wastes would be transported to authorized hazardous waste management facilities. Copies of manifests, reports, waste analyses, and other documents would be kept on-site and would remain accessible for inspection for at least three years. Employees would be trained in hazardous waste procedures, spill contingencies, and waste minimization.

Hazardous waste would be stored on-site for less than 90 days and transported by a licensed hazardous waste transporter to an authorized treatment, storage, and disposal facility. Hazardous waste would likely be sent to the California Class I landfills Kettleman Hills Facility and/or Clean Harbors Buttonwillow Landfill or an out-of-state landfill.

The application does not include a comprehensive security plan for the construction phase of the project. Therefore, staff proposes COC **HAZ-4** to require the project owner to create a construction security plan to ensure a minimum level of security for the solar PV facility, BESS, step-up substation, and generation-intertie line. With implementation of COC **HAZ-3** and **HAZ-4** the impact of construction of the solar PV facility components would be less than significant.

Non-Jurisdictional Project Components

LADWP would make upgrades to the protection settings at the Marketplace (Boulder City, NV) and Adelanto (Adelanto, CA) substations. These would include line tuners, wave traps, microwave telecom links, relay protection equipment, and metering and controls equipment. These upgrades to existing substation would not require ground disturbance and would not create a significant hazard to the public or the environment from the routine transport, use, or disposal of hazardous materials. Therefore, the impact would be less than significant.

Operation

Less Than Significant Impact with Mitigation Incorporated. Based on the analysis below, operation of the project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials, and the impact would be less than significant with the implementation COCs **HAZ-1**, **HAZ-2**, and **HAZ-5.**

Jurisdictional Project Components

Operation would involve the use of hazardous materials, as identified in **Table 5.7-1**. Hazardous materials used and stored on-site during would be securely stored in appropriate containers or operating equipment in compliance with 40 CFR Part 262, 40 CFR 1910.12, and California Code of Regulations, title 8, section 5192.

Hazardous materials would be transported to the site as needed by operations. Transportation of hazardous substances would occur with DOT-approved personnel and trucking/transport equipment

Project operation and maintenance activities would include the transport, use, and storage of a variety of hazardous materials. **Table 5.7-1** presents the hazardous materials that would likely be used and stored on the project site. The project would prepare a SPCC and HMBP prior to operation based on the hazardous materials at the project site. The HMBP would list the hazardous materials and their location which ensures that first responders are prepared to respond to any incidents that could occur at the project site. The SPCC would lay out the proper procedures to help prevent a discharge of petroleum products, as well as control a discharge should one occur at the project site. Therefore, staff proposes COC **HAZ-1** which would require the submission of the HMBP and SPCC for the project site to the San Bernardino County HazMat

Compliance Program, CUPA for the project area, and to the CPM for review and approval.

There is the potential for the project to increase the quantities or change the types of hazardous materials that are used at the project site. New or increased amounts of hazardous materials could require new requirements for the project site. Therefore, staff proposes COC **HAZ-2** which would require the project owner to notify and seek approval from the CPM before changing the quantity of or using a new hazardous material onsite. This would ensure that any new or the change in the amount of hazardous material introduced to the project site would be consistent with applicable plans, policies, and regulations.

The application addresses security in several resource areas but does not include a comprehensive security plan for operations. Staff concurs that security elements are needed to ensure the protection of California's electrical infrastructure from vandalism or domestic/foreign attacks. Therefore, staff proposes COC **HAZ-5** which would require the project owner to create an operations security plan to ensure appropriate security for the project.

With implementation of COCs **HAZ-1, HAZ-2,** and **HAZ-5** the impact from operation of the solar PV facility components and BESS would be less than significant.

Non-Jurisdictional Project Components

The LADWP operational components of the project would involve transport, use and storage of hazardous materials for a limited number of hazardous materials. Hydraulic fluids, mineral oil and sulfur hexafluoride would be used at the utility switchyard. Prior to operation, the switchyard would be required to prepare a HMBP for approval by San Bernardino County HazMat Compliance Program. The preparation of the HMBP would list the hazardous materials and their location which ensures that first responders are prepared to respond to any incidents that could occur at the project site or the switchyard. With the anticipated large quantities of hydraulic fluids and mineral oil at the switchyard, the utility switchyard would also be required to develop a SPCC. The SPCC would lay out the proper procedures to help prevent a discharge of petroleum products, as well as control a discharge should one occur at the utility switchyard. No additional hazardous materials would be expected for the modification at the Marketplace (Boulder City, NV) and Adelanto (Adelanto, CA) substations. Existing HMBPs at the substations would be updated, if necessary and required.

Given LADWP's experience operating switchyards and the requirements of the HMBP and SPCC, the LADWP utility switchyard and substation upgrades would have a less than significant impact involving the routine transport, use, or disposal of hazardous materials during operation.

b. Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Construction

Less Than Significant with Mitigation Incorporated. Based on the analysis below, construction would not result in a significant hazard to the public or the environment, with implementation of COCs **HAZ-4**, **WORKER SAFETY -1**, **WORKER SAFETY-7,** and **WORKER SAFETY-8**.

Jurisdictional Project Components

As discussed above in CEQA criterion "a", project construction activities would involve the transportation, use and storage of hazardous materials at the project site. Several hazardous materials would be used in construction activities (see **Table 5.7-1**). The improper use and storage of hazardous materials could lead to leaks and spills or fires. However, most spills and leaks would be limited and easily cleaned up with spill kits due to the small quantities involved. In addition, during construction, hazardous materials would use temporary secondary containment to lower the risk of a release to the environment. In 2024, I-15 was closed in both directions for 40 hours due to a fire on a truck transporting batteries for a BESS. COC **WORKER SAFETY-7** would reduce the potential BESS fires (during transport to and from the site), by requiring lithium-ion batteries be shipped from the factory to the project site at a maximum of 30 percent State of Charge (SOC). This measure would reduce the likelihood of a thermal runaway incident and reduce the energy of any fire if one occurred during transportation.

Staff reviewed the project details for storage, transport, and disposal of hazardous materials during construction, which are listed above in criterion "a" that would be developed to reduce the potential for incidents involving hazardous materials and concluded that implementation would be adequate to ensure that hazardous materials handling would be consistent with applicable plans, policies and regulations (RE 2024mmm). Therefore, hazardous materials would be transported, stored, used, and cleaned up consistent with plans, policies and regulations. Additionally, staff proposed COC **WORKER SAFETY-1** would include plans to reduce injuries and prepare for emergencies. **WORKER SAFETY-7** and **WORKER SAFETY-8** includes several actions to reduce the effects of accidents related to the BESS and require SBCFPD training for BESS fires. **HAZ-4** would enhance site security during construction, also reducing the potential for accidents on-site. Worker safety programs and procedures to protect workers from exposure to hazardous materials and waste are included in **Section 4.4, Worker Safety and Fire Protection**.

The application included a Fire Management and Prevention Plan to be prepared and implemented by the applicant to ensure the safety of workers and the public during

construction activities for the project. Staff proposes COC **WORKER SAFETY-1** that would require a Fire Management and Prevention Plan for construction.

Non-Jurisdictional Project Components

Construction would be limited to the internal upgrades at two existing LADWP substations with no ground disturbance, and this construction would have no foreseeable upset or accident conditions involving the release of hazardous materials into the environment.

Operation

Less Than Significant with Mitigation Incorporated. Based on the analysis below, operations would not result in a significant hazard to the public or the environment, with implementation of COCs **HAZ-5, WORKER SAFETY-2, WORKER SAFETY-7** and **WORKER SAFETY-8**.

Jurisdictional Project Components

As discussed above in criterion "a", project operations would involve the transportation, use and storage of hazardous materials at the project site. Several hazardous materials would be used during operations (see **Table 5.7-1**), but less petroleum fuels than would be used during construction. The improper use and storage of hazardous materials could lead to leaks and spills or fires. However, most spills and leaks would be limited and easily cleaned up with spill kits due to the small quantities involved. Combined with the remote location of the project site, COCs **WORKER SAFETY-7** and **WORKER SAFETY-8** would mitigate the impact of potential BESS fires to a less-than-significant level.

Staff reviewed the project details for storage, transport, and disposal of hazardous materials/waste during operation, which are listed above in criterion "a" that would be developed to reduce the potential for incidents involving hazardous materials and concluded that implementation would generally be adequate to ensure that hazardous materials handling would be consistent with applicable plans, policies, and regulations (RE 2024mmm). Therefore, hazardous materials would be transported, stored, used, and cleaned up consistent with plans, policies, and regulations. Additionally, COC **WORKER SAFERY-2** would include plans to reduce injuries and prepare for emergencies. **WORKER SAFETY-7** and **WORKER SAFETY-8** include several actions to reduce the effects of accidents related to the BESS and require SBCFPD training for BESS fires. Staff proposed COC **HAZ-5** would enhance site security during operations, also reducing the potential for accidents on-site. Worker safety programs and procedures to protect workers from exposure to hazardous materials and waste are included in **Section 4.4, Worker Safety and Fire Protection**.

The BESS would have the potential for upset and accident conditions due to the large volume of lithium-ion batteries that could create the risk of fires due to BESS failure incidents leading to thermal runaway and fires from other infrastructure (susceptible to

failure) related to the storage and dispatch of the large quantity of stored energy in the BESS. Thermal runaway is a process in which the lithium-ion cell enters an uncontrollable, self-heating state and can emit toxic gases such as hydrogen chloride, hydrogen fluoride, hydrogen cyanide, and benzene along with flammable/explosive gases including hydrogen, methane, propane, ethylene, and others. These flammable gases could potentially lead to a fire or explosion within the BESS. Due to the potential for fire and explosion, staff conclude that the project's BESS would present a significant risk that should be mitigated. Therefore, staff recommend the adoption of COCs **WORKER SAFETY-7** and **WORKER SAFETY-8** that would reduce the risk of fire to less than significant. For more information refer to **Section 4.4, Worker Safety and Fire Protection**.

However, in the rare case of a thermal runaway or fire incident at a BESS, there could be smoke that could last for many hours, even if the accident is limited to a single container. Water would be available for the San Bernadino County Fire Protection District (SBFPD) to use to potentially cool the surrounding containers or could be used on the container on fire at the discretion of the SBFPD. Several BESS fire incidents have occurred at installations where the water and air were required to be sampled to ensure the safety of the public. This real time information would be important for first responders to have to determine if a shelter in place or evacuation order would be necessary. To date, the water and air sampling conducted at other BESS fire incidents has found that the constituents did not pose a concern to the public (NYSERDA 2023). However, staff has determined that having this real time information could be critical for first responders such as the SBCFPD during an incident. Therefore, staff proposes COC **HAZ-9** that would require an air and water sampling plan. COC **HAZ-9** would require the project owner to develop an air sampling plan to ensure that information can be relayed to first responders in a timely manner. Additionally, water quality testing would be conducted prior to any disposal of water used for an incident.

The application included a Fire Management and Prevention Plan to be prepared and implemented by the applicant to ensure the safety of workers and the public during operation and maintenance activities for the project. Staff proposes COC **WORKER SAFETY-2** that requires a Fire Management and Prevention Plan for operations.

Non-Jurisdictional Project Components

Operations and maintenance activities would have limited hazardous materials used and stored at the LADWP utility switchyard and no additional hazardous materials stored at the Marketplace (Boulder City, Nevada) and Adelanto (Adelanto, CA) substations as a result of the project modification to those substations. Therefore, operation of the LADWP utility switchyard and Marketplace and Adelanto substations would have a less than significant impact involving the accidental release of hazardous materials.

c. Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

No Impact. Based on the analysis below, project construction and operation would not result in hazardous materials impacts to existing or proposed schools.

Construction and Operation

Jurisdictional Project Components

The are no schools within one-quarter mile of the proposed jurisdictional project components. The nearest schools to the jurisdictional project components are Baker Elementary, Middle, and High Schools, are over 8 miles away in the northeastern part of Baker. In addition, no acutely hazardous materials (as listed in 8 CCR § 5189 Appendix A) would be used during project construction and operations. Therefore, no impact would occur to existing or proposed schools.

Non-Jurisdictional Project Components

The nearest schools to the new switchyard and 500 kV loop-in transmission line segments are Baker Elementary, Middle, and High Schools, are over 8 miles away in the northeastern part of Baker. There are also no schools within 0.25 miles of the upgrades to the protection settings at the Marketplace (Boulder City, NV) and Adelanto (Adelanto, CA) substations. In addition, no acutely hazardous materials (as listed in California Code of Regulations, title 8, section 5189 Appendix A) would be used during project construction and operation. Therefore, no impact would occur to existing or proposed schools.

d. Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code, section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Less Than Significant with Mitigation Incorporated. Based on the analysis below, project construction or operation would not be on a listed hazardous materials site. To mitigate the potential impacts from unknown environmental contamination, staff proposes COCs **HAZ-6**, **HAZ-7**, and **HAZ-8** to require a Soils Management Plan (SMP) and a professional engineer or geologist be available for consultation if contamination is discovered during ground disturbing activities.

Construction and Operation

Jurisdictional Project Components

The DTSC and SWRCB compile and update lists of hazardous material sites pursuant to Government Code §65962.5. The DTSC's and SWRCB's databases show that the project

site is not on the Cortese list (DTSC 2025, SWRCB 2025). The project would not be developed on a site identified on a list compiled pursuant to Government Code §65962.5.

Unknown Environmental Contamination. Given the scale of the project construction, staff identify the potential for ground disturbing activities to encounter impacted groundwater and/or soil. CEC proposes that the applicant prepare a Soils Management Plan (SMP). The purpose of the SMP would be to provide procedures and protocols for the proper management of unknown impacts to soil or undocumented subsurface features potentially encountered at the project site during grading and construction activities. The information provided in the SMP would be used to address proper handling, assessment, and disposal of any impacted soil or subsurface features that are encountered during grading. Soil that would be transported offsite must be adequately characterized and disposed of at a facility that is permitted and approved by the disposal contractor to receive such material. Likewise, any soil imported to the property must be either from a virgin quarry or certified as determined by analysis to be "clean" consistent with applicable state plans, policies and regulations prior to arriving at the project site. Therefore, staff proposes COC **HAZ-6** which would require the submission of a SMP to the San Bernardino County CUPA, for review and comment, and to the CPM for review and approval prior to the start of any ground disturbing activities. This would ensure that the project complies with the proposed SMP in their application.

A professional engineer or professional geologist with sufficient experience in hazardous waste management would have the requisite expertise to determine whether additional investigations are needed to identify the extent of contamination and to ensure proper handling and disposal contaminated soil and groundwater. Therefore, staff proposes COC **HAZ-7** which would require that an experienced and qualified professional engineer or professional geologist would be available for consultation if contamination is discovered during ground disturbing activities. The resume of the professional engineer or professional geologist shall reflect experience in remedial investigations and feasibility studies. Staff proposes COC **HAZ-8** requiring 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 representatives of the San Bernardino County CUPA and the CPM on findings and the recommended course of action. Related activities would specifically include soil removal, dust suppression, and worker exposure prevention by means of wearing personal protective equipment. Any contaminated soils and/or groundwater identified would be removed and disposed of according to the appropriate local, state, and federal regulations under the oversight of the agency taking lead jurisdiction.

Any contaminated soils and/or groundwater identified would be removed and disposed of according to the appropriate local, state, and federal regulations under the oversight of the CEC. Staff proposes COCs **HAZ-6**, **HAZ-7**, and **HAZ-8** for construction activities to ensure that any impacts from unknown environmental contamination would be less than significant.

Non-Jurisdictional Project Components

The DTSC's and SWRCB's databases show that the location of the new switchyard and 500 kV loop-in transmission line segments and the Adelanto substation are not on the list of hazardous materials sites. There would be no ground disturbance at the Adelanto substation.

Although the Marketplace (Boulder City, NV) substation is not included in the California hazard databases, it is an isolated existing substation and there is no planned ground disturbing construction.

The modifications to the two substations would not create a hazard to the public or the environment from known hazardous waste sites or unknown contamination. Therefore, there are no impacts to non-jurisdictional project components related to Government Code section 65962.5 or a significant hazard to the public or the environment.

e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

No Impact. There are no public or private airports within two miles of any of the project components.

Construction and Operation

Jurisdictional Project Components

The nearest airport to the jurisdictional project components is Baker Airport over eight miles northeast of the project site. Given the distance and the limited flights at the Baker Airport, on-site construction workers or operations staff would not be exposed to excessive airport noise levels that would result in a safety hazard.

Non-Jurisdictional Project Components

The new switchyard and 500 kV loop-in transmission line segments are over 8 miles from the Baker Airport. There are no airports within two miles of the Marketplace (Boulder City, NV) and Adelanto (Adelanto, CA) substations. Therefore, on-site construction workers or operations staff would not be exposed to excessive airport noise levels that would result in a safety hazard.

f. Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less Than Significant Impact. The project would not substantially impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

Construction and Operation

Jurisdictional Project Components

The construction of the project's facilities would not require any temporary lane closures that could restrict the movements of emergency vehicles or impair an emergency evacuation. The project site would have controlled access points for ingress and egress. These access points would allow for emergency vehicle access into and through the sites. Once constructed, maintenance activities would occur as needed at the solar PV facilities but would not require any temporary travel lane closures that could restrict emergency vehicle movements (RE 2024mmm).

The operation of the project would require few staff on-site for regular maintenance and operations. The project design would allow a main travel artery, I-15, to bisect the project site. With other secondary roads and no major population center nearby, evacuation procedures would not be impaired (RE 2024cc)

The San Bernardino County Multi-Jurisdictional Hazard Mitigation Plan does not specifically map emergency evacuation or access routes. The project would be consistent with the safety practices described within the San Bernardino County Multi-Jurisdictional Hazard Mitigation Plan. This plan was developed to reduce or eliminate long-term risk to people and property from hazards (San Bernardino County, 2022). Therefore, the project would have a less-than-significant impact and would not physically interfere with an adopted emergency response or evacuation plan.

Non-Jurisdictional Project Components

Similar to the jurisdictional project components, construction and operation of the new switchyard and 500 kV loop-in transmission line segments would not require any temporary travel lane closures that would restrict emergency vehicle movements. Also, the upgrades to the Marketplace (Boulder City, NV) and Adelanto (Adelanto, CA) substations would have minimal impacts to local traffic and would not be expected to require any temporary travel lane closures that could restrict emergency vehicle movements. Therefore, the non-jurisdictional project components would have a less-than-significant impact or would not physically interfere with an adopted emergency response or evacuation plan.

g. Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

Less Than Significant Impact with Mitigation Incorporated. The project site has no history of wildland fires and COCs **WORKER SAFETY-1** and **WORKER SAFETY-2**

have been included to reduce the potential for fires from project construction and operation.

Construction and Operation

Jurisdictional Project Components

The project site is not populated and is largely flat desert land with no nearby forested areas. As indicated in **Figure 5.7-1,** there is no history of wildfires near the project site. Land use in the immediate vicinity is primarily undeveloped desert land, and the nearby Soda Mountain has sparse vegetation for fuel loading. The project site is in an FRA and is not within an SRA or LRA and therefore does not have a FHZS designation from CAL FIRE.

There would be an increase in human activity and potential ignition sources associated with the PV generation and BESS. The predominant fire hazard from project construction would involve the use of vehicles and equipment which could ignite dry vegetation and result in a fire. Particularly during the drier, warmer conditions of summer and fall. Construction activities that could result in sparks, such as welding or grading, would have potential to result in an ignition.

The project owner proposes to prepare and implement a Construction Fire Prevention Plan that would further reduce construction-related risks of wildfire ignition. It would do this by providing fire protections, identifying known fire hazards, and outlining procedures for fire safeguards for project construction activities. Therefore, staff proposes COC **WORKER SAFETY-1** to require the project owner to implement a Construction Fire Prevention Plan.

The project owner proposes to prepare and implement an Operations and Maintenance (O&M) Fire Protection and Prevention Program which would further reduce operations-related risks of wildfire ignition by providing fire protections, identifying known fire hazards, and outlining procedures for fire safeguards for project O&M activities. The project owner would coordinate with the local fire department and follow applicable detection and suppression requirements in the local California Fire Code (see **Section 4.4, Worker Safety and Fire Protection** for more fire protection information). Staff proposes COC **WORKER SAFETY-2** which would require the project owner to implement an O&M Fire Protection and Prevention Plan.

With the COCs identified above, the project would have a less than significant impact on hazards from wildland fires.

Non-Jurisdictional Project Components

Similar to the jurisdictional project components, the new switchyard and 500 kV loop-in transmission line segments are high voltage electrical equipment that are potential ignition sources. Implementation of the 2025 Wildfire Mitigation Plan (LADWP 2025) would reduce the potential for wildland fires from these non-jurisdictional components.

Implementation of the required 2025 Wildfire Mitigation Plan would also reduce the potential for any wildland fires at the Marketplace (Boulder City, NV) and Adelanto (Adelanto, CA) substations.

h. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

i. Substantially impair an adopted emergency response plan or emergency evacuation plan?

Less Than Significant Impact. The project site has no history of wildland fires and is not classified as a very high fire hazard severity zone (FHSZ). None of the non-jurisdictional project components are in very high fire hazard severity zones. The project would not impair adopted emergency response plans or emergency evacuation plans.

Construction and Operation

Jurisdictional Project Components

Based on the analysis for CEQA criterion "f", above, project construction and operation would not substantially impair an adopted emergency response plan or emergency evacuation plan. Additionally, the project is not located within a SRA or very high FHSZ, or land classified as having a fire threat by the CPUC (CPUC 2025).

Non-Jurisdictional Project Components

Similar to the jurisdictional project components, the new switchyard and 500 kV loop-in transmission line segments are high voltage electrical equipment that are potential ignition sources. Implementation of the 2025 Wildfire Mitigation Plan (LADWP 2025) would reduce the potential for wildland fires from these non-jurisdictional components. Implementation of the required LADWP 2025 Wildfire Mitigation Plan would also reduce the potential for any wildland fires at the Marketplace (Boulder City, NV) and Adelanto (Adelanto, CA) substations. The Marketplace substation is in a desert location with limited vegetation; there is no history of any wildfires at this location or immediate vicinity in the history dating back to 1980.

The non-jurisdictional project components would not change access to any routes necessary for emergency response or emergency evacuation.

ii. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

Less Than Significant Impact with Mitigation Incorporated. Based on the analysis below, with the implementation COCs **WORKER SAFETY-1**, and **WORKER SAFETY-2**

and the low potential for wildfire at the project location, the overall impact of wildfire would be less than significant.

Construction and Operation

Jurisdictional Project Components

As discussed above in criterion "g" above, the project site is relatively flat and is currently undeveloped and the project owner would implement construction and operation fire prevention plans. The implementation of COCs **WORKER SAFETY-1** and **WORKER SAFETY-2** would ensure that construction and operation fire prevention plans would be followed. Additionally, there are no portions of the project that are within an SRA or Very High FHSZ. Also, there is no recent history of wildfires in the area of the project (CAL FIRE 2025b). Therefore, impacts from the jurisdictional project components would be less than significant with incorporation of COCs.

Non-Jurisdictional Project Components

There are no portions of the new switchyard and 500 kV loop in transmission line segments sites that are within an SRA or Very High FHSZ. Therefore, the new switchyard and 500 kV loop in transmission line segments sites components would have a less than significant impact. Implementation of the required LADWP 2025 Wildfire Mitigation Plan would also reduce the potential for any wildland fires at the Marketplace (Boulder City, NV) and Adelanto (Adelanto, CA) substations.

iii. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

Less Than Significant Impact with Mitigation Incorporated. Based on the analysis below, with the implementation of COCs **WORKER SAFETY-1** and **WORKER SAFETY-2** and the low potential for wildfire at the project location, the project would not exacerbate fire risk and impact of wildfire would be less than significant.

Construction and Operation

Jurisdictional Project Components

Project related infrastructure would include the installation and/or maintenance of access roads, power lines, and other electrical utilities. As discussed above in criterion "g", the project site is relatively flat and is currently undeveloped. The project owner would implement construction and operation fire prevention plans. The implementation of COCs **WORKER SAFETY-1** and **WORKER SAFETY-2** would ensure that construction and operation fire prevention plans would be followed. Additionally, there

are no portions of the project site that are within a SRA or Very High FHSZ. Also, there is no recent history of wildfires in the area of the solar PV facility (CAL FIRE 2025b).

Non-Jurisdictional Project Components

Project-related infrastructure including the new switchyard, and 500 kV loop-in transmission line segments sites would include installation and/or installation and/or maintenance of access roads, power lines, and other electrical utilities. Additionally, there are no portions of the project site that are within an SRA or Very High FHSZ. Also, there is no recent history of wildfires in the area of the solar PV facility (CAL FIRE 2025b) Implementation of the required LADWP 2025 Wildfire Mitigation Plan would also reduce the potential for any wildland fires at the Marketplace (Boulder City, NV) and Adelanto (Adelanto, CA) substations. Therefore, the non-jurisdictional project components would have a less than significant impact.

iv. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

Less Than Significant Impact with Mitigation Incorporated. Based on the analysis below, project construction and operation would not expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

Construction and Operation

Jurisdictional Project Components

The project would not significantly alter existing drainage patterns, and existing hydrologic patterns would be preserved. Storm water discharge during construction would be managed according to the project Storm Water Pollution Prevention Plan (SWPPP). The implementation of COC **WATER-1** (see **Section 5.16, Water Resources**) would ensure that the SWPPP would be followed. With the implementation of the SWPPP, development of the site would not cause an increase in the rate or volume of stormwater runoff during construction. Operation of the project would not substantially alter local drainage patterns and would maintain existing flow channels. The owner would implement an Operations Drainage, Erosion and Sediment Control Plan (DESCP) that addresses all project elements of stormwater management during project operations. Implementation of COC **WATER-2** will ensure that the DESCP is followed. The proposed onsite stormwater control measures would be designed to maintain existing flow channels to accommodate stormwater during significant rain events. The project would therefore not be expected to contribute to a flooding hazard onsite or offsite.

Additionally, as discussed in CEQA criterion "g" above, the topography of the project site is relatively flat to gently sloping. Therefore, the project would not be exposed to post-fire slope instability or drainage changes that would impact people or structures.

Non-Jurisdictional Project Components

Similar to the jurisdictional project components, the new switchyard and 500 kV loop-in transmission line segments sites are not located within a SRA or Very High FHSZ, or land classified as having a fire threat by the CPUC (CPUC 2025). Operation of the non-jurisdictional project components (switchyard and loop-in transmission lines) at the Soda Mountain project site would not significantly alter drainage patterns and would preserve the existing hydrologic patterns. Implementation of the required LADWP 2025 Wildfire Mitigation Plan would also reduce the potential for any wildland fires at the Marketplace (Boulder City, NV) and Adelanto (Adelanto, CA) substations. The project would therefore not be expected to contribute to a flooding hazard onsite or offsite.

The non-jurisdictional project components would not be exposed to post-fire slope instability or drainage changes that would impact people or structures.

5.7.2.3 Cumulative Impacts

Construction and Operation

Less Than Significant with Mitigation Incorporated. The cumulative effect of hazards such as emergency evacuation, the lithium-ion BESS, the transportation, use, and storage of hazardous materials and the generation and haul away of hazardous waste would be limited to the project site and immediately adjacent areas. Three projects have been identified as being in the immediate vicinity of the project site. COCs **HAZ-1**, **HAZ-4** and **HAZ-5** would mitigate project specific effects related to hazardous materials, and COCs **WORKER SAFETY-1** and **WORKER SAFETY-2** would provide mitigation site specific effects related to emergency actions and response. Therefore, staff have concluded that the COCs are sufficient to reduce impacts, and the proposed project would not contribute to a cumulatively considerable impact related to hazardous materials.

The three projects identified in the cumulative setting of this document are not in high wildfire risk areas (lands classified as a very high FHSZ or classified by the CPUC as having a fire threat), nor in an area with any recent historic wildfires (see **Figure 5.7-1**) in those locations adjacent to the main project area and thus the project would not contribute to a cumulative considerable impact to wildfires. **WORKER SAFEY-1**, **WORKER SAFETY-2**, and **WORKER SAFETY-7** would mitigate project specific effects related to fire protection and potential BESS incidents. CEC has concluded that these COCs are sufficient to reduce impacts, and the proposed project would not contribute to a cumulatively considerable impact on wildfires.

5.7.3 Project Consistency with Applicable Plans, Policies and Regulations

Table 5.7-2 and **Table 5.7-3** are staff's determination of consistency with applicable plans, policies and regulations, including any proposed Conditions of Certification. As shown in this table, staff concludes that with implementation of specific Conditions of

Certification, the project would be consistent with all applicable plans, policies and regulations. The subsection below, "Staff Proposed Conditions of Certification" contains the full text of the referenced Conditions of Certification.

TABLE 5.7-2 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES AND REGULATIONS

Applicable Plans, Policies and Regulations	Consistency and Basis For Determination
Federal	
Section 302, EPCRA (Public Law 99-499 42 USC 110222) and Hazardous Chemical Reporting: Community Right-to-Know (40 CFR 370). Requires one-time notification if EHS are stored in excess of TPQs.	**Yes. HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. An HMBP would be prepared for project for the project and submitted to the San Bernardino Fire Protection District Hazardous Materials Section – CUPA/HazMat Compliance Program and uploaded to CERS.
Section 304, EPCRA (Public Law 99-499, 42 USC 11002) and Emergency Planning and Notification (40 CFR 355). Requires notification when there is a release of hazardous material in excess of its RQ.	**Yes. HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. Any releases of hazardous materials at the project facility in excess of its RQ would follow the notification procedures described in the project HMBP.
Hazardous Waste Storage Requirements (40 CFR Part 262). Includes provisions for securing hazardous waste storage areas to prevent unauthorized access and potential release of hazardous materials.	**Yes. HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. The HMBP would include information regarding the secure storage of hazardous waste materials. **HAZ-5** requires the owner to prepare a site-specific security plan.
Section 311, EPCRA (Public Law 99-499, 42 USC 11021) and Hazardous Chemical Reporting: Community Right-to-Know (40 CFR 370). Requires that SDSs for all hazardous materials or a list of all hazardous materials be submitted to the State Emergency Response Commission Local Emergency Planning Committee (LEPC), and San Bernardino Fire Protection District Hazardous Materials Section – CUPA/Hazardous Materials Division.	**Yes. HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. The HMBP would include a list of hazardous materials for submission to the State Emergency Response Commission LEPC and San Bernardino Fire Protection District Hazardous Materials Section – CUPA/HazMat Compliance Program.
Section 313, EPCRA (Public Law 99-499, 42 USC 11023) and Toxic Chemical Release Reporting: Community Right-to-Know (40 CFR 372). Requires annual reporting of releases of hazardous materials.	**Yes. HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. Any releases of hazardous materials at the project facility would follow the notification procedures described in the HMBP.
Section 112, CAA Amendments (Public Law 101-549, 42 USC 7412) and Chemical Accident Prevention Provisions. Requires facilities that store a regulated hazardous material at a quantity greater than the threshold quantity (TQ) to develop an RMP.	**Yes.** An RMP is not required because no regulated hazardous material would be stored at a quantity greater than the TQ.
Section 311, CWA (Public Law 92-500, 33 USC 1251 et seq.) and Oil Pollution Prevention (40 CFR 112). Requires preparation of an SPCC plan if the total oil and petroleum storage (including ASTs, oil-filled equipment, and drums) is greater	**Yes. HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. An SPCC plan would be prepared for the project facility if cumulative storage of oil and oil products on-site is greater than 1,320 gallons and/or storage of oil and oil products in USTs is greater than 42,000 gallons.

TABLE 5.7-2 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES AND REGULATIONS

Applicable Plans, Policies and Regulations	Consistency and Basis For Determination
than 1,320 gallons or if the oil or oil products stored in USTs exceeds 42,000 gallons.	
U.S. Department of Transportation Regulations, 49 CFR 171-177. Governs the transportation of hazardous materials, including the marking of transportation vehicles.	**HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. The HMPB would describe transportation requirements for hazardous materials stored at the project facility.
Hazardous Waste Operations and Emergency Response (49 CFR Section 1910.12). Specifies the operational and response requirements related to the use, generations, and storage of hazardous materials.	**Yes. HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. The project HMBP would describe operational and emergency response requirements related to the use, generation, and secure storage of hazardous materials.
Resource Conservation and Recovery Act (RCRA), Title 42, Chapter 82. Regulates transportation, treatment, storage, and disposal of hazardous waste.	**Yes. HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. The HMBP would establish procedures related to the transportation, treatment, storage, and disposal of hazardous waste.
Toxic Substances Control Act (TSCA), Title 15, Chapter 53. The TSCA addresses the production, importation, use, and disposal of specific chemicals, including PCBs.	**Yes. HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. The HMBP would establish procedures for the use of hazardous materials including PCBs.
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Title 42, Chapter 103. Provides procedures to respond to releases and threatened releases of hazardous substances, pollutants, and/or contaminants.	**Yes. HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. See CEQA impact criterion b.
State	
California Code of Regulations (CCR), Title 8, Section 339; Section 3200 et seq., Section 5139 et seq. and Section 5160 et seq. Lists hazardous chemicals under the Hazardous Substance Information and Training Act; addresses control of hazardous substances; and addresses hot, flammable, poisonous, corrosive, and irritant substances.	**Yes. HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. The project HMBP would describe hazardous material handling requirements related to the control of hazardous substances, including hot, flammable, poisonous, corrosive, and irritant substances.
Health and Safety Code, Section 25500 et seq. (HMBP). Requires preparation of an HMBP if hazardous materials are handled or stored in excess of threshold quantities.	**Yes. HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. An HMBP would be prepared for the project and submitted to San Bernardino Fire Protection District Hazardous Materials Section – CUPA/HazMat Compliance Program and uploaded to CERS.
Health and Safety Code, Section 25531 through 25543.4 (CalARP). Requires registration with local CUPA or lead agency and preparation of RMP if regulated (extremely hazardous) substances are handled or stored in excess of threshold planning quantities (TPQs).	**Yes.** An RMP is not required because no regulated hazardous materials would be handled or stored in excess of TPQ quantities.
Occupational Safety and Health Act (19 CFR 1910.119). For chemicals listed above thresholds, requires a process safety management plan for	**Yes.** The project facility is not expected to have chemicals that would trigger a Project Safety

TABLE 5.7-2 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES AND REGULATIONS

Applicable Plans, Policies and Regulations	Consistency and Basis For Determination
preventing or minimizing the consequences of catastrophic releases of toxic, reactive, flammable, or explosive chemicals. These releases may result in toxic, fire, or explosive hazards.	Management Plan (PSM), therefore a PSM is not required.
Health and Safety Code, Section 25270.13 (Aboveground Petroleum Storage Act). Requires preparation of an SPCC plan if oil is stored in a single AST with capacity greater than 660 gallons or if the total petroleum storage (including ASTs, oil-filled equipment, and drums) is greater than 1,320 gallons.	**Yes. HAZ-1** requires the owner to prepare an HMBP and SPCC plan prior to the start of operations for the project and implemented if cumulative storage of oil and oil products on-site is greater than 1,320 gallons.
Health and Safety Code, Section 25249.5 through 25249.13 (Safe Drinking Water and Toxics Enforcement Act) (Proposition 65). Requires warning to persons exposed to a list of carcinogenic and reproductive toxins and protection of drinking water from the same toxins.	**Yes.** The project facility would be appropriately labeled for any chemicals stored onsite that are on the Proposition 65 list.
Health and Safety Code, Section 25100 through 25259. Establishes the procedures for hazardous waste storage, treatment, and transportation.	**Yes. HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. The HMBP would include details about the storage and transportation of hazardous materials and waste.
California Vehicle Code Section 32000 – 32053. Regulates the transportation of hazardous materials, including licensing and notification and hauling routes.	**Yes.** Transportation of hazardous materials to and from the project facility would follow all licensing and notification requirements.
Health and Safety Code, Section 25280 through 25299 (Underground Storage of Hazardous Substances). Regulates the construction, maintenance, testing, and use of USTs for the storage of hazardous Substances.	**Yes.** The project facility is not expected to have any USTs therefore a UST monitoring plan is not required for the facility.
CCR, Title 24 (California Fire Code) (CFC). Requires the preparation of a Hazardous Materials Management Plan (HMMP) and Hazardous Materials Inventory Statement (HMIS) or an HMBP that includes the required information.	**Yes. HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. The project facility would prepare an HMBP that would include details that satisfy the requirements of the HMMP and HMIS.
CCR, Title 22 (Hazardous Waste Management). Establishes standards applicable to generators and transporters of hazardous waste.	**Yes. HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. The project HMBP would include details regarding hazardous waste generation, transportation and manifest recordkeeping requirements.
Health and Safety Code, Hazardous Materials Release Response Plans and Inventory Law, Division 20, Chapter 6.95. Regulates the release or accidental release of hazardous waste.	**Yes.** See CEQA impact criterion "b".
Local	
San Bernardino Countywide Plan Hazards Element, Policy HZ-1.2 - Policy detailing	**Yes.** The project facility would not be constructed in a environmental hazard area.

TABLE 5.7-2 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES AND REGULATIONS	
Applicable Plans, Policies and Regulations	**Consistency and Basis For Determination**
environmental hazard areas and new development.	
San Bernardino County Code of Ordinances, chapter 7. Identifies CUPA Permit Elements for Hazardous Materials.	**Yes. HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. An HMBP would be prepared for the project and submitted to San Bernardino Fire Protection District Hazardous Materials Section – CUPA/HazMat Compliance Program and uploaded to CERS

TABLE 5.7-3 PROJECT CONSISTENCY WITH PLANS, POLICIES, AND REGULATIONS	
Applicable Plan, Policies, and Regulations	**Consistency and Basis For Determination**
Federal	
National Fire Protection Association Codes, Standards, Practices, and Guides. Provides design, installation, and operation standards regarding fire safety.	**Yes.** The NFPA Standards required by the project, including NFPA 855, Standard for the Installation of Stationary Energy Storage Systems, and is the standard for the testing, design, installation, operation, and removal of BESS and components, provide the basis for state regulation (CFC, Chapter 12, Section 1207), which the proposed project would be consistent with.
North American Electric Reliability Corporation; Institute of Electrical and Electronics Engineers; National Electrical Safety Code	**Yes.** All electrical components, most notably overhead powerlines, associated with the proposed project (including the gen-tie line), would be consistent with the requirements of the National Electrical Safety Code, most notably the vegetation management requirements.
State	
CCR, Title 8 section 1920, et seq. Regulations for fire protection systems.	**Yes.** A Fire Prevention Plan would be required by COCs **WORKER SAFETY-1** & **WORKER SAFETY-2.**
Requirements for fire protection. CCR, Title 8, sections 6150, 6151, 6165, 6170, 6175, 6183,6184.	**Yes.** A Fire Prevention Plan would be required by COCs **WORKER SAFETY-1** & **WORKER SAFETY-2.**
CFC, Title 24 (California Fire Code). Establishes best practices for fire safety and prevention. Requires the preparation of a Hazardous Materials Management Plan (HMMP) and Hazardous Materials Inventory Statement (HMIS) or a Hazardous Business Materials Plan (HMBP) that includes the required information.	**Yes. HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. The project facility would prepare an HMBP that would include details that satisfy the requirements of the HMMP and HMIS.
CCR, Title 24, Chapter 1207. Outlines requirements for design, construction, operation, and decommissioning standards; permits, construction documents, hazard mitigation analysis, and fire testing, suppression, and remediation for stationary and mobile electrical energy storage systems.	**Yes.** COC **WORKER SAFETY-6** requires the project owner to be consistent with the applicable provisions of NFPA 855 (standard for the Installation of Stationary Energy Storage Systems) as minimum level of safety for the BESS. Also, COC **WORKER SAFETY-6** requires the project owner to be consistent with the applicable provisions of NFPA 850 (recommended Practice for Fire Protection for

TABLE 5.7-3 PROJECT CONSISTENCY WITH PLANS, POLICIES, AND REGULATIONS	
Applicable Plan, Policies, and Regulations	**Consistency and Basis For Determination**
	Electric Generating Plants and High Voltage Direct Current Converter Stations) as the minimum level of fire protection. The BESS would be designed to be consistent with the requirements set forth in CCR, Title 24, Chapter 1207.
California Public Resources Code, Section 4427, Section 4428, and Section 4431. Outlines fire safety and wildfire protection standards in conjunction with building, construction, and development in SRAs.	**Yes.** A Fire Prevention Plan would be required by COCs **WORKER SAFETY-1** & **WORKER SAFETY 2.** The project would include preparation and implementation of a Fire Prevention Plan during construction and O&M activities.
Part 2 of CCR Title 24, California Building Code (CBC); San Bernardino County Code, title 6, division 3, commencing with sections 63.0101. Provides construction standards.	**Yes.** Project construction would be consistent with the CBC as modified and adopted by San Bernardino County.
Part 9 of CCR Title 24, California Fire Code (CFC). Establishes requirements for fire department access, fire protection systems, BESS design, installation, operation, and removal.	**Yes.** All project components will be in compliance with the requirements of the CFC including those pertaining to fire apparatus access and BESS design.
Local	
San Bernardino County Fire Protection District Fire Ordinance No. 23-01. Contains the San Bernardino County Fire Protection District Fire Code, which adopts by reference the CFC, with requirements pertaining to fire safety.	**Yes.** All project components would be in compliance with the San Bernardino County Fire Protection District Fire Code.

5.7.4 Conclusions and Recommendations

As discussed above, with implementation of COCs **WATER-1** and **WATER-2** (**Section 5.16, Water Resources**), **WORKER SAFETY-1**, **-2**, **-7**, and **-8** (**Section 4.4 Worker Safety and Fire Protection**) and **HAZ-1** through **HAZ-9**, the project would have a less than significant impact related to hazards, hazardous materials/waste and wildfire, and would be consistent with applicable plans, policies, and regulations. Staff recommends adopting the conditions of certification as detailed in subsection "5.7.5 Proposed Conditions of Certification" below.

5.7.5 Proposed Conditions of Certification

The following proposed COCs include measures to both mitigate environmental impacts and ensure consistency with applicable plans, policies, and regulations. The conditions below are enforceable as part of the CEC's certificate for the portions of the project constituting the site and related facility.

HAZ-1 The project owner shall prepare a Hazardous Materials Business Plan (HMBP) and a Spill Prevention Control and Countermeasure (SPCC) Plan and provide these plans to San Bernardino County HazMat Compliance Program review and comment and to the Compliance Project Manager (CPM) for review and approval.

Verification: At least 60 days prior to the start of operation the project owner shall prepare and submit the HMBP and SPCC Plan to the San Bernardino County HazMat Compliance Program for 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 San Bernardino County HazMat Compliance Program requesting review and comment.

At least 30 days prior to the start of operation, the project owner shall provide copies of any comment letters received from the San Bernardino County HazMat Compliance Program along with any changes to the HMBP and SPCC plans for CPM review and approval. After CPM review and approval, the project owner shall provide complete copies of the final HMBP and SPCC to the San Bernardino County HazMat Compliance Program sending copies of the correspondence to the CPM.

HAZ-2 After the start of project operation, the project owner shall not use any new hazardous material or change the quantity of hazardous materials that would require a change in the project's HMBP unless approved in advance by the CPM.

Verification: At least 30 days prior to changing the quantity of or using a new hazardous material onsite, the project owner shall notify and seek approval from the CPM. The project owner shall provide to the CPM, in the Annual Compliance Report, the HMBP's list of hazardous materials and quantities contained at the facility.

HAZ-3 The project owner shall report new or temporary hazardous waste generator identification numbers from the EPA 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 EPA. Documentation of any new or revised hazardous waste generation notifications or changes in identification number shall be provided to the CPM 30 days before the change occurs.

HAZ-4 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:

- perimeter security consisting of fencing enclosing the construction area;

- security guards during hours when construction personnel are not present at the site;
- site access control consisting of a check-in procedure or tag system for construction personnel and visitors;
- written standard procedures for employees, contractors, and vendors when encountering suspicious objects or packages on site or off site;
- protocol for contacting law enforcement and the CPM in the event of suspicious activity, incident, or emergency; and
- evacuation procedures.

Verification: At least 30 days prior to commencing construction, the project owner shall submit a signed letter to the CPM for review and approval stating that the provisions identified in **HAZ-4** have been implemented and notify the CPM that a site-specific Construction Security Plan is available for review onsite.

HAZ-5 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.

The Operation Security Plan for the BESS and project substation shall include the following:

1. permanent full perimeter fence or wall, at least eight feet high and topped with barbed wire or the equivalent (CCR, Title 8, Section 2812.1 (High Voltage Safety Order);
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 O&M building (or remotely) with cameras able to pan, tilt, and zoom, have low-light capability, and able to view 100 percent of the perimeter fence, and outside entrances to the site for the BESS and O&M building; and,
9. additional measures to ensure adequate perimeter security consisting of either:
   A. perimeter breach detection or onsite motion detector capabilities; and
   B. security guard(s) present 24 hours per day, seven days per week; or
   C. facility personnel on site 24 hours per day, seven days per week.

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 facility components, 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 (NERC), 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 onsite, the project owner shall submit a signed letter to the CPM for review and approval stating that the provisions identified in HAZ-5 have been implemented and notify the CPM that the site-specific operations site security plan is available for review onsite.

In the annual compliance report, the project owner shall include signed statements similar to Attachments A and B that all current project employees 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-6 The project owner shall prepare and submit to the CPM a Soils Management Plan (SMP) prior to any ground disturbing activities. The SMP shall be prepared/approved by a California Registered Civil Engineer or a California Registered Geologist with sufficient experience in hazardous waste management. The purpose of the SMP is to establish appropriate management practices and procedures for handling impacted soil and/or groundwater or other materials that may be encountered during construction activities to ensure worker protection from toxicant exposure. The SMP shall be updated as needed to reflect changes in laws, regulations, or site conditions. All ground disturbing activities at the site and potential disposal of contaminated soil and/or groundwater 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:

- Land use history including description and locations of any known contamination.
- The nature and extent of any previous investigations and remediation at the site.
- The nature and extent of any unremediated contamination at the proposed site.
- A listing and description of institutional controls such as the county's excavation ordinance and other local, state, and federal regulations and laws that would apply to the project.
- Names and positions of individuals involved with site management and their specific roles.
- An earthwork schedule.
- A description of protocols for the investigation and evaluation of any previously unidentified contamination that may be encountered in time. The protocol shall be for temporary and permanent controls that may be required to reduce exposure to onsite workers, visitors, and the public.
- A site-specific Health and Safety Plan (HSP) to be implemented by all contractors and subcontractors at the site. The HSPs shall be specific to each of the contractors' or subcontractors' scopes of work. The HSPs shall be prepared by a Certified Industrial Hygienist and would protect onsite workers by including engineering controls, personal protective equipment, monitoring, and security to prevent unauthorized entry and to reduce construction related

hazards. The HSPs shall address the possibility of encountering subsurface chemical contamination and include procedures to protect workers and the public. The HSPs shall be updated as needed if site conditions change significantly, such as discovery of contaminated soil or groundwater. Copies of the approved HSPs shall be kept at the project site.

- Hazardous waste determination and disposal procedures for known and previously unidentified contamination.
- Requirements for site-specific techniques at the site to minimize dust, manage stockpiles, run-on and run-off controls, waste disposal procedures, etc.
- Copies of relevant permits or closures from regulatory agencies.

Verification: At least 45 days prior to any ground disturbance, the project owner shall submit the SMP to the San Bernardino County CUPA for review and comment and to the CPM for review and approval. An SMP summary shall be submitted to the CPM within 30 days of completion of any ground disturbance.

HAZ-7 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 and/or groundwater.

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.

HAZ-8 If seemingly contaminated soil and/or groundwater is identified during site characterization, demolition, excavation, or grading at either the proposed site or linear facilities (as evidenced by discoloration, odor, detection by handheld instruments, or other signs), the professional engineer or professional geologist shall inspect the site, determine the need for sampling to confirm the nature and extent of contamination, and provide a written report to the project owner, San Bernardino County CUPA, 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 San Bernardino County CUPA for guidance and possible oversight.

Verification: The project owner shall submit any final reports filed by the professional engineer or professional geologist to the CPM within 5 days of their receipt. The project owner shall notify the CPM within 24 hours of any orders issued to halt construction.

HAZ-9 The project owner shall contract with a third-party consultant who shall be on-call and prepared to conduct real-time air quality monitoring if a BESS fire occurs as soon as possible but no later than four hours after fire initiation. Monitoring shall continue not less than four hours after visible flames are no longer present.

As a part of that contract, the project owner shall develop a Sampling and Analysis Plan (SAP) for air, water, and soil. Substances monitored shall include carbon monoxide, carbon dioxide, metals, HF, HCl, HCN, benzene, PM2.5, and ultrafine particulates of <0.1 µm in diameter. Additionally, sampling and analysis of soils on and off-site, surface wipe samples on and off-site, and nearby off-site surface waters during and after a BESS fire shall be conducted. The SAP shall be submitted to the CPM for review and approval and to the California Department of Health (CDPH) and the local county Department of Public Health for review and comment.

The project owner shall establish protocols with emergency responders to ensure that real-time air monitoring data is communicated to the incident commander. Additionally, water quality samples shall identify constituents in any firefighting water used to extinguish the fire and ensure that the appropriate actions are taken for water disposal or treatment after the fire.

Verification: The project owner shall submit the proposed SAP to the CPM 120 days prior to proposed BESS operations for review and approval and to the CDPH and local county DPH for review and comment. The project owner shall submit a letter with comments, if any, from the CDPH and local county DPH along with responses to comments and any proposed revisions of the SAP to the CPM for review and approval.

5.7.6 Recommended Mitigation Measures

No mitigation measures for non-jurisdictional project components are recommended for hazards, hazardous materials, and wildfire.

5.7.7 References

Agency for Toxic Substances and Disease Registry (ATSDR) 2025. Public Health Statement for Hydraulic Fluid. Accessed online November 18, 2025 at: https://wwwn.cdc.gov/TSP/PHS/PHS.aspx?phsid=755&toxid=141#bookmark05

BLM 2015 – Bureau of Land Management. Proposed Plan Amendment/ Final Environmental Impact Statement/ Environmental Impact Report. July 30, 2024. Accessed online October 10, 2025, at: https://eplanning.blm.gov/public_projects/nepa/66043/80113/93126/Vol_1_Soda Mtn_PA-FEIS-EIR_508.pdf

California Department of Forestry and Fire Protection (CAL FIRE) 2025a. Fire Hazard Severity Zones in State Responsibility Area, last updated February 24, 2025. Accessed on June 18, 2025. Accessed online at: https://calfire-forestry.maps.arcgis.com/apps/webappviewer/index.html?id=988d431a42b242b29d89597ab693d008

California Department of Forestry and Fire Protection (CAL FIRE) 2025b. California Historical Fire Perimeters Webmap. Accessed on June 18, 2025. Available online at: https://www.fire.ca.gov/what-we-do/fire-resource-assessment-program/fire-perimeters

California Public Utilities Commission (CPUC) 2025. CPUC High Fire Threat District (HFTD) map viewer. Accessed June 18, 2025. Available online at: https://www.arcgis.com/apps/webappviewer/index.html?id=5bdb921d747a46929d9f00dbdb6d0fa2

California Environmental Protection Agency (Cal EPA) 2024. Cortese List Data Resources. Accessed on June 23, 2025. Accessed online at: https://calepa.ca.gov/sitecleanup/corteselist/

Department of Toxic Substances Control (DTSC) 2025. EnviroStor. Accessed on June 23, 2025. Accessed online at: https://www.envirostor.dtsc.ca.gov/public/

Los Angeles Department of Water and Power (LADWP) 2025. 2025 Wildfire Mitigation Plan. Available at: https://www.ladwp.com/sites/default/files/2025-07/LADWP%202025%20Wildfire%20Mitigation%20Plan.pdf

Nevada Fire Info 2025. Nevada Fire History since 1980. Accessed November 2, 2025 at: https://www.arcgis.com/apps/dashboards/ee4df2244f76419386d4ed4bcc3fcd04

New York State Energy Research and Development Authority (NYSERDA), 2023, Initial Findings Released From Inter-Agency Fire Safety Working Group On Emergency Response. Accessed November 7,2025. Available at: https://www.nyserda.ny.gov/About/Newsroom/2023-Announcements/2023-12-21-Governor-Hochul-Announces-Results-of-Fire-Safety-Working-Group

San Bernardino County 1992. Baker Airport Comprehensive Land Use Plan. Accessed June 18, 2025. Available at: https://www.sbcounty.gov/Uploads/lus/Airports/Baker.pdf

San Bernadino County, 2020. Policy Map HZ-5 Fire Hazard Severity Zones (2020). Accessed June 23, 2025. Available online at: https://countywideplan.sbcounty.gov/resources/maps-tables-figures/

San Bernadino County 2024. Countywide Plan. Accessed June 18, 2025. Available at: https://countywideplan.sbcounty.gov/

San Bernardino County Fire Protection District. 2023. Fire Prevention Standards. Accessed May 2024. Available at: https://sbcfire.org/communitysafety/

San Bernardino County 2022. Multi-Jurisdictional Hazard Mitigation Plan. Accessed June 24, 2025. Available at: https://resilientca.org/projects/99190499-717b-43f3-9bbd-0c014c2d00f1/

State Water Resources Control Board (SWRCB) 2025. GeoTracker. Accessed on June 23, 2025. Accessed online at: https://geotracker.waterboards.ca.gov/

United States Environmental Protection Agency (U.S. EPA) 2024. Exposure Assessment Tools by Routes, last updated October 21, 2024. Accessed on June 18, 2025. Accessed online at: https://www.epa.gov/expobox/exposure-assessment-tools-routes

RE 2024cc – Resolution Environmental (TN 257928). Section 3-20 Wildfire, dated July 23, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2024mmm – Resolution Environmental (TN 259700). Section 3-9 Hazards and Hazardous Materials - October 2024 - Revision 1, dated October 25, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2024sss – Resolution Environmental (TN 259706). Appendix I Phase I Environmental Site Assessment - October 2024 - Revision 1, dated October 25, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025eeee – Resolution Environmental (TN 266918). Updated Figures. Docketed October 29, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

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.

5.8 Land Use

5.8.1 Environmental Setting

The land use analysis addresses the proposed project's compatibility with existing or reasonably foreseeable land uses and consistency with land use plans, policies, and regulations. In general, construction and operation of the proposed project would be incompatible if there is a preclusion of a designated land use or conflict with a federal, state, or local plan, policy, or regulation. Project impacts to surrounding land uses associated with noise, dust, traffic, and visual changes are discussed in detail in relevant sections of this Staff Assessment.

A land use analysis for a Staff Assessment typically evaluates effects on land resources such as agriculture and forestry. As explained in this section, the project is located in the Mojave Desert wholly on federal lands managed by the U.S. Bureau of Land Management (BLM), and there are no agricultural or forestry resources within the project site or the surrounding area. The project would have no potential to impact an agricultural resource or forestry resource. As such, this analysis will focus exclusively on land uses and associated policy guidance relevant to the area surrounding the project, and no further discussion of agriculture or forestry resources is included in this section.

The project includes jurisdictional and non-jurisdictional components. The jurisdictional components include the construction and operation of the solar photovoltaic (PV) facility, battery energy storage system (BESS), project substation and generation intertie line (gen-tie), and construction of the utility switchyard and section of transmission loop in lines that would connect to the existing Mead-Adelanto Transmission Line. The non-jurisdictional project components include the operation of the utility switchyard and transmission loop in lines, as well as network upgrades at the Marketplace and Adelanto substations (i.e., installation of new line tuners, wave traps, microwave telecom links, relay projection equipment, and metering and controls equipment). The non-jurisdictional network upgrades at the Marketplace and Adelanto substations are intended to support ongoing operations at those substations and would occur entirely within existing facilities. The network upgrades are not expected to result in land use preclusions or any conflicts with a federal, state, or local plan, policy, or regulation, and therefore are not addressed further in this land use analysis. Therefore, when the word "project" is used in this section, the analysis is directed to the jurisdictional components to be located on BLM land, unless otherwise stated.

Existing Conditions

Study Area

The extent of the area to be analyzed for impacts to land uses is considered the Land Use Study Area. The Land Use Study Area is defined as the geographic area within which the proposed project may affect an existing land use or conflict with a land use

designation. To determine the appropriate study area for the land use analysis, CEC staff reviewed filings by the applicant related to the proposed project site as well as the established uses and land use designations that surround the project site (RE 2025ii; RE 2025ccc). The Land Use Study Area is defined as the following:

- Land uses and designations within the boundaries of the proposed project site; and
- Land uses and designations immediately adjacent to project construction or operation activities.

Project Site

The proposed project is located in the Mojave Desert[1] on approximately 2,670 acres of land that is administered by the BLM. The project site is adjacent to Interstate-15 (I-15) and is proposed to be wholly sited on federal lands within San Bernardino County. Figure 3.11-1 from the project's application (page 3.11-8) identifies the public lands within and surrounding the project site that are administered by the BLM (RE 2025ccc). Land use designations applicable to the project site are determined by the BLM's California Desert Conservation Area Plan (CDCA), as amended by the Desert Renewable Energy Conservation Plan (DRECP) (BLM 2016), and by the Designation of Energy Corridors on Bureau of Land Management-Administered Lands in the 11 Western States (BLM 2009). Below is a list of the applicable land use designations and the proposed project components that would be located within each designation.

- **General Public Lands (GPL).** A GPL designation allows for the development of renewable energy projects but does not provide streamlined permit review or other permitting incentives that are available in areas designated for renewable energy development (i.e., Development Focus Areas (DFAs)) by the DRECP (BLM 2016). The proposed solar PV, BESS, project substation, and approximately 950-foot segment of the 500-kilovolt (kV) gen-tie line would be located on GPL-designated lands.
- **Rasor Road (BLM No. AC8828).** Rasor Road would be used to access the project site during construction and operation. Rasor Road is a BLM-designated off-highway vehicle (OHV) Open Route that currently provides the main point of access to the Rasor Road OHV Area. An OHV Open Route designation signifies that there are no special restrictions or resource protection needs that would otherwise require limits on the timing or season of use, or the type of OHV that is allowed (BLM 2019a). The project proposes to re-route a 0.4-mile segment of Rasor Road between South Array 2 and South Array 3 and would widen this Rasor Road segment to a maximum width of 26 feet (see **Section 3, Project Description, Figure 3-6**).
- **Soda Mountains Expansion Area of Critical Environmental Concern (ACEC).** An ACEC designation is intended to conserve important historic, cultural, scenic, or biological resources, and establishes provisions for special management of these resources (i.e., ground disturbance caps and restrictions on specific activities). The

1 The Mojave Desert is a subregion of the California Desert. Other subregions within the California Desert include the Colorado Desert and the Great Basin Desert.

Soda Mountains Expansion ACEC was designated by the DRECP to protect plant and wildlife connectivity as well as a tribal cultural resource (BLM 2016). The proposed utility switchyard and gen-tie line would be located within the management boundaries of a designated ACEC.

- **Section 368 Energy Corridor 27-225.** Corridor 27-225 is a federally-designated energy corridor that is located on BLM-administered land within the CDCA. Section 368 energy corridor designations are intended to streamline the ROW application process for new transmission and distribution facilities. Corridor 27-225 has a width of 10,560 feet, and generally follows the I-15 transportation corridor. The proposed utility switchyard, gen-tie line, project substation, and the majority of the solar PV arrays (i.e., all of the East Array and South Array 1, most of South Array 2, and the eastern half of South Array 3) would be constructed within this designated energy corridor. Figure 3.11-2 from the project's application (page 3.11-10) illustrates the Section 368 energy corridor designation relative to the project site (RE 2025ccc).

Adjacent Land Uses

Land uses surrounding the proposed project site include BLM-administered lands as well as a National Park Service preserve. The following land use designations are adjacent to the project site:

- **Rasor Off-Highway Vehicle Special Recreation Management Area (SRMA).** An SRMA designation is used by BLM to signify a high priority area for outdoor recreation due to the area's recreation opportunities, unique value, and importance. The Rasor OHV SRMA encompasses 24,000 acres of BLM-administered land and is adjacent to the project site along its southeastern boundary. The Rasor OHV SRMA allows for open desert riding and camping. Direct access to the Rasor OHV SRMA is limited to Rasor Road and Basin Road via I-15.
- **Mojave National Preserve.** The 1.6 million-acre Mojave National Preserve is managed by the National Park Service and is located approximately 0.5 mile east of the project boundary. The General Management Plan for the Mojave National Preserve emphasizes the goals of protecting the preserve's natural, scenic, and cultural resources while minimizing new development (NPS 2002).
- **Soda Mountains Wilderness.** This 80,090-acre wilderness area is located approximately 0.3-mile northwest of the project's interconnection with the Mead-Adelanto 500-kV transmission line. The wilderness area was designated in 2019 (Public Law 116-9) to protect prehistoric and historic cultural resources, wildlife, and plant habitat (Wilderness Connect 2025).

Summary of Notable Land Uses

Notable land uses and sensitive receptors within the Land Use Study Area are listed in **Table 5.8-1**. A sensitive receptor is defined as a land use that is particularly sensitive to nuisance effects from construction, operation, and maintenance (e.g., noise, dust, traffic). Examples of sensitive receptor land use types include residences, recreation areas (e.g., campgrounds and parks), and academic institutions.

TABLE 5.8-1 NOTABLE STUDY AREA LAND USES AND SENSITIVE RECEPTORS

Jurisdiction	Land Use	Land Use Type	Land Use Description	Location	Designation	Sensitive Receptor
FEDERAL LAND USES						
BLM	Rasor OHV SRMA	Recreation	Open OHV Area	Adjacent to the project site's southeastern boundary. Accessible by Rasor Road and Basin Road via I-15	SRMA	X
BLM	Soda Mountains Expansion ACEC	Recreation	BLM Conservation Lands	Encompasses the area north of I-15 and south of the Soda Mountains Wilderness	ACEC	X
BLM	Soda Mountains Wilderness	Recreation	BLM Conservation Lands	Located along the northwestern perimeter of the Soda Mountains Expansion ACEC	Wilderness	X
BLM	Afton Canyon Campground	Recreation	Campground	Located along Afton Road, within Afton Canyon SRMA and Afton Canyon ACEC	SRMA and ACEC	X
BLM and National Park Service	Old Spanish National Historic Trail	Recreation	Trail	Approximately 3.5 miles to the east and south of project site.	National Historic Trail	X
National Park Service	Mojave National Preserve	Recreation	NPS Conservation Lands	Approximately 0.5 mile east of the project site. Accessible by Kelbaker Road via I-15	National Preserve	X
National Park Service	Mojave Wilderness	Recreation	NPS Conservation Lands	Located within the boundaries of the Mojave National Preserve	Wilderness	X
National Park Service	CSU Soda Springs Desert Studies Center	Institutional	Research field station	Within Mojave National Preserve; 49441 Zzyzx Road	Interpretive Facility	X
LOCAL LAND USES						
San Bernardino County	Rasor Road Services Shell Oil	Commercial	Gas station	66150 Rasor Road, Baker	CH	NA
San Bernardino County	Residence	Residential	Single home	66150 Rasor Road, Baker Adjacent to gas station	CH	X

Notes: San Bernardino County Zoning Designations are defined as the following: CH = Highway Commercial
BLM Designations are defined as the following: ACEC = Area of Critical Environmental Concern; SRMA = Special Recreation Management Area
Sources: San Bernardino County 2007; BLM 2016; and NPS 2002

Regulatory

The project would be sited and constructed entirely on federal public lands administered by the BLM. As such, the project would be subject to federal regulatory requirements. There are no state or local land use plans, policies or regulations applicable to the project. The regulatory setting for the project includes applicable BLM resource management plans and decision documents as summarized below.

Federal

California Desert Conservation Area Plan as Amended (by the Desert Renewable Energy Conservation Plan). The project site is located within the CDCA Plan area. The CDCA Plan area encompasses over 10.7 million acres of public lands within the California desert that are administered by the BLM. Since the adoption of the original 1980 CDCA Plan, the BLM has amended the CDCA Plan to address changing resource conditions and new uses of public lands. These include numerous small amendments that allow for a specific project or land use change, as well as a few large-scale amendments such as the 2016 DRECP Land Use Plan Amendment (LUPA). The DRECP amended the CDCA Plan to develop a landscape approach to renewable energy siting in the California Desert, which included the following changes:

- Designation of land use allocations that identify conservation areas, recreation areas, and energy development areas; and
- Adoption of Conservation and Management actions (CMAs) that guide and restrict activities within each land use allocations.

A key strategy to avoid conflicts from renewable energy development within the California Desert is the designation of Development Focus Areas (DFAs). The DRECP LUPA created DFAs to aggregate renewable energy generation within areas determined to be suitable for development. DFAs are characterized by having high quality solar, wind, or geothermal resources; containing disturbed or degraded lands; being in close proximity to existing transmission; and having sufficient acreage for utility-scale renewable energy development.

The project site is not located within a DFA. Instead, the proposed project would straddle the following two BLM land use allocations:

- **General Public Lands.** The proposed solar PV, BESS, project substation, and a 950-foot segment of the gen-tie line (500 kV) would be located on GPL-designated lands. Development on GPLs would be subject to LUPA-wide and GPL-specific CMAs (BLM 2016).
- **Area of Critical Environmental Concern.** The proposed utility switchyard and approximately 0.75-mile segment of the 500-kV gen-tie line would be located within the Soda Mountains Expansion ACEC. Project activities within an ACEC are subject to LUPA-wide CMAs, ACEC-specific CMAs, and management prescriptions from the ACEC Special Unit Management Plan (SUMP) (BLM 2016).

Designation of Energy Corridors on BLM-Administered Lands in the 11 Western States (West-Wide Energy Corridor PEIS). Section 368 of the Energy Policy Act of 2005 (Public Law 109-58) (EPAct) directed federal agencies to designate energy corridors on public lands (i.e., Section 368 corridors). Section 368 energy corridor designations are intended to streamline the ROW application process for new transmission and distribution facilities. In 2009, the BLM completed a Programmatic Environmental Impact Statement (PEIS) and issued a ROD for the Designation of Energy Corridors on BLM-Administered Lands in 11 Western States (West-Wide Energy Corridor PEIS). The 2009 ROD approved Resource Management Plan amendments to incorporate the energy corridor designations, which included amendments to the CDCA Plan. The ROD also adopted Interagency Operating Procedures (IOPs), which are uniform requirements and performance criteria for construction, operation, and decommissioning activities within the energy corridors. Per the 2009 ROD, these IOPs apply to all designated energy corridors on BLM-administered land (BLM 2009).

Section 368 Energy Corridor Review Final Report. Since 2009, the BLM has continued to conduct regional reviews of the Section 368 energy corridors to identify potential revisions, deletions, or additions to the corridors, and potential changes to the IOPs (BLM 2022). In 2022, the BLM issued a Section 368 Energy Corridor Review Final Report (Corridor Review Report) that provides a framework for analyzing modifications to energy corridors during future land use planning (BLM 2022). The Corridor Review Report describes ongoing issues with corridor siting and management, such as corridor segments that have been physically constrained from the siting of non-linear energy facilities (e.g., solar development). The Corridor Review Report itself does not amend the BLM's Resource Management Plans but is intended to provide further guidance on maximizing the intended use of each designated energy corridor.

Cumulative

The Land Use Study Area includes all land uses that may be directly or indirectly affected by construction and operation of the proposed project. The extent of the Land Use Study Area includes land uses and designations within the boundaries of the proposed project site and immediately adjacent to project construction or operation activities. As the Land Use Study Area is defined broadly to encompass any potential land use impacts, this same geographic extent would be suitable for the cumulative analysis.

Table A-1 in **Appendix A** provides a list of past, present, and reasonably foreseeable projects that may be relevant to the cumulative analysis for each issue area. The following is a list of the projects that are within the geographic extent for the land use cumulative analysis:

- Brightline West-Las Vagas to Victor Valley
- Ivanpah Control Transmission Line Project
- I-15 Mojave Wildlife Crossings Restoration Project

5.8.2 Environmental Impacts

LAND USE	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Would the project preclude access to an established land use?	☐	☒	☐	☐
b. Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐

Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix G, land use and planning. Note that agriculture and forestry resources are not included in the checklist as staff has determined that there are no agricultural resources or forestry resources within the project site or the surrounding area.

5.8.2.1 Methodology and Thresholds of Significance

As discussed in subsection 5.8.1, the proposed project would be wholly sited on federal land that is administered by the BLM. 43 CFR Part 2800 requires the BLM to coordinate with state and local governments as part of the BLM's ROW authorization process for non-federal projects. Staff, in coordination with BLM, has reviewed the project application to determine the project's consistency with relevant land use plans, policies, and regulations, and to propose mitigation, where applicable. Staff's California Environmental Quality Act (CEQA) land use analysis is being conducted in response to the project's opt-in application for certification submitted to the CEC pursuant to California Public Resources Code section 25545.7.

To conduct the land use analysis, staff developed an inventory of potentially affected uses within the Land Use Study Area. Staff reviewed docket files submitted by the applicant, agencies, and the public to identify potentially affected land uses. Data was also gathered through a review of aerial maps, open-source geospatial data, and applicable BLM documents to determine consistency of the proposed project with applicable federal land use plans. It should be noted that there are no state, regional, or local land use plans, policies, and regulations applicable to the project.

Significance criteria used in this analysis are based on Appendix G of the CEQA Guidelines. The proposed project would have a potentially significant impact (and would require mitigation) if it would:

- Preclude access to an established land use.
- Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

5.8.2.2 Direct and Indirect Impacts

a. Would the project preclude access to an established land use?

Construction and Operation

Less Than Significant with Mitigation Incorporated. The proposed project would be located adjacent to the Rasor OHV SRMA, which is a popular destination for OHV recreationists and offers unique opportunities for open desert riding (i.e., OHV users are not required to stay on designated routes). This SRMA is also used as a staging area for scenic touring excursions along the Mojave Road, which travels northeast to southwest through the SRMA. There are only two roads that provide access to the Rasor OHV SRMA, Rasor Road (BLM No. AC8828) and Basin Road (BLM No. AC8712), which are accessible via I-15.

The proposed project would utilize Rasor Road as the primary access road during project construction and operation. As described in **Section 3, Project Description**, subsection 3.7.9.3, the project proposes to widen a 0.4-mile segment of Rasor Road and would re-route this segment to travel between the proposed South Array 2 and South Array 3 (see **Section 3, Project Description, Figure 3-7**).

The applicant has stated in its application filings that Rasor Road would be permanently open to the public during both project construction and operation, and that it would continue to serve as the main access route into the Rasor OHV SRMA (RE 2025bbb). However, the applicant has not provided further details on how public access would be safely maintained during construction. As discussed in **Section 3, Project Description**, subsection 3.8, the proposed project's realignment and improvements to Rasor Road would occur during Stage 1 of construction, which would coincide with the transport of heavy construction equipment (e.g., bulldozers, excavators, compactors) through the Rasor Road site entrance and along Rasor Road to reach the laydown areas and work sites. The project application does not address the potential need for any access restriction along Rasor Road during construction. However, given the extensive construction activity that would occur during Stage 1 (i.e., site grading, compaction, cut and fill activities), staff considers it likely that restrictions along Rasor Road may be necessary to accommodate equipment transport or road improvement activities. Therefore, this analysis includes a discussion of the impacts that could result from potential construction-related access restrictions.

To ensure public safety during construction, staff assumes that public access along Rasor Road would need to be limited or closed during road improvement and realignment activities and movement of heavy equipment. The applicant has proposed an 18-month construction schedule, during which Stage 1 activities (i.e., Rasor Road improvements and realignment) would occur for the first 8 months (see **Section 3, Project Description**, subsection 3.8). Once Stage 1 activities are completed, the types and location of construction activities during Stage 2 through Stage 4 could more easily

accommodate public access along Rasor Road, although periodic restrictions may still be necessary to allow for movement of equipment and materials.

As Rasor Road is the primary access route to the Rasor OHV SRMA, closure of Rasor Road would effectively preclude access to the Rasor OHV SRMA (i.e., a designated recreational resource). Preclusion of access that extends beyond the construction phase would be considered a potentially significant land use impact, because it would conflict with future use of a designated recreation area. To minimize the impacts associated with any potential Rasor Road closure, staff recommends that restrictions along Rasor Road be limited to specific construction stages, specific hours of the day, and specific days of the week. Such periodic restrictions would be a temporary inconvenience to OHV recreationists but would prevent preclusion of access to the Rasor OHV SRMA throughout the entire construction period. Staff proposes Condition of Certification (COC) **LAND-1** to ensure that the project would not preclude access to the Rasor OHV SRMA (a recreational resource), and that any temporary restrictions or access delays along Rasor Road are communicated to the public. With the implementation of COC **LAND-1** the potential for recreation access preclusions would be mitigated to less than significant.

b. Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

This section describes the applicable federal management goals and policies, and the degree to which the proposed project could potentially create a conflict with those applicable plans. Further detail on the project's consistency with applicable BLM land use plans and policies is provided in **Table 5.8-2**.

Construction and Operation

Less Than Significant Impact. As discussed in subsection 5.8.1, the proposed project would only be subject to federal policies and management actions set forth in BLM's adopted resource management plans and decision documents. BLM's resource management plans were developed for the express intent of managing multiple uses in a manner that avoids conflicts with competing land management objectives. The BLM's planning documents establish land allocations and resource designations, which are tied to specific management prescriptions that specify the allowable and prohibited uses within each designation. These specific BLM land management prescriptions expressly have been developed to allow for multiple uses while avoiding or mitigating the environmental effects of those uses.

California Desert Conservation Area Plan as Amended (by the Desert Renewable Energy Conservation Plan)

The DRECP LUPA amended the CDCA Plan to designate conservation areas, recreation areas, and energy development areas. The DRECP LUPA also adopted CMAs that guide and restrict activities within each land use designation. Per the DRECP LUPA, the

proposed solar PV, BESS, project substation, and a portion of the 500-kV gen-tie line would be located in GPL-designated lands. Although renewable energy development is an allowable use within the GPL designation, a project must adhere to a series of LUPA-wide and GPL-specific CMAs to ensure consistency with the DRECP LUPA.

The proposed 500-kV gen-tie and utility switchyard would be located within the Soda Mountains Expansion ACEC. Per the DRECP LUPA, transmission is an allowable use in an ACEC. However, project activities within an ACEC are required to implement CMAs and ACEC SUMP management prescriptions that are designed to protect sensitive resources.

Land use policies that are relevant to the GPL and ACEC land use designations include the CMAs and management prescriptions from the DRECP LUPA that are summarized below. **Table 5.8-2** includes a project consistency analysis for each of these policies.

- Project activities must avoid impacts to SRMAs and maintain route network connectivity with roads and trails leading into and through the Rasor OHV SRMA. Renewable energy development adjacent to SRMAs must avoid traffic conflicts with visitors and permitted uses (CMA LUPA-CTTM-1, CMA GPL-2, Rasor OHV SRMA SUMP management prescription).
- Project activities must avoid conflicts with approved recreation activities, avoid impacts to a recreation facility's access routes and staging areas, and avoid impacts to roads and trails. If roads or trails cannot be avoided, relocate the road or trail to maintain access to recreation areas (CMA GPL-REC-2, CMA GPL-REC-3, CMA GPL-REC-6, CMA GPL-CTTM-1, CMA LUPA-CTTM-2).
- Existing routes and trails within the Soda Mountains Expansion Area ACEC provide access to the Soda Mountains Wilderness and should remain accessible unless modified as part of BLM's travel management process (Soda Mountains Expansion ACEC SUMP management prescription).
- Transmission is an allowable use within ACECs, while renewable energy development is not allowed (CMA ACEC LANDS-1).
- Renewable energy projects must be transmission aligned. New transmission lines of 161-kV and greater must be located in designated utility corridors (CMA LUPA-LANDS-8, CMA GPL-4).

The CMAs and management prescriptions that are relevant to this land use analysis are focused on avoiding impacts to designated recreation areas and maintaining access to these recreation areas along BLM roads and trails. Below is a discussion of the BLM roads that provide key access to recreation areas and would be used during project construction and operation:

- Rasor Road is a designated OHV Open Route that serves as the main access route to the Rasor OHV SRMA. The proposed project would utilize Rasor Road as the primary entrance to the project site and would re-route a segment of this road through the proposed solar PV arrays (see **Section 3, Project Description, Figure 3-6**).

- Route CL 8847 is located within the Soda Mountains Expansion Area ACEC and provides access to the Soda Mountains Wilderness (BLM 2019a). The project would utilize Route CL 8847 to construct the gen-tie and utility switchyard (See **Section 3, Project Description, Figure 3-2**).

Given the proposed project's location on federal land, the project would be subject to BLM CMAs and management prescriptions that require access to be maintained to established recreation areas. BLM's ROW authorization process would include requirements for the applicant to comply with all applicable CMAs and management prescriptions. For example, COC **LAND-1** (proposed in response to CEQA criterion a. above) would help maintain public access to the Rasor OHV SRMA and the Soda Mountains Wilderness throughout the life of the project. Potential impacts associated with BLM's land use plans and policies adopted for the purpose of mitigating an environmental effect within a GPL and ACEC land use designation would be less than significant, because there would be no new policy conflicts created by the project.

Designation of Energy Corridors on BLM-Administered Lands in the 11 Western States (West-Wide Energy Corridor PEIS)

The proposed utility switchyard, gen-tie line, project substation, and the majority of the solar PV arrays would be constructed within Section 368 Energy Corridor 27-225. The BLM's 2009 PEIS and ROD (West-Wide Energy Corridor) did not identify solar facilities as an incompatible land use within a designated energy corridor (BLM 2009). Rather, the BLM's 2016 ROD for the Soda Mountain Solar Project determined that the project's substation, switchyard, and gen-tie would be consistent with the intended use of Energy Corridor 27-225 (RE 2024jjj). While the BLM's 2015 EIS for the Soda Mountain Solar Project acknowledged that the proposed solar PV arrays would occupy the full width of Energy Corridor 27-225 that extends south of I-15, the BLM concluded that sufficient width was available within the energy corridor north of I-15 to accommodate several major utility lines (BLM 2015). Further, the BLM's 2016 ROD approved an amendment to the CDCA Plan to allow development of a 2,813-acre solar facility within Energy Corridor 27-225 (RE 2024jjj).

Per BLM's 2022 Corridor Review Report, the BLM may choose to modify its management guidance for energy corridors through updates to local land use plans. However, BLM's adopted plans and policies specific to energy corridors have not changed since the 2009 West-Wide Energy Corridor PEIS and ROD. In the 2016 ROD issued by BLM for the project, the BLM determined that the project's solar PV arrays would be consistent with a Section 368 energy corridor through the adoption of a project-specific CDCA Plan Amendment to identify the solar facility as an allowable use (RE 2024jjj). This project-specific plan amendment was approved by the published ROD. Further, the acreage of the currently proposed project (i.e., 2,670 acres) is less than the acreage for the solar facility evaluated in the 2015 EIS and approved in the 2016 ROD (i.e., 2,813 acres) (BLM 2015; RE 2025ii; RE 2024jjj). Given that no changes have occurred to Section 368 energy corridor designations since 2009, and given that the proposed project acreage within Energy Corridor 27-225 would be less than the solar facility acreage approved in

the 2016 ROD, CEC staff concludes that the proposed project would not introduce a new conflict with existing applicable BLM plans and policies specific to Section 368 energy corridors. Potential impacts associated with BLM's land use plans and policies adopted for the purpose of mitigating an environmental effect within a Section 368 energy corridor would be less than significant.

Table 5.8-2 below details staff's review of project consistency with land use plans, policies, and regulations applicable to the project site.

TABLE 5.8-2 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS

Applicable Plans, Policies, and Regulations	Consistency and Basis For Determination
Federal	
California Desert Conservation Area Plan as Amended by the Desert Renewable Energy Conservation Plan	
Project activities must avoid impacts to SRMAs and maintain route network connectivity with roads and trails leading into and through the Rasor OHV SRMA. Renewable energy development adjacent to SRMAs must avoid traffic conflicts with visitors and permitted uses. *CMAs and Management Prescriptions:* • LUPA-CTTM-1 • GPL-2 • Rasor OHV SRMA SUMP	**Yes.** The proposed project would be located adjacent to the Rasor OHV SRMA along its southeastern boundary. None of the project's construction or operation activities are proposed within the SRMA. To maintain public access to the Rasor OHV SRMA throughout the life of the project, staff proposes COC **LAND-1**.
Project activities must avoid conflicts with approved recreation activities, avoid impacts to a recreation facility's access routes and staging areas, and avoid impacts to roads and trails. If roads or trails cannot be avoided, relocate the road or trail to maintain access to recreation areas. *CMAs:* • GPL-REC-2 • GPL-REC-3 • GPL-REC-6 • GPL-CTTM-1 • LUPA-CTTM-2	**Yes.** Rasor Road provides public access to the Rasor OHV SRMA. The proposed project would utilize Rasor Road as its primary access road and would re-route a segment of this road around the solar PV within the project site. To ensure that Rasor Road remains accessible to the public throughout the life of the project, staff proposes COC **LAND-1**.
Existing routes and trails within the Soda Mountains Expansion Area ACEC provide access to the Soda Mountains Wilderness and should remain accessible unless modified as part of BLM's travel management process. *Management Prescriptions:* • Soda Mountains Expansion ACEC SUMP	**Yes.** Route CL 8847 provides public access to the Soda Mountains Wilderness through the Soda Mountains Expansion ACEC. The proposed project would utilize Route CL 8847 to construct the gen-tie and utility switchyard. To ensure that Route CL 8847 remains accessible to the public throughout the life of the project, staff proposes COC **LAND-1**.
Transmission is an allowable use within ACECs, while renewable energy development is not allowed. *CMAs:* • ACEC-LANDS-1	**Yes.** The project's 500-kV gen-tie and utility switchyard would be located within the Soda Mountains Expansion ACEC. All other project components (i.e., solar PV, BESS, project substation) would be located on GPL-designated

TABLE 5.8-2 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS	
Applicable Plans, Policies, and Regulations	**Consistency and Basis For Determination**
	lands. The project would be consistent with this CMA that identifies compatible uses (i.e., transmission infrastructure) and non-compatible uses (i.e., solar PV, BESS) within an ACEC.
Renewable energy projects must be transmission aligned. New transmission lines of 161-kV and greater must be located in designated utility corridors. *CMAs:* • LUPA-LANDS-8 • GPL-4	**Yes.** The DRECP LUPA defines transmission-aligned development as energy projects that are in areas immediately adjacent or in close proximity to approved designated utility corridors. The intent of this CMA is to minimize the need for new, unplanned transmission infrastructure. The proposed project would be consistent with this CMA as it is proposed within a Section 368 energy corridor.
Designation of Energy Corridors on Bureau of Land Management-Administered Lands in the 11 Western States (West-Wide Energy Corridor PEIS)	
Section 368 energy corridor designation allows BLM to streamline the ROW application process for new transmission and distribution facilities. Projects within a designated energy corridor must adhere to IOPs, which are uniform requirements and performance criteria for construction, operation, and decommissioning activities within the energy corridors.	**Yes.** The proposed utility switchyard, gen-tie line, project substation, and the majority of the solar PV arrays would be constructed within Section 368 Energy Corridor 27-225. In 2016, the BLM determined that the project's substation, switchyard, and gen-tie would be consistent with the intended use of Energy Corridor 27-225, and the solar PV arrays would be consistent following adoption of a project-specific CDCA Plan Amendment (RE 2024jjj). Because the proposed project would occupy a slightly smaller footprint than the 2016 project (i.e., 2,670 acres versus 2,813 acres), the proposed project would remain consistent with a Section 368 energy corridor designation. Further, the applicant has identified IOPs that are applicable to the project and has specified the applicant proposed measures and mitigation measures that would be implemented to meet the IOP requirements (RE 2025ccc).

5.8.2.3 Cumulative Impacts

Less Than Significant Impact. A cumulative impact to land use would occur if the activities of the proposed project overlap with the construction or operation of another project in the Land Use Study Area, resulting in a combined impact that may be equal to, or more severe than, the effects of the proposed project alone.

Preclude access to an established land use. Construction of the proposed project could preclude access to the Rasor OHV SRMA if it were to close or limit public access along Rasor Road. The projects listed in **Table A-1** primarily include wildlife conservation projects (i.e., wildlife crossings) and linear infrastructure projects (i.e., high speed rail, transmission line upgrade). Per the location information provided in **Appendix A** and **Table A-1**, none of these cumulative projects would be located along Rasor Road or Basin Road, which are the two primary access roads to the Rasor OHV

SRMA. As such, construction and operation of these cumulative projects would not be anticipated to conflict with access to the Rasor OHV SRMA. There are no other established land uses potentially impacted by the proposed project that would also be affected by the projects listed in **Table A-1**. Potential preclusion of access with an established land use would not be cumulatively considerable.

Conflict with a land use plan, policy, regulation, or zoning. The proposed project would be subject to BLM CMAs and management prescriptions for GPLs and ACECs that require access to be maintained to established recreation areas. As none of the cumulative projects listed in **Table A-1** would conflict with access to the recreation areas adjacent to the proposed project, there would be no cumulative effect attributed to a conflict with a CMA or management prescription for GPLs and ACECs.

The proposed project would also be subject to plans, policies, or regulations that guide management of Section 368 energy corridors. There are two linear infrastructure projects listed in **Table A-1** that would be located within the same Section 368 energy corridor as the proposed project (i.e., Corridor 27-225). The first is the Ivanpah Control Transmission Line Project (Map ID #2) that would construct upgrades to an existing high-voltage transmission line. As a long-distance transmission line project, this project would be compatible with the intended use of an energy corridor, which is to prioritize siting of major energy transmission infrastructure. The second is the Brightline West-Las Vegas to Victor Valley Project (Map ID #1) that would construct a high-speed rail project along the west side of, and immediately adjacent to, the I-15 freeway (USDOT FRA 2011 and 2023). This high-speed rail project would be sited within the existing I-15 transportation corridor that overlaps with the BLM-designated Section 368 energy corridor (i.e., Corridor 27-225) for an approximately 40-mile segment of I-15 between Barstow and Baker (BLM 2019b). As a linear transportation project, the high-speed rail project would be compatible with the existing I-15 transportation corridor. Furthermore, the high-speed rail project would parallel the west side of I-15, and would not introduce non-linear infrastructure that could create a barrier to future transmission infrastructure projects within a Section 368 energy corridor. Neither of these cumulative projects (Map ID #1 and Map ID #2) would conflict with BLM's adopted management guidance for energy corridors. Potential cumulative impacts would be less than significant.

5.8.3 Conclusions and Recommendations

Implementation of COC **LAND-1** would avoid preclusion of access to the Rasor OHV SRMA (a designated recreational resource), and would facilitate compliance with the DRECP LUPA CMAs and management prescriptions that require access to designated recreation areas to be maintained along BLM roads and trails. The proposed project would remain consistent with a Section 368 energy corridor designation per BLM's 2009 ROD for the West-Wide Energy Corridor PEIS and per BLM's 2016 ROD for the Soda Mountain Solar Project. Potential conflicts associated with BLM's land use plans, policies, or regulations adopted for the purpose of mitigating an environmental effect within a Section 368 energy corridor would be less than significant.

No mitigation measures for non-jurisdictional project components are recommended for land use.

5.8.4 Proposed Conditions of Certification

The following proposed COC would ensure consistency with federal land use plans, policies, and regulations, where applicable.

LAND-1 The proposed project shall adhere to the Conservation and Management Actions (CMAs) and management prescriptions from the Desert Renewable Energy Conservation Plan (DRECP) Land Use Plan Amendment (LUPA) that require BLM roads and trails (i.e., Rasor Road and Route CL 8847) to remain accessible to the Rasor Off-Highway Vehicle (OHV) Special Recreation Management Area (SRMA) and the Soda Mountains Wilderness. These CMAs and management prescriptions include the following: CMA LUPA-CTTM-1, CMA GPL-2, Rasor OHV SRMA Special Unit Management Plan, Soda Mountains Expansion ACEC Special Unit Management Plan.

To be consistent with the aforementioned CMAs and management prescriptions, the project owner shall prepare an OHV Route Access Plan prior to the start of construction. The OHV Route Access Plan shall specify the days of the week and hours of the day that temporary road closures or delays would occur along Rasor Road and Route CL 8847. Temporary road closures must accommodate periodic public access, although access may be restricted to specific time periods. For example, temporary road closures could be scheduled Monday-Thursday from 10 a.m. to 4 p.m. The OHV Route Access Plan shall avoid scheduling temporary road closures during weekends and holidays. Scheduled delays could also be utilized during construction, in which a pilot car would be used to navigate public vehicles through construction areas. The OHV Route Access Plan shall indicate the timeframe (i.e., days and hours) for scheduled delays.

The OHV Route Access Plan shall describe the methods to be used for public notification of the construction schedule along Rasor Road and Route CL 8847. At a minimum, the OHV Route Access Plan shall utilize the following public notification efforts:

- Post the Rasor Road and Route CL 8847 access schedule on a website that is frequented by the OHV community (e.g., BLM's webpage for the Rasor OHV Area, Friends of El Mirage webpage, Cal4Wheel webpage). The OHV Route Access Plan shall identify the websites that will host the construction schedule; and
- Send monthly electronic communications to OHV community groups regarding the access schedule for Rasor Road and Route CL 8847. The project owner shall consult with the BLM regarding the OHV community groups to be included in these monthly updates and will identify the list of OHV community groups in the OHV Route Access Plan.

Verification: At least 60 calendar days prior to the start of construction, the project owner shall submit the OHV Route Access Plan to the BLM and to the compliance project manager (CPM) for review and approval. The project owner shall incorporate any changes to the OHV Route Access Plan that are requested by the BLM and the CPM and shall provide the BLM and the CPM with the updated OHV Route Access Plan prior to the start of construction.

At least two weeks prior to the start of construction, the project applicant shall provide the CPM with proof of public notification of the access schedule for Rasor Road and Route CL 8847. Proof of public notification shall include copies of website postings and copies of electronic communications to OHV community groups per the OHV Route Access Plan.

5.8.5 Recommended Mitigation Measures

There are no recommended mitigation measures for non-jurisdictional project components for land use.

5.8.6 References

BLM 2009 – U.S. Bureau of Land Management. Approved Resource Management Plan Amendments/Record of Decision for Designation of Energy Corridors on Bureau of Land Management-Administered Lands in the 11 Western States. Approved January 14, 2009. Accessed online at: https://corridoreis.anl.gov/documents/

BLM 2015 – U.S. Bureau of Land Management. Soda Mountain Solar Project Proposed Plan Amendment/ Final Environmental Impact Statement/ Environmental Impact Report. Dated June 2015. Accessed online at: https://eplanning.blm.gov/eplanning-ui/project/66043/570

BLM 2016 – U.S. Bureau of Land Management. Desert Renewable Energy Conservation Plan. Land Use Plan Amendment to the California Desert Conservation Plan, Bishop Resource Management Plan, and Bakersfield Resource Management Plan. Approved September 14, 2016. Accessed online at: https://eplanning.blm.gov/eplanning-ui/project/66459/570

BLM 2019a – U.S. Bureau of Land Management. West Mojave Route Network Project. Final California Desert Conservation Plan Amendment and Supplemental Environmental Impact Statement for the California Desert District. Approved October 2019. Accessed online at: https://eplanning.blm.gov/eplanning-ui/project/93521/570

BLM 2019b – U.S. Bureau of Land Management. Region 1 Energy Corridor Abstracts: Corridor 27-225. Dated March 2019. Accessed August 22, 2025. Accessed online at: https://corridoreis.anl.gov/regional-reviews/region-1/

BLM 2022 – U.S. Bureau of Land Management. Energy Policy Act of 2005 Section 368 Energy Corridor Review Final Report: Regions 1-6. Issued April 2022. Accessed online at: https://www.corridoreis.anl.gov/regional-reviews/report/

BLM 2025 – U.S. Bureau of Land Management. Rasor Off-Highway Vehicle Area. Accessed October 1, 2025. Accessed online at: https://www.blm.gov/visit/rasor-highway-vehicle-area

NPS 2002 – National Park Service. Mojave National Preserve General Management Plan. April 2002. Accessed online at: https://www.nps.gov/moja/learn/management/gmp.htm

RE 2024jjj – Resolution Environmental (TN 259697). Appendix W, BLM Record of Decision, dated October 25, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025ii – Resolution Environmental (TN 264913). Updated Project Description and Responses to REV 1 DR BIO-2 and REV 1 DR ES-1, dated July 18, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025bbb – Resolution Environmental (TN 265178). REV 2 DR LAND-2 and REV 2 DR WATER-1, dated July 31, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025ccc – Resolution Environmental (TN 265182). 3-11 Land Use and Planning - July 31 2025 Revision, dated July 31, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

San Bernardino County 2007 – San Bernardino County. Zoning Maps: Desert Region. Baker Map DI16A. Dated May 30, 2007. Accessed online at: https://lus.sbcounty.gov/planning-home/zoning-and-overlay-maps/zoning-maps/

USDOT FRA 2011 – U.S. Department of Transportation Federal Railroad Administration. Record of Decision for the DesertXpress High-Speed Passenger Train. Approved July 8, 2011. Accessed November 3, 2025. Accessed online at: https://railroads.dot.gov/sites/fra.dot.gov/files/fra_net/152/ROD_FINAL.pdf

USDOT FRA 2023 – U.S. Department of Transportation Federal Railroad Administration. Reevaluation Summary and Conclusions Brightline West High-Speed Passenger Train Project. Approved September 15, 2023. Accessed November 3, 2025. Accessed online at: https://railroads.dot.gov/sites/fra.dot.gov/files/2023-09/BW%20LVVV_Decision%20Memo%20Final_9-15-2023_PDFa%20%281%29.pdf

Wilderness Connect 2025 – Wilderness Connect. Soda Mountains Wilderness. Accessed October 13, 2025. Accessed online at: https://wilderness.net/visit-wilderness/?ID=770#general

5.9 Noise and Vibration

This section analyzes the jurisdictional and non-jurisdictional project components. The jurisdictional project components include the construction and operation of the solar photovoltaic (PV) facility, battery energy storage system (BESS), project substation and generation intertie line (gen-tie) and construction of the utility switchyard and section of transmission loop in lines that would connect to the existing Mead-Adelanto Transmission Line. The non-jurisdictional project components include the construction and operation of the protection setting upgrades to the Marketplace and Adelanto substations and operation of the utility switchyard and section of transmission loop in lines.

5.9.1 Environmental Setting

Existing Conditions

The Soda Mountain Solar Project (SMSP or project) area primarily consists of undeveloped rural desert land (RE 2025ii). Infrastructure in the immediate area around the project include an unimproved Bureau of Land Management (BLM) public access road, the four-lane Interstate 15 (I-15), two high-voltage electric transmission lines, an electrical distribution line, wireless cellular telephone towers, and two fuel pipelines (RE 2025ii). The project would be located on approximately 2,670 acres of federally-owned land managed by the BLM (RE 2025ii).

The project is located in San Bernadino County along Patterson Pass Road, bounded directly to the east by the Mojave National Preserve and to the west by I-15 (RE 2025ii).

The nearest municipality to the project is the city of Barstow, approximately 48 miles to the west-southwest. The Rasor Road Services Shell Oil gas station is located off I-15 southwest of the project site, with a residence next to the gas station approximately 260 feet southwest of the southwest corner of the project boundary. The predominant ambient noise sources include traffic and distant light aircraft.

A long-term (24-hour) ambient noise monitoring survey was conducted at the project site from January 17th through January 18th, 2023 (RE 2024v). The applicant surveyed one long- term monitoring location, LT-1, located within the southeastern area of the project site along Rasor Road. The average ambient sound levels measured at LT-1 during daytime hours (7 A.M. to 10 P.M.) were approximately 43 decibels on the A-weighted scale (dBA) L_{eq}[1]. During nighttime hours (10 P.M. to 7 A.M.) they measured approximately 48 dBA L_{eq}.

1 L_{eq} is a measurement of average energy level intensity of noise over a given period of time.

In addition, a short-term noise measurement was conducted on January 17th, 2023, at ST-1, which is located approximately 260 feet southwest of the southwest corner of the project site adjacent to I-15. ST-1 is located next to the closest residence and gas station. The measurements were taken during daytime hours during an interval of 15 minutes. The short-term noise level was 53 dBA L_{eq} (RE 2024v).

Regulatory

Federal

Occupational Safety and Health Act (OSHA). The Department of Labor, Occupational Safety and Health Administration (OSHA) has adopted regulations (29 C.F.R. Section 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. The regulations further specify a hearing conservation program that involves monitoring the noise to which workers are exposed, assuring that workers are made aware of overexposure to noise, and periodically testing the workers' hearing to detect any degradation.

State

Cal-OSHA. Cal-OSHA has promulgated Occupational Noise Exposure Regulations (Cal. Code Regs., tit. 8, Section 5095-5099) that set employee noise exposure limits. These standards are equivalent to the federal OSHA standards.

Local

San Bernadino County General Plan

Hazards Element. The Hazards Element includes guidelines for noise-compatible land use categories (San Bernardino 2022). The General Plan also includes several policies that aim to protect residential and other noise-sensitive land uses from exposure to harmful or annoying noise levels. The following are General Plan policies applicable to the project:

Goal HZ-2 Human-generated hazards: People and the natural environment protected from exposure to hazardous materials, excessive noise, and other human-generated hazards.

- Policy HZ-2.8 limits or restricts new noise sensitive land uses in proximity to existing conforming noise generating uses and planned industrial areas.
- Policy HZ-2.9 prioritizes noise mitigation measures that control sound at the source before buffers, soundwalls, and other perimeter measures.

San Bernadino County Ordinance

83.01.080 Noise. This Noise Ordinance includes noise measurement criteria, exterior noise standards, and noise source exemptions. Section 83.01.080 of the Noise

Ordinance establishes noise regulations for residences, professional services, industrial, and other commercial areas in both incorporated and unincorporated areas of San Bernadino County (San Bernadino 2014). The County's exterior noise level standards for different cumulative number of minutes in any one-hour time period are shown in **Table 5.9-1** and **5.9-2** below. The mentioned standards apply within 50 feet of the affected sensitive receptors.

TABLE 5.9-1 NOISE STANDARD FOR STATIONARY NOISE SOURCES – RESIDENTIAL

Category	Cumulative Number of minutes in any one-hour time period	Noise Level Standards, dBA	
		Daytime 7 A.M. to 10 P.M	Nighttime 10 P.M. to 7 A.M.
1	30	55	45
2	15	60	50
3	5	65	55
4	1	70	60
5	0	75	65

Source: San Bernardino 2014

TABLE 5.9-2 NOISE STANDARD FOR STATIONARY NOISE SOURCES – COMMERCIAL

Category	Cumulative Number of minutes in any one-hour time period	Noise Level Standards, dBA	
		Daytime 7 A.M. to 10 P.M	Nighttime 10 P.M. to 7 A.M.
1	30	60	60
2	15	65	65
3	5	70	70
4	1	75	75
5	0	80	80

Source: San Bernardino 2014

According to the County's Noise Ordinance, if the measured ambient noise level exceeds the applicable noise level standard in any category above (**Table 5.9-1** and **Table 5.9-2**), the applicable standard shall be adjusted to equate to the ambient noise level. The County's Noise Ordinance exempts construction provided these activities do not take place before 7 A.M. or after 7 P.M. on any day except Sunday or Federal holidays.

83.01.090 Vibration. This Vibration Ordinance includes exemptions for vibration sources. Section 83.01.090 of the Vibration Ordinance states that temporary construction, maintenance, repair, or demolition activities between the hours of 7 A.M. and 7 P.M., except on federal holidays, are exempt from the Vibration Standard regulations in the Vibration Ordinance.

Cumulative

Section 15130 of the CEQA Guidelines (Cal. Code Regs., tit. 14) requires a discussion of cumulative environmental impacts. Cumulative impacts are two or more individual impacts that, when considered together, are considerable or that compound or increase other environmental impacts. The CEQA Guidelines require that the discussion reflect the severity of the impacts and the likelihood of their occurrence but need not provide as much detail as the discussion of the impacts attributable to the project alone.

Staff reviewed the master cumulative project list in **Appendix A, Table A-1** and concludes that the SMSP would have no cumulative noise impacts with past, present, or probable future projects, because there are no other projects located within a distance where their noise could combine with that of the SMSP to create a cumulative impact (this distance is typically one mile).

5.9.2 Environmental Impacts

NOISE AND VIBRATION	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
b. Would the project result in generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix G, noise.

5.9.2.1 Methodology and Thresholds of Significance

The construction and operation of any power plant and large industrial facilities create noise, or undesired sound. The character and loudness of this noise, the times of day or night that it occurs, and the proximity of the facility to sensitive receptors (humans) combine to determine whether the facility would meet applicable noise control laws and ordinances, and whether it would cause significant adverse environmental impacts.

In addition, vibration may be produced as a result of construction practices, such as blasting or pile driving. The ground-borne energy of vibration has the potential to cause structural damage and annoyance to humans.

In addition to the above environmental checklist, staff used the following methodology and thresholds of significance to evaluate the project.

Methodology

The California Environmental Quality Act (CEQA) Guidelines state that a project would normally be considered to have a significant impact if noise levels conflict with adopted environmental standards or plans (County's noise level threshold), or if noise levels generated by the project would substantially increase existing ambient noise levels at noise-sensitive receivers on a permanent or temporary basis.

Thresholds of Significance

Generally, an increase of 3 dBA is noticeable and an increase of 5 dBA is distinct. An increase of 5 dBA is considered less than significant, particularly if the resulting noise level does not exceed established community noise standard. CEQA Cal. Code Regs., tit. 14, Section 15064.7 (c) allows adopting thresholds recommended by other public agencies or experts, which supports the use of established noise criteria such as +5 dBA in quieter environments. Federal Highway Administration (FHWA) guideline explains that a 5 dBA increase is discernible but not substantial. It further explains that a 5 dBA increase is considered a discernible change, while larger increases (10–15 dBA) are regarded as substantial, potentially doubling perceived loudness. FHWA 23 C.F.R. Part 772 defines a "substantial noise increase" anywhere in the 5–15 dBA range.

The CEC has jurisdiction over dozens of power generating facilities. In most cases, Commission Decisions have required that operational noise from projects not exceed ambient noise levels by more than 5 dBA. They also typically require a post-construction noise survey to verify compliance with this threshold. Notably, no project with operational noise increases of 5 dBA or less above ambient has triggered a community noise complaint.

Other factors, such as the period of exposure to noise, frequency of occurrence and tonal character of the noise, and time of day/night it occurs are also commonly considered in determining if such an increase is clearly significant or not.

There are no adopted thresholds for an increase in dBA level to be considered a significant impact for construction activities. Noise due to construction activities is considered to be less than significant if the construction activity is temporary and the use of heavy equipment and noisy activities is limited to daytime hours. However, an increase of 10 dBA or more during the day can be perceived as noisy (triggering a community reaction) and warrant additional measures to address the noise levels. An increase of 10 dBA corresponds to a doubling of loudness or dBA level and is generally

considered to be the starting point at which significant noise impacts may occur (triggering a community reaction). It is very difficult to identify the exact level of noise resulting from construction because it fluctuates based on many factors over the course of a week, day, or even hour. It also depends on other factors, such as intervening structures, land topography and land cover. For example, intervening structures block or impede sound waves, and undulating topography and land roughness would play a role in attenuating the propagation of sound waves. Therefore, performance standards (i.e., a complaint and redress process) are ultimately used as a backstop measure to address any impacts that are perceived by the community.

For noise-sensitive receptors, such as residences, San Bernadino Noise Ordinance establishes noise level thresholds and noise limitations for new projects, setting a limit of 55 dBA L_{50} during daytime hours and 45 dBA L_{50} during nighttime hours.

The California Department of Transportation's (Caltrans) Transportation and Construction Vibration Guidance Manual includes the Federal Transit Administration's (FTA) methods and findings. The Caltrans manual states that for construction activities that generate vibration, the threshold of human response begins at a peak particle velocity (PPV) of 0.16 inch per second (in/sec). This is characterized by Caltrans as a "distinctly perceptible" event with an incident range of transient to continuous (Caltrans 2020). A level of 0.20 in/sec has been found to be annoying to people in buildings and can pose a risk of architectural damage to buildings.

5.9.2.2 Direct and Indirect Impacts

a. Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Construction

Less Than Significant with Mitigation Included. Based on the analysis below, construction of the project would have a less than significant impact on ambient noise levels in the vicinity of the project with the discussed Conditions of Certification (COCs) incorporated.

Jurisdictional and Non-Jurisdictional Project Components

San Bernadino County Noise Ordinance does not establish noise level thresholds for construction activities. However, the County's Noise Ordinance exempts construction provided these activities do not take place before 7 A.M. or after 7 P.M. on any day except Sunday or Federal holidays. Construction would take approximately 18 months to complete, with the construction work schedule expecting to be mostly from 6 A.M. to 6 P.M., Monday through Friday (RE 2024ss, RE 2025ii). Pile driving is anticipated to be used during site preparation and construction of the PV and BESS facilities. However,

staff recommended COC **TRANS-1** (**Section 5.14, Transmission**) to reduce traffic impacts (to level of service) by requiring that construction on Fridays would cease at 1 P.M. and requiring that no construction would take place on Fridays when a Federal Holiday occurs the following Monday.

The PV system would be closest to the project's sensitive receptor, the residence represented by noise monitoring location ST-1. The access road construction phase along the existing Rasor Road would generate the highest construction noise level at ST-1. The noise level due to construction at this location would reach approximately 71 dBA L_{eq}. The daytime ambient noise level at this location is approximately 53 dBA L_{eq}. Since this is 18 dBA L_{eq} above the ambient level, it could be perceived as noisy. However, the loudest construction activities would be intermittent and temporary. Construction of linear facilities typically moves along at a rapid pace, thus not subjecting any one receptor to noise impacts for more than a few days. Also, COC **NOISE-5** would place restrictions on construction activities related to linear facilities, in addition to any project features, with the exception of pile driving and the operation and maintenance buildings, within 1.5 miles of residences.

Pile driving activity could potentially occur during PV panel system installation and BESS facility construction phases. Typically, pile driving is infrequent and of short duration. Pile driving noise is intermittent and not continuous throughout the day. Unsilenced pile driving would generate the highest noise level for a single piece of construction equipment, 104 dBA at 50 feet. The nearest residence to the pile driving activities is located approximately 260 feet away from the southwest corner of the project boundary and roughly 3,960 feet away from PV system installation (RE 2025ii). At the residence, the noise level from pile driving (104 dBA at 50 feet) would be approximately 66 dBA. The daytime ambient noise level at the residence is approximately 53 dBA L_{eq}. This ambient noise level would increase by up to 13 dBA L_{eq}. This is a significant increase, however, pile driving activities would be intermittent and temporary. In addition, this increase does not account for atmospheric and ground absorption over distance which would likely drop the overall noise increase to below 10 dBA. The applicant identified and committed to implement the Applicant-Proposed Measure (APM) N-1 related to pile driving and construction of the O&M buildings (RE 2024v). Staff reviewed the APM N-1 and determined that APM N-1 would be sufficient to reduce potential construction noise impacts to less than significant when combined with the staff proposed COCs described below.

Staff proposes COC **NOISE-6** to ensure noise from pile driving would not substantially increase the existing ambient noise levels at the residence. As outlined in **NOISE-6**, this can be achieved by implementing several best management methods that 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.

Furthermore, to address additional noise impacts that might be perceived noisy by the community, staff proposes COCs **NOISE-1**, **NOISE-2**, **NOISE-4**, and **NOISE-5**. These conditions would provide the public with noise complaint and redress process (**NOISE-1**), would require construction workers and employees noise protection (**NOISE-2** and **NOISE-4**), and would place restrictions on construction activities (**NOISE-5**).

With implementation of COCs **NOISE-1**, **NOISE-2**, **NOISE-4**, **NOISE-5**, and **NOISE-6**, noise generated by project construction activities would be reduced and would not result in generation of a substantial increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies and would not create a significant adverse noise impact.

There are no noise-sensitive receptors within the vicinity of the proposed location of the gen-tie lines nor the non-jurisdictional project components and therefore, construction activities would have a less than significant impact on ambient noise levels.

Operation

Less Than Significant with Mitigation Incorporated. Based on the analysis below, operation of the project would have a less than significant impact on ambient noise levels in the vicinity of the project with the discussed COCs incorporated. The operational noise levels at the downstream network upgrades would be consistent with current operational noise levels.

Jurisdictional and Non-Jurisdictional Project Components

According to the County Noise Ordinance (Section 83.01.080), the exterior noise level standards for a cumulative 30 minutes in any one-hour time period is 45 dBA L_{eq} during nighttime hours and 55 dBA L_{eq} during daytime hours for residential land uses.

The simultaneous operation of the PV system, BESS, transformer, and substation would lead to combined operational noise levels of 24 dBA L_{eq} at the nearest residence, ST-1 (RE 2024v). This sensitive receptor would be located approximately 3,960 feet southwest of the nearest edge of the solar PV field. The ambient noise level at the nearest sensitive receptor is approximately 53 dBA L_{eq} The operational noise level of 24 dBA L_{eq} at this residence would be below both the ambient noise level and the County Noise Ordinance's thresholds.

Staff proposes COC **NOISE-3** to ensure project operation during daytime and nighttime hours would not distinctly increase the ambient noise level at nearest residence and would comply with the county's noise thresholds. **NOISE-3** would ensure measurement and verification that operational noise performance criteria are met at the project's noise-sensitive receptors.

With implementation of COC **NOISE-3** project operations would not result in generation of a substantial increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies and would not create a significant adverse noise impact.

There are no noise-sensitive receptors within the vicinitof the proposed location of the gen-tie lines nor the non-jurisdictional project components and therefore, noise from operation would not have an impact on ambient noise levels for sensitive receptors. Operation noise for the downstream network upgrades at the Marketplace and Adelanto and substations would be consistent with current operational noise levels.

b. Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

Construction

Less Than Significant Impact. Based on the analysis below, construction of the project would have a less than significant impact on groundborne vibration and groundborne noise levels in the vicinity of the project. No groundborne vibration or groundborne noise levels for the downstream network upgrades would be anticipated based on the upgrades to be made.

Jurisdictional and Non-Jurisdictional Project Components

Pile driving would generate the most project construction vibration (RE 2024ii). This analysis relies on the vibration thresholds identified by Caltrans to determine the significance of vibration impacts related to adverse human reactions. The threshold of human response begins at a PPV of 0.16 in/sec. Caltrans characterizes this as a "distinctly perceptible" event (Caltrans 2020). A level of 0.20 in/sec has been found to be annoying to people in buildings and can pose a risk of architectural damage to buildings.

Jackhammers can cause a groundborne vibration rate of 0.035 in/sec at 25 feet (less than the threshold of human response), bulldozers can cause a groundborne vibration of 0.089 in/sec at 25 feet (DOT 2006), and pile drivers can cause a groundborne vibration rate of 0.65 in/sec at 25 feet (Caltrans 2020). However, vibration rates dissipate rapidly with distance. Bulldozing activities would take place approximately 3,960 feet from the closest off-site residential structure (ST-1). At 3,960 feet, the vibration would be approximately 0.00034 in/sec, which is below the Caltrans PPV limit of 0.16 in/sec. Pile driving would occur at roughly 4,100 feet from ST-1. At this distance, the vibration would be approximately 0.0024 in/sec, which is also below the Caltrans PPV limit of 0.16 in/sec. Therefore, temporary vibration impact from construction is expected to be less than significant.

No groundborne vibration or groundborne noise levels for the downstream network upgrades would be anticipated based on the upgrades to be made.

Operation

No Impact. Based on the analysis below, operation of the project would have no impact associated with groundborne vibration and groundborne noise levels in the vicinity of the project.

Jurisdictional and Non-Jurisdictional Project Components

Operational components of the jurisdictional and non-jurisdictional project components would not generate perceptible vibration levels. Most equipment used in PV, BESS, project substation, and O&M facility are designed to produce no or very low vibration levels (less than the threshold of human response). Therefore, the operation of the project would not result in any substantial vibration.

No Operational groundborne vibration or groundborne noise would be generated from operation of the downstream network upgrades at the Marketplace and Adelanto and substations.

c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

Construction and Operation

No Impact. Based on the analysis below, the SMSP is not within the vicinity of a private airstrip or airport land use plan and is not within two miles of a public airport or public use airport. Therefore, the SMSP would have no impacts from excessive noise levels.

Jurisdictional and Non-Jurisdictional Project Components

The SMSP and Marketplace and Adelanto Substations are more than seven miles from the nearest airport, Baker Airport. The airport is too far away to result in exposure of people residing or working in the project area to excessive noise levels, when combined with SMSP and the substations.

5.9.2.3 Cumulative Impacts

Construction and Operation

There are no cumulative projects close enough to the project that when combined with the project would result in cumulative noise and vibration impacts.

5.9.3 Project Consistency with Applicable Plans, Policies, and Regulations

Table 5.9-3 below details staff's determination of consistency with applicable local, state and federal plans, polices, and regulations, including any proposed COCs, where applicable, to ensure the jurisdictional components of the project would comply with plans, policies, and regulations. As shown in this table, staff concludes that with implementation of specific COCs, the proposed project would be consistent with all applicable plans, policies, and regulations. The subsection below, "Proposed Conditions of Certification," contains the full text of the referenced COCs.

TABLE 5.9-3 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS

Applicable Plans, Policies, and Regulations	Consistency and Basis For Determination
Federal	
Occupational Health and Safety Act (OSHA) Title 8, California Code of Regulations, Sections 5095-5099, and Title 29, Code of Federal Regulations, Section 1910.95	**Yes.** With incorporation of COCs **NOISE-2** and **NOISE-4** requiring an employee noise control program and occupational noise survey.
State	
Cal-OSHA Title 8, California Code of Regulations, Sections 5095-5099, and Title 29, Code of Federal Regulations, Section 1910.95	**Yes.** With incorporation of COCs **NOISE-2** and **NOISE-4** requiring an employee noise control program and occupational noise survey.
Local	
San Bernadino County Noise Ordinance Title 8, Division 3, Chapter 83.01.080 Noise	**Yes.** With incorporation of COCs **COM-11**, and **NOISE-1** through **NOISE-6**, requiring notification of construction, a noise complaint process, employee noise control program, operational noise restrictions, occupational noise survey, construction noise restrictions, and pile driving control.

5.9.4 Conclusions and Recommendations

As discussed above, with the implementation of COCs **COM-11** (**Section 9, Compliance Conditions and Compliance Monitoring Plan**) and **NOISE-1** through **-6**, the jurisdictional project components would have a less than significant impact related to noise and vibration and would conform with applicable plans, policies and regulations. Staff recommends adopting the COCs as detailed in subsection "5.9.5 Proposed Conditions of Certification" below.

There are no impacts associated with non-jurisdictional project components, as there are no sensitive receptors close enough to these components to be impacted, therefore no mitigation measures are recommended.

5.9.5 Proposed Conditions of Certification

NOISE-1 Noise Complaint Process Throughout the construction and operation of the project, the project owner shall document, investigate, evaluate, and attempt to resolve all project-related noise complaints.[2] The project owner or its authorized agent shall:

- use the Noise Complaint Resolution Form (shown below), or a functionally equivalent procedure acceptable to the Compliance Project Manager (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 the Noise Complaint Resolution Form to the CPM documenting the complaint and actions taken. The form shall include: a complaint summary, including the final results of noise reduction efforts and, if obtainable, a signed statement by the complainant that states that the noise problem has been resolved to the complainant's satisfaction.

Verification: Within five days of receiving a noise complaint, the project owner shall file with the CPM the Noise Complaint Resolution Form, that documents the resolution of the complaint. If noise control measures are required to resolve the complaint, and the complaint is not resolved within three business days, the project owner shall submit an updated Noise Complaint Resolution Form when the noise control measures are implemented.

NOISE-2 Employee Noise Control Program 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.

NOISE-3 Operational Noise Restrictions The project design and implementation shall include appropriate noise control measures adequate to ensure that

2 A project-related noise complaint is a complaint about noise that is caused by the project as opposed to another source and may constitute a violation by the project of any Noise condition of certification. A project-related noise complaint is documented by an individual or entity affected by such noise.

operation of the project will not exceed the existing ambient level of 53 dBA L_{eq} at monitoring location ST-1.

No new pure-tone components may be introduced. No single piece of equipment shall be allowed to stand out as a source of noise that draws legitimate complaints.

When the project first achieves a sustained output that produces the highest noise level, the project owner shall conduct a 25-hour community noise survey at the nearest residence, ST-1, by someone who represents the project owner and is qualified to conduct noise surveys. This survey during project operation shall also include measurement of one-third octave band sound pressure levels at the above locations to ensure that no new pure-tone noise components have been introduced.

If the results from the noise survey indicate that the project noise levels (L_{eq}) at the affected receptor, ST-1, exceed the above value for any given hour during the survey, noise control measures shall be implemented to reduce noise to a level of compliance with this limit.

If the results from these noise survey indicate that pure tones are present, noise control measures shall be implemented to eliminate the pure tones.

Verification: The survey shall take place within 45 days of the project first achieving a sustained output that produces the highest noise level. Within 30 days after completing the survey, the project owner shall submit a summary report of the survey to the CPM. Included in the survey report will be a description of any additional noise control measures necessary to achieve compliance with the above listed noise limit, and a schedule, subject to CPM approval, for implementing these measures. When these measures are in place, the project owner shall repeat the noise survey.

Within 15 days of completion of the new survey, the project owner shall submit to the CPM a summary report of the new noise survey, performed as described above and showing compliance with this condition.

NOISE-4 Occupational Noise Survey Following the project's attainment of a sustained output that produces the highest noise level, the project owner shall conduct an occupational noise survey to identify any noise hazardous areas within the project.

The survey shall be conducted by a qualified person in accordance with the provisions of Title 8, California Code of Regulations, Sections 5095-5099 and Title 29, Code of Federal Regulations, Section 1910.95(g)(3). 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 hazard controls against occupational noise exposures 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 Cal-OSHA upon request from Cal-OSHA.

NOISE-5 Construction Noise Restrictions Except for pile driving and the O&M buildings, heavy equipment operation and noisy[3] construction work relating to any project features, including linear facilities, within 1.5 miles of residences, shall be restricted to the times delineated below:

Mondays through Thursdays, and Saturdays:	7:00 A.M. to 7:00 P.M.
Fridays:	7:00 A.M to 1:00 P.M.
Sundays, Federal Holidays, and Fridays when a Federal Holiday occurs the following Monday:	No construction allowed

Heavy equipment operation and noisy[3] construction work relating to O&M buildings, within 1.5 miles of residences, shall be restricted to the times delineated below:

Mondays through Thursdays, and Saturdays:	7:00 A.M. to 10:00 P.M.
Fridays:	7:00 A.M to 1:00 P.M.
Sundays, Federal Holidays, and Fridays when a Federal Holiday occurs the following Monday:	No construction allowed

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 of the project.

3 "Noisy" means noise that has the potential to cause project-related noise complaints (for the definition of "project-related noise complaint", see the footnote in COC **NOISE-1**)

NOISE-6 Pile Driving Control The project owner shall perform pile driving in a manner to reduce the potential for any project-related noise and vibration complaints. Pile driving within 1.5 miles of residences shall not occur between the hours of 10:00 P.M. and 7:00 A.M., Mondays through Saturdays, or at any time on Sundays. The project owner shall notify residences in the vicinity of pile driving, including the residence represented by ST-1, prior to start of these activities.

Verification: At least 15 days prior to first pile driving, the project owner shall submit to the CPM a description of the pile driving technique to be employed, including calculations showing its projected noise impacts and peak particle velocity at monitoring location ST-1. Examples of noise-reducing techniques 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.

At least 10 days prior to first production pile driving, the project owner shall notify residences in the vicinity of the project, including the residence represented by ST-1. The notification may be in the form of letters, or other effective means, as approved by the CPM. 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.

5.9.6 Recommended Mitigation Measures

There are no recommended mitigation measures for the non-jurisdictional components of the project for Noise and Vibration.

5.9.7 References

Caltrans 2020 – California Department of Transportation (Caltrans). Transportation and Construction Vibration Guidance Manual. Published in April 2020. Accessed online at: https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tcvgm-apr2020-a11y.pdf

RE 2024v – Resolution Environmental (TN 257921). Section 3-13 Noise, dated July 23, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025ii – Resolution Environmental (TN 264913). Updated Project Description and Responses to REV 1 DR BIO-2 and REV 1 DR ES-1, dated July 18, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2024ss – Resolution Environmental (TN 257945). Appendix L Noise and Ground Vibration Technical Report, dated July 23, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

San Bernardino 2014 – San Bernardino County, CA Code of Ordinances. Chapter 83.01: General Performance Standards - § 83.01.080 Noise. Passed 2014. Accessed online at: https://codelibrary.amlegal.com/codes/sanbernardino/latest/sanberncty_ca/0-0-0-169172

San Bernardino 2022 – San Bernardino County. Countywide Plan – Hazards Element. Last updated 9/27/2022. Accessed online at: https://countywideplan.sbcounty.gov/policy-plan/hazards/

EXHIBIT 1 – NOISE COMPLAINT RESOLUTION FORM

SODA MOUNTAIN SOLAR PROJECT (24-OPT-03)
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 level at 3 feet from noise source: _____dBA Date: _____ Initial noise level at complainant's property: _____dBA Date: _____ Final noise levels at 3 feet from noise source: _____dBA Date: _____ Final noise level at complainant's property: _____dBA Date: _____
Description of corrective measures taken: Complainant's signature: _____ Date: _____
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: _____

5.10 Public Health

This section analyzes the jurisdictional and non-jurisdictional project components. The jurisdictional project components include the construction and operation of the solar photovoltaic (PV) facility, battery energy storage system (BESS), project substation and generation intertie line (gen-tie) and construction of the utility switchyard and section of transmission loop in lines that would connect to the existing Mead-Adelanto Transmission Line. The non-jurisdictional project components include the construction and operation of the protection setting upgrades to the Marketplace and Adelanto substations and operation of the utility switchyard and section of transmission loop in lines.

The Soda Mountain Solar Project (SMSP or project) would be in an unincorporated area of San Bernardino County within the Mojave Desert Air Basin (MDAB). The project site consists of rural desert lands managed primarily by the Bureau of Land Management (BLM) and is adjacent to the Mojave National Preserve. The project footprint is located near Interstate-15, with the Rasor Road service station to the southwest. The proposed solar PV facility, BESS, and supporting infrastructure would be sited within this undeveloped desert setting.

To interconnect the SMSP with the California Independent System Operator (California ISO)-managed electric grid, he applicant would construct two 500-kilovolt (kV) loop-in transmission line segments and six new steel towers. Upon completion, these facilities, together with the new utility switchyard, would be operated and maintained by the Los Angeles Department of Water and Power (LADWP). Operation of these components falls under the jurisdiction of the Los Angeles Board of Water and Power Commissioners.

The purpose of this Public Health analysis is to determine whether toxic emissions from the proposed project would have the potential to cause significant adverse public health impacts or violate federal, state, or local standards for public health protection in the project area.

The toxic air contaminants (TACs) addressed in this analysis are pollutants that do not have specific ambient air quality standards but may cause acute or chronic health effects. **Section 5.1, Air Quality**, separately addresses criteria air pollutants for which ambient air quality standards exist (e.g., ozone, PM10, PM2.5). **Section 4.4, Worker Safety and Fire Protection**, **Section 5.7, Hazards, Hazardous Materials, and Wildfire**, and **Section 5.9, Noise and Vibration**, provide additional analyses of human health-related issues such as Valley Fever risks, hazardous materials handling, and operational safety.

5.10.1 Environmental Setting

Existing Conditions

Toxic Air Contaminants

California Health and Safety Code section 39655 defines a toxic air contaminant as "an air pollutant which may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health." Substances listed as hazardous air pollutants (HAPs) under Section 112 of the federal Clean Air Act (42 U.S.C. §7412) are also included as TACs under California law (Health & Saf. Code §39657(b)). California Air Resources Board (CARB) has formally identified federal HAPs as TACs in Title 17, California Code of Regulations (CCR), section 93001.

TACs, or air toxics, are different from criteria pollutants such as ground-level ozone, particulate matter, carbon monoxide, nitrogen dioxide, sulfur dioxide, and lead. Criteria air pollutants are regulated using National Ambient Air Quality Standard (NAAQS) and California Ambient Air Quality Standard (CAAQS), as noted above. However, there are no ambient standards for most TACs, therefore, site-specific health risk assessments need to be conducted to evaluate whether risks of exposure to TACs create an adverse impact. Specific TACs have known acute, chronic, and cancer health impacts. CARB has identified TACs in California Code of Regulations, Title 17, sections 93000 and 93001. The nearly 200 regulated TACs include asbestos, organic, and inorganic chemical compounds and compound categories, diesel exhaust, and certain metals. The requirements of the Air Toxic "Hot Spots" Information and Assessment Act of 1987 (Health and Saf. Code, §44300 et seq.) apply to facilities that emit these listed TACs above regulated threshold quantities.

Sensitive Receptors

Sensitive receptor locations typically include residences, schools, childcare centers, hospitals, long-term care facilities, and similar uses where vulnerable populations may be present. Identifying these locations is necessary to evaluate potential TAC impacts on public health.

The nearest residence is next to the Rasor Road Services Shell Oil gas station, about 260 feet southwest of the project boundary. This residence is used to accommodate workers (RE 2025mm). In addition, there are around six to eight people living near the gas station on the same property. Transient campers come during certain times of the year and camp out on a few different properties located about 4.5 to 5 miles down the Rasor Road (CEC 2025z). The nearest schools, Baker Elementary, Middle, and High Schools, are located more than 6.5 miles northeast in the community of Baker. No other sensitive receptors are located within 1,500 feet of the project boundary (RE 2025mm).

Health Effects of TACs

The health effects associated with TACs are quite diverse and generally are assessed locally, rather than regionally. Exposure to TACs can cause serious adverse human health effects, known as injury or illness, including cancer and birth defects. Numerous other health effects also have been linked to exposure to TACs, including heart disease, sudden infant death syndrome, respiratory infections in children, lung cancer, and breast cancer (OEHHA 2015; OEHHA 2024).

The primary on-site TAC emission sources for the proposed project would be diesel engines, including engines powering the vehicles and equipment during construction and operation. Diesel exhaust is a complex mixture of gases and fine particles including over 40 substances listed by the U.S. EPA as HAPs and by CARB as TACs. The solid material in diesel exhaust is known as diesel particulate matter (DPM) (CARB 2024).

DPM has been the accepted surrogate for whole diesel exhaust since the late 1990's. CARB identified DPM as the surrogate compound for whole diesel exhaust in its Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant staff report in April 1998 (Appendix III, Part A, Exposure Assessment) (CARB 1998). DPM is primarily composed of aggregates of spherical carbon particles coated with organic and inorganic substances. Diesel exhaust deserves attention mainly because of its ability to induce serious noncancerous effects and its status as a likely human carcinogen. Diesel exhaust is also characterized by CARB 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 U.S. EPA as "likely to be carcinogenic to humans" (U.S. EPA 2002).

Naturally Occurring Asbestos

Naturally occurring asbestos may be present at sites with certain geologic conditions. This health hazard may occur at a project site in a geographic ultramafic rock unit area or an area where naturally occurring asbestos, serpentine, or ultramafic rocks are determined to be present. Based upon review of the US Geological Survey map detailing natural occurrence of asbestos in California, naturally occurring asbestos is not expected to be present at the project site (Van Gosen and Clinkenbeard 2011).

Valley Fever

Soils in some areas of California host the microscopic fungus that causes Valley Fever, known as *Coccidioides immitis*, which lives in the top two to 12 inches of soil in many parts of the state. When soil is disturbed by activities such as digging, driving, or high winds, fungal spores can become airborne and potentially be inhaled. Since 2019, Valley Fever infections in San Bernardino County are on the rise, with infection rates

ranging from approximately 6 to 11 per 100,000 people (CDPH 2025). In addition, employers have a legal responsibility to provide workers with protection from health risks, including any risks due to Valley Fever (DIR 2022). The primary ways to reduce the risk of Valley Fever are to avoid exposure to dusty air or dust storms, prevent dirt or dust from becoming airborne, and, if working at a dusty site is unavoidable, wear respiratory protection with particulate filters rated as N95 or higher (DIR 2022).

CO Hotspots

A CO hotspot refers to a localized area where CO concentrations exceed ambient air quality standards. These hotspots can occur at intersections with high peak-hour traffic volumes. Specifically, CO hotspots may be created at intersections where traffic levels are high enough to cause local CO concentrations to exceed the federal one-hour standard of 35.0 parts per million (ppm) or the federal and state eight-hour standard of 9.0 ppm. The SMSP site is located within the Mojave Desert Air Basin (MDAB) under the jurisdiction of the Mojave Desert Air Quality Management District. The MDAB is designated as in attainment/unclassified for CO with respect to both the California Ambient Air Quality Standards (CAAQS) and the National Ambient Air Quality Standards (NAAQS) (MDAQMD 2025).

Regulatory

Federal

Federal Clean Air Act. The federal Clean Air Act (CAA), Section 112 (42 U.S.C., § 7412) defines the list of specified Hazardous Air Pollutant (HAP) and requires new sources that emit more than 10 tons per year of any HAP or more than 25 tons per year of any combination of HAPs to apply Maximum Achievable Control Technology.

HAPs are a variety of substances that pose serious health risks. Direct exposure to HAPs has been shown to cause cancer, reproductive effects or birth defects, damage to the brain and nervous system, and respiratory disorders. Categories of sources that cause HAP emissions are controlled through separate standards under CAA Section 112: National Emission Standards for Hazardous Air Pollutants (NESHAPs). These standards are specifically designed to reduce the potency, persistence, or potential bioaccumulation of HAPs.

Hazardous Air Pollutants and NESHAPs. Section 112 of the CAA (42 U.S.C. §7412) identifies hazardous air pollutants (HAPs) that pose serious health risks, including cancer, reproductive and developmental effects, nervous system damage, and respiratory illness. Major sources emitting more than 10 tons per year of a single HAP or 25 tons per year of combined HAPs are required to apply Maximum Achievable Control Technology (MACT). The EPA regulates HAPs through National Emission Standards for Hazardous Air Pollutants (NESHAPs), which are designed to reduce persistence, potency, or potential bioaccumulation. Stationary reciprocating internal combustion engines (RICE), such as emergency backup generators, are regulated under the RICE NESHAP (40 C.F.R. Part 63, Subpart ZZZZ). These rules establish emission

limits for hydrocarbons and formaldehyde, require compliance demonstrations, and limit non-emergency use of emergency engines to 50 hours per year. The project does not propose the use of any emergency backup engine; therefore, this portion of the NESHAP regulation is not applicable.

Toxic Substances Control Act. The Toxic Substances Control Act (TSCA) authorizes the U.S. EPA to require testing, reporting, recordkeeping, and restrictions on new and existing chemical substances that may pose risks to human health or the environment. While authority under TSCA is primarily federal, states may administer U.S. EPA-authorized programs to develop accreditation and certification programs and work practice standards for lead inspection, risk assessment, abatement, and renovation that are at least as protective as federal requirements.

Asbestos NESHAP. Asbestos is a hazardous air pollutant regulated under the NESHAP (40 C.F.R. Part 61, Subpart M). The asbestos NESHAP requires thorough inspection before demolition or renovation, notification to the delegated enforcement agency, and strict work practices (e.g., wetting asbestos-containing material, sealing in leak-tight containers, and proper disposal). These practices are designed to minimize asbestos emissions, which are linked to lung cancer, mesothelioma, and asbestosis. The project area is not located in a geologic setting with naturally occurring asbestos; therefore, asbestos is not expected to be an issue.

California Desert Conservation Area Plan. The project site lies within the California Desert Conservation Area (CDCA). The CDCA Plan requires management of air quality and visibility consistent with Clean Air Act Class II objectives, unless otherwise reclassified by the State of California as a result of recommendations developed by any Bureau of Land Management (BLM) air quality management plan.

State

California Health and Safety Code

Sections 39650 et seq. These sections mandated the CARB and the Department of Health Services to establish safe exposure limits for toxic air pollutants and identify pertinent best available control technologies. They also required that the New Source Review rule for the permitting of new and modified stationary sources of air pollution in each air pollution control district include regulations that require procedures for controlling the emission of toxic air contaminants.

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."

Toxic Air Contaminants Program and Hot Spots Act. California regulates TACs primarily under two statutes:

- The Tanner Air Toxics Act of 1983 (AB 1807), which created California's program for identifying and controlling TACs. In 1998, CARB identified diesel particulate matter (DPM) as a TAC, leading to a comprehensive Diesel Risk Reduction Plan that set goals of reducing DPM emissions by 75% by 2010 and 85% by 2020.
- The Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588), which requires facilities emitting TACs to report emissions, assess health risks, and notify the public if risks exceed thresholds. Facilities with elevated risk are required to develop plans to reduce exposure.

Airborne Toxic Control Measures (ATCMs). CARB has adopted a series of ATCMs to reduce TAC emissions:

- ATCM for Stationary Compression Ignition Engines, Emergency Standby Diesel-Fueled Compression Ignition Engines. Statewide regulations govern the use of and emissions performance standards for emergency standby diesel-fueled engines. As defined in regulation (Cal. Code Regs., tit. 17, §93115.4(a)(29)), an emergency standby engine is, among other possible use, one that provides electrical power during an emergency use and is not the source of primary power at the facility and is not operated to supply power to the electric grid. The corresponding ATCM (Cal. Code Regs., tit. 17, § 93115.6) restricts each emergency standby engine to operate no more than 50 hours per year for maintenance and testing purposes. The ATCM establishes no limit on engine operation for emergency use or for emission testing to show compliance with the ATCM's standards. The project does not propose the use of any emergency backup engine; therefore, this part of ATCM does not apply.
- Asbestos ATCM for Construction, Grading, Quarrying, and Surface Mining Operations (Cal. Code Regs., tit. 17, §93105) minimizes airborne asbestos from earth disturbance in ultramafic rock areas. The project area is not located in a geologic setting with naturally occurring asbestos; therefore, asbestos is not expected to be an issue.
- ATCM to Limit Diesel-Fueled Commercial Motor Vehicle Idling (Cal. Code Regs., tit. 13, § 2485) states that the idling of all diesel-fueled commercial vehicles (weighing over 10,000 pounds) during construction shall be limited to five minutes at any location.

Other California Code of Regulations (CCR). The CCR also includes numerous standards that apply to energy and construction projects:

- Title 20: Appliance Energy Efficiency Standards.
- Title 24, Part 6: Building Energy Efficiency Standards.
- Title 24, Part 11: Green Building Standards Code.

Local

Mojave Desert Air Quality Management District (MDAQMD). The MDAQMD is the local agency responsible for improving and maintaining air quality in the MDAB. The following MDAQMD rules and regulations are applicable to the project:

- **Rule 201, Permit to Construct.** Requires written authorization prior to building or altering any equipment that may emit air contaminants.
- **Rule 203, Permit to Operate.** Requires written authorization to operate any equipment that may emit or control air contaminants.
- **Rule 204, Permit Conditions.** Allows the Air Pollution Control Officer to impose permit conditions to assure compliance with all regulations.
- **Rule 401, Visible Emissions.** Limits visible emissions from sources within the District.
- **Rule 402, Nuisance.** Prohibits the discharge of air contaminants that 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.
- **Rule 403, Fugitive Dust Control.** Requires measures to reduce PM10 entrainment from anthropogenic Fugitive Dust sources within the District.
- **Rule 1113, Architectural Coatings.** Limits volatile organic compound (VOC) content in architectural coatings.

San Bernardino Countywide Plan. The San Bernardino County Policy Plan includes long-term goals and policies that will guide County decisions, investments, and improvements toward achieving the countywide vision. It serves as the County's General Plan for the unincorporated areas, which is mandated by state law (San Bernardino County 2020). Policies applicable to this analysis include:

- **Goal NR-1, Air Quality.** Air quality that promotes health and wellness of residents in San Bernardino County through improvements in locally-generated emissions.
- **Policy NR-1.3.** We collaborate with air quality management districts and other local agencies to monitor and reduce major pollutants affecting the county at the emission source.
- **Policy NR-1.6.** We coordinate with air quality management districts on requirements for dust control plans, revegetation, and soil compaction to prevent fugitive dust emissions.

San Bernardino County Code. San Bernardino County Code Section 83.01.040 Air Quality establishes diesel exhaust emissions control measures applicable to discretionary land use projects (San Bernardino County 2025), including:

(A) Off-road vehicles/equipment shall not be left idling on site for periods in excess of five minutes (with some exceptions).

(B) Use reformulated ultra low-sulfur diesel fuel in equipment and use equipment certified by the U.S. Environmental Protection Agency (EPA) or that pre-dates EPA regulations.

(C) Maintain engines in good working order to reduce emissions.

(D) Signs shall be posted requiring vehicle drivers to turn off engines when parked.

(E) Any requirements or standards subsequently adopted by the South Coast Air Quality Management District, the Mojave Desert Air Quality Management District or the California Air Resources Board.

(F) Provide temporary traffic control during all phases of construction.

(G) On-site electrical power connections shall be provided for electric construction tools to eliminate the need for diesel-powered electric generators, where feasible.

(H) Maintain construction equipment engines in good working order to reduce emissions. The developer shall have each contractor certify that all construction equipment is properly serviced and maintained in good operating condition.

(I) Contractors shall use ultra-low sulfur diesel fuel for stationary construction equipment as required by Air Quality Management District (AQMD) Rules 431.1 and 431.2 to reduce the release of undesirable emissions.

(J) Substitute electric and gasoline-powered equipment for diesel-powered equipment, where feasible.

Cumulative

The proposed SMSP would be located in San Bernardino County within the MDAB. Past, present, and reasonably foreseeable future development projects in the MDAB contribute to cumulative TAC levels and associated public health risks. Although the region experiences existing conditions of acute, chronic, and cancer health risks due to TACs attributable to the basin's development history, the project is isolated and unlikely to be affected by the region's other industrial sources of TACs

For cumulative air quality and TAC assessments, staff generally considers a six-mile radius appropriate because, based on staff's modeling experience, beyond six miles there is no statistically significant overlap of nonreactive pollutant concentrations between stationary emission sources. According to **Appendix A**, **Table A-1**, the existing, approved, pending and proposed projects of potential sources of toxic air contaminants within six miles of the solar field include:

- 1: Brightline West - Las Vegas to Victor Valley (0.05 mile)
- 2: Ivanpah Control Transmission Line Project (0.62 mile)
- 3: I-15 Mojave Wildlife Crossings Restoration Project (1.15 mile)

The applicant also identified another facility, the California State University Desert Studies Center (Facility ID: 3238), from the CARB Emission Inventory Development and Reporting System (CEIDARS). However, the associated health risks were not reported in CEIDARS (RE 2025mm).

Past, present, and reasonably foreseeable probable future public health impacts could be attributable to each of the cumulative projects, especially those that involve construction activities or operation and maintenance (O&M) activities with substantial sources of air pollutants.

5.10.2 Environmental Impacts

PUBLIC HEALTH	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determination.				
a. Would the project expose sensitive receptors to substantial pollutant concentrations or result in other public health impacts?	☐	☒	☐	☐

Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix G, air quality and staff additions.

5.10.2.1 Methodology and Thresholds of Significance

In addition to the above environmental checklist, staff used the following methodology and thresholds of significance to evaluate the project.

Methodology

Staff determines the health effects of exposure to toxic emissions based on impacts to the maximum exposed individual. This is a person hypothetically exposed to project emissions at a location where the highest ambient impacts were calculated using worst-case assumptions of contaminant concentrations and exposure.

Staff conducts the public health assessment by evaluating the information and data provided 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 Reference Exposure Levels (RELs) of these contaminants. Staff also relies upon the expertise of the CARB and local air districts to conduct ambient air monitoring of TACs and on the California Department of Public Health (CDPH) to evaluate pollutant impacts in specific communities. The public health related data sets, guidelines and

technical analysis issued by these agencies are routinely relied on by experts in the field of public health to perform project level analysis to identify any impacts to public health from the construction and operation of the project. Typically, a screening level risk assessment is performed using simplified assumptions that are intentionally biased toward protection of public health. That is, an analysis is designed that overestimates public health impacts from exposure to project emissions. This approach increases the likelihood that the actual risks from the new source of emissions will be much lower than the risks as estimated by the screening level assessment. The risks for screening purposes are based on examining conditions that would lead to the highest, or worst-case, risks and then using those conditions in the study. Such conditions include:

- Using the highest levels of pollutants that could be emitted from the source;
- 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;
- Using health based standards designed to protect the most sensitive members of the population (i.e., the young, elderly, and those with respiratory illnesses).

Staff evaluated health risks primarily in relation to diesel particulate matter (DPM), identifying it as the TAC expected to be emitted in the largest quantity. Emissions of DPM are evaluated for potential long-term (chronic) non-cancer health effects, as well as cancer (long-term) health effects. OEHHA has not developed an acute REL for DPM, therefore, acute non-cancer health effects are not evaluated for DPM. The significance of project health impacts is determined separately for each of these categories of health effects. To assess chronic health risks and cancer risks, staff used annual average concentrations of DPM at the most exposed sensitive receptors. Staff applied OEHHA's Air Toxics Hot Spots Program Risk Assessment Guidelines (OEHHA 2015) and the SJVAPCD's Risk Management Policy (MDAQMD 2020) to determine toxicity values and exposure parameters. Staff calculated health risks using standardized equations provided in OEHHA guidelines (OEHHA 2015), incorporating adjustments for age-specific exposure rates and sensitivity.

Thresholds of Significance

Acute and Chronic Noncancer Health Effects

Staff evaluates the significance of non-cancer health effects by calculating a "hazard index." A hazard index is a ratio comparing exposure from facility emissions to the reference (safe) exposure level. A hazard index of less than one (1.0) indicates that the worst-case exposure is below the safe threshold, suggesting that health protection is likely achieved, even for sensitive populations. In such a case, staff presumes that there would be no significant non-cancer project-related public health impacts. The MDAQMD

considers a non-cancer hazard index (HI) exceeding 1.0 to be significant (MDAQMD 2020). Staff considers chronic or acute non-cancer health impacts to be significant if the total hazard index exceeds 1.0.

Cancer Risks

A cancer risk that is at or below 1 chance in a million (or 1×10^{-6}) is not a public health concern. This means that no more than one person in a population of one million people exposed to the same level of chemical contaminant(s) at the site would develop cancer over a lifetime (OEHHA 2020).

Staff evaluates the significance of cancer risks by comparing estimated risks to established thresholds by MDAQMD. The MDAQMD considers a project to have a significant impact if it increases cancer risk by 10 in one million (MDAQMD 2020).

As noted earlier, the initial risk analysis for a project is typically performed at a screening level, which is designed to overstate actual risks, so that health protection can be ensured. Staff's analysis also addresses potential impacts on all 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 TACs 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 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 one million (MDAQMD 2020), 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 one million, staff would deem such a risk to be significant and unmitigable and would not recommend project approval.

5.10.2.2 Direct and Indirect Impacts

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determination.

a. Would the project expose sensitive receptors to substantial pollutant concentrations or result in other public health impact?

Construction

Less Than Significant with Mitigation Incorporated. Based on the analysis below, with the incorporation of the conditions of certification (COCs) described below, construction

of the project would not expose sensitive receptors to substantial pollutant concentrations or result in other public health impacts.

Jurisdictional Project Components

Potential risks to public health during construction would primarily be associated with exposure to particulate matter emissions from diesel-fueled engines and fugitive dust that may also pose a risk of valley fever to individuals near the site. DPM is expected to be the predominant TAC emitted during construction and is the main contaminant of concern for this project.

The project has included construction emission estimates based on an approximately 18-month construction period. The construction phases for the project include the following:

Phase 1: Site Preparation and Grading

Phase 2: Structural Construction

Phase 3: Solar Array Installation

Phase 4: Inspections, Testing, and Commissioning

Health Risks of Toxic Air Contaminants

Construction of the project is expected to last approximately 18 months. Health risk assessment was performed using CARB's Hotspots Analysis and Reporting Program (HARP), which includes cancer potency values and noncancer reference exposure levels approved by the OEHHA. Health values approved by OEHHA in conjunction with CARB include a chronic inhalation reference exposure level for DPM of 5 $\mu g/m^3$, and a cancer inhalation unit risk factor of 3×10^{-4} $(\mu g/m^3)^{-1}$ (OEHHA 2023). DPM has no recommended value for an acute reference exposure level, since insufficient data supports an acute value.

Potential cancer health risk and chronic HI were evaluated for the maximally exposed individual resident at the nearest residence located about 260 feet southwest of the project boundary. Because this residence is used to accommodate workers, the applicant assumed the starting age of exposure to be 16 years old.

Table 5.10-1 shows that all risk levels during construction would be well below MDAQMD's thresholds (10 in one million for cancer risk, HI of 1.0 for chronic/acute effects) (MDAQMD 2020). Therefore, construction would not expose sensitive receptors to substantial TAC concentrations. Although the project would not result in a significant impact from DPM emissions, COC **AQ-SC5** in **Section 5.1**, **Air Quality** would further reduce DPM emissions and the health risks.

TABLE 5.10-1 HEALTH RISKS IMPACT DURING CONSTRUCTION

Receptor Type	Cancer Risk Impact (in one million)	Chronic Non-Cancer Hazard Index (HI)	Acute Non-Cancer Hazard Index (HI)
Residential, maximally exposed individual resident (at the gas station)	0.038	0.001	N/A
Thresholds of Significance	10	1.0	1.0
Threshold exceeded?	No	No	No

Source: RE 2025mm

It should be noted that the Health Risk Assessment discussed above focuses on emissions at the project site, where concentrations of TAC pollutants directly impact local receptors. Offsite vehicle/truck emissions would only pass by any single sensitive receptor along the routes for a momentary duration where emissions would disperse rapidly and over large areas. This makes them harder and speculative to quantify and less likely to cause concentrated exposure in a single location. In addition, the Health Risk Assessment focuses on health risks to sensitive receptors from DPM, which has no acute reference exposure level. Therefore, acute health risk associated with DPM, such as those from trucks passing by communities, is not evaluated. Instead, staff evaluates the health risks to sensitive receptors associated with onsite DPM emissions from long term repeated exposure over the course of the entire construction period and shows that the health risks associated with DPM would be less than significant.

Fugitive Dust and Valley Fever. Construction of the proposed project could result in mobilization of Coccidioides fungus spores in airborne dust, incrementally contributing to cumulative fungus spores in airborne dust in the area in combination with ground-disturbing activities associated with other past, present, and probable future projects. If inhaled, mobilized spores could expose workers and the public to contracting valley fever. The applicant proposed dust control measures in APM AIR-1, APM AIR-3, and APM HAZ-3, to mitigate the risk of workers or the public contracting valley fever to less than significant. Staff proposes COC **WORKER SAFETY-9** in **Section 4.4, Worker Safety and Fire Protection**, COC **HAZ-6** in **Section 5.7 Hazards, Hazardous Materials/Waste, and Wildfire** and COCs **AQ-SC3** and **AQ-SC4** in **Section 5.1, Air Quality**, which require a Valley Fever Prevention and Response Plan and a Soils Management Plan with enhanced dust control measures, N95 mask use, worker training, medical protocols, and safe handling of contaminated soils to minimize health risks during construction. Refer to the above-listed sections for further details regarding Valley Fever.

CO Hotspots. The project site is located within the MDAB, which is designated as in attainment/unclassified for CO with respect to both the CAAQS and the NAAQS. According to regional air quality monitoring data, no CO hotspots have been recorded in the Mojave Desert portion of San Bernardino County (MDAQMD 2025 and CARB 2025). Additionally, as shown in **Section 5.1, Air Quality**, CO impacts from construction and operation would not exceed ambient air quality standards.

Non-Jurisdictional Project Components

Construction activities for the network upgrades at existing Marketplace and Adelanto substations would be temporary in nature and are unlikely to result in long-term adverse effects on public health. Short-term construction emissions and any associated public health impacts, such as exposure to dust or other airborne pollutants, would dissipate as a function of distance from the construction site and comply with applicable regulations. Moreover, these activities would not introduce any new sources of significant health risks, such as hazardous air pollutants or toxic emissions, beyond those identified and mitigated elsewhere in this analysis.

Operation

Less Than Significant Impact. Based on the analysis below, operation of the project would not expose sensitive receptors to substantial pollutant concentrations or result in other public health impacts.

Jurisdictional Project Components

The project would be remotely operated, resulting in minimal on-site activity. Operation of the project would not include any stationary equipment that would be sources of significant TAC emissions. Operational emissions would result from off-site vehicle trips for worker commutes, material deliveries, site security, and facility upkeep associated with the proposed solar facility; additional minor emissions would result from routine solar panel washing, consumer product use, and landscaping activities. Any on-road, diesel-powered vehicles associated with maintenance or material deliveries would operate for short durations and would not remain at any one location for extended periods such that they would expose sensitive receptors to excessive DPM emissions. As such, operation-related TAC emissions would be small, and ongoing operations would not expose sensitive receptors to substantial pollutant concentrations or result in other public health impacts. Therefore, operational impacts would be less than significant.

BESS Thermal Runaway and Fire Impacts

Section 4.4, Worker Safety and Fire Protection provides a detailed discussion regarding potential BESS safety hazards and concludes that the risk of BESS thermal runaway is small and is heavily influenced by older (pre-2025) technology. The overall utility-scale BESS failure rate has sharply decreased while the global installed capacity has dramatically increased. The most recent data from EPRI shows that the failure rate dropped by 98 percent from 2018 to 2024 as lessons learned from early failures have been incorporated into the latest designs and best practices. See more detailed discussion in **Section 4.4, Worker Safety and Fire Protection**.

The American Clean Power Association report "Assessment of Potential Impacts of Fires at BESS Facilities", prepared by Fire & Risk Alliance, LLC, provides a detailed literature review and analysis of historical BESS fire incidents and the extent of environmental impacts (ACP 2025). A key concern in BESS fire events is the release of toxic gases, but studies reviewed in the ACP report indicate that emissions are largely confined to the

immediate vicinity of the fire, with rapid dissipation and concentration reduction in open-air scenarios. Air sampling from past incidents reviewed in the ACP report has found that contaminant concentrations beyond the immediate fire scene do not pose a public health risk. Staff reviewed the air monitoring/modeling reports available for the past incidents discussed in the ACP report and the following is a summary of staff's review:

- **Surprise AZ – April 19, 2019.** The April 19, 2019 incident at the McMicken Battery Energy Storage System in Surprise, Arizona resulted in the injury of multiple firefighters. Subsequently there have been extensive investigations undertaken post-incident by UL and Arizona Public Service (APS). Hazardous hydrogen cyanide (HCN) and carbon monoxide (CO) gas concentrations were detected at the gate to the fenced area (above 50 ppm and 500 ppm, respectively) (ULFSRI 2020). APS hired AECOM and Wood to conduct an evaluation of both on-site and off-site environmental and health impacts of the event. The environmental investigation involved collecting and evaluating on-site environmental media samples, such as surface soils, and performing air dispersion modeling to evaluate the potential for off-site environmental impacts (APS 2020). AECOM collected both surficial soil samples from the area around the BESS and wipe samples from within the BESS structure. AECOM found that none of the samples exhibited contaminant of concern concentrations in excess of levels that would require site remediation or other response actions. Wood performed air dispersion modeling to develop a conservative quantification of likely off-site deposition of contaminant of concern particulates moving through the air in the plume. Wood's analysis relied upon conservative emission rates. Satellite imagery and site-specific meteorological data were also utilized, along with an evaluation of the on-site soil and structure wipe sampling data. As a result of this dispersion modeling analysis, Wood found that contaminant of concern particulate matter deposition through the air was minimal and primarily confined to on-site locations near the BESS structure and modeled off-site concentrations of contaminants of concern were lower than applicable state and federal standards governing environmental, health, and safety protection from hazardous substance releases (APS 2020).
- **Warwick, NY – June 26 and 27,2023.** Two independent fire events occurred on June 26 and June 27, 2023 in Warwick, New York. The Orange County, NY HAZMAT Response Team responded to the two independent events and collected air samples for each event. Low levels of CO and HCN were detected in the area approximately 1 meter from the affected containers and not detected outside the fence line. Air monitoring was also conducted at the Warwick Valley School, which is about 900 feet away from the BESS unit where fire was initiated. Low levels of VOCs and CO were detected outside of the building (ground levels and on the rooftop) up to 0.1 to 0.5 ppm. There were no elevations of VOCs or CO detected in any indoor locations. Hydrogen sulfide (H_2S) levels were all below 0.2 ppm. Indoor airborne particulate matter levels within the school and administrative offices were all lower than outdoor levels. No bromide or fluoride were detected from any of the sampled locations. Low level smoke-like odors were detectable in a few offices and

classrooms. There were no signs of smoke residues on surfaces of supply air diffusers, walls, desktops or floors of the Administrative/Middle School building at the time of inspection. Surface sampling for lithium revealed no detected lithium (< 0.250 micrograms per square foot) from any office, classroom or bus surfaces sampled (NYSERDA 2023).

- **Chaumont, NY – July 27 through August 1, 2023.** On July 27, 2023, a multi container fire occurred at the Convergent Energy facility in Lyme, New York. Over the five-day BESS fire event, air monitoring was conducted by the Watertown hazmat team with New York State Office of Fire Prevention and Control (OFPC) technical assistance. The detection instruments used were looking for oxygen (O_2), explosive gases (LEL), CO, H_2S, VOC, and HCN. Readings on the evening of the 27th were negative except for HCN which showed a maximum level of 4 ppm next to the damaged container and 0 ppm at 200 feet from the involved areas. On July 29, 2023, a very low level of CO (single digit readings) was detected at the perimeter fence. Air monitoring in the Village of Chaumont shows a finding of 1 ppm VOC, which was consistent with background levels and/or sensor drift and deemed not significant. On August 1, 2023, trace readings of CO, VOC and HCN were found at the base of the containers that had previously been involved in the fire and no detectable amounts of these materials were found at the fence line (NYSERDA 2023).
- **Melba, ID – October 2 to October 6, 2023.** Idaho Power contracted a consultant, CTEH, to provide air monitoring and sampling support in response to the Melba, ID BESS fire event in October 2023. This was done to augment air sampling efforts being performed prior to the consultant's arrival on site by Idaho Power's Industrial Hygiene Services. Air monitoring was performed both during the multi-day fire event and consisted of real-time air monitoring both on-site and in the surrounding community (ACP 2025). Community Monitoring was conducted at breathing zone level in publicly accessible residential areas near the substation. CTEH personnel conducted handheld and stationary real-time air monitoring for LEL, CO, carbon dioxide (CO_2), hydrogen fluoride (HF), hydrogen chloride (HCl), acid gases, particulate matter with a diameter of 2.5 micrometers or less (PM2.5), and VOCs. Industrial Hygiene Services conducted analytical air sampling for total dust, total metals particulates, metals particulates with an average particulate size of 4 µm, and total volatile organic compounds (TVOCs) in four general downwind locations from the substation. CTEH personnel also deployed analytical air sampling of VOCs, metals particulates, and polycyclic aromatic hydrocarbons (PAHs) at five discrete locations around the substation. Results of both real-time air monitoring and analytical air sampling conducted from both monitoring groups indicate that all chemical constituents measured around the impacted substation were not at levels that would represent a public health concern (CTEH 2023).
- **Escondido, CA – September 5, 2024.** The City of Escondido released an air quality monitoring report after the September 5, 2024 fire, which impacted one container at an energy storage facility in Escondido, CA (City of Escondido 2024). The air quality data came from 11 different locations monitored by San Diego

County HAZMAT and 17 locations monitored by Haley & Aldrich, Inc., SDG&E's third-party contractor. The stations were located approximately 100 feet to as far as 4,000 feet from the affected container (CESA 2024). Monitored gases include: CO, HF, HCN, H_2S, phosphine (PH_3), chlorine (Cl_2), LEL, CO_2, O_2. The equipment only detected the presence of two toxic gases, CO and HCN, but readings for both gases were well below acceptable exposure limits. The City of Escondido report concludes that "… only normal products combustion [sic] of a structure fire were detected and at levels considered by NIOSH and OSHA to be well below exposure thresholds."

- **Moss Landing, CA – January 16, 2025.** On January 16, 2025, a fire broke out in the 300 MW Moss Landing Battery Energy Storage Facility owned by Vistra Energy, located within a converted, historic, generator hall on-site. At the request of Monterey County, the U.S. EPA deployed nine air monitoring stations for particulate matter and HF. As part of the multi-agency emergency response, U.S. EPA installed the first seven monitors shortly after the fire started on January 16 and later deployed two more. Two monitoring stations are located at the facility and four are located just outside the facility, including one at Moss Landing, three are in communities due east of the fire, to the south near Castroville, and to the north in the vicinity of Moss Landing Middle School. Monitoring stations have been located to account for any changes in wind direction and potential drift to nearby communities. U.S. EPA's monitoring showed concentrations of particulate matter to be consistent with the air quality index throughout the Monterey Bay and San Francisco Bay regions, with no measurements exceeding the moderate air quality level. HF gas was measured at one second intervals and there were no exceedances of California's human health standards. In addition to U.S. EPA's monitoring, Vistra Energy brought in a third-party environmental consultant, CTEH, right after the fire started, to conduct roaming and fixed air monitoring in communities (U.S. EPA 2025a). CTEH conducted extensive air quality monitoring in and around the Moss Landing community as part of response efforts. CTEH mobile air monitoring personnel sampled over 100 locations, testing for seven air constituents specific to this type of fire, including CO, HCl, HCN, HF, %LEL, O_2 and PM2.5. CTEH's monitoring did not detect hazardous compounds (HF, HCl, HCN, CO), and all particulate matter readings were low and within expected air quality index (AQI) bands deemed safe for the general public (Vistra 2025). Post-incident environmental testing and monitoring information is summarized on the County of Monterey website (County of Monterey 2025).

Historical incident data as discussed above can be a useful predictor for identifying and understanding future risks. Traditionally, Staff would also use modeling to predict future impacts where such impacts are considered foreseeable based on available information. However, due to the infrequent, irregular, and unplanned nature of the BESS thermal runaway/fire events, staff considers a modeling assessment of the public health impacts of such events to be speculative. In addition, as pointed out in the ACP report, while numerous publications have appeared in recent years addressing emissions associated with thermal runaway, the information is still somewhat limited. A comprehensive description of the chemical composition, total volume, and rate of production of the

emissions for different battery chemistry, battery form, state of charge, stage of the event, and cause of the malfunction is not yet available. Regarding the information that is available, there are significant variations in the reported qualities within or between studies. These variations may be associated with differences in experimental procedures, quality control of batteries, or experimental uncertainty. Much research is still needed in order to provide definitive input information for predictive modeling (ACP 2025).

However, to address potential impacts during a BESS thermal runaway/fire event, the applicant provided a modeling analysis to estimate the worst-case TAC impacts at the nearest sensitive receptor (RE 2025ggg). The modeled TACs included CO, benzene, HF, HCN, and HCl. For conservative estimation, the applicant assumed that one battery tray (112 cells) would be fully consumed during a fire event, with a total release duration of 0.5 hours. Because HF, HCN, and HCl were not detected during the UL 9540A module-level testing, the applicant used conservative emission factors from published literature (Vistra 2024; RE 2025ggg). The modeling analysis shows that TAC concentrations at the maximally exposed individual resident (MEIR), which is at the gas station about 2.9 miles from the BESS component, would be well below the OEHHA 1-hour RELs and the acute HI would be below 1.0. Therefore, potential BESS thermal runaway/fire events would not expose sensitive receptors to substantial pollutant concentrations.

It should be noted that the applicant's analysis of BESS thermal runaway/fire impacts focuses on evaluating the worst-case potential acute exposure risks to sensitive receptors located near the project site. Individuals traveling in vehicles on the nearby I-15 are expected to only experience a potential plume for a short duration due to high vehicle speeds if I-15 was not closed. As such, quantifying potential impacts from a BESS thermal runaway/fire event on the highway would require speculation of a number of factors, such as meteorological conditions, location of the receptor, and exposure duration. Considering the infrequent, irregular, and unplanned nature of such events and the short exposure duration, the potential for any adverse impact to the public traveling on the highway would be a very low probability event. In addition, first responders and the incident commander would use their discretion on when to close the highway, preventing the public from approaching the project site and being exposed to potential TAC impacts. Therefore, staff concludes that assessing BESS thermal runaway/fire impacts to the public traveling on the highway would be speculative and impacts are not objectively predictable or quantifiable. However, because of the infrequent nature of the events and the short exposure duration expected on the highway, potential BESS thermal runaway/fire events would be unlikely to expose individuals traveling in vehicles on the highway to substantial pollutant concentrations.

In summary, based on the review of the monitoring data for past BESS incidents, applicant's modeling analysis for this project, and the infrequent, irregular, and unplanned nature of the BESS thermal runaway/fire events, staff concludes that potential BESS thermal runaway/fire events would not expose sensitive receptors to

substantial pollutant concentrations. In addition, staff recommended COCs in **Section 4.4, Worker Safety and Fire Protection,** and **Section 5.7, Hazards, Hazardous Materials, and Wildfire**, would further reduce any impacts to public health. COC **WORKER SAFETY-6** would ensure that the proposed BESS would comply with the latest versions of National Fire Protection Association (NFPA) 855 for BESS safety. COC **WORKER SAFETY-7** would require administrative and engineering controls to prevent or respond to a fire from the BESS. COC **WORKER SAFETY-8** and COC **WORKER SAFETY-10** would ensure additional fire protection and worker EMS response. COC **HAZ-9** would also require real-time measurements of air quality to provide timely feedback to any workers or people potentially affected. The adoption of these COCs would further reduce the risk and impacts of any BESS thermal runway/fire events.

Non-Jurisdictional Project Components

Operations and maintenance (O&M) activities associated with the non-jurisdictional components would be minimal. These components include the utility switchyard, transmission loop and towers, and downstream network upgrades at the existing Marketplace and Adelanto substations. Operation and maintenance of these facilities would be performed remotely by LADWP, resulting in only small emissions from occasional vehicle trips to and from these components after construction is completed. The remote operation of these components would not generate significant TAC emissions. Therefore, the operation of non-jurisdictional project components would be unlikely to pose any significant risk to public health.

5.10.2.3 Cumulative Impacts

Past, present, and reasonably foreseeable probable future public health impacts could be attributable to each of the cumulative projects, especially those that involve construction activities or O&M activities with substantial sources of air pollutants.

Each of the projects in the cumulative project scenario could result in some level of contribution to public health impacts, although the individual contribution of each project would be minimized if the project complies with applicable health-protective significance thresholds. While air quality cumulative impacts could occur with sources within a six-mile radius (as discussed in **Section 5.1, Air Quality**), cumulative public health impacts from TACs are usually not significant unless the emitting sources are extremely close to each other, within a few blocks, not miles. The CARB provides recommendations for siting new sources or sensitive receptors near TAC sources, with recommended distances typically ranging from 500 to 1,000 feet, depending on the source category (CARB 2005). In the absence of specific guidance from the MDAQMD, potential cumulative impacts from TACs were assessed using a 1,000-foot radius from the project site boundary. Only Brightline West is located immediately adjacent to the project site.

Construction

Less Than Significant with Mitigation Incorporated. Based on the analysis below, with the incorporation of the COCs described below, project construction would not contribute to cumulatively considerable impacts to public health and impacts would be less than significant with mitigation incorporated.

Jurisdictional Project Components

The contribution of the project construction to both cancer risk and chronic non-cancer impacts would be well below the significance thresholds even in a cumulative context including other regional sources. Additionally, construction traffic is not expected to create a CO hotspot. Staff recommend COC **WORKER SAFETY-9** in **Section 4.4, Worker Safety and Fire Protection**, COC **HAZ-6** in **Section 5.7, Hazards, Hazardous Materials/Waste, and Wildfire,** and COCs **AQ-SC3** and **AQ-SC4** in **Section 5.1, Air Quality** to ensure that exposure to Valley fever among personnel and the public would be reduced to the greatest extent feasible. The project's potential to contribute to a cumulative public health impact would be less than significant with mitigation incorporated.

Non-Jurisdictional Project Components

As discussed above, public health impacts of construction of the network upgrades at existing Marketplace and Adelanto substations would be less than significant. Therefore, the contribution of the network upgrades at existing Marketplace and Adelanto substations to any cumulative impacts would not be cumulatively considerable.

Operation

Less Than Significant Impact. Based on the analysis below, project operation would not contribute to cumulatively considerable impacts to Public Health and impacts would be less than significant.

Jurisdictional Project Components

The operation of jurisdictional project components would be conducted remotely. Any on-road, diesel-powered vehicles associated with maintenance or material deliveries would operate for short durations and would not expose sensitive receptors to excessive DPM emissions. The public health impacts of the project operation would be less than significant in a cumulative context including other regional sources. Therefore, the project's potential to contribute to a cumulative public health impact would be less than significant.

Non-Jurisdictional Project Components

Operation and maintenance of switchyard, the transmission loop in line and towers, and downstream network upgrades would be performed remotely by LADWP, resulting in only small emissions from occasional vehicle trips to and from these components after

construction is completed. Therefore, the contribution of the non-jurisdictional components to any cumulative impacts would be less than significant.

5.10.3 Project Consistency with Applicable Plans, Policies, and Regulations

Table 5.10-2 below details staff's determination of consistency with applicable local, state and federal plans, policies, and regulations, including any proposed Conditions of Certification, where applicable, to ensure the jurisdictional components of the project would be consistent with plans, policies, and regulations. As shown in this table, staff concludes that with implementation of specific conditions of certification, the proposed jurisdictional components of the project would be consistent with all applicable plans, policies, and regulations. The subsection below, "Proposed Conditions of Certification," contains the full text of the referenced conditions of certification.

TABLE 5.10-2 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS

Applicable Plans, Policies, and Regulations	Consistency and Basis For Determination
Federal	
None.	
State	
California Health and Safety Code	
Sections 39650 et seq. These sections mandated the CARB and the Department of Health Services to establish safe exposure limits for toxic air pollutants and identify pertinent best available control technologies. They also required that the New Source Review rule for the permitting of new and modified stationary sources of air pollution in each air pollution control district include regulations that require procedures for controlling the emission of toxic air contaminants.	**Yes.** The proposed project would not include sources that emit listed TACs above regulated threshold quantities. In addition, as discussed above, the Health Risk Assessment shows that the project would have less than significant impacts to public health.
Section 41700. This section states that "no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property."	**Yes.** The proposed project would not include sources that emit listed TACs above regulated threshold quantities. In addition, as discussed above, the Health Risk Assessment shows that the project would have less than significant impacts to public health.
Air Toxics Hot Spots Program	**Yes.** The proposed project would not include sources that emit listed TACs above regulated threshold quantities. In addition, as discussed above, the Health Risk Assessment shows that the project would have less than significant impacts to public health.
ATC to Limit Diesel-Fueled Commercial Motor Vehicle Idling	**Yes.** COC **AQ-SC4** would minimize engine idling time.

TABLE 5.10-2 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS	
Applicable Plans, Policies, and Regulations	**Consistency and Basis For Determination**
Local	
Mojave Desert AQMD	
Rule 201 – Permit to Construct: Authorization is required before building, erecting, installing, or altering equipment that may emit air contaminants. Rule 203 – Permit to Operate: Operation of any equipment that may emit or control emissions requires a written permit. Rule 204 – Permit Conditions: Conditions may be imposed on any permit to ensure compliance. Rule 401 – Visible Emissions: Limits the visible emissions from sources within the District. Rule 402 – Nuisance: Prohibits discharge of air contaminants that cause injury, detriment, nuisance, or annoyance to the public, or damage to property. Rule 403 – Fugitive Dust Control: Requires implementation of best available control measures to prevent and mitigate PM10 emissions from construction and earth-moving activities. Rule 1113 – Architectural Coatings: Limits volatile organic compounds (VOC) in coatings used for buildings and structures.	**Yes.** As detailed in **Section 5.1, Air Quality**, the project would comply with Mojave Desert AQMD plans, rules and regulations with implementation of Air Quality COCs **AQ-SC1** to **AQ-SC7.**
San Bernardino County	
Goal NR-1, Air Quality. Policy NR-1.3. Policy NR-1.6. San Bernardino County Code Section 83.01.040 Air Quality.	**Yes.** As detailed in **Section 5.1, Air Quality**, the project would comply with San Bernardino countywide plan and county code with implementation of Air Quality COCs **AQ-SC1** to **AQ-SC7**.

5.10.4 Conclusions and Recommendations

It should be noted that staff's analysis of the project's impacts is based on the project design before the consideration of the applicant's proposed change in stormwater design (applicant-proposed HYD-1 (RE 2025jjjj), incorporated as COC **WATER-9,** in **Section 5.16, Water Resources**). The revised project design removes the previously proposed stormwater berms and associated drainage features. Construction of these components would have required additional grading, soil disturbance, and operation of heavy construction equipment, which are primary sources of DPM emissions and fugitive dust and potential exposure pathways related to valley fever. Removal of the components therefore would reduce construction-related public health risks compared to the project configuration analyzed in this analysis. These reductions are achieved through implementation of COC **WATER-9**, which minimizes grading and ground disturbance by preserving existing drainage patterns and applying fluvial geomorphic stormwater design principles rather than engineered berms and channels. Accordingly, the public health analysis presented in this section represents a conservative assessment of potential impacts.

As discussed above, with the implementation of COCs **AQ-SC3** and **AQ-SC4 (Section 5.1, Air Quality), HAZ-6 (Section 5.7, Hazards, Hazardous Materials, and Wildfire)** and **WORKER SAFETY-9 (Section 4.4, Worker Safety and Fire Protection)**, the project would have a less than significant impact related to public health and would be consistent with applicable plans, policies, and regulations. Staff does not propose any additional conditions of certification or recommend mitigation measures for public health.

5.10.5 Proposed Conditions of Certification

No additional Conditions of Certification are proposed for public health.

5.10.6 Recommended Mitigation Measures

No mitigation measures for non-jurisdictional project components are recommended for public health.

5.10.7 References

ACP 2025 – American Clean Power (ACP). Assessment of Potential Impacts of Fires at BESS Facilities. Literature Review. August 21, 2025. Accessed on: December 1, 2025. Accessed online at: https://cleanpower.org/wp-content/uploads/gateway/2025/03/Assessment-of-Potential-Impacts-of-Fires-at-BESS-Facilities_FINAL_Sep-2025.pdf

APS 2020 – Arizona Public Service (APS). McMicken Battery Energy Storage System Event Technical Analysis and Recommendations. July 18, 2020. Assessed November 24, 2025. Available online at: https://www.aps.com/-/media/APS/APSCOM-PDFs/About/Our-Company/Newsroom/McMickenFinalTechnicalReport.pdf

CARB 1998 – California Air Resources Board (CARB). 1998. Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant. Appendix III, Part A, Exposure Assessment. June 1998. Accessed on: January 8, 2025. Accessed online at: https://ww3.arb.ca.gov/toxics/dieseltac/part_a.pdf

CARB 2005 – California Air Resources Board (CARB). Air Quality And Land Use Handbook: A Community Health Perspective. Accessed on January 7, 2025. Accessed online at: https://www.aqmd.gov/docs/default-source/ceqa/handbook/california-air-resources-board-air-quality-and-land-use-handbook-a-community-health-perspective.pdf

CARB 2024 – California Air Resources Board (CARB). Overview: Diesel Exhaust & Health. Accessed on: January 8, 2025. Accessed online at: https://ww2.arb.ca.gov/resources/overview-diesel-exhaust-and-health

CARB 2025 – California Air Resources Board (CARB). California Air Quality Data Statistics (iADAM). Accessed on September 29, 2025. Available online at: https://www.arb.ca.gov/adam/topfour/topfour1.php'

CDPH 2025 – California Department of Public Health 2025. "Valley Fever in California Year-end Data Dashboard". Accessed on September 29, 2025. Available online at: https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/ValleyFeverDashboard.aspx

CEC 2025z – California Energy Commission (TN 267975). Report of Conversation with Manu Singh - Discussion of existing residents living adjacent to and near the project site, dated December 19, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

CESA 2024 – California Energy Storage Alliance (CESA). Air and Water Quality Data from Escondido Fire Show Minimal Contamination. October 2, 2024. Accessed on December 1, 2025. Accessed online at: https://storagealliance.org/news/air-and-water-quality-data-from-escondido-fire

City of Escondido 2024 – City of Escondido. Air Quality Report: SDG&E Battery Fire. September 2024. Accessed on: November 24, 2025. Available online at: https://www.escondido.gov/DocumentCenter/View/6716/SDGE-Battery-Fire-Air-Quality-Report-PDF?bidId=

County of Monterey 2025 – County of Monterey, CA. Current Emergency Information, Accessed on: December 2, 2025. Available online at: https://www.readymontereycounty.org/emergency/2025-moss-landing-vistra-power-plant-fire/testing

CTEH 2023 – Center for Toxicology and Environmental Health, LLC (CTEH). Air Modeling and Sampling Summary: Melba, ID Fire incident, October 2 – October 6, 2023. Accessed on: November 24, 2025. Available online at: https://portal.ct.gov/-/media/csc/3_petitions-medialibrary/petitions_medialibrary/mediapetitionnos1601-1700/pe1607/motiontoreopen/exhibit-f--sdgeescondido-besf-air-quality-report-ctehidaho.pdf?rev=cdd9351721ba43dbb813dd5e1f19c37b&hash=1271FCAC25258D1AE95BEB62012276AB

DIR 2022 – Department of Industrial Relations (DIR). Protection from Valley Fever; Updated: April 2022. Accessed on January 8, 2025. Accessed online at: https://www.dir.ca.gov/dosh/valley-fever-home.html.https://www.dir.ca.gov/dosh/valley-fever-home.html

MDAQMD 2020 – Mojave Desert Air Quality Management District (MDAQMD). California Environmental Quality Act (CEQA) And Federal Conformity Guidelines. Accessed on: September 25, 2025. Accessed online at: https://www.mdaqmd.ca.gov/home/showpublisheddocument/8510/638126583450270000

MDAQMD 2023 – Mojave Desert Air Quality Management District (MDAQMD). MDAQMD Rule Book. Accessed on: September 25, 2025. Accessed online at: https://www.mdaqmd.ca.gov/rules/rule-book

MDAQMD 2025 – Mojave Desert Air Quality Management District (MDAQMD). Mojave Desert AQMD Attainment Status. Accessed on: September 25, 2025. Accessed online at: https://www.mdaqmd.ca.gov/home/showdocument/1267#print

NYSERDA 2023 – New York State Energy Research and Development Authority (NYSERDA). New York State Interagency Fire Safety Working Group, Air, Soil, and Water Data Findings. December 2023. Assessed November 24, 2025. Available online at: https://s3.documentcloud.org/documents/24738054/nys-data-collection-report_wsummaryr1.pdf

San Bernardino County 2020 – San Bernardino Countywide Plan. Accessed on: September 26, 2025. Accessed online at: https://countywideplan.sbcounty.gov/policy-plan/natural-resources/

San Bernardino County 2025 – California Code of Ordinances. Accessed on: September 26, 2025. Accessed online at: https://codelibrary.amlegal.com/codes/sanbernardino/latest/sanberncty_ca/0-0-0-169099#JD_83.01.040

OEHHA 2015 – Office of Environmental Health Hazard Assessment (OEHHA). Air Toxics Hot Spots Program Risk Assessment Guidelines. Guidance Manual for Preparation of Health Risk Assessments. February. Accessed on January 22, 2024. Accessed online at: https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf.

OEHHA 2020 – Office of Environmental Health Hazard Assessment (OEHHA). Cancer Risk and Noncancer Hazard Index. Fact Sheet for Contaminated Sites in California. February 2015. Accessed on: January 8, 2025. Accessed online at: https://oehha.ca.gov/media/downloads/risk-assessment/fact-sheet-california-human-health-screening-levels-chhsls/riskfactsheet.pdf

OEHHA 2023 – Office of Environmental Health Hazard Assessment (OEHHA). Consolidated Table of OEHHA / CARB Approved Risk Assessment Health Values. Updated October 6. Accessed on January 22, 2024. Accessed online at: https://ww2.arb.ca.gov/resources/documents/consolidated-table-oehha-carb-approved-risk-assessment-health-values

OEHHA 2024 – Office of Environmental Health Hazard Assessment (OEHHA). Toxic Air Contaminants. Accessed on: January 8, 2025. Accessed online at: https://oehha.ca.gov/air/toxic-air-contaminants

RE 2025mm – Resolution Environmental (TN 264931). 3-21 Public Health - July 2025 Revision, dated July 21, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025ggg – Resolution Environmental (TN 265688). Appendix C, Air Quality and Greenhouse Gas Technical Report, July 2025, dated August 19, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025jjjj – Resolution Environmental (TN 267972). MM HYD-1, dated December 18, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

ULFSRI 2020 – Underwriters Laboratories Firefighter Safety Research Institute (ULFSRI). Four Firefighters Injured In Lithium-Ion Battery Energy Storage System Explosion-Arizona. July 2020. Accessed November 24, 2025. Available online at: https://dx.doi.org/10.54206/102376/TEHS4612

U.S. EPA 2002 – United States Environmental Protection Agency (U.S. EPA). Health Assessment Document For Diesel Engine Exhaust. May 2002. Accessed on: January 8, 2025. Accessed online at: https://cfpub.epa.gov/si/si_public_file_download.cfm?p_download_id=36319&Lab=NCEA

U.S. EPA 2025a – United States Environmental Protection Agency (U.S. EPA). EPA Completes Air Monitoring Near Moss Landing Vistra Battery Fire. January 20, 2025. Accessed on: December 2, 2025. Accessed online at: https://www.epa.gov/newsreleases/epa-completes-air-monitoring-near-moss-landing-vistra-battery-fire

Vistra 2024 – Vistra Morro Bay BESS Project. Offsite Consequence Analysis Vistra Morro Bay BESS Project. March 2024. Accessed on: November 4, 2025. Accessed online at: https://neveragainmosslanding.org/wp-content/uploads/2025/04/Vistra-Morro-Bay-OCA-Ramboll-March-2024.pdf

Vistra 2025 – Vistra Moss Landing Response (Vistra). Air Quality Monitoring. Accessed on: December 2, 2025. Accessed online at: https://www.mosslandingresponse.com/air-monitoring-reports

Van Gosen and Clinkenbeard 2011 – Van Gosen, B.S., and Clinkenbeard, J.P. (Van Gosen and Clinkenbeard). Reported Historic Asbestos Mines, Historic Asbestos Prospects, and Other Natural Occurrences of Asbestos in California: U.S. Geological Survey Open-File Report 2011-1188. Accessed on September 26, 2025. Accessed online at: http://pubs.usgs.gov/of/2011/1188/

5.11 Socioeconomics

5.11.1 Environmental Setting

This section analyzes the jurisdictional and non-jurisdictional project components. The jurisdictional project components include the construction and operation of the solar photovoltaic (PV) facility, battery energy storage system (BESS), project substation and generation intertie line (gen-tie) and construction of the utility switchyard and section of transmission loop in lines that would connect to the existing Mead-Adelanto Transmission Line. The non-jurisdictional project components include the construction and operation of the protection setting upgrades to the Marketplace and Adelanto substations and operation of the utility switchyard and section of transmission loop in lines.

This section further discusses the project details, environmental setting, regulatory background, and the regional and local impacts associated with the proposed Soda Mountain Solar Project (SMSP or project), as well as proposed Conditions of Certifications (COCs) for the jurisdictional project components or recommended mitigation measures for the non-jurisdictional project components with respect to socioeconomic aspects of the project. The socioeconomic effects of both the jurisdictional and non-jurisdictional project components are analyzed in this section using qualitative and quantitative methods, as appropriate, depending on the nature of the effect, data availability, and the level of impact anticipated.

Existing Conditions

Population and Housing

San Bernardino County has an estimated land area of 12,867,200 acres (20,105 square miles). It is the largest county in California in terms of land area, and the fifth most populous (San Bernardino County 2025a). There are a total of 24 incorporated cities and, according to the 2019 California Roster (Caltrans 2019), the county has 129 unincorporated areas with place names. Eighty-eight percent of the land area of the county is outside the control of San Bernardino County or city governments, because 82 percent of the county's land, including the project site, is owned by the federal government (San Bernardino County 2025a).

Region of Influence and Labor Force Availability

A significant portion of the workforce required for both the construction and operational phases of the proposed project is anticipated to be drawn from the Riverside—San Bernardino—Ontario Metropolitan Statistical Area (MSA), commonly known as the "Inland Empire," which encompasses all of Riverside and San Bernardino counties. For the purposes of this analysis, this area is considered the project's Region of Influence.

Within this broader MSA lies the Victorville—Hesperia—Apple Valley Urban Area, commonly referred to as the "Victor Valley," which also includes the City of Adelanto, as

well as the City of Barstow Urban Area (Census Reporter 2025a). Although not formally designated as an MSA by the Office of Management and Budget (OMB), the federal agency responsible for defining MSAs, Victor Valley is the nearest urbanized region to the project site, of which the furthest point is located within a 90-minute drive from the site (Google Maps 2025).

Due to its relative proximity, population base, and informal recognition as a distinct metropolitan subregion, staff determined that the Victor Valley warrants inclusion in this analysis. During the construction phase, it is anticipated that a substantial share of the project's labor force would be sourced from the Victor Valley, with employment heavily weighted toward skilled construction trades, consistent with the project applicant's stated expectations for the construction workforce. In contrast, operations-phase staffing for the solar PV and BESS facilities would be minimal, with most monitoring and dispatch functions performed remotely and limited on-site personnel required for periodic inspection, maintenance, and troubleshooting activities. As a result, operations-phase employment would be substantially smaller than construction employment and would not be expected to generate a material increase in long-term local labor demand.

Population Growth

As shown in **Tables 5.11-1** and **5.11-2**, Baker and the other cities within the area, like much of the county and state, experienced population growth between 2010 and 2015, followed by a slowing or decline around 2020 and into 2025 due to the COVID-19 pandemic (CA DOF 2025a, 2025b). The community of Baker grew from 735 to 831 between 2010 and 2015, representing a compounded annual growth rate (CAGR)[1] of 2.5 percent (World Population Review 2025). The City of Barstow increased its population from 22,639 to 24,234 during the same period, reflecting a 1.4 percent CAGR. Victor Valley saw a population increase of 21,879 residents from 2010 to 2015, also representing a 1.4 percent CAGR. The county and state experienced smaller growth rates during that period, specifically 0.8 and 0.9 percent, respectively.

TABLE 5.11-1 HISTORICAL AND PROJECTED POPULATIONS

Area	2010	2015	2020	2025	2035 projected	2050 projected
Community of Baker	735	831	602	508	N/A	N/A
City of Barstow	22,639	24,234	25,534	24,811	27,100	29,800
City of Apple Valley	69,135	72,700	75,917	75,262	82,500	92,200
City of Hesperia	90,173	94,138	99,756	101,792	113,500	135,700
City of Victorville	115,903	127,447	134,754	141,013	152,800	180,000
City of Adelanto	31,765	34,570	36,620	37,150	51,900	74,800
Victor Valley	306,976	328,855	347,047	355,217	400,700	482,700
San Bernardino County	2,035,210	2,114,182	2,181,654	2,207,424	2,298,042	2,370,418

1 Compound Annual Growth Rate (CAGR) is a measure of how much something grows, on average, per year, over a multi-year period assuming the growth compounds (meaning each year builds on the prior year's value). It represents the constant annual growth rate that would take you from a beginning value to an ending value over a set period of time. CAGR = (Ending Value / Beginning Value)^(1 / Number of Years) – 1

TABLE 5.11-1 HISTORICAL AND PROJECTED POPULATIONS

Area	2010	2015	2020	2025	2035 projected	2050 projected
California	37,253,956	38,865,532	39,520,071	39,529,101	40,414,799	41,726,601

N/A = not available
Sources: CA DOF 2025a; CA DOF 2025b; CA DOF 2025c; World Population Review 2025a; SCAG 2025 (Final SCAG 2024 RTP/SCS Connect SoCal 2024 Growth Projections)

TABLE 5.11-2 AVERAGE ANNUAL COMPOUND GROWTH RATE

Area	2010-2015	2015-2020	2020-2025	2025-2035 Projected	2035-2050 Projected
Community of Baker	2.5%	-6.2%	-4.2%	N/A	N/A
City of Barstow	1.4%	1.1%	-0.7%	0.8%	0.6%
City of Apple Valley	1.0%	0.9%	-0.2%	0.8%	0.7%
City of Hesperia	0.9%	1.2%	0.5%	1.0%	1.2%
City of Victorville	1.9%	1.1%	1.1%	0.7%	1.1%
Adelanto	1.7%	1.2%	0.4%	3.1%	2.5%
Victor Valley	1.4%	1.1%	0.6%	1.1%	1.2%
San Bernardino County	0.8%	0.6%	0.3%	0.4%	0.2%
California	0.9%	0.3%	0.0%	0.2%	0.2%

Source: CAGR values calculated by Staff based on population data from **Table 5.11-1** above.

During the years leading up to and after the start of the COVID-19 pandemic (2015 through 2020), the population of the community of Baker decreased from 831 to 602, reflecting a CAGR of -6.2 percent. In contrast, Barstow and the Victor Valley experienced population growth, albeit at slightly lower CAGRs of 1.1 percent each in relation to Baker (2015-2020). Barstow's population increased from 24,234 to 25,534 in Barstow, while the MSA grew from 328,855 to 347,047 individuals. The county showed a similar trend, adding only 67,472 residents and achieving a CAGR of 0.6 percent; whereas the state exhibited a comparatively low CAGR of 0.3 percent.

Through the pandemic, and during the years following its official end[2] (2020 to 2025), the community of Baker continued to lose residents, but at a slower CAGR of -4.2 percent, resulting in its current (2025) population of 508. Similarly, Barstow experienced a population decrease to 24,811, reflecting a CAGR of -0.7 percent. Victor Valley showed slow growth at a CAGR of 0.6 percent during this period, with its current population reaching 355,217. Likewise, the county exhibited a slower growth rate (0.3 percent CAGR) since 2020, while the state experienced almost stagnant growth, with a CAGR of 0.0 percent, representing an increase of only 9,030 residents in the entire state.

Barstow is projected to experience significant population growth in the coming years, driven by the anticipated BNSF Barstow International Gateway (BIG) project, which is expected to begin around the same time as the SMSP, although Barstow is not expected to experience significant population growth as a result of the SMSP. This

2 President Biden declared the official end of the COVID-19 Pandemic with the termination of the public health emergency on May 11, of 2023 [CDC 2023]).

railway project, discussed in further detail below and in **Appendix A**, is anticipated to generate thousands of direct and indirect jobs to High Desert communities such as Barstow (BNSF 2025). However, because the project is in environmental review, current population projections do not account for any growth resulting from the BIG project. CAGRs are forecasted to return to the city's pre-pandemic level of 0.8 percent by 2035, with a projected population of 27,100. By 2050, the city's growth is expected to slow to a CAGR of 0.6 percent, reaching a population of 29,800 residents.

Projections indicate that population growth rates will increase over the next decade, with Victor Valley expected to reach 400,700 by 2035 and 482,700 by 2050, representing CAGRs of 1.1 and 1.2, respectively (SCAG 2023). Similarly, the county's population is projected to grow from its current (2025) levels to 2,298,042 by 2035 and 2,370,418 by 2050, indicating CAGRs of 0.4 percent over the next decade and 0.2 percent toward the end of the proposed project's operational lifespan. Meanwhile, the state is projected to experience minimal growth, with a stagnant CAGR of 0.2 percent between these future periods (CA DOF 2025c).

Housing

Table 5.11-3 presents housing supply data for the cities within a 90-minute commute of the project site, the region of influence (which includes San Bernardino County as a whole), as well as the greater state of California for comparison purposes. Year 2025 housing estimates indicate there were 65,956 vacant housing units out of 758,120 total units within San Bernardino County, representing a vacancy rate of 8.7 percent (CA DOF 2025c). The small community of Baker, located northeast of the site, has a vacancy rate of 23.9 percent, with 61 vacant housing units out of 255 total units (Census Reporter 2025). The City of Barstow, located approximately 50 miles southwest of the project site, is the nearest incorporated municipality. It has a total of 9,619 homes, of which 846 are vacant, resulting in a vacancy rate of 8.8 percent.

TABLE 5.11-3 HOUSING ESTIMATES AS OF JANUARY 1, 2025

Housing Supply	Total Units	Single-Family (Detached)	Multi-Family (Attached)	Mobile Homes	Percent Vacant	Estimated Vacant Units
Community of Baker*	255	72	73	110	23.9%	61
City of Barstow	9,619	5,553	3,037	817	8.8%	846
Town of Apple Valley	27,485	21,227	3,984	1,380	4.6%	1,264
City of Hesperia	31,666	25,375	4,062	1,487	4.0%	1,267
City of Victorville	41,410	33,512	5,866	1,725	4.7%	1,946
Adelanto	9,836	7,951	1,231	437	4.3%	426
Victor Valley	110,397	88,065	15,143	5,029	4.5%	4,968
San Bernardino County	758,120	537,845	149,803	42,403	8.7%	65,956
California	14,949,001	8,525,241	4,797,844	539,557	6.4%	956,736

Note: *= Most recent available data from ACS 2023 5-year report, as reported by Census Reporter
Sources: CA DOF 2025c; Census Reporter 2025

The Southern California Association of Governments (SCAG) developed the 6th Cycle Final Regional Housing Needs Allocation Plan (RHNA), which allocates the estimated

number of potential housing unit available capacities needed in San Bernardino County from 2021 to 2029. As shown in **Table 5.11-4**, it is estimated that 146,942 housing units are needed in the county during that eight-year period (2021 to 2029) to meet projected population growth, including all city jurisdictions and unincorporated areas across all income categories (SCAG 2021). Of that amount, 8,832[3] additional housing units would be needed in the unincorporated areas of the county (San Bernardino County 2022a). The City of Barstow would require an additional capacity of 1,520 units by 2029. According to the city, with the planned adoption of its General Plan Update, the annexation and pre-zoning of unincorporated areas within the city's sphere of influence will account for a capacity of 7,008 new dwelling units. This planning effort is intended to accommodate forecasted growth through 2048 (City of Barstow 2024), which closely aligns with the proposed project's operational timeframe and reflects a growth horizon more comparable to the project's lifespan than the RHNA planning period of 2021 through 2029. The town of Apple Valley is also able to meet its RHNA of 4,290 with the city's vacant land inventory for lower income units alone accounting for 3,882 potential units (Town of Apple Valley 2022). According to the City of Hesperia, it is capable of meeting its RHNA of 8,155 in its current Housing Element Cycle (City of Hesperia 2023). The City of Victorville has a RHNA of 8,165 units. It is on track to meet having an inventory of land suitably zoned and with available infrastructure and utilities to meet that need (City of Victorville 2022).

TABLE 5.11-4 HISTORICAL AND PROJECTED NUMBER OF HOUSEHOLDS 2019 - 2050

Housing Supply	2019	2035	2050	Growth Rate* 2019-2035	Growth Rate* 2035-2050	RHNA 2021-2029
Community of Baker	N/A	N/A	N/A	N/A	N/A	N/A
City of Barstow	8,600	10,700	12,100	1.4%	0.8%	1,520
Town of Apple Valley	25,500	33,500	38,700	1.7%	1.0%	4,290
City of Hesperia	28,700	41,700	51,200	2.4%	1.4%	8,155
City of Victorville	36,400	53,800	65,700	2.5%	1.3%	8,165
Adelanto	9,000	21,000	30,100	5.4%	2.4%	3,763
Victor Valley	99,600	150,000	185,700	2.6%	1.4%	24,373
San Bernardino County	657,100	834,500	953,200	1.5%	0.9%	146,942
California	14,271,894	N/A	N/A	N/A	N/A	N/A

Note: *= Compound annual growth rate
Source: SCAG 2021; SCAG 2025; CA DOF 2025d.

As indicated in **Table 5.11-5**, there are a total of 13 recreational vehicle (RV) and campsite temporary lodging opportunities within a 50-mile radius of the project site, along with a number of hotels/motels located within and around the Barstow. Many of the RV sites include full hookups for water, sewage, and electricity. The county of San Bernardino provides camping and RV site rentals in several of its regional parks. Calico

3 The 2021-2029 San Bernardino County Housing Element and Hazards Element Update Addendum provides RHNA allocations by income category for the county. According to the element, the county requires a total of 8,832 units, broken down into income levels: 2,179 units for very low income residents (up to 50 percent Area Median Income [AMI]); 1,360 units for low income (50 percent to 80% AMI); 1,523 units for moderate income (80 percent to 120 percent AMI); and 3,770 units for above moderate income levels (120 percent and above of AMI).

Ghost Town, located approximately 40 miles southwest of the site, is the closest regional county park to the project site that offers tourist attractions and amenities centered around the historical "Old West" silver mining town that was founded in 1881. The park provides 265 sites total, 113 RV sites with full hookups, 45 RV sites with electricity-only hookups, 62 RV sites with no hookups, 11 cabins, and 34 campsites (San Bernardino County 2025b). Due to the historic nature of the town, not all areas are compliant with the Americans with Disabilities Act (ADA). Recreational activities such as off-road motorcross racing at the nearby Dumon Dunes, scenic hiking trails, horseback riding, driving historic Route 66, and more result in the sparsely populated towns and communities surrounding the project site becoming inundated with tourism, particularly from fall through spring when the temperatures are lower. For example, the Dumont Dunes alone see approximately 60,000 visitors per year, mostly during the fall through spring months (San Bernardino County 2019).

TABLE 5.11-5 TEMPORARY LODGING WITHIN 25 MILES OF THE PROJECT SITE – RV AND CAMPING FACILITIES

Facility	Total Units	Cabins	Campsites	RV Sites	Busy Season & Notes
RV Parking Baker	12	N/A	N/A	12	N/A
Tecopa Palms RV Park	26	N/A	4	22	N/A
Tecopa Hot Springs Campground and RV Park	140	2	30-40	100 (50 e/h, 50 n/h)	Winter is busy season, closed in summer
Newberry Mountain RV Park	13	N/A	4	9	Bathrooms with showers available
Foothill Estates MHP & RV Park	50	N/A	N/A	50	N/A
Calico Ghost Town Campground and RV	265	11	34	220 (113 f/h, 45 e/h, 62 n/h)	Sites for RVs, trailers, and tents. 1 tent permitted per site, Group Tent Campsites are available for groups of 20+
Desert Springs RV Park	66	N/A	N/A	66	N/A
Barstow/Calico KOA	100	5	N/A	95	N/A
Oasis RV Park and Lodging	35	N/A	N/A	35	Free Wi-Fi is not available ($3 per day if needed)
Shady Lane RV Camp	35	N/A	N/A	35 (19 f/h, 16 n/h)	Folding Tents allowed on sites
Skyline RV Park	22	N/A	N/A	22	BNSF Barstow International Gateway project starting in 2025 will make it busier
OSR Campground	13	1	10	2	Small general store, propane, firewood, and U-Haul
Mongolian Campground	N/A	3	N/A	N/A	N/A
Total	782	22	92	668	

Notes: f/h= full hookups; e/h= electric-only hookups; n/h= no hookups
Source: Staff conducted a series of phone calls with each of the lodging facilities in Table 5.11-5 to gather this information.

Economy and Employment

Between 2020 and 2025, employment in the Riverside-San Bernardino-Ontario MSA (all industries) increased by approximately 196,900 jobs (1,706,800 - 1,509,900), representing a 13.0 percent gain and a CAGR of 2.5 percent (CA EDD 2025a; 2025b). By comparison, statewide employment in California grew by about 783,800 jobs (19,851,300 - 19,067,500), or 4.1 percent and a CAGR of 0.8 percent, over the same period. As shown in **Table 5.11-6**, employment increased across all industry sectors, including construction, with the exception of agriculture (Total Farm), Manufacturing, and Financial Activities, which experienced a decline. The Leisure and Hospitality sector recorded the highest percentage growth in employment at 29.1 percent, followed by Private Education and Health Services (28.7 percent), Other Services (28.1 percent), and Accommodation and Food Services (26.7 percent). Although construction employment grew by 7,100 jobs between 2020 and 2025 (112,000-104,900), the sector's overall contribution to the San Bernardino County economy remained modest, accounting for only 6.5 to nearly 7 percent of total employment, with a CAGR of 1.3 percent. At these growth rates and proportional employment shares, the construction sector represents a relatively small portion of the regional labor market, such that temporary fluctuations associated with individual large industrial or infrastructure projects would not be expected to meaningfully alter overall regional employment trends.

TABLE 5.11-6 EMPLOYMENT DISTRIBUTION IN RIVERSIDE-SAN BERNARDINO-ONTARIO MSA, 2020-2025

	2020		2025			
Industry Title	**Number of Employees**	**Employment Share %**	**Number of Employees**	**Employment Share %**	**Percent Change 2020-2025**	**CAGR**
Total Farm	14,100	0.9%	13,100	0.8%	-7.1	-1.5%
Total Nonfarm	1,495,800	99.1%	1,693,700	98.7%	13.2	2.5%
Total Private	1,247,800	82.6%	1,425,700	83.1%	14.3	2.7%
Goods Producing	202,200	13.4%	205,700	12.0%	1.7	0.3%
Construction	104,900	6.9%	112,000	6.5%	6.8	1.3%
Manufacturing	96,000	6.4%	92,200	5.4%	-4.0	-0.8%
Service Providing	1,293,700	85.7%	1,488,000	86.7%	15.0	2.8%
Private Service Providing	1,045,700	69.3%	1,217,100	70.9%	16.4	3.1%
Trade, Transportation, and Utilities	406,900	26.9%	450,700	26.3%	10.8	2.1%
Information	12,400	0.8%	12,800	0.7%	3.2	0.6%
Financial Activities	44,100	2.9%	42,600	2.5%	-3.4	-0.7%
Professional and Business Services	152,100	10.1%	159,900	9.3%	5.1	1.0%

TABLE 5.11-6 EMPLOYMENT DISTRIBUTION IN RIVERSIDE-SAN BERNARDINO-ONTARIO MSA, 2020-2025

	2020		2025			
Industry Title	**Number of Employees**	**Employment Share %**	**Number of Employees**	**Employment Share %**	**Percent Change 2020-2025**	**CAGR**
Private Education and Health Services	248,800	16.5%	320,100	18.7%	28.7	5.2%
Leisure and Hospitality	141,300	9.4%	182,400	10.6%	29.1	5.2%
Accommodation and Food Services	127,400	8.4%	161,400	9.4%	26.7	4.8%
Other Services	40,200	2.7%	51,500	3.0%	28.1	5.1%
Total All Industries	1,509,900	100%	1,706,800	100%	13.0	2.5%
Total All Industries CA	19,067,500*	100%	19,851,300*	100%	4.1	0.8%

Note: *= Data taken from the month of July for both 2020 and 2025 data.
Sources: CEDD 2025a; 2025b

Table 5.11-7 presents employment data from 2020 to 2025 for San Bernardino County, and the cities of Barstow, Apple Valley, Hesperia, Victorville, Adelanto, Victor Valley, the Riverside—San Bernardino—Ontario MSA, and the state of California. Given the labor market volatility associated with the COVID-19 pandemic, the 2020 to 2025 timeframe captures both pandemic-related disruptions and subsequent recovery conditions, providing an appropriate basis for evaluating baseline employment trends relevant to this analysis. With the exception of San Bernardino County as a whole and the Riverside—San Bernardino—Ontario MSA, all listed cities have consistently reported higher unemployment rates than the statewide average in every year throughout the five-year period (CA EDD 2024c). Because the estimated population for the community of Baker is small, there is no workforce or unemployment data reported by the California Employment Development Department (CA EDD). In 2024, the average unemployment rate in San Bernardino County was 5.1 percent, just under the statewide average of 5.2 percent, and below the MSA's average of 5.2 percent. The CA EDD does not publish projections for future unemployment rates, and no alternative state or regional agency unemployment rate projections were identified for use in this analysis.

TABLE 5.11-7 CITY, COUNTY, AND STATE EMPLOYMENT DATA, 2020-2025

Area	**Year**	**Labor Force**	**Employment**	**Unemployment**	**Unemployment Rate**
City of Barstow	2024	9,400	8,800	600	6.6%
City of Apple Valley		29,000	27,200	1,900	6.4%
City of Hesperia		42,100	39,500	2,700	6.4%
City of Victorville		55,300	51,400	3,900	7.0%
Adelanto		14,100	13,000	1,100	7.7%
Victor Valley		140,500	131,100	9,600	6.8%
San Bernardino County		1,027,800	975,200	52,600	5.1%

TABLE 5.11-7 CITY, COUNTY, AND STATE EMPLOYMENT DATA, 2020-2025

Area	Year	Labor Force	Employment	Unemployment	Unemployment Rate
Riverside—San Bernardino—Ontario MSA		2,209,100	2,093,800	115,300	5.2%
California		37,427,340	35,461,490	1,962,450	5.2%
City of Barstow	2023	10,300	9,800	500	5.3%
City of Apple Valley		30,600	29,000	1,600	5.3%
City of Hesperia		38,200	35,800	2,400	6.2%
City of Victorville		49,200	45,900	3,400	6.8%
Adelanto		10,300	9,300	1,000	9.4%
Victor Valley		128,300	120,000	8,400	6.5%
San Bernardino County		1,013,700	966,500	47,200	4.7%
Riverside—San Bernardino—Ontario MSA		2,180,300	2,078,100	102,300	4.7%
California		37,109,300	35,355,860	1,753,840	4.7%
City of Barstow	2022	10,300	9,700	500	5.2%
City of Apple Valley		30,400	28,800	1,600	5.1%
City of Hesperia		37,800	35,600	2,200	5.7%
City of Victorville		48,600	45,600	3,000	6.2%
Adelanto		10,200	9,300	900	8.7%
Victor Valley		127,000	119,300	7,700	6.1%
San Bernardino County		1,003,000	961,200	41,700	4.2%
Riverside—San Bernardino—Ontario MSA		2,140,500	2,049,900	90,700	4.2%
California		36,848,360	35,283,710	1,562,580	4.2%
City of Barstow	2021	10,200	9,300	900	9.2%
City of Apple Valley		30,000	27,500	2,500	8.4%
City of Hesperia		37,600	34,000	3,700	9.7%
City of Victorville		48,800	43,500	5,300	10.9%
Adelanto		10,400	8,900	1,500	14.8%
Victor Valley		126,800	113,900	13,000	10.3%
San Bernardino County		990,000	916,600	73,500	7.4%
Riverside—San Bernardino—Ontario MSA		2,108,400	1,951,600	156,700	7.4%
California		36,440,050	33,779,890	2,661,240	7.3%
City of Barstow	2020	9,900	8,900	1,000	10.2%
City of Apple Valley		29,200	26,400	2,800	9.7%
City of Hesperia		36,700	32,600	4,100	11.2%
City of Victorville		47,600	41,700	5,900	12.4%
Adelanto		10,100	8,500	1,600	16.2%
Victor Valley		123,600	109,200	14,400	11.7%
San Bernardino County		972,800	879,300	93,500	9.6%

TABLE 5.11-7 CITY, COUNTY, AND STATE EMPLOYMENT DATA, 2020-2025

Area	Year	Labor Force	Employment	Unemployment	Unemployment Rate
Riverside—San Bernardino—Ontario MSA		2,073,400	1,868,300	205,100	9.9%
California		36,448,300	32,752,330	3,696,780	10.1%

Source: CA EDD 2025c

Fiscal Resources

San Bernardino County serves as the primary taxing authority for the project with respect to property-based and related local tax revenues. **Table 5.11-8** presents General Fund revenues and expenditures for the county. The General Fund has demonstrated steady year-over-year growth in Total Revenue. Between FY 2022–23 and FY 2023–24, General Fund revenues increased by 10.4 percent; approximately double the county-projected growth of 4.2 percent between FY 2023–24 and FY 2024–25 (San Bernardino County 2021; 2022b; 2023). Tax revenue consistently accounts for approximately 15 to 16 percent of the county's total General Fund revenue, ranging from 14.9 percent in FY 2023–24 to 15.7 percent in FY 2020–21.

TABLE 5.11-8 SAN BERNARDINO COUNTY ANNUAL BUDGET

Fund Type	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25
Requirements					
Staffing Expenses	$2,495,632,160	$2,722,815,971	$2,838,424,335	$3,034,388,500	$3,157,853,259
Operating Expenses	$3,559,368,963	$3,850,994,180	$4,139,010,831	$4,710,135,931	$5,005,326,858
Capital Expenditures	$828,855,084	$906,409,770	$1,131,993,304	$1,322,502,871	$1,316,633,277
Reimbursements	($503,454,342)	($499,441,525)	($547,396,174)	($591,664,522)	($640,453,894)
Contingencies	$302,736,117	$303,025,158	$448,095,298	$417,763,610	$557,667,253
Operating Transfers Out	$287,354,757	$415,170,289	$614,721,092	$587,334,402	$580,695,556
General Fund Contributions to Reserves	$57,266,025	$136,478,854	$185,664,506	$243,285,292	$173,458,205
Non-General Fund Contributions to Reserves/Net Position	$26,912,232	$18,409,086	$20,718,006	$29,174,269	$14,404,603
Total Requirements	$7,054,670,996	$7,853,861,783	$8,831,231,198	$9,752,920,353	$10,165,675,117
Sources of Funding					
Taxes	$1,108,040,081	$1,181,781,477	$1,319,791,056	$1,451,422,028	$1,562,395,553
1991 Realignment - Departmental Use	$439,139,030	$373,014,826	$368,727,703	$431,771,131	$454,885,241
2011 Realignment - Departmental Use	$456,240,893	$452,482,509	$565,257,408	$595,142,196	$615,686,877

TABLE 5.11-8 SAN BERNARDINO COUNTY ANNUAL BUDGET

Fund Type	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25
State/Fed/Other Government	$2,179,781,946	$2,474,494,917	$2,812,166,555	$3,165,828,345	$2,915,499,470
Fee/Rate	$1,208,630,302	$1,271,614,270	$1,362,621,505	$1,405,487,356	$1,535,877,840
Other Revenue	$151,027,960	$202,803,734	$221,191,664	$175,977,576	$227,464,528
Operating Transfer in Use of Fund Balance	$299,425,791	$420,747,296	$437,430,446	$578,498,807	$733,790,928
Unrestricted Net Position	$947,381,276	$1,027,473,229	$1,208,726,124	$1,344,448,199	$1,502,297,537
General Fund Unassigned Fund Balance	$252,862,863	$408,387,810	$495,566,077	$564,830,542	$525,447,288
Use of General Fund Reserves	$12,140,854	$41,061,715	$39,752,660	$39,514,173	$92,329,855
Total Sources	$7,054,670,996	$7,853,861,783	$8,831,231,198	$9,752,920,353	$10,165,675,117

Note: All expenditures (requirements) and revenues (sources) are of adopted budgets for each fiscal year provided.
Sources: San Bernardino County 2023; 2022b, 2021, 2020a

San Bernardino County's total General Fund revenues have steadily increased over the past five fiscal years. In FY 2020–21, the county reported both total General Fund revenues and total expenditures at $7,054,670,996 (San Bernardino County 2020a). For the current fiscal year (FY 2024–25), both revenues and expenditures are projected to reach $10,165,675,117. In FY 2023–24, revenue from taxes and fees/rate contributed $2,856,909,384 to the county's General Fund. These sources are projected to generate $3,098,273,393 in FY 2024–25 (in nominal dollars), reflecting continued growth in locally generated revenues.

Labor Supply

Although the San Bernardino County experienced a decline of 2 percent of its labor supply in 2020, as a result of the COVID-19 Pandemic, the county's construction industry quickly recovered and is projected to remain at a steady rate of near fully employed (40,000 workers). The San Bernardino County Economic Forecast predicts construction employment will remain at elevated levels throughout the forecast period until 2026, indicating between 38,000 to 40,000 construction jobs throughout the period (Caltrans 2023).

Table 5.11-9 presents the California Employment Development Department (CA EDD) 2022-2032 Occupational Employment Projections for the project's construction occupations in the Riverside—San Bernardino—Ontario MSA (CA EDD 2025d). It is anticipated that most of the SMSP workforce would come from this area. The projections are estimates of the expected employment for individual occupations. For the year 2032, the total projected employment estimate of the construction occupations that would be consistent with the project workforce within the MSA would be 346,760 workers. Of those jobs, there are an estimated 3,118 annual openings due to growth

and exits from the occupations. The majority of the project workforce would be comprised of solar photovoltaic (PV) installers. As shown in **Table 5.11-9** below, there are an average of 142 open solar PV installer positions each year.

TABLE 5.11-9 PROJECTED EMPLOYMENT GROWTH, 2022 TO 2032

Riverside-San Bernardino-Ontario MSA	Year 2022	Year 2032	Percent Change	CAGR	Average Annual Job Openings*
Total, All Occupations	1,760,710	1,947,320	10.6%	1.0%	232,741
Computer and Information Systems Managers	2,590	3,080	18.9%	1.7%	230
Construction Managers	5,620	6,370	13.3%	1.3%	497
Engineers	10,250	11,660	13.8%	1.3%	754
Electrical Engineers	1,030	1,150	11.7%	1.1%	69
Construction and Extraction Occupations	100,200	113,550	13.3%	1.3%	10,154
First-Line Supervisors of Construction Trades and Extraction Workers	9,710	11,030	13.6%	1.3%	948
Construction Trades Workers	83,160	94,740	13.9%	1.3%	8,384
Cement Masons and Concrete Finishers	4,770	5,270	10.5%	1.0%	425
Construction Laborers	15,520	18,280	17.8%	1.7%	1,713
Paving, Surfacing, and Tamping Equipment Operators	200	220	10.0%	1.0%	20
Electricians	8,840	10,240	15.8%	1.5%	971
Glaziers	960	1,110	15.6%	1.5%	116
Insulation Workers, Floor, Ceiling, and Wall	160	180	12.5%	1.2%	15
Painters, Construction and Maintenance	5,710	6,260	9.6%	0.9%	513
Pipelayers	250	270	8.0%	0.8%	21
Plumbers, Pipefitters, and Steamfitters	4,230	4,670	10.4%	1.0%	423
Roofers	2,700	3,160	17.0%	1.6%	270
Sheet Metal Workers	1,010	1,090	7.9%	0.8%	104
Solar Photovoltaic Installers	970	1,370	41.2%	3.5%	142
Helpers, Construction Trades	2,790	2,970	6.5%	0.6%	334
Helpers--Electricians	630	640	1.6%	0.2%	71
Other Construction and Related Workers	3,750	4,000	6.7%	0.6%	403
Fence Erectors	590	650	10.2%	1.0%	57
Septic Tank Servicers and Sewer Pipe Cleaners	220	260	18.2%	1.7%	26
Electrical and Electronic Equipment Mechanics, Installers, and Repairers	5,380	5,890	9.5%	0.9%	580
Telecommunications Equipment Installers and Repairers, Except Line Installers	970	1,110	14.4%	1.4%	119
Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	210	240	14.3%	1.3%	22
Security and Fire Alarm Systems Installers	900	1,110	23.3%	2.1%	125
Millwrights	140	160	14.3%	1.3%	14
Electrical Power-Line Installers and Repairers	1,420	1,770	24.6%	2.2%	154
Assemblers and Fabricators	15,170	15,270	0.7%	0.1%	1619
Structural Metal Fabricators and Fitters	240	220	-8.3%	-0.9%	22
Metal Workers and Plastic Workers	13,470	13,990	3.9%	0.4%	1385

TABLE 5.11-9 PROJECTED EMPLOYMENT GROWTH, 2022 TO 2032

Riverside-San Bernardino-Ontario MSA	Year 2022	Year 2032	Percent Change	CAGR	Average Annual Job Openings*
Welders, Cutters, Solderers, and Brazers	4,100	4,550	11.0%	1.0%	462
Power Plant Operators	240	230	-4.2%	-0.4%	18
Crane and Tower Operators	280	310	10.7%	1.0%	31
Total Project-Related Construction Occupations	**308,100**	**346,760**	**12.5%**	**1.2%**	**3,118**

Notes: CAGR = Compound annual growth rate; *=Total job openings is the sum of exits, transfers, and numeric change averaged over 10 years.
Long-term (10-year) projections are based on annual average employment levels by industry for the base (2022) and target (2032) years.
Jobs located in the county or the metropolitan area that pay wages and salaries are counted although workers may live outside the area. Jobs are counted regardless of the number of hours worked.
Individuals who hold more than one job (i.e., multiple job holders) may be counted more than once. The employment figure is an estimate of the number of jobs in the area (regardless of the place of residence of the workers) rather than a count of jobs held by the residents of the area.
Source: CA EDD 2025d

The California Department of Transportation's (Caltrans) San Bernardino County Economic Forecast shows that construction employment trends in San Bernardino County have increased over the last decade (2012 to 2022), aside from the 2 percent decline in 2020 due to the COVID-19 Pandemic. Additionally, it states that the county employed an additional 1,300 construction workers in 2021 and 300 new jobs in 2022, reflected as net employment growth over the previous year, pushing the total construction workforce to the highest level in 10 years. After 2022, the San Bernardino County construction workforce is forecasted to remain relatively constant through 2026. Unemployment rates are projected to remain fairly steady around 4.1 percent through 2025 (Caltrans 2023).

Public Services and Facilities

The study area for public service-related impacts is San Bernardino County. Fire and police protection services are provided to the project site from departments within San Bernardino County. There are existing service access roads in the project vicinity, including Rasor Road that runs from Interstate 15 (I-15) eastward to the Rasor Off-Highway Vehicle (OHV) Recreation Area. An additional access road exists north of I-15 to access the existing Los Angeles Department of Public Works/Southern California Edison (LADPW/SCE) transmission lines (see **Section 3, Project Description, Figure 3-2**). Park facilities and other public facilities such as libraries are also provided by the county. There are no libraries within the community of Baker. The project site is within the Baker Valley School District boundary (SBCSS 2025a).

Fire Protection

Fire protection services for the project site are provided by the San Bernardino County Fire Protection District (SBCFPD). The SBCFPD is a regional fire service agency that serves a district encompassing 19,278 square miles of San Bernardino County. The

SBCFPD covers 24 cities and all unincorporated areas in the county and protects over two million residents located throughout the county. The SBCFPD comprises five divisions and 57 fire stations, including seven volunteer fire stations. It employs 1,166 county fire personnel, of whom 712 are fire suppression personnel. This force provides emergency response to all fires, medical aids, rescues, hazardous materials incidents, wildland fires, and other miscellaneous emergencies (SBCFPD 2025a).

Fire Station 53, of Division 5 North Desert, is the closest station to the project site, located at 72734 Baker Boulevard, Baker. It is situated approximately seven miles northeast of the site. The station has a daily staffing consisting of one fire captain, one fire apparatus engineer, one firefighter paramedic, and one firefighter emergency medical technician (EMT) on the station's single engine, and one ambulance paramedic and one EMT on the station's single ambulance, for a total station staffing of six firefighting and emergency medical personnel. As mentioned, the station is equipped with its own fire engine, an ambulance, and a water tender apparatus (CEC 2025y). The Division had a total of 31,743 calls for service between July of 2024 and June 2025, with 1,835 fire incidents, 23,834 medical aid incidents, 457 hazardous materials incidents, and 2,481 traffic collision incidents (SBCFPD 2025b).

Law Enforcement

Police protection for the project site is provided by the San Bernardino County Sheriff Department (SBCSD). The Sheriff's Department was budgeted for 2,077 sworn and 1,499 professional staff in 2023, and the department has a varying number of part-time or per diem employees, and nearly 1,400 community volunteers. As of 2023, the Sheriff's Department had one authorized sworn officer per thousand population (SBCSD 2023).

The closest SBCSD substation is located at 225 East Mountain View Street in Barstow, approximately 51.8 miles southwest of the project site. Services are accomplished through a county-wide interagency service agreement to provide services such as patrol, K-9, investigations, citizen volunteer patrol, search and rescue, concealed weapons permit processing, abandoned vehicle abatement, detention, and a human trafficking division. For 2024-2025, the Barstow substation has a budget for approximately 52 full-time equivalent personnel, broken down into one captain, one lieutenant, five sergeants, 29 deputies, and 16 professional staff. The Barstow substation currently staffs two to five officers for the day shift, and one deputy for the Baker community per 12-hour shift. Current estimated response times for the project site would be 10 minutes if an officer is on shift and available, and up to 1.5 hours if an officer would come from the Barstow area, reflecting variability in coverage during periods of limited staffing (CEC 2025cc).

Hospitals

The hospital closest to the project site with an emergency room is the Barstow Community Hospital, located at 820 East Mountain View Street, Barstow. This facility is

a 30-bed general acute care hospital and has just under 400 employees, which would be adequate to absorb typical short-term construction-related demand in small cities such as Barstow, given the temporary nature of construction employment and the relatively limited number of workers requiring emergency medical services at any given time. The facility is located approximately 48.7 miles southwest of the proposed project site and within an approximately 50-min travel time under typical conditions. The emergency room at Barstow Community Hospital provides immediate, specialized care for its patients. Specialty services at the hospital include general surgery, cardiovascular, orthopedics, women's services, outpatient facilities, laboratories, radiology, x-ray, echo cardio, and a variety of other specialty services (CEC 2025bb).

For trauma care treatment, individuals from the area can be transported by helicopter or ground transportation to one of two nearby trauma centers. The closest facilities to the project site are Arrowhead Regional Medical Center (400 North Pepper Avenue, West Colton), approximately 97.8 miles southwest of the site, and Loma Linda University Medical Center (11234 Anderson Street, Loma Linda), approximately 95.5 miles southwest. The Mercy Air air ambulance, located across the street from Barstow Community Hospital, ensures rapid transportation for trauma care.

Schools

San Bernardino County Superintendent of Schools (SBCSS) oversees 33 school districts, comprising of 589 public schools and serving nearly 400,000 students (SBCSS 2025b). Student enrollment over the past three years is shown in **Table 5.11-10** for the Baker Valley, Barstow, Apple Valley, Hesperia, Victorville, and Adelanto unified school districts, which are served by the SBCSS, as well as total enrollment for the state of California.

TABLE 5.11-10 ENROLLMENT IN PROJECT VICINITY SCHOOL DISTRICTS, SAN BERNARDINO COUNTY, AND STATEWIDE

Area	2021-22 School Year	2022-23 School Year	2023-24 School Year	2024-25 School Year
Baker Valley Unified	134	124	129	125
Barstow Unified	6,401	6,396	6,318	6,128
Apple Valley Unified	14,762	15,087	15,252	15,128
Hesperia Unified	24,475	25,006	25,356	25,167
Victorville Unified*	24,390	24,525	24,747	24,766
Adelanto Unified	8,044	8,213	8,348	8,472
Victor Valley	71,671	72,831	73,703	73,533
San Bernardino County	398,648	397,426	396,860	396,773
California	5,892,240	5,852,544	5,837,690	5,806,221

Note: *= Victor Elementary and Victor Valley Union High combined
Source: CA DOE 2025a

The project site is located within the Baker Valley School District, which contains Baker Pre-School, Baker Elementary School, Baker Junior High School, Baker High School, and the Baker Adult School. There are no school facilities located on or immediately adjacent to the project site, and the project does not involve routine use of or access to

school facilities. **Table 5.11-11** provides district enrollment by grade for the 2021-22, 2022-23, 2023-24, and 2024-25 school years (CA DOE 2025b).

TABLE 5.11-11 ENROLLMENT IN BAKER UNIFIED SCHOOL DISTRICT, BY GRADE

School	Grade	2021-22 School Year	2022-23 School Year	2023-24 School Year	2024-25 School Year
Baker Elementary School	Kindergarten	16	6	6	10
	1st	18	11	8	6
	2nd	7	16	10	8
	3rd	12	7	16	10
	4th	13	13	7	17
	5th	6	14	13	7
Baker Junior High School	6th	5	6	15	14
	7th	5	6	6	14
	8th	11	5	10	7
Baker High School	9th	6	11	5	9
	10th	13	5	11	5
	11th	10	14	6	11
	12th	12	10	13	6

Source: CA DOE 2025b

Baker Elementary enrolled 58 students in the 2024-25 school year, Baker Junior High School enrolled 35 students, and Baker High School enrolled 31 students in the 2024-25 school year (CA DOE 2025b). The nearest public schools within 60 miles of the project site are:

- California State University Desert Studies Center, 49441 Zzyzx Rd, Baker, approximately 3.4 miles east of the project site;
- Baker Elementary, Baker Junior High, and Baker High School, all three schools are located at 72100 School House Lane, Baker, approximately 9.5 miles northeast of the project site;
- Silver Valley High School in the Silver Valley Unified School District, located at 35484 Daggett-Yermo Road, Yermo, approximately 44.4 miles southwest of the project site;
- Montara Elementary School in the Barstow Unified School District, located at 700 Montara Road, Barstow, approximately 50.4 miles southwest of the project site; and
- Barstow Junior High School, located at 1000 Armory Road, Barstow, approximately 51.1 miles southwest of the project site.

Parks and Recreation

San Bernardino County, the largest county in the state, is renowned for its recreational opportunities. The county features over 2.5 million acres of designated wilderness areas, more than two million acres of national monument parklands managed by BLM,

and over 470,000 acres of National Forest lands. Additionally, it includes 1.9 million acres of National Park land, nearly 23,000 acres of State Parks, 8,515 acres of county regional parks across four county regions, and thousands of acres of county special district parks. All of these county parkland areas contain some combination of historical sites, bikeways and trails, rivers and lakes, and/or wildlife viewing opportunities. The county contains over 322,520 acres of OHV recreation areas that are owned and managed by BLM which provide off-road sports, camping, rock climbing, hiking, and geological sightseeing opportunities to hundreds of thousands of visitors each year. As mentioned previously, the Dumont Dunes, located approximately 30 miles north of Baker, is one of these recreational areas that attracts approximately 60,000 visitors each year, with the busiest season being fall through springtime when temperatures are cooler for racing activities. The anticipated construction period is approximately 18 months, which spans more than one calendar year and therefore coincides with at least one peak visitation season, depending on the timing of construction initiation. Other year-round recreation activities available in the county include the use of playgrounds, sports fields/courts, hiking, camping, horseback riding, golf, boating, biking, and fishing (San Bernardino County 2019). The project site and its immediate surroundings include unofficial, unpaved OHV trails and roads. Primary access to the project site would be from Rasor Road via Interstate 15. Rasor Road runs along the southern boundary of the project site and, approximately 1.4 miles west of the site, forks into a western route that continues toward the designated Rasor OHV Open Area on BLM-administered land. The Rasor OHV Open Area encompasses approximately 24,000 acres of public land in the Mojave Desert, located between I-15 and the Mojave National Preserve, about 50 miles east of Barstow and 7 miles southwest of Baker, with primary access from Basin Road (3.8 miles southwest of the project site) and Rasor Road adjacent to the project's southern boundary (US BLM n.d.). The project site's southeastern boundary directly abuts the Rasor OHV Open Area (see **Figure 3-1** and **Figure 3-2,** in **Section 3.0, Project Description**).

The county is home to two national forests: the Angeles National Forest, located approximately 96.7 miles southwest of the site, and the San Bernardino National Forest, located just south of Hesperia and approximately 63.0 miles southwest of the site. The closest state park to the proposed project would be the Providence Mountains State Recreation Area, located approximately 37.4 miles southeast of the site, which encompasses the Mitchell Caverns State Park within its boundaries. The nearest county regional park would be the Calico Ghost Town Regional Park, located just north of Barstow approximately 39.0 miles southwest of the site.

There are several wilderness areas under the jurisdiction of the BLM and national park sites in the project vicinity. These include the Mojave National Preserve a National Park Service site located approximately 1.9 miles east of the proposed site, with access provided from I-15 via Rasor Road to Mojave Road south of the site. The nearest visitor center for the Mojave National Preserve is the Kelso Depot Visitor Center, located 30 miles east of the site in Kelso, CA. The nearest hiking trail to the site is the Old Spanish National Historic Trail that traverses through the Preserve, with the closest point being

approximately 3.5 miles due east of the site in the small community of Zzyzx (NPS n.d.). From the Basin Road interchange on I-15 (Exit 230), recreational users can access the Rasor OHV Open Area, Mojave Road, and the eastern portion of the Afton Canyon Special Recreation Management Area (SRMA), as well as the Cronese Lakes Area of Critical Environmental Concern (ACEC) to the north. From the Afton Canyon Road interchange on I-15 (Exit 221), Afton Canyon Road provides primary access to the Afton Canyon SRMA and the Afton Canyon Campground, which is the closest BLM-managed visitor facility to the project site at an approximate straight-line distance of 12.0 miles (RE 2024b). Other nearby areas include the Soda Mountain Wilderness Area, approximately 1.5 miles northwest of the proposed point of interconnection with the Mead-Adelanto 500 kilovolt (kV) Transmission Line (see **Section 3, Project Description, Figure 3-2**).

Other Public Facilities

Public library services are provided by the county, which operates 32 branch library facilities. The San Bernardino County Library (SBCL) system provides library service to the unincorporated areas of San Bernardino County, including Baker, Barstow, and other cities within the county (San Bernardino County 2019). SBCL is a member of the Inland Library System, which includes 19 independent public libraries in Riverside, San Bernardino, and Inyo counties. These libraries collaborate to locate, deliver, and share resources, enhancing library services across the three-county region. The system offers access to more than 2 million volumes. The Barstow Branch Library is located within the City of Barstow, approximately 49.0 miles southwest of the proposed site.

The project site would be located within the SCE service territory, which supplies electricity to the area, and within the Southern California Gas Company (SoCalGas) southeast regional territory, which supplies natural gas. SCE provides electrical services to the area through state-regulated public utility contracts. SCE, a subsidiary of Edison International, serves 15 million people across a 50,000-square-mile service area, encompassing approximately 180 cities in 15 counties throughout central and Southern California (SCE 2025). The project would connect to the Meade-Adelanto 500-kV transmission line to provide the regional electrical grid with on-site storage and grid resiliency for on-site renewable solar energy generation. SoCalGas, the nation's largest natural gas distribution utility, also serves the project area. Its service territory covers approximately 24,000 square miles across Central and Southern California, stretching from Visalia to the Mexican border. It delivers natural gas to 21.1 million consumers through 5.9 million meters in over 500 communities (SoCalGas 2025). The project does not require the installation of natural gas infrastructure.

AT&T has fiberoptic connections throughout the area, and there are several FCC-registered cell phone towers nearby, including a Verizon Wireless tower located southwest of the project site, along Rasor Road, east of the gas station (Advameg 2025).

Regulatory

Federal

There are no Federal plans, policies, or regulations related to socioeconomics applicable to the project.

State

California Education Code, 17620. The governing board of any school district is authorized to levy a fee, charge, dedication, or other requirement for the purpose of funding the construction or reconstruction of school facilities.

California Government Code, Sections 65995-65998. Except for a fee, charge, dedication, or other requirement authorized under Section 17620 of the Education Code, state and local public agencies may not impose fees, charges, or other financial requirements to offset the cost for school facilities.

Local

San Bernardino County Development Impact Fees. The County of San Bernardino, in accordance with Section 65995 of the California Government Code, and as authorized under Section 17620 of the Education Code, levies developer fees on residential, commercial, and industrial development for the purpose of financing the construction of school facilities (San Bernardino County 2020b).

San Bernardino County Countywide Plan. The San Bernardino County Countywide Policy Plan (San Bernardino County 2020c) provides policy guidance for public safety services, including fire protection and emergency medical response. The "Personal & Property Protection" element sets forth goals and policies intended to ensure sufficient fire stations, equipment, staffing, site and building design, and regional coordination so new development does not compromise countywide service levels. The following policies relate to the proposed SMSP.

- Policy PP-3.1 – Fire and emergency medical services: "We maintain a sufficient number and distribution of fire stations, up-to-date equipment, and fully-trained staff to respond effectively to emergencies."
- Policy PP-3.6 – Concurrent protection services: "We require that fire department facilities, equipment, and staffing required to serve new development are operating prior to, or in conjunction with, new development."
- Policy PP-3.7 – Fire safe design: "We require new development in the Fire Safety Overlay to comply with additional site design, building, and access standards to provide enhanced resistance to fire hazards."
- Policy PP-3.12 – Fire protection and emergency medical resource allocation: "We use fire and emergency services data analysis and professional expertise to allocate resources, reduce fire risks, and improve emergency response."

- Policy PP-3.13 – Periodic needs assessment: "We periodically assess our facility, equipment, and staffing needs and use the assessment to allocate funding resources in the annual budget and capital improvement program."

Cumulative

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, other current projects, or reasonably foreseeable future projects. Staff used San Bernardino County as the geographic scope for socioeconomic cumulative impacts. A master list of cumulative projects located within the study area is provided in **Appendix A, Table A–1** and **Figure A-1**. Staff considers all projects on the master list as part of the cumulative setting for socioeconomics.

5.11.2 Environmental Analysis

SOCIOECONOMICS	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
b. Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☒	☐
c. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
i. Fire protection?	☐	☒	☐	☐
ii. Police Protection?	☐	☐	☒	☐
iii. Schools?	☐	☐	☒	☐
iv. Parks?	☐	☐	☐	☒
v. Other public facilities?	☐	☐	☒	☐

SOCIOECONOMICS	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
d. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
e. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☒	☐

Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix G, population and housing, public services, and recreation.

5.11.2.1 Methodology and Thresholds of Significance

Methodology

Local environmental impacts (such as population, housing, impacts to public services, and impacts to parks and recreation) were determined by comparing project demands during construction and operation with the socioeconomic resources of the project area (i.e., the communities and cities in the area and San Bernardino County as a whole). A proposed solar facility, BESS, switchyard, substation, and associated features could impact employment, population, housing, public services and utilities, parks and recreation, and/or schools. The determination of the significance of any impacts is based on expert knowledge, including input from local and state agencies, and the 90-minute commute range for construction and operational workers, as workers from Barstow and the Victor Valley could reach the site in under 90 minutes. Impacts could be local and/or regional, though most impacts would tend to be more regional than local. Although it is anticipated that the project would not have significant adverse impacts on the socioeconomic environment, it is expected to result in some socio-economic benefits to the area.

Significance Criteria

The criteria used to determine the significance of project-related socioeconomic impacts are as suggested in the CEQA Checklist above. There are no additional thresholds of significance applicable to this project.

Applicability of Socioeconomic Impact Analysis to Jurisdictional and Non-Jurisdictional Project Components

The proposed project includes both jurisdictional and non-jurisdictional components; however, the nature of the socioeconomic effects as a result of the proposed project

would be the same across all portions of the site. Differences in jurisdictional authority do not alter the type or intensity of potential impacts related to population, housing, workforce, or public services. Therefore, the following impact analyses and associated conclusions apply uniformly to both jurisdictional and non-jurisdictional segments of the proposed SMSP.

5.11.2.2 Direct and Indirect Impacts

a. Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

Construction

Less Than Significant Impact. The regional labor force within the Riverside–San Bernardino–Ontario MSA is expected to be sufficient to meet project demand, and the majority of workers would commute from their existing residences within the region rather than relocate. A limited number of specialized trades may seek temporary lodging near the site; however, available accommodations in nearby communities such as Barstow, Baker, and the Victor Valley area would adequately meet this short-term demand. Construction employment would therefore be temporary and would not result in permanent population increases or the need for new housing.

Construction of the proposed project is anticipated to last up to 18 months and employ an average of 200 full-time equivalent construction workers annually, with an estimated 300 workers on-site during peak construction activities. Construction activities would occur in four separate stages, plus the decommissioning period anticipated to begin after the 30 years of operations. Construction would include the following activities (specifics of each stage are discussed in greater detail in **Section 3, Project Description**:

- Stage 1 Construction (months 1 – 8)
  - Mobilization
  - Site preparation
  - Fencing
  - Preparation of laydown areas
  - Trenching
- Stage 2 Construction (months 4 – 12)
  - Installation of solar array structural components including cables, piles, racking systems, installation of solar panels, inverters, and modules
- Stage 3 Construction (months 10 – 16)

  - Installation of BESS
  - Construction of substation and switchyard
  - Interconnection to the 500-kV transmission line
  - Trenching activities between inverters and transformers
- Stage 4 Construction / Commissioning (months 15 – 18)
  - Inspections
  - Commissioning
  - Testing of equipment

Workforce

It is anticipated that most, if not all of the construction workforce would be drawn from the Riverside—San Bernardino—Ontario MSA, which includes both Riverside and San Bernardino counties. The primary trades in demand would include solar installers, electricians, electrical powerline installers, power plant operators, construction managers, concrete finishers, crane operators, heavy tractor drivers, and construction laborers. The number of construction workers required for the SMSP is estimated to average 200 actual workers, with an expected peak of 300 workers over the course of the project (RE 2025k).

As noted previously, San Bernardino County is considered the region of influence for the proposed project. It is reasonable to assume that workers[4] from San Bernardino County are not likely to temporarily (during construction) or permanently (during operations) move closer to the project. The project site could be reached within 90 minutes from many of the populated areas within the county, which includes Victor Valley (Google Maps 2025).

Local workers are defined as residing within a 90-minute commute for project construction and operation. According to the US Census Bureau, super commuters[5] are becoming more common and are willing to drive longer distances, with greater travel time to reach places of employment (Rapino and Fields 2012). Data showed that approximately 8.1 percent of US workers commute longer than 60 minutes and nearly 600,000 full-time workers were considered mega commuters (90 minutes or more and 50 miles or more commutes).

Considering this and the available workforce in San Bernardino County, per the US Census Bureau's findings, it is reasonable that most, if not all of the SMSP workers would commute to the site in lieu of moving themselves and families closer for the

4 Workers with a greater commute (i.e., greater than 90 to 120 minutes from home) would be considered non-local and would tend to seek lodging closer to the project site (temporarily during construction or permanently during operations).
5 Super commuters include extreme (90 minutes or more one-way), long distance (50 miles or more one-way), and mega (90 minutes or more and 50 miles or more one-way) commuters.

temporary construction period. Furthermore, construction workers would only be on-site for the duration of the period in which their specific skillsets are required. It is anticipated that most of the project workforce would be on-site for periods lasting weeks to a few months. It is staff's experience that workers that would have a longer commute than 90 minutes typically choose to find temporary lodging closer to the site, which in most cases includes finding a hotel/motel or an RV resort to temporarily park their personal RV for the duration of time their skillsets are required. As indicated in **Table 5.11-5**, there is sufficient availability of temporary lodging within a 50-mile radius of the project site.

The availability of skilled labor in the Riverside—San Bernardino—Ontario MSA was assessed by surveying the California Employment Development Department (CEDD). **Table 5.11-9** demonstrates that the current and projected (through 2032) construction labor force in this MSA would be sufficient to meet the labor requirements for the SMSP. This is based on the CAGR of approximately 1.2 percent for the relevant project trades and the relatively minimal construction workforce required. As shown in **Table 5.11-9**, there would be an adequate number of tradesmen, laborers, and supervisors to complete the proposed solar array and BESS during the 18-month project construction period.

Based on recent discussions (July 2025) with International Brotherhood of Electrical Workers (IBEW) Local 477, sufficient labor is expected to be available to meet the construction demands of the proposed project. Although two large-scale projects are currently underway in the region, both are anticipated to conclude prior to the start of construction at SMSP. Approximately half of the local union's workforce resides in the Victor Valley area, with the remainder spread throughout San Bernardino County. If additional labor is needed, the proximity to Nevada allows for potential support from Local 11 out of the Los Angeles area, as well as workers from Local 357 out of Las Vegas. According to the union representative, the project site is located within Zone B and provides prevailing wage that is considered to be a high enough rate to attract out-of-area workers who would likely stay in the nearest communities with available lodging. The representative exclaimed that they did not anticipate conflict with labor allocations from the rebuilding efforts associated with the Palisades and Eaton Fires, as that effort is being staffed separately by Local 11 (CEC 2025dd). Furthermore, as the SCE territory is going to need additional energy to support the rebuilding post-fires, electricity from the project would be a benefit to the grid.

Therefore, the availability of labor would not place an undue burden on the local workforce in the MSA. This impact would be less than significant.

Population and Housing Impacts

The proposed project would not directly or indirectly induce substantial unplanned growth in San Bernardino County. The project does not propose new housing, and it would not facilitate growth through the extension of roads, water supply pipelines, or other growth-inducing infrastructure. The project includes the development of an

approximately 300 MW solar renewable energy system and an accompanying 300 MW BESS and associated infrastructure within an area totaling approximately 2,081 acres within the 2,670-acre federally owned property administered by BLM. The project includes additional infrastructure to support the solar array and BESS system (i.e., operation and maintenance structures, underground and overhead collection lines, access roads, substation, switchyard, and stormwater infrastructure). Electric energy would be transferred from the existing power grid to the project batteries for storage and from the project batteries to the power grid when additional electricity is needed. It would not be an extension of infrastructure serving customers. Therefore, there would be no indirect population growth.

Construction of the proposed project is anticipated to last up to 18 months and employ an average of 200 full-time equivalent construction workers with an estimated peak of approximately 300 workers on-site during peak construction months. As mentioned previously, most of the workers are not anticipated to come from outside of the area. However, for the purposes of this analysis, if all construction workers were to relocate their families to the project area, it is anticipated that these workers would move to Baker, Barstow, or more likely to Victor Valley. As shown in **Table 5.11-3**, Baker has a total of 255 housing units, with a 23.9 percent vacancy rate, which represents a total of 61 available units. Barstow currently (2025) has a total of 9,619 units with a vacancy rate of 8.8 percent, representing a total of 846 available units. Victor Valley has a total of 110,397 housing units, with a 4.5 percent vacancy rate, representing a total of 4,968 available units. These available housing units would be sufficient to absorb any influx in migration resulting from construction of the project.

Additionally, if all 300 workers were to temporarily relocate to the area, there would be an ample supply of motels, hotels, RV sites, campgrounds and vacation rentals in the area. There are a total of 13 RV/camping resorts within a 50-mile radius of the project site, as shown in **Table 5.11-5**. Of those 13 facilities, there are a total of 782 sites, comprising 22 cabins, 92 campsites, and 668 RV sites. Staff confirmed that several of the larger resorts have typical occupancy rates around 50 percent or more for most of the year. It is Staff's experience that most traveling construction workers have camper trailers and stay in RV resorts, or hotels and motels of which there are six within 50 miles of the project site, and many more just in the Barstow area alone.

However, as previously noted, only a limited number of workers are expected to relocate temporarily for the duration of time required for their specific skillset. With a 90-minute commute option, areas within Victor Valley provide access to a significantly larger pool of lodging opportunities. Therefore, the project's construction workforce would not directly or indirectly induce substantial population growth in the project area. The impact from project construction would be less than significant.

Non-Jurisdictional Project Components

Installation of line tuners, wave traps, microwave telecom links, relay protection equipment, and metering and controls equipment to upgrade the protection settings at

the Marketplace and Adelanto substations, would either be carried out by LADWP staff or local labor. Either way, installation of this equipment would require limited construction workforce and would have a minimal impact.

Operation

Less Than Significant Impact. During operations, the project would be remotely monitored and controlled, requiring only a small team of technicians to conduct periodic site visits for maintenance, inspections, and equipment servicing. No full-time on-site staff would be necessary, and most workers are expected to reside within the surrounding region and commute to the site as needed. Operational activities would be limited in scale and duration, and the number of workers involved would be minimal relative to the regional labor force and population base. As a result, operation of the project would not generate substantial direct or indirect population growth or create a need for new housing or supporting infrastructure.

Workforce

As discussed previously, SMSP would be operated and monitored remotely through the Supervisory Control and Data Acquisition (SCADA) system, with on-site visits being conducted on an as-needed basis by 25 to 40 technicians to conduct routine inspections, maintenance, equipment operation, and/or security. The project would not require any full-time, on-site operational staff. Technicians would likely be sourced from the surrounding area; however, for the purposes of this analysis, a more conservative approach was taken by considering all technician staff would have to relocate closer to the project site and within the 90-minute commute range, which includes the Victor Valley. Consequently, only a slight increase in the county's workforce would be anticipated as a result of this project, resulting in a less than significant impact.

Population and Housing Impacts

The proposed project would create a low number of permanent jobs, with an anticipated 25 to 40 part-time employees visiting the site over the 40-year expected lifetime of the project. The small operation and maintenance workforce would conduct site visits and routine maintenance on an as-needed basis, with the majority of operational activities being conducted remotely. Some of the operational workforce may be drawn from the local population. However, it is anticipated that most of the operational workforce would be drawn from the Victor Valley, as well as parts of the surrounding Riverside—San Bernardino—Ontario MSA.

If we assume that all 40 of the operation and maintenance workers relocate with their families to the communities within a 90-minute commute of the site, the population increase would be very negligible. These few workers would be spread among the overall population of 380,536 as of January 2025 (this includes the community of Baker, and the cities of Apple Valley, Barstow, Hesperia, Victorville, and Adelanto and does not include the smaller communities smattered throughout the region). If all 40 workers were to relocate to the project area for the part-time workload required for the solar

array and BESS facilities, the anticipated increase in population would also be negligible. As shown in **Table 5.11-1** above, Baker saw a population reduction of around 100 residents, Barstow lost over 700, and Apple Valley nearly the same between 2020 and 2025. Although 40 new residents to Baker would represent a 22.8 percent increase, considered a substantial increase in some cases, the community of Baker would benefit from this influx of residents that would reflect numbers similar to the community's population levels pre-pandemic.

It is staff's experience that workers who are willing to move their families permanently choose areas that have amenities for their entire family and that are closer to larger commercial centers. Although some may choose to move to the community of Baker, it is more likely that they would move closer to Barstow or the Victor Valley and commute to the project site from there. Thus, it is unlikely that these few workers would directly or indirectly induce a substantial population growth in the project area that would require the construction of new homes or infrastructure. The impact from project operation would therefore be less than significant.

Non-Jurisdictional Project Components

Operation of the utility switchyard and new protection equipment at the Marketplace and Adelanto substations would be carried out by LADWP staff. Existing staff would service the two substations and the new utility switchyard would likely require few, if any, additional workers to be employed. The impact from operation of the non-jurisdictional project components would have a minimal impact.

b. Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

Construction and Operation

No Impact. The proposed project would not displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere. The project site is currently vacant and does not contain any residential uses. Therefore, implementation of the project would not result in the removal or displacement of existing housing units or residents, and no impact would occur.

The Marketplace and Adelanto substations are existing substations and thus no displacement of existing housing units or residents would occur.

c. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable

service ratios, response times, or other performance objectives for any of the public services:

i. Fire protection?

Construction

Less Than Significant with Mitigation Incorporated. Construction of the project would generate a temporary workforce and short-term increase in activity in the project area. Most workers would be drawn from within the regional labor pool, and given the project's location and limited duration, substantial worker relocation or population in-migration is not anticipated. Construction activities would, however, temporarily elevate demand for fire protection and emergency medical services (EMS) due to the use of heavy equipment, electrical systems, fuel storage, and the site's remote desert conditions. Existing emergency response resources in the area are limited, and response times to the site could be lengthy, resulting in a potential strain on local fire and EMS capacity during active construction. With implementation of proposed COC **WORKER SAFETY-10** to support additional fire service staffing, on-site equipment, and water storage during construction, these temporary service demands would be adequately addressed. Therefore, construction-related impacts related to population growth and public service demand would be less than significant with mitigation.

The project workforce is unlikely to increase the need for residential area fire services due to an in-migration population. Additionally, any changes to service ratios as a result of the project's construction phases would be temporary and would not require the need for new or physically altered fire protection facilities.

Construction of the proposed project would temporarily increase the demand for fire protection and emergency medical services (EMS) in the project area. Construction activities would involve the use of heavy equipment, electrical systems, and fuel storage, which collectively increase the potential for fire ignition and worker injury. Additionally, the remote desert setting, limited access routes, and extreme temperature conditions further elevate safety risks and the need for rapid emergency response.

According to correspondence received from SBCFPD (CEC 2025u), Station 53 in Baker is the only staffed county fire station positioned to respond directly to the project site. This station currently serves a response area of more than 4,000 square miles with only a single paramedic engine staffed by 4 firefighters, a cross-staffed 3,500-gallon water tender, and one paramedic ambulance crewed by non-firefighter medical personnel. Under ideal conditions, response time to the project site would be approximately 20 minutes; however, this assumes that Station 53 is available and not committed to another incident. When Station 53 is unavailable, response times could extend to 90 minutes or longer, as the next closest resources are located approximately 1.5 to 2 hours away in Helendale and Hesperia.

Station 53 responds to emergencies across a vast geographic area, from Harvard to the Nevada Stateline on the I-15, Highway 127 west to the Inyo County line, which includes the Dumont Sand Dunes Recreation Area, Interstate 40 from Ludlow to Kelbaker Road, and 1.5 million acres of the Mojave National Preserve. Consequently, its resources are routinely strained, and concurrent incidents are common. SBCFPD has indicated that most of Station 53's service area consists of federal lands that do not contribute property tax revenue to the county, leaving no existing mechanism for revenue recovery to offset increased service demand. Consequently, construction-related emergencies at the project site could draw down limited county fire and EMS resources, resulting in delayed response to other emergencies throughout the region.

While the applicant would implement standard construction safety measures that include fire prevention plans, equipment maintenance, and worker safety training, these actions would not reduce the fundamental issue of extended response times or limited on-site firefighting capacity, mainly associated with the transportation, delivery, and installation of the BESS units. Without mitigation, the project would exacerbate existing service deficiencies and could result in a potentially significant impact on fire protection and emergency response capabilities during construction.

Implementation of COC **WORKER SAFETY-10** (see **Section 4.4, Worker Safety and Fire Protection**), required prior to the start of site mobilization, is aimed at funding additional firefighter staffing at Station 53, contributing toward reopening Station 52 in Harvard (located 30 miles south of the site at 39059 Kathy Lane, Harvard), and providing on-site firefighting equipment and water storage during active construction would ensure that adequate emergency response capacity is available during construction. If construction were to commence prior to execution of a funding agreement or an arbiter's decision issued later than 30 days before site mobilization, equivalent funding would be paid to SBCFPD retroactively to the start of construction. With implementation of these measures, impacts would be reduced to a less-than-significant level.

The Marketplace and Adelanto substations are currently being served by fire protection services and the installation of the equipment to update protection settings would likely pose little impact on fire services.

Operation

Less Than Significant with Mitigation Incorporated. Operation of the project would require only limited and periodic on-site activity and therefore would not substantially affect service ratios or necessitate additional housing or infrastructure due to in-migration. However, the permanent presence of high-voltage solar infrastructure and BESS would introduce new fire, explosion, and hazardous materials risks in an area already characterized by limited emergency response capacity. The remote location extended response times, and lack of specialized resources increase the potential for strain on existing fire protection and emergency services. Without mitigation, these conditions could significantly affect regional emergency response capability and increase risk to

workers and nearby communities. Implementation of measures to fund additional training, staffing, and equipment, along with reopening and staffing a nearby fire station, would offset the project's incremental service demand and ensure consistency with applicable county policies.

The project would require a small number of employees visiting the site (up to 40 employees per year) for routine inspections and maintenance, and thus it is unlikely to affect service ratios as a result of in-migration from the project's operation. The operations workers are unlikely to relocate closer to the project site, and even if all 40 workers relocated, it would not create an increase in the need for fire protection services or an effect on service ratios.

Given the small number of operational employees, it is also very unlikely that new or physically altered fire facilities would be necessary to cover any relocated workers. The few potentially relocated workers would be within the range of the projected populations for the county.

Operation of the proposed solar and BESS facility would result in a permanent increase in demand for fire protection and EMS in a region that is already resource deficient. The SBCFPD has identified that the project would introduce new fire, explosion, and hazardous materials risks associated with high-voltage solar infrastructure and lithium-ion BESS technologies. These systems present unique hazards including thermal runaway, toxic gas release, and the potential for deflagration. Although the Tesla Megapack 2XL (or equivalent) units proposed for the project incorporate passive explosion control and early ignition venting systems to prevent uncontrolled deflagration, these features do not eliminate the need for specialized emergency response training, equipment, and resources.

SBCFPD has further indicated that current regional capabilities are insufficient to manage complex incidents at the project site. Station 53 lacks dedicated HazMat or Technical Rescue resources, and specialized units are located 90 to 120 minutes away in Victorville (closest chief officer), Hesperia (closest Technical Rescue team with additional support from Fontana and Lake Arrowhead), and Spring Valley Lake (HazMat). A single BESS or solar-related fire could exceed the capabilities of the first-due station within minutes, requiring mutual aid from distant jurisdictions. However, given the project's remote location, timely mutual aid responses are unlikely and often infeasible.

Even if full staffing were achieved at existing fire stations, the physical infrastructure in the region would remain inadequate. SBCFPD has identified the reopening and staffing of Station 52 in Harvard as critical for providing secondary coverage to the project area. In the absence of new funding or mitigation, the project would substantially degrade fire response capability, increase response times for other emergencies, and expose workers and the public to elevated fire and safety risks.

Without additional investment in fire protection infrastructure, specialized training, and staffing, the project would have a significant impact on the provision of fire protection, hazardous materials, and emergency medical services. Therefore, resource allocation would be required to reduce the project's burden on the local fire protection services in the area. Because the facility is on federal land, staff confirmed the project would be subject to possessory-interest (PI) tax assessment after construction (CEC 2025aa). PI tax is appraised by the County Assessor (e.g., cost-less-depreciation and/or income approach), and the resulting taxable value is subject to the one percent general levy, which is apportioned by Assembly Bill 8 (AB-8) factors (CABOE 2025). For the Tax Rate Area (TRA) 55003 (area surrounding and including the project site), 3.714756 percent of the one percent levy is allocated to SBCFPD, yielding an estimated annual fire-share [Assessed Value × 0.01 levy × 0.03714756 = funds provided to the SBCFPD]. Revenues typically begin after enrollment of the first secured roll following completion and may lag the onset of operations, creating a near-term coverage gap. In addition, any special taxes/assessments (e.g., service zones/Community Facilities Districts [CFDs]) are outside the one percent levy and would be additive, if applicable (LAO 2012). According to the County Assessor, solar and energy storage projects are exempt from the PI tax; however, if at any point power is drawn from the grid to be stored on-site for any period of time, the exemption is voided, and the project would be subject to paying PI tax (CEC 2025aa). However, this project proposes to use the solar PV field to power the BESS systems, and therefore, would not be subject to PI taxes.

To avoid a temporary shortfall in coverage and ensure BESS-specific readiness, COC **WORKER SAFETY-10** requires the project owner to provide fair-share funding and coordinated implementation with the San Bernardino County Fire Protection District, thereby reducing operational impacts on fire protection services. Additionally, reopening and staffing Fire Station 52 implements the Countywide Plan Policy PP-3.1 by ensuring that the required number and distribution of fire stations, staffed equipment, and trained personnel are in place to effectively respond to emergencies associated with the project. It satisfies Policy PP-3.6 by ensuring that the facility is operational in conjunction with the project's development rather than after service degradation occurs. It aligns with Policy PP-3.7 by promoting fire-safe site and building design, access, and defensible area standards for high-hazard zones. Thus, without the imposition of COC **WORKER SAFETY-10**, impacts on local fire protection services during operations would be significant. However, with implantation of COC **WORKER SAFETY-10**, project impacts would be reduced to a less-than-significant level.

Operation impact analysis for the new utility switchyard is discussed above. Operation of the new protection equipment at the Marketplace and Adelanto substations would not change from current operational practices.

ii. Police Protection?

Construction

Less Than Significant Impact. Project construction would not generate population growth that increases demand for police/sheriff's services. While some construction workers may temporarily relocate, this would not affect service ratios or necessitate new or expanded police/sheriff's facilities.

The project could potentially cause a relatively small, incremental increase in police/sheriff's protection services due to security issues during construction. However, it is not expected to be an increase that would require new or expanded police/sheriff's protection facilities to maintain acceptable service ratios, response times or other performance objectives for protection services. As there would be no need for new or physically altered police protection facilities, a less than significant impact would result from construction.

Operation

Less Than Significant Impact. The applicant stated that all project components would be surrounded by warning signage, perimeter security fencing, and perimeter security cameras. Security fencing would be installed surrounding each individual solar array field and extend to include the substation and BESS area. The security fencing would be an eight-foot-high chain-link fence with an additional three-strand barbed wire on top. Additionally, lighting would be provided at the Rasor Road site entrance, operation and maintenance building, substation, and switchyard. Exterior security lighting would be installed to provide safe access to project facilities as well as visual surveillance. Some portable lighting may be required for essential nighttime maintenance activities. All lighting would be kept to the minimum required for safety and security; sensors, motion detectors, and switches would be used to keep lighting turned off when not required (RE 2025ii).

Police services to the project site would be sourced from either the Baker area, or the City of Barstow. As mentioned previously, response times to the site are anticipated to take approximately 10 minutes, if an officer is on duty in the area of Baker and available. If not, officers would come from Barstow and could take up to 1.5 hours to reach the site. Minor theft in the area is expected to increase as a result of the equipment installed on-site, based on historical incidents occurring at similar facilities in the area. Additionally, any fire incident on-site would require sheriff personnel, and they are typically the first to arrive for incidents in the area of the project site (CEC 2025cc).

Given the small number of operational employees, it is unlikely that new or physically altered police/sheriff's facilities would be necessary as the project would not affect service ratios. If any workers were to relocate closer to the project site, it would be within the range of the projected population growth for the county. There would be no impact.

iii. Schools?

Construction

Less Than Significant Impact. The project would be located within the Baker Valley Unified School District. Based on the number and proximity of the available workforce for the project, construction workers from the surrounding cities and counties are not likely to temporarily relocate closer to the project site. Based on staff's experience, construction workers who seek lodging closer to the project site do not bring their families with them.

Furthermore, given the short duration of time required for construction, and the short duration of time individual trades are needed for the various project phases, it is anticipated that very few (if any) workers would relocate their families to the Baker and Barstow areas. This impact would be less than significant.

Operation

No Impact. Based on the proximity of the small number of operational employees and their expected availability, operation workers from neighboring cities are not likely to permanently relocate to the project site. However, if some or all of the 40 workers were to permanently relocate closer to the project, it would not increase the need for schools or have an effect on service ratios to the extent that new or physically altered school facilities would be necessary.

Additionally, in accordance with Section 65995 of the California Government Code, and Section 17620 of the Education Code, because the project is located within the Baker Valley Unified School District (BVUSD) boundary the project would be required to pay development fees to offset any project impacts to local schools. The project site has a chargeable floor area of 12,400 square feet[6] (RE 2025k), which would result in a school impact fee of $9,672 (at $0.78/square foot), to be paid to the BVUSD as required by COC **SOCIO-1**. Therefore, impacts associated with an influx of new residents to the area because of the SMSP would be minimal and would not increase the need for school facilities or have an effect on service ratios to the extent that new or physically altered school facilities would be necessary. As no new physically or altered school facilities would be needed, no impact would result from operation of the SMSP and associated facilities.

iv. Parks

Construction

No Impact. Based on the proximity of available construction workforce to the project, few (if any) workers would temporarily relocate closer to the project site due to the short construction duration. Based on staff's experience, workers who may temporarily relocate closer to the project usually return to their primary residence during the

6 One building would be 2,400 square feet, and the other two buildings would each be 4,950 square feet in area.

weekends. Temporary construction workers may visit park facilities before, during, or after a workday, but this would not result in many people visiting these facilities. Additionally, this would be a short-term use that would cease at the end of the project's construction period. It is unlikely that there would be an increase in the usage of, or demand for park facilities, to maintain acceptable service ratios or other performance objectives. Through implementation of APM TRAN-2 (Recreationalist Access), Rasor Road would remain open to public access along the southern boundary of the project site, with temporary signage used to direct recreational users to alternate routes and to identify temporary closures, as necessary (RE 2024s). Additionally, through APM REC-1, the applicant would update and provide Travel Management Area maps to identify open and closed routes and OHV areas for posting by the BLM whenever project activities result in changes to travel access (RE 2024b). The applicant's measures have been incorporated into staff's proposed Condition of Certification **LAND-1**. As there would be no need for new or physically altered park facilities, no impact would result from construction.

Operation

No Impact. The project would create up to 40 part-time positions for operational workers. Therefore, it would not generate substantial population growth in the project area that would result in the need for additional park facilities for new residents. Because of the availability of an existing workforce throughout San Bernardino County, the project's small number of operational employees and infrequent time on-site, would likely reside within commuting distance of the project site and would not need to relocate closer to the project. These employees would continue to be served by existing park facilities in their local communities, and project operations would not require new park facilities. If some or all of the operations workers were to permanently relocate closer to the project, it is unlikely that there would be an increase on the usage of, or demand for, parks to maintain acceptable service ratios or other performance objectives to the extent that new or physically altered parks would be necessary. As there would be no new or physically altered park facilities, no impact would result from operation.

v. Other public facilities

Construction

No Impact. Based on the proximity of available construction workforce to the project, few workers would temporarily relocate closer to the project site. However, if some construction workers were to temporarily relocate, they are not likely to visit public facilities such as libraries while working in the project area. Based on staff's experience, these workers typically return to their primary residence over the weekend. Temporary construction workers are unlikely to visit public libraries in the project vicinity before, during, or after a workday. If some of the temporary construction workers were to visit the public libraries, this would not result in many people visiting these facilities and would be a short-term use that would cease at the end of the project's construction

period. It is unlikely that there would be an increase in the usage of, or demand for, other public facilities.

As no new or physically altered public facilities such as libraries would be required, no impact would result from construction.

Impacts on Utilities

Less Than Significant Impact. Construction of the SMSP would not make significant adverse demands on local water, sanitary sewer, electricity, natural gas, or telecommunications facilities. There are no natural gas or sanitary sewer hookups proposed for construction of the project. The project in and of itself is an improvement project for the grid, to supply the grid with clean, renewable solar energy and stored energy for grid resilience. Water used during project construction for dust suppression is estimated to be 319 acre-feet (AF). Operational water demand for the 40-year lifespan of the project would be approximately 5.6 acre-feet per year (AFY, or 224 AF total.) Water for the project would be sourced from up to five newly constructed on-site groundwater wells located within the Soda Mountain Subbasin of the Soda Lake Valley Groundwater Basin or, alternatively, from an existing private off-site groundwater well. If the off-site supply is used, water would be transported by truck from the off-site well and stored on-site in water storage tanks to support project operations. The Silver Lake Valley Groundwater Basin Water Supply Report concludes that, based on an analysis of regional hydrogeology, an evaluation of pumping impacts, and water quality data, sufficient water resources are available to meet the projected water demands of the project. Thus, the impact to the water supply would be less than significant (RE 2025ddd).

During the construction phase, sanitary water supply would not be required as the wastewater generated from the use of construction phase portable toilets would be sourced and serviced from a vendor. The vendor would dispose of waste at a wastewater treatment facility that has adequate capacity. The Barstow Wastewater Treatment Plant, located approximately 47.0 miles southwest of the site at 2200 Riverside Drive in Barstow, is the closest wastewater treatment facility to the project site. Given the number of workers and temporary duration of the construction period, the impacts on the local sanitary sewer system (from emptying the "porta-potties") would be less than significant.

Operation

No Impact. The project would not generate substantial population growth in the project area that would result in the need for additional public facilities or services for new residents. The project's small operations workforce is anticipated to be drawn from San Bernardino County and is not expected to relocate closer to the project site. However, if some or even all 40 operations workers were to relocate permanently, it would not create an increase in the usage of, or demand for, the surrounding libraries or other

public facilities. As no new or physically altered public facilities such as libraries would be required, no impact would result from operations.

Impacts on Utilities

The project would not generate substantial population growth in the project area that would result in significant adverse demands on utilities for new residents. The project's small operation workforce is anticipated to be drawn from the Riverside—San Bernardino—Ontario MSA and is not expected to relocate closer to the project site. However, if some or even all 40 operations workers were to relocate permanently, it would be unlikely that there would be a significant increase in the usage of, or demand on, the electricity grid, natural gas, telecommunications, or water resources.

As mentioned previously, the project in and of itself is an upgrade to the existing SCE electrical grid. The project proposes to install a new solar array and BESS on-site, along with an accompanying switchyard, substation, and associated equipment. The BESS would store power from the solar array and would discharge during times when the grid's renewable sources are in states of lower production. The BESS would also be a source of available electricity during Public Safety Power Shutoffs (PSPSs). The project would connect to existing telecommunications facilities located in the project area. There is no proposed natural gas required for project operations, nor any natural gas infrastructure included in the project.

Portable sanitary facilities are proposed during construction. No sanitary sewer hookups are proposed or required for the remote operation of the solar facility and BESS. Water during the operations of the solar facility and BESS would be required for dust control, panel washing, and fire suppression to be supplied by an existing private groundwater well in Baker, California. Additionally, three 10,000-gallon water tanks would be located throughout the site near the operation and maintenance building, BESS, and adjacent to the solar arrays for fire suppression water to comply with National Fire Protection Association (NFPA) standards (RE 2025k). As addressed above, and further in **Section 5.16, Water Resources**, the project's proposed water requirements for operations would not require new off-site water, wastewater, or sewer infrastructure. Project staff would only visit the site periodically for maintenance, equipment operation, or PV panel washing (RE 2025k, RE 2025y). No permanent sanitary facilities are planned for the project. As no new or physically altered utilities would be required, no impact on utilities would result from operations.

d. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Construction

No Impact. Construction of the proposed SMSP is planned to take a total of 18 months and require an average of 200 workers, with a peak of 300 workers. It is assumed that

most, or all of these workers would be sourced from the local area, with some coming from the Victor Valley, the greater region of San Bernardino County, and possibly from other areas within the Riverside—San Bernardino—Ontario MSA. Some workers may choose to temporarily relocate closer to the project site for the duration of the temporary construction period. However, construction workers do not visit parks and recreational facilities while working and likely do not visit these facilities often outside of working hours. However, if some workers choose to use these facilities, it would be on a very minimal basis and would cease upon completion of the construction period. Thus, the few project workers, when compared to the population in the area, would not increase use of existing facilities beyond their planned limits and would not cause a substantial deterioration of parks or other recreational facilities. Therefore, the project would have no impact on the surrounding parks and recreational facilities.

Operation

No Impact. The project is expected to employ a total of approximately 25 to 40 operational workers, many drawn from the local and regional area of San Bernardino County. If some workers were to relocate closer to the project site, their use of existing parks or recreational facilities would be minimal and would not be increased to the extent that substantial physical deterioration of the park or facility would result. Therefore, there would be no impact to surrounding parks and recreational facilities.

e. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

Construction

Less That Significant Impact. The SMSP does not include the construction of recreational facilities, nor would it require the construction or expansion of recreational facilities. Project construction would last a total of 18 months and require an average of 200 workers per month, with a peak of 300 workers anticipated. The majority of the workforce would be sourced locally, or from within the greater Riverside—San Bernardino—Ontario MSA area. Some workers may choose to temporarily relocate closer to the project site during the week. Based on Staff's experience, construction workers do not typically visit recreational facilities while working. If some workers were to use nearby recreational facilities, such usage would be temporary and would end with completion of the solar array and BESS construction period. The project would not require the construction or expansion of recreational facilities. The project proposes the widening of a segment of Rasor Road, which is a dirt road, to 26 feet. Rasor Road provides access to the Rasor OHV Open Area. The road widening could temporarily disrupt access to the recreational area; however, with the implementation of APM TRAN-2 (Recreationalist Access), Rasor Road would remain open to public access along the southern boundary of the project site, with temporary signage used to direct recreational users to alternate routes and to identify temporary closures, as necessary (RE 2024s). Additionally, through APM REC-1, the applicant would update and provide

Travel Management Area maps to identify open and closed routes and OHV areas for posting by the BLM whenever project activities result in changes to travel access (RE 2024b). The applicant's measures have been incorporated into staff's proposed Condition of Certification **LAND-1**. The road widening does not require the construction or expansion of recreational facilities. Therefore, the project would have a less than significant impact.

Operation

No Impact. Operation of the SMSP would require approximately 25 to 40 part-time operational workers, sourced mainly from the Riverside—San Bernardino—Ontario MSA area. If some workers were to relocate closer to the project site, they would simply be replacing past population levels, therefore they would not be in numbers that would require construction or expansion of recreational facilities to accommodate the project. Therefore, the project would have no impact on surrounding parks and recreational facilities and would not require the construction or expansion of recreational facilities.

5.11.2.3 Cumulative Impacts

Less Than Significant Impact with Mitigation Incorporated. The proposed project would have a less than significant contribution to existing cumulative effects with mitigation incorporated, as described in the Public Services section below. Cumulative socio-economic effects could occur when more than one project has an overlapping construc-tion schedule that creates a demand for workers that cannot be met by the local labor force, resulting in an influx of non-local workers and their dependents. Operational cumulative socioeconomics impacts could occur when the development of multiple projects significantly impacts the population of an area, resulting in a housing shortage, change in local employment conditions, and an increased demand on public services or recreational facilities.

The population and housing effects would not be significant and have been accounted for in various local and regional plans and projections. However, because of the number of BESS projects (existing and proposed) in the region, housing impacts are comparatively minor relative to impacts to Public Services, which is the dominant cumulative impact issue.

Geographic Extent

The geographic scope for the analysis of cumulative impacts on Socioeconomics is San Bernardino County. This is defined as the cumulative impact area because socioecon-omic factors such as public services are provided by local jurisdictions or districts, and available housing is located within San Bernardino County. Additionally, the local workforce is expected to come from within the Riverside—San Bernardino—Ontario MSA.

Cumulative

The project construction period is anticipated to commence in 2026 and finish commissioning 18 months later. Only those related projects under construction during that period would be considered for cumulative impacts of the construction population on housing and public services. All projects in **Appendix A, Table A-1** and **Figure A-1** are located within the geographic scope for Socioeconomic cumulative effects and thus are considered for co-location impacts.

Population

Past development and population growth within San Bernardino County have historically influenced regional demand for housing, labor, and public services. As development occurs and populations increase, corresponding expansions in housing stock, workforce participation, and public infrastructure typically follow. However, as discussed in **Section 5.11.1**, the unincorporated community of Baker has experienced a net population decline of approximately 94 residents since 2020, with no data indicating a reversal or projected growth trend in the foreseeable future. Barstow experienced a reduction of over 700 residents in the same time period, while Apple Valley's population reduced by nearly 700 over the past 5 years. At the county level, the total population grew at a CAGR of approximately 0.4 percent between 2015 and 2025, with forecasts suggesting this rate will continue through 2035, followed by a reduction to a slower CAGR of 0.2 percent through 2050, approximately the lifespan of the proposed project.

Labor

As discussed in **Section 5.11.1**, the construction employment trends have increased over the past several years and are expected to level off through the forecast period of 2026. Despite the county's overall unemployment rate of 7.5 percent in 2021, the county was expecting to employ an additional 1,300 construction workers in that year and was forecasted to employ an additional 300 in 2022. Construction and operation of the proposed solar array and BESS, in conjunction with the projects described in **Appendix A, Cumulative Impacts**, is not likely to result in the potential for impacts to the labor supply in the county. It is not expected that operation of the projects listed would substantially alter labor supply dynamics in San Bernardino County beyond those reflected in the SCAG regional population and employment forecasts (SCAG 2021; 2025), which incorporate long-term, regionwide growth assumptions for the High Desert and broader county. Accordingly, the construction projects described in **Appendix A** would not be expected to influence countywide population or labor trends in a cumulatively considerable manner.

Housing

As mentioned previously, most if not all of the construction workforce would be sourced locally from communities within a 90-minute drivetime from the project site, or possibly from the greater San Bernardino County area. If any construction workers were to seek temporary lodging closer to the project site, they would likely be few and, as addressed

in **Section 5.11.1** above, there is ample stock of temporary and permanent housing in the area. The minor increase in temporary housing requirements, if there were any, for the proposed project would not contribute to cumulative projects in the area that would also require temporary housing.

As indicated in **Table A-1**, construction of the Barstow International Gateway (BIG) and the Brightline West projects have the potential to occur around the same time as the proposed project. BIG does not appear to have a definitive starting date at this point, so it is unclear as to whether it would overlap with the proposed project. However, for the purpose of this analysis, it is assumed to overlap. Brightline West has already begun construction, with an opening date scheduled for 2029. Construction of the proposed project would require a temporary peak workforce of approximately 300. Based on staff's discussion with the local IBEW Labor Union, most construction workers are expected to come from the regional labor pool (e.g., San Bernardino and Riverside counties) and would commute to the site daily. While some workers could seek temporary lodging closer to the project, the Barstow area has a substantial supply of hotels, motels, and RV accommodations located along the I-15 and I-40 corridors that primarily serve long-haul travelers. These facilities can typically absorb short-term workforce demand without displacing existing residents or increasing pressure on the local housing stock.

If project construction overlaps with other major infrastructure projects in the region, such as BIG or Brightline West, the combined workforce could increase temporary lodging demand. However, the number of workers for the various trades would be different for each of the various projects, and their duration required for each trade, as part of the overall construction schedule would also differ, reducing the overlapping demand for temporary lodging. Plus, given the existing vacancy rates listed in **Table 5.11-3** and lodging inventory identified in **Table 5.11-5** above, this incremental lodging demand would not be expected to result in displacement of permanent residents or necessitate the construction of new housing. Therefore, the project's contribution to cumulative temporary housing impacts would not be cumulatively considerable.

The approximately 25 to 40 workers required for the few on-site trips during operations of the solar array and BESS would be sourced locally from San Bernardino County, although it is possible some workers may relocate closer to the project site. As indicated in **Table 5.11-3**, the community of Baker, Barstow, cities within a 90-minute drive from the project site, and San Bernardino County have a housing vacancy rate of 4.0 to 23.9 percent, with the county's vacancy rate at 8.7 percent and declining populations over the past 5 years for most of the cities in **Table 5.11-3**. There is a total of 65,956 vacant homes in San Bernardino County. If some operational workers relocated, the demand for housing would be less than significant and not contribute to a cumulatively considerable impact on the housing supply.

Public Services

The project is located in a portion of the Mojave Desert that has seen substantial utility-scale renewable development over the past decade. Several approved or proposed PV plus BESS facilities in the broader I-15/Baker–Barstow corridor, including the multi-phase Daggett Solar & BESS complex, Overnight Solar (with a 150-MW BESS), Desert Breeze Solar (with up to 2 GWh of storage), and the Equinox Energy Center near Mountain Pass, are reasonably foreseeable and may overlap in construction or operations with the proposed project. The principal cumulative concern for public services is the risk profile of lithium-ion BESS, which can entail prolonged response durations, specialized suppression tactics, and extended fire watch/wrap-up; thereby, increasing demand on fire protection and EMS in a geographically remote corridor with limited local resources and reliance on mutual aid. Separately, large non-BESS regional projects (e.g., Brightline West, and Barstow International Gateway [BIG]) contribute to overall fire/EMS workload during peak construction and operations, but do not share the same battery-specific hazard profile.

Individually, each facility contributes to the regional demand for fire suppression, hazardous materials response, and medical aid services. Collectively, these projects have created a condition in which SBCFPD and allied agencies (e.g., CalFire, BLM, California Highway Patrol [CHP], and SBCSD) must maintain extended response coverage over large areas with limited staffing, equipment, and water availability. The operational presence of lithium-ion and other advanced battery systems has increased the need for specialized training, mutual aid coordination, and thermal runaway containment resources. The July 24, 2024, BESS fire near Afton Canyon Road, cited by SBCFPD (CEC 2025u), demonstrates the cascading regional impacts such incidents can produce, including multi-day highway closures, diversion of firefighting resources, and secondary economic disruptions exceeding $120 million. Such events highlight the cumulative strain on emergency response capacity in the corridor.

The SMSP would incrementally contribute to this regional strain through both construction and operational phases. During construction, temporary increases in workforce population, equipment operation, and potential ignition sources (e.g., welding, heavy equipment use, or battery staging) would increase the need for emergency response availability. During operation, the presence of 300MW of lithium-ion energy storage and associated electrical infrastructure would require ongoing coordination with SBCFPD and other agencies to ensure safe operation and emergency preparedness. Although the project would implement fire prevention and safety measures such as COCs **WORKER SAFETY-1** through **WORKER SAFETY-4** (see **Section 4.4, Worker Safety and Fire Prevention**), these measures would primarily address project-specific risk rather than eliminate its incremental contribution to regional service demand.

Given the existing and projected expansion of large-scale renewable energy, energy storage, and infrastructure projects within the I-15 Corridor and eastern Mojave Desert,

the proposed project's incremental contribution to cumulative demand on fire protection and EMS resources could be cumulatively considerable in the absence of adequate regional planning and resource allocation. However, implementation of **WORKER SAFETY-10**, which provides a binding mechanism to establish and maintain fair-share funding agreements with the San Bernardino County Fire Protection District, together with the other identified measures and continued interagency coordination with SBCFPD, BLM, and CAL FIRE, would reduce the project's incremental effects to the maximum extent practicable and ensure consistency with regional emergency response planning efforts. Additionally, **WORKER SAFETY-10** advances Countywide Plan Policies PP-3.12 and PP-3.13 by using demand data, risk analysis, and periodic assessments to determine appropriate staffing and equipment levels, thereby reducing the project's incremental contribution to overall service demand and protecting countywide fire and EMS service capacity. With these measures in place, the project would not result in a cumulatively considerable contribution to cumulative impacts on fire protection or emergency medical services, and cumulative impacts would therefore be considered less than significant.

5.11.3 Project Consistency with Applicable Plans, Policies, and Regulations

Table 5.11-12 provides staff's determination of consistency with applicable local and state plans, policies, and regulations, including any proposed conditions of certification, where applicable, to ensure the project would comply with plans, policies, and regulations. The federal regulations related to socioeconomics are very general.

TABLE 5.11-12 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS

Applicable Plans, Policies, and Regulations	Consistency and Basis for Determination
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.	**Yes.** Condition of certification **SOCIO-1** would require the project owner to pay school impact fees to the Baker Valley Unified School District.
California Code Government Code, Sections 65995-65998	
Except for a fee, charge, dedication, or other requirement authorized under Section 17620 of the Education Code, state and local public agencies may not impose fees, charges, or other financial requirement to offset the cost for school facilities.	**Yes.** The proposed project would not trigger any state and local public agency fees, etc. to offset the cost for school facilities. Therefore, the project is in conformance.
Local	
Baker Valley Unified School District Board Policy	
The County of San Bernardino, in accordance with Section 65995 of the California Government Code, and as authorized under Section 17620 of the Education Code, levies developer fees on	**Yes. SOCIO-1** would require the project owner to pay school impact fees to the Baker Valley Unified School District.

TABLE 5.11-12 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS	
Applicable Plans, Policies, and Regulations	**Consistency and Basis for Determination**
residential, commercial, and industrial development for the purpose of financing the construction of school facilities.	
San Bernardino County Ordinance FPO 23-01 (Fire Code)	
International Fire Code as adopted into the 2022 California Fire Code (CFC) and San Bernardino County Code of Ordinances including the July 2024 amendment	**Yes. WORKER SAFETY-10** would require the project owner to prepare and implement an FPRCP that follows CFC Sec. 503, 507, Chapter 49, and Appendices B, C, and D.

5.11.4 Conclusions and Recommendations

As discussed above, the project would have a less than significant impact with the implementation of COCs **WORKER SAFETY-1** though **WORKER SAFETY 4** and **WORKER SAFETY-10** (**Section 4.4, Worker Safety and Fire Protection**) related to socioeconomics, and with the COC below, the project would be consistent with applicable plans, policies, and regulations. Staff does not propose any additional conditions of certification or recommend mitigation measures for socioeconomics.

5.11.5 Proposed Conditions of Certification

SOCIO-1 The project owner shall pay the current one-time statutory school facility development impact fee to the Baker Valley Unified School District as required by the district's adopted fee program implemented pursuant to Education Code Section 17620, and as outlined in the County of San Bernardino Land Use Services Building and Safety Division Information Bulletin and through Assembly Bill 2926.

Verification: At least 30 days prior to the start of construction, the project owner shall provide the compliance project manager (CPM) proof of payment of the development impact fees to the Baker Valley Unified School District.

5.11.6 Recommended Mitigation Measures

No mitigation measures are recommended for the non-jurisdictional project components for socioeconomics.

5.11.7 References

Advameg 2025 – Advameg, Inc. "FCC Registered Cell Phone and Antenna Towers in Baker, California. Accessed online at: https://www.city-data.com/towers/cell-Baker-California.html

BNSF 2025 – BNSF Railway Company. "Barstow International Gateway Project." Accessed online at: https://bnsfbig.com/

CABOE 2025. California State Board of Equalization (CABOE). California State Property Tax – An Overview. Available online at: https://boe.ca.gov/proptaxes/pdf/pub29.pdf

CA EDD 2025a – California Employment Development Department (CA EDD). Labor Market Information Division, 1990-2024 Industry Employment and Labor Force – by Annual Average, Riverside-San Bernardino-Ontario MSA, data last updated May 19, 2025. March 2024 Benchmark. Accessed online at: https://labormarketinfo.edd.ca.gov/data/employment-by-industry.html

CA EDD 2025b – California Employment Development Department (CA EDD). Labor Market Information Division, Industry Employment and Labor Force – Current Month (April), Riverside-San Bernardino-Ontario MSA, data last updated June 20, 2025. March 2024 Benchmark. Accessed online at: https://labormarketinfo.edd.ca.gov/data/employment-by-industry.html

CA EDD 2025c – California Employment Development Department (CA EDD). Unemployment Rate and Labor Force. Accessed online at: https://labormarketinfo.edd.ca.gov/data/unemployment-and-labor-force.html

CA EDD 2025d – California Employment Development Department (CA EDD). 2022-2032 Occupational Employment Projections Riverside-San Bernardino-Ontario Metropolitan Statistical Area. Accessed online at: https://labormarketinfo.edd.ca.gov/data/employment-projections.html

CA DOE 2025a – California Department of Education (CA DOE). Enrollment by Year – San Bernardino County School Districts. Accessed online at: https://dq.cde.ca.gov/dataquest/page2.asp?level=District&subject=Enrollment&submit1=Submit

CA DOE 2024b – California Department of Education (CA DOE). Enrollment Multi-Year Summary by Grade – Baker Valley School District. Accessed online at: https://dq.cde.ca.gov/dataquest/dqcensus/EnrGrdYears.aspx?cds=3673858&agglevel=district&year=2024-25

CA DOF 2025a – California Department of Finance (CA DOF). E-4 Population Estimates for Cities, Counties, and the State, 2011-2020 with 2010 Census Benchmark – May 2021. Accessed online at: https://dof.ca.gov/forecasting/demographics/estimates/e-4-population-estimates-for-cities-counties-and-the-state-2011-2020-with-2010-and-2020-census-benchmark-new/

CA DOF 2025b – California Department of Finance (CA DOF). E-5 Population and Housing Estimates for Cities, Counties and the State — 2020-2025, May 2025. Accessed online at: https://dof.ca.gov/forecasting/demographics/estimates/e-5-population-and-housing-estimates-for-cities-counties-and-the-state-2020-2025/

CA DOF 2025c – California Department of Finance (CA DOF). Demographic Research Unit. Report P-2A: Total Population Projections, California Counties, 2020-2070 (Baseline 2023 Population Projections; Vintage 2025 Release). Sacramento: California. April 2025. Accessed online at: https://dof.ca.gov/serp/?q=P-2A

CA DOF 2025d – California Department of Finance (CA DOF). E-8 Report Population and Housing Estimates for Cities, Counties, and the State, April 1, 2010-April 1, 2020, with January Estimates. May 2025. Accessed online at: https://dof.ca.gov/forecasting/demographics/estimates/estimates-e8-2010-2020/

Caltrans 2019 – California Department of Transportation (CA DOT). "California Roster 2019." CA Business, Transportation and Housing Agency. Accessed online at: https://admin.cdn.sos.ca.gov/ca-roster/2019/02k-unincorp.pdf

Caltrans 2023 – California Department of Transportation (Caltrans). San Bernardino County Economic Forecast. Accessed online at: https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/new-state-planning/transportation-economics/socioeconomic-forecasts/2021/2021-pdf/san-bernardino-profile-a11y.pdf

Census Reporter 2025a. Victorville—Hesperia—Apple Valley, CA Urban Area. Accessed online at: https://censusreporter.org/profiles/40000US90541-victorville-hesperia-apple-valley-ca-urban-area/

Census Reporter 2025b. Baker California. "Housing." Accessed online at: https://censusreporter.org/profiles/16000US0603512-baker-ca/

CDC 2023 – Center for Disease Control and Prevention (CDC). "End of the Federal COVID-19 Public Health Emergency (PHE) Declaration." Accessed online at: https://archive.cdc.gov/www_cdc_gov/coronavirus/2019-ncov/your-health/end-of-phe.html

CEC 2025u – California Energy Commission (TN 266469). Comments from San Bernardino County Fire Protection District. Docketed October 10, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

CEC 2025y – California Energy Commission (TN 267971). Report of Conversation with San Bernardino County Fire Protection District - Potential impacts on fire department, dated December 18, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

CEC 2025aa – California Energy Commission (TN 268019). Report of Conversation with Kevin Trax San Bernardino County Assessor, dated December 22, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

CEC 2025bb – California Energy Commission (TN 268020). Report of Conversation with M Mendibles, Barstow Community Hospital, dated December 22, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

CEC 2025cc – California Energy Commission (TN 268021). Report of Conversation with Sergeant A Vanderberg, San Bernardino County Sheriff Department, dated

December 22, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

CEC 2025dd – California Energy Commission (TN 268022). Report of Conversation with M Vasquez International Brotherhood of Electrical Workers (IBEW) Unit 477, dated December 22, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

CFC 2022. California Fire Code (CFC). 2022 California Fire Code, Title 24, Part 9. International Code Council. Available online: https://codes.iccsafe.org/s/CAFC2022P1/chapter-5-fire-service-features/CAFC2022P1-Pt03-Ch05-Sec503

City of Barstow 2024 – City of Barstow. "Notice of Preparation (NOP) for Draft Environmental Impact Report and Notice of a Public Scoping Meeting." Accessed online at: https://www.barstowca.org/home/showpublisheddocument/8491/638434192375770000

City of Hesperia 2023 – City of Hesperia. *2021-2029 Housing Element.* Revised April 2023; adopted May 2, 2023. Accessed online at: https://www.cityofhesperia.us/DocumentCenter/View/18151/Hesperia-Housing-Element_Adoption--3_24_23?bidId=

City of Victorville 2022 – City of Victorville. Final Draft 2021–2029 Housing Element. Adopted January 2022. Accessed online at: https://www.victorvilleca.gov/home/showpublisheddocument/7726/637776637502000000

FOX11 2025 – FOX11 Los Angeles. "LA fires could cost more than $250 billion, estimate says." Published January 14, 2025. Accessed online at: https://www.foxla.com/news/california-wildfires-cost-estimate

LAO 2012. Legislative Analyst's Office (LAO). Understanding California's Property Taxes. Available online at: https://lao.ca.gov/reports/2012/tax/property-tax-primer-112912.aspx

NPS n.d. – US Department of Interior National Park Services (NPS). Park Tiles Map. Available online at: https://www.nps.gov/moja/planyourvisit/maps.htm

Rapino, Melanie A. Ph.D. and Alison K. Fields, Ph.D. 2012 – US Census Bureau. "Mega Commuting in the U.S. Accessed online at: https://www.census.gov/content/dam/Census/library/working-papers/2013/demo/SEHSD-WP2013-03.pdf.v

RE 2025k – Resolution Environmental (TN 261595). Chapter 2_Project Description, dated February 7, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025y – Resolution Environmental (TN 261668). CEC Data Request Response Set #2, dated February 10, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025ddd – Resolution Environmental (TN 265183). Onsite Water Supply - Revised July 31, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025ii – Resolution Environmental (TN 264913). Updated Project Description and Responses to REV 1 DR BIO-2 and REV 1 DR ES-1, dated July 18, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2024b – Resolution Environmental (TN 257901). Section 3-16 Recreation, dated July 23, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2024s – Resolution Environmental (TN 257918). Section 3-17 Transportation, dated July 23, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2024ddd – Resolution Environmental (TN 258506). Non-confidential Appendix P Socioeconomic Impacts, dated August 15, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03.

San Bernardino County 2019. *San Bernardino Countywide Plan Draft PEIR – Chapter 5.15 Recreation*. State Clearinghouse No. 2017101033. Accessed online at: https://countywideplan.sbcounty.gov/wp-content/uploads/sites/125/2021/01/Ch_05-15-REC.pdf

San Bernardino County 2020a. 2021-2022 Adopted Budget. Accessed online at: https://wp.sbcounty.gov/cao-finance/wp-content/uploads/sites/38/2021/12/2021-22-Adopted-Budget-Final-web-version.pdf

San Bernardino County 2020b. "Land Use Services Building and Safety Division Information Bulletin." Updated July 20, 2020. Accessed online at: https://www.sbcounty.gov/Uploads/LUS/BandS/Handouts/IB-0013.pdf

San Bernardino County 2020c. San Bernardino Countywide Plan – Personal and Property Protection Element. Accessed online at: https://countywideplan.sbcounty.gov/policy-plan/personal-property-protection/

San Bernardino County 2021. 2022-2023 Adopted Budget. Accessed online at: https://wp.sbcounty.gov/cao-finance/wp-content/uploads/sites/38/2022/12/2022-23-Adopted-Budget-Book-San-Bernardino-County.pdf

San Bernardino County 2022a. 2021–2029 Housing Element and Hazards Element Update Addendum. July 2022. Accessed online at: https://www.sbcounty.gov/uploads/LUS/PC/SB_HE_Addendum_July2022_Update_ToCounty.pdf

San Bernardino County 2022b. 2023-2024 Adopted Budget. Accessed online at: https://wp.sbcounty.gov/cao-finance/wp-content/uploads/sites/38/2023/12/2023-24-Adopted-Budget.pdf

San Bernardino County 2023. 2024-2025 Adopted Budget. Accessed online at: https://main.sbcounty.gov/wp-content/uploads/sites/80/2024/12/2024-25-Adopted-Budget.pdf

San Bernardino County 2025a. "Community Indicators." Accessed online at: https://indicators.sbcounty.gov/county-profile/#:~:text=20%2C105,Acres%20of%20recreational%20land

San Bernardino County 2025b. "Calico Ghost Town Campground Reservations." Available online at: https://sbcountyparks.com/reservation/camping/index.asp

SBCFPD 2025a – San Bernardino County Fire Protection District (SBCFPD). "San Bernardino County Fire Facts (FY 2024-25)." Accessed online at: https://sbcfire.org/statistics/

SBCFPD 2025b – San Bernardino County Fire Protection District (SBCFPD). "San Bernardino County Fire Statistics – Fiscal Year 2024-2025 Division 5 (North Desert) Statistics." Accessed online at: https://sbcfire.org/statistics/

SBCSS 2025a – San Bernardino County School Superintendent (SBCSS). "2022-23 San Bernardino County School District Boundaries Label on Map: Sq Miles." ArgGIS. Accessed online at: https://www.arcgis.com/home/item.html?id=4b27f3c3d08249fc8947c830bd36ae77

SBCSD 2023 – San Bernardino County Sheriff Department (SBCSD). 2023 Annual Report. Accessed online at: https://wp.sbcounty.gov/sheriff/wp-content/uploads/sites/17/2023-Annual-Crime-Report.pdf

SBCSS 2025b – San Bernardino County School Superintendent (SBCSS). "About Us." Accessed online at: https://www.sbcss.net/about-sbcss

SCAG 2021 – Southern California Association of Governments (SCAG). SCAG 6th Cycle Final RHNA Plan. Modified July 2021. Accessed online at: https://scag.ca.gov/sites/main/files/file-attachments/6th_cycle_final_rhna_allocation_plan_070121.pdf?1646938785

SCAG 2025 – Southern California Association of Governments (SCAG). Final SCAG 2024 RTP/SCS Connect SoCal 2024 Growth Projections. Accessed online at: https://scag.ca.gov/local-data-exchange

SCE 2025 – Southern California Edison (SCE). "About Us." Accessed online at: https://www.sce.com/about-us

SoCalGas 2025 – Southern California Gas Company. About Us. Accessed online at: https://www.socalgas.com/about-us/company-profile

Town of Apple Valley 2022 – Town of Apple Valley. "Adopted Housing Element Update." Adopted March 8, 2022, Revised November 21, 2022. Accessed online at: https://www.applevalley.org/home/showpublisheddocument/32796/638052460500930000

US BLM n.d. – U.S. Department of Interior Bureau of Land Management (BLM). Rasor Off-Highway Vehicle Area. Accessed online at: https://www.blm.gov/sites/blm.gov/files/documents/files/Rasor_Mobile_Final.pdf

World Population Review 2025a – World Population Review. "Baker, California Population 2025." Accessed online at: https://worldpopulationreview.com/us-cities/california/baker

World Population Review 2025b. Average Household Size by State 2025. Accessed online at: https://worldpopulationreview.com/state-rankings/average-household-size-by-state

5.12 Solid Waste Management

This section analyzes the jurisdictional and non-jurisdictional project components. The jurisdictional project components include the construction and operation of the solar photovoltaic (PV) facility, battery energy storage system (BESS), project substation and generation intertie line (gen-tie) and construction of the utility switchyard and section of transmission loop in lines that would connect to the existing Mead-Adelanto Transmission Line. The non-jurisdictional project components include the construction and operation of the protection setting upgrades to the Marketplace and Adelanto substations and operation of the utility switchyard and section of transmission loop in lines.

5.12.1 Environmental Setting

The project would be located in unincorporated eastern San Bernardino County, approximately 7 miles southwest of Baker, California. The project would occupy approximately 2,670 acres of land administered by the U.S. Department of Interior, Bureau of Land Management (BLM). According to San Bernardino County online zoning maps, the project site is zoned as resource conservation (RC) (San Bernardino County 2025a).

Solid Waste Generation and Disposal

Nonhazardous solid waste would be recycled or disposed at a Class III facility. Third party vendors would be contracted by the project to manage the handling and disposal of solid waste. The applicant identified three Class III landfills within 100 miles of the project site that would accept solid waste generated from the project (RE 2024yyy):

- Barstow Sanitary Landfill (32553 Barstow Road, Barstow, CA) Class III Facility (SWIS No. 36-AA-0046) – Permitted through 2071, remaining capacity of 68,361,526 cubic yards (CY) as of May 1, 2024, daily throughput 1,500 tons (CalRecycle 2025).
- Victorville Sanitary Landfill (18600 Stoddard Wells Road, Victorville, CA) Class III Facility (SWIS No. 36-AA-0045) – Permitted through 2047, remaining capacity of 79,400,000 CY as of March 31, 2020, daily throughput 3,000 tons (CalRecycle 2025).
- Mid-Valley Sanitary Landfill 2390 N. Alder Avenue, Rialto, CA) Class III Facility (SWIS No. 36-AA-0055) – Permitted through 2045, remaining capacity of 54,219,377 CY as of December 31, 2023, daily throughput 7,500 tons (CalRecycle 2025).

Regulatory

Federal

Resource Conservation and Recovery Act (RCRA), 40 CFR, Subtitle D. RCRA Subtitle D regulates the disposal of non-hazardous waste. It includes guidelines for the

storage and collection of residential, commercial and institutional solid waste (Part 243), and source separation for material recovery (Part 246) design of municipal solid waste facilities (Part 258).

State

Integrated Waste Management Act (PRC Section § 40000 et seq.). The Integrated Waste Management Act of 1989 established the California Integrated Waste Management Board (CIWMB), revamped the government codes regulating solid waste management, and required cities and counties to divert at least 50 percent of solid waste through source reduction, recycling, and composting. To comply with the Integrated Waste Management Act, counties must adopt regulations and policies to fulfill the requirements of the Act.

Mandatory Commercial Recycling Law (PRC Section §§ 42649-42649.7). Effective May 7, 2012, AB 341 set a statewide goal of reducing solid waste by 75 percent by 2020. It also established mandatory recycling programs for solid waste generated by businesses, public entities, and multi-family dwellings. In addition, the Governor signed SB 1018 on July 27, 2012, which required any business generating over 4 CY of solid waste per week to arrange for recycling services.

Short-Lived Climate Pollutant Reduction Law (PRC Section § 42652-42652.7). The Short-Lived Climate Pollutant Reduction Law established statewide targets to reduce disposal of organic waste to 50 percent of 2014 levels by 2020 and to 75 percent of 2014 levels by 2025 and instructed the California Department of Resources Recycling and Recovery to adopt regulations to achieve these goals.

California Energy Efficiency Standards for Residential and Nonresidential Buildings – Green Building Code (2011), CCR Title 24 Update (2019). The California Green Buildings Standards Code applies to the planning, design, operation, construction, use, and occupancy of newly constructed buildings and requires energy and water-efficient indoor infrastructure. The related waste management plan is required to allow for the diversion of 50 percent of the generated waste away from the landfill.

Local

San Bernardino County, East County Area Plan. The following goals and policies apply to solid waste management issues related to the project (San Bernardino County 2022):

- **Goal IU-4 Solid Waste** - Adequate regional landfill capacity that provides for the safe disposal of solid waste, efficient waste diversion, and collection for unincorporated areas.
    - **Policy IU-4.1 Landfill capacity** - Maintain a minimum ongoing landfill capacity of 15 years to serve unincorporated waste disposal needs.
    - **Policy IU-4.2 Transfer stations** - Locate and operate transfer stations based on overall system efficiency.

- **Policy IU-4.3 Waste diversion** - Meet or exceed state waste diversion requirements, augment future landfill capacity. Reduce greenhouse gas emissions and use of natural resources through the reduction, reuse, or recycling of solid waste.
- **Policy IU-4.4 Landfill funding** - Require sufficient fees for use of County landfills to cover capital costs; ongoing operation, maintenance, and closure costs of existing landfills; and the costs and liabilities associated with closed landfills.

San Bernardino County Ordinances

28.0804 (a) Littering and Illegal Dumping. Any person who illegally dumps waste matter, or causes, maintains and/or permits waste matter to be illegally dumped, shall be guilty of an infraction or a misdemeanor and such action shall be punishable as an infraction or a misdemeanor.

46.0604 (b) Commercial Organics Recycling/Diversion. A business generating two cubic yards or more of commercial solid waste per week shall arrange for recycling services specifically for organic waste, consistent with State (PRC Section § 42652-42652.7) and local laws.

33.0803 Storage of Refuse. All refuse generated on a property or premises shall be stored in appropriate containers and in a manner which does not promote the propagation, harborage, or attraction of vectors, or the creation of nuisances. Each owner, operator or occupant shall provide sufficient numbers of suitable refuse containers to contain, without overflowing, all refuse generated between refuse removal dates.

33.0804 (a) Refuse Removal. All owners, operators, or occupants of any residence, premises, business establishment or industry shall be responsible for the satisfactory removal of all refuse accumulated on their property or premises.

Cumulative

The following projects from **Appendix A, Table A-1**, comprise the cumulative setting for solid waste management:

- Transportation/Shipping
  - Barstow International Gateway Intermodal Facility
  - Brightline West High-Speed Railway, California Civil North section
- Road Construction – I-15 Mojave Wildlife Crossings
  - Cady Mountain (Milepost R116.70)
  - Soda Mountain (Milepost R129.75)
  - Clark Mountain (Milepost 168.05)

- Solar Energy
  - Dagget Solar Power Facility
  - Dagget Solar 33
  - Dagget Solar 66
  - Reido Farms LLC

5.12.2 Environmental Impacts

SOLID WASTE MANAGEMENT Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☒	☐	☐
b. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☒

Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix G, utilities and service systems.

5.12.2.1 Methodology and Thresholds of Significance

The solid waste facilities identified to support the project were evaluated for consistency with state regulations and requirements, as well as assessed to determine if the proposed project would pose an impact on permitted landfill capacity.

5.12.2.2 Direct and Indirect Impacts

a. Would the project generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

Construction

Less Than Significant with Mitigation Incorporated. As discussed below, with mitigation incorporated, construction of the project would have a less than significant impact on the capacity of local solid waste infrastructure.

Jurisdictional Project Components

Solid waste consisting of the following materials would be generated during the 18-month construction period (RE 2024yyy):

- Concrete (<16 tons) – Excess concrete is expected to be generated during construction.

- Scrap Metal (<65 tons) – During construction, scrap metal would be generated from the installation of battery storage units.
- Cardboard (337 tons) – Construction waste resulting from cardboard packaging
- Office Waste (108 tons) – Paper, plastic, and other solid waste would be generated from general administrative activities.
- Excavated Soil (449,900 CY) – Soil would be generated during grading activities associated with project construction over a disturbance area of 2,059 acres. Where feasible, this material would be used as fill on the project site. However, preliminary designs estimate 630,000 CY of cut and 180,100 CY of fill resulting in 449,900 CY, or 216,852 tons of excess soil using a weight/volume conversion factor of 0.482 tons/CY (USEPA 2016). According to the application documents, the excess soil would be distributed throughout the soil disturbance area (RE 2025k).

Assuming a construction schedule of 18 months (RE 2025k), an estimated 526 tons of solid waste would be generated during project construction, excluding excess excavated soil. Including excess excavated soil, solid waste generated during construction would be 217,378 tons. This solid waste would be diverted from landfills and recycled to the extent possible to comply with California Public Resource Code (PRC) Section § 42920 and the Green Building Code. However, solid waste that cannot be recycled would be disposed at one of the three Class III landfills listed in the Environmental Setting section. According to CalRecycle, the combined remaining capacity of these three landfills is over 201 Million CY (CalRecycle 2025).

By converting the tonnage of materials provided in the application, an estimated 8,811 CY of solid waste would be generated during project construction excluding exported soil and rock (USEPA 2016). If disposal of excess excavated soil were necessary, the estimated volume of solid waste would be 458,711 CY. Assuming all the construction-related solid waste could not be recycled, the estimated amount of solid waste without excess excavated soil represents0.004 percent of the available capacity of the three listed landfills. Including the excess excavated soil, the volume of construction solid waste would represent 0.2 percent of the available capacity of the three listed landfills.

To ensure that solid waste generated during project construction is recycled to the greatest extent possible, staff proposes a Construction Waste Management Plan as required in Condition of Certification (COC) **WASTE-1**.

Non-Jurisdictional Project Components

Network upgrades at the Marketplace and Adelanto substations consist of equipment replacement only and solid waste generation is expected to be minimal and anticipated to be handled consistent with current practices at these existing facilities.

Operation

Less Than Significant with Mitigation Incorporated. As discussed below, with mitigation incorporated, operation of the project would have a less than significant impact on the capacity of local solid waste infrastructure.

Jurisdictional Project Components

Solid waste consisting of the following materials would be generated during project operations annually (RE 2024yyy):

- Scrap Metal (<500 lbs. or 0.25 tons) – Scrap metal would be generated during maintenance of the PV panels and battery storage units.
- Office Waste (15 tons) – Paper, plastic, and other solid waste would be generated from general administrative activities.

This solid waste would be diverted from landfills and recycled to the extent possible to be consistent with PRC Section § 42920 and the Green Building Code. However, solid waste that cannot be recycled would be disposed of at one of the three Class III landfills listed in the Environmental Setting section. As stated in the previous section, the combined remaining capacity of these three landfills exceeds 201 million CY (CalRecycle 2025).

By converting the anticipated tonnage provided in the application and estimating the proportions of each class of materials, approximately 102 CY of solid waste would be generated annually during project operations (USEPA 2016). Assuming all the operational solid waste could not be recycled, the estimated amount of solid waste generated during project operations would represent 0.00005 percent of the available capacity of the three listed landfills and would not exceed permitted landfill capacity or impede compliance with applicable solid waste regulations. The Operations Waste Management Plan proposed by staff in COC **WASTE-1** would ensure the recycling of solid waste generated during project operation to the greatest extent possible and not in excess of state or local standards.

Non-Jurisdictional Project Components

Incidental waste generated at the utility switchyard and section of gen-tie loop in line is expected to be minimal and thus not exceed the capacity of local facilities. With staff recommended mitigation measure (**MM**) **WASTE-1**, solid waste generated during operation would be recycled to the greatest extent possible. Operation at Marketplace and Adelanto substations is not expected to change from current practices.

b. Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

Construction

No Impact. Based on the analysis below, construction of the project would comply with federal, state, and local solid waste regulations and have no impact.

Jurisdictional Project Components

The California Integrated Waste Management Act of 1989 (Assembly Bill 939) requires local jurisdictions to reduce the amount of solid waste disposed of in landfills by 50 percent and to maintain diversion programs that continue to meet this requirement. During project construction, solid waste would be collected and hauled off-site for recycling or disposal in local jurisdictions within San Bernardino County that have programs in place to ensure that disposal of solid waste complies with state requirements. Implementation of COC **WASTE-1** would ensure the recycling of solid waste generated during project construction to the greatest extent possible. The project would not generate any special or unique waste during the construction phase and thus the project would not conflict with federal, state, or local statutes, as well as solid waste management and reduction regulations. Management of hazardous waste along with applicable federal regulations is discussed in **Section 5.7, Hazards, Hazardous Materials, and Wildfire**.

Table 5.12-1 below details staff's determination of project consistency with applicable local, state and federal, plans, policies, and regulations. As shown in this table, staff concludes that with implementation of specific conditions of certification, the proposed jurisdictional components of the project would be consistent with all applicable plans, policies, and regulations. The subsection below, "Proposed Conditions of Certification," contains the full text of the referenced conditions of certification.

TABLE 5.12-1 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS

Applicable Plans, Policies, and Regulations	Consistency and Basis For Determination
Federal	
Resource Conservation and Recovery Act (RCRA)	
40 CFR, Subtitle D. Provides guidelines for the storage and collection of residential, commercial, and institutional solid waste (Part 243), source separation for material recovery (Part 246), and design of municipal solid waste facilities (Part 258).	**Yes.** All landfills proposed for use with the project would comply with Federal regulations.
State	
Integrated Waste Management Act (Assembly Bill 939)	
AB 939/Public Resources Code Section § 40000. Established the California Integrated Waste Management Board (CIWMB), revamped the government codes regulating solid waste management, and required cities and counties to reduce the amount of solid waste disposed of in landfills by 50 percent.	**Yes.** All landfills proposed for use with the project would comply with State statutes.

TABLE 5.12-1 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS	
Applicable Plans, Policies, and Regulations	**Consistency and Basis For Determination**
California Assembly Bill 341 (Reduction of Solid Waste)	
AB 341/Public Resources Code Section 42926(a). Set a statewide goal of reducing solid waste by 75 percent by 2020. It also established mandatory recycling programs for solid waste.	**Yes.** All landfills proposed for use with the project would comply with State statutes. COC **WASTE-1** would assist with the solid waste reduction requirement of the statute.
California Senate Bill 1383 (Reduction of Organic Waste)	
SB 1383/CCR Title 14 Section § 17402. Established statewide targets to reduce 2014 organic waste levels to 50 percent by 2020 and to 75 percent by 2025.	**Yes.** All landfills proposed for use with the project would comply with State regulations.
Local	
San Bernardino County Ordinances	
28.0804 (a) Littering and Illegal Dumping. Any person who illegally dumps waste matter shall be guilty of an infraction or a misdemeanor. 46.0604 (b) Commercial Organics Recycling and Diversion. A business generating two cubic yards or more of commercial solid waste per week shall arrange for recycling services. 33.0803 Storage of Refuse. All refuse generated on a property or premises shall be stored in appropriate containers. 33.0804 (a) Refuse Removal. All property owners, operators, or occupants, shall be responsible for the satisfactory removal of all refuse accumulated on their property or premises.	**Yes.** The project, and all landfills proposed for use with the project, would comply with local ordinances.

Non-Jurisdictional Project Components

Incidental waste generated from the installation of protection equipment at the existing Marketplace and Adelanto substations would be minimal and be carried out consistent with current practices at these existing facilities. Thus, construction is not expected to conflict with federal, state, or local statutes and regulations related to solid waste management and reduction.

Operation

Less Than Significant with Mitigation Incorporated. Based on the analysis below, operation of the project would comply with federal, state and local solid waste regulations.

Jurisdictional Project Components

During operation, the project would not conflict with federal, state, and local statutes and regulations related to solid waste. Implementation of COC **WASTE-1** would ensure the recycling of solid waste generated during project operation to the greatest extent

feasible. Thus, the project would be consistent with federal, state, or local solid waste management and reduction requirements.

Non-Jurisdictional Project Components

Operation of the non-jurisdictional project components would not conflict with federal, state, and local statutes and regulations related to solid waste. Operation of the Marketplace and Adelanto substations would not change from current operation practices. Implementation of **MM WASTE-1** would ensure recycling of solid waste generated during switchyard operations to the extent possible. Therefore, the operation of the switchyard and gen-tie loop-in lines would not conflict with federal, state, or local statutes and regulations related to solid waste management and reduction.

5.12.2.3 Cumulative Impacts

Construction and Operation

Less Than Significant Impact. Based on the analysis below, the cumulative impact of local projects to the capacity of the three landfills proposed for the project is less than significant.

Jurisdictional Project Components

The Barstow International Gateway project will be a 4,500-acre intermodal facility where shipping containers arriving by rail from the ports of Los Angeles and Long Beach can be transferred to domestic containers and distributed to the rest of the country by truck or rail. Incoming freight from the east would be transferred to international containers and loaded onto trains for transport to the ports. The purpose of the project is to alleviate shipping congestion and truck traffic in Southern California (BNSF 2025). According to the City of Barstow Planning Division, the draft environmental impact report (DEIR) for the City of Barstow General Plan 2048, which includes the Barstow International Gateway Specific Plan, is expected to be released in late 2025 (Barstow 2025).

The Brightline West high-speed passenger train project would extend 218 miles and link Rancho Cucamonga, California with Las Vegas, Nevada. The planned rail line would pass through the project area along the I-15 corridor. There would be no stations between Victorville, California and Las Vegas. During construction, a minimal amount of solid waste would be generated. During operation of the high-speed train, no solid waste would be generated between the Victorville and Las Vegas stations (Brightline 2025, USDOT 2011).

Contrary to Figure 3.4-1 of the application, the three wildlife crossings over I-15 are a single project. Essentially these structures would be overpasses with vegetated cover enabling large mammals (especially desert bighorn sheep) safe passage over the interstate and the future Brightline West high-speed railway. The footprint of the three wildlife crossings would range from 5.8 to 6.3 acres (Caltrans 2023). Since these are

small projects planned to be completed in less than a year, the amount of solid waste is expected to be minimal.

The four solar projects would be the most comparable to the subject project: Dagget Solar Power Facility, Reido Farms LLC, Dagget [National Trails] Solar 33, and Dagget Solar 66. Although not quantified, according to environmental documents available on the San Bernardino County Planning Division, Land Use Services website, these four solar projects would generate a minimal amount of solid waste within state and local standards, and would not have a significant impact on local landfill capacity (San Bernardino County 2025c).

Non-Jurisdictional Project Components

Construction and operation of the network upgrades and operation of the utility switchyard and gen-tie loop-in lines would contribute minimal waste streams and would not have a significant impact on landfill capacity.

5.12.3 Conclusions and Recommendations

Staff recommends adopting the conditions of certification as detailed in subsection "5.12.4 Proposed Conditions of Certification" below. The conditions below would be enforceable as part of the CEC's certificate under the Opt-in provisions for the portions of the project constituting the site and related facilities. As discussed above, with implementation of the proposed conditions of certification, the project would have a less than significant impact related to solid waste management and would be consistent with applicable plans, policies, and regulations. With recommended mitigation measure operation of the utility switchyard would have a less than significant impact.

5.12.4 Proposed Conditions of Certification

The following proposed Conditions of Certification include measures to ensure consistency with applicable plans, policies, and regulations.

WASTE-1 The project owner shall prepare a Construction Waste Management Plan and an Operation Waste Management Plan for all wastes generated during construction and operation of the facility, respectively, and shall submit both plans to the Compliance Project Manager (CPM) for review and approval. The plans shall contain, at a minimum, the following:

- A description of all waste streams, including projections of frequency, amounts generated and hazard classifications; and
- Methods of managing each waste, including treatment methods and companies contracted with for treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/reduction plans.

Verification: No less than 30 days prior to the start of site mobilization, the project owner shall submit the Construction Waste Management Plan to the CPM for approval.

The Operation Waste Management Plan shall be submitted to the CPM no less than 30 days prior to the start of project operation for approval. The project owner shall submit any required revisions within 20 days of notification by the CPM.

In the Annual Compliance Reports, the project owner shall document the actual waste management methods used during the year compared to the planned management methods.

5.12.5 Recommended Mitigation Measures

MM WASTE-1 The project owner shall prepare a Construction Waste Management Plan and an Operation Waste Management Plan for all wastes generated during construction and operation of the facility, respectively, and shall submit both plans to the Los Angeles Board of Water and Power Commissioners for review and approval. The plans shall contain, at a minimum, the following:

- A description of all waste streams, including projections of frequency, amounts generated and hazard classifications; and
- Methods of managing each waste, including treatment methods and companies contracted with for treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/reduction plans.

5.12.6 References

Barstow 2025 – City of Barstow, Community Development Department, Planning Division (Barstow). City of Barstow General Plan 2048 website. Undated daily. Available online at: https://www.barstowca.org/departments/community-development-department/planning/general-plan-update

BNSF 2025 – Burlington Northern and Santa Fe Railway (BNSF). Barstow Internation Gateway Project website. Undated daily. Available online at: https://bnsfbig.com/

Brightline 2025 – Brightline West informational website. Updated daily. Available online at: https://www.brightlinewest.com/

CalRecycle 2025 – California Department of Resources Recycling and Recovery (CalRecycle). SWIS Facility/Site Search website. Updated daily. Available online at: https://www2.calrecycle.ca.gov/SolidWaste/Site/Search\

Caltrans 2023 – California Department of Transportation (Caltrans). CEQA Exemption/NEPA Categorical Exclusion Determination, I-15 Mojave Wildlife Crossings (08-SBD-15). November 11, 2023. Available online at: https://files.ceqanet.lci.ca.gov/292080-1/attachment/sHbUoZdy6MA6R-

y5sD6X3oX_o5CLsBldRgjhJnMSe_2-HWjwgB-cMoSb_eBkhAc3XZHN7GnzkQBddluP0

RE 2024yyy – Resolution Environmental (TN 259712). Appendix R Waste Management Plan - October 2024 - Revision 1, dated October 25, 2024. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025k – Resolution Environmental (TN 261595). Chapter 2_Project Description, dated February 7, 2025. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

San Bernardino County 2022 – San Bernardino County. San Bernardino County, Countywide Plan, County Policy Plan. September 2022. Available online at: https://countywideplan.sbcounty.gov/wp-content/uploads/sites/125/2021/01/CWP_PolicyPlan_HardCopy_MainText_Tables_2022_Sept_Adopted.pdf

San Bernardino County 2025a – San Bernardino County Planning Division (San Bernardino County). San Bernardino County land Use Plan, General Plan, Land Use Zoning Districts. Last modified March 20, 2025. Available online at: https://lus.sbcounty.gov/wp-content/uploads/sites/48/GeneralPlan/CIDIA.pdf

San Bernardino County 2025b – San Bernardino County Planning Division, Land Use Services (San Bernardino County). County of San Bernardino, Land Use Services/Planning Division, Renewable Energy Projects as of February 2025. Last modified April 22, 2025. Available online at: https://lus.sbcounty.gov/wp-content/uploads/sites/48/SolarProjectListFEB2025.pdf

San Bernardino County 2025c – San Bernardino County Planning Division, Land Use Services (San Bernardino County). San Bernardino County Environmental Documents, Desert Region website. Updated daily. Available online at: https://lus.sbcounty.gov/planning-home/environmental/desert-region/

USDOT 2011 – United States Department of Transportation, Federal Railroad Administration (USDOT). Final Environmental Impact Statement and Final Section 4(f) Evaluation for the Proposed DesertXpress High-Speed Passenger Train, Victorville, California to Las Vegas, Nevada, Volume I: Report. March 2011. Available online at: https://railroads.dot.gov/rail-network-development/environment/environmental-reviews/brightline-west-las-vegas-victor-valley

USEPA 2016 – United Stated Environmental Protection Agency (USEPA). Volume-To-Weight Conversion Factors, U.S. Environmental Protection Agency, Office of Resource Conservation and Recovery, April 2016. Available online at: https://www.epa.gov/sites/default/files/2016-04/documents/volume_to_weight_conversion_factors_memorandum_04192016_508fnl.pdf

5.13 Transmission Line Safety and Nuisance

This section analyzes the jurisdictional and non-jurisdictional project components. The jurisdictional project components include the construction and operation of the solar photovoltaic (PV) facility, battery energy storage system (BESS), project substation and generation intertie line (gen-tie) and construction of the utility switchyard and section of transmission loop in lines that would connect to the existing Mead-Adelanto Transmission Line. The non-jurisdictional project components include the construction and operation of the protection setting upgrades to the Marketplace and Adelanto substations and operation of the utility switchyard and section of transmission loop in lines.

This section describes the environmental and regulatory setting. It discusses the impacts associated with the construction and operation of the project, as well as its consistency with applicable plans, policies, and regulations specific to transmission line safety and nuisance. The project components and their operation could result in impacts associated with transmission line safety and nuisance. They are regulated by applicable laws and regulations, including the proposed 500 kilovolts (kV) generator intertie-line (gen-tie) and project substation.

5.13.1 Environmental Setting

The applicant, Soda Mountain Solar, LLC, and its affiliates have proposed constructing and operating the Soda Mountain Solar Project (SMSP/project). The proposed project would alter the environmental setting by adding a 500 kilovolt (kV) underground generator tie-line (gen-tie) to interconnect the project with the first point of interconnection, a yet-to-be-built 500 kV switching station. This project includes a solar photovoltaic (PV) facility with a battery energy storage system (BESS). The SMSP would be owned and operated by the applicant, along with the associated generator line. The project site boundary encompasses approximately 2,670 acres within the project area, located in San Bernardino County, California.

Regulatory

The following section outlines the national, federal, state, and local plans, policies, and regulations, that apply to controlling the field and non-field impacts of electric power lines. Staff's analysis examines the project's compliance with these requirements. Different versions of the National Electrical Code (NEC) are enforced throughout the United States because the Code does not fall under federal law. Instead, it is a "uniform code," a set of guidelines that each state may adopt and apply as it sees fit.

National

Institute of Electrical and Electronics Engineers (IEEE). IEEE is the world's largest technical professional organization dedicated to advancing technology for the benefit of humanity. IEEE and its members inspire a global community through its

highly cited publications, conferences, technology standards, and professional and educational activities.

American National Standards Institute (ANSI). ANSI is a private, non-profit organization that administers and coordinates the U.S. voluntary standards and conformity assessment system.

National Electrical Safety Code (NESC). NESC is a United States standard for the safe installation, operation, and maintenance of electric power and communication utility systems, including power substations, overhead power lines, and underground power and communication lines.

Federal

Code of Federal Regulations (CFR). Title 47, CFR, section 15.205, Federal Communications Commission (FCC)

> Prohibits the operation of devices that can interfere with radio-frequency communication.

State

California Code of Regulations (CCR). California Code of Regulations (CCR), title 8, 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.

CCR, title 14, 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.

General

Los Angeles Department of Water and Power (LADWP) follows Federal Energy Regulatory Commission's Good Utility Practice and LADWP standards and specifications.

Cumulative

The cumulative impacts of Transmission Line Safety and Nuisance (TLS&N) would be considered if other power-generating facilities were adjacent to the project.

5.13.2 Environmental Impacts

TRANSMISSION LINE SAFETY AND NUISANCE Would the project's transmission line be either physical or electrical (via its electromagnetic field):	**Significant and Unavoidable Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a. Affect aviation safety?	☐	☒	☐	☐
b. Interfere with radio frequency communication?	☐	☐	☒	☐
c. Be a source of audible noise?	☐	☐	☒	☐
d. Be a fire hazard?	☐	☒	☐	☐
e. Be a source of hazardous shock?	☐	☒	☐	☐
f. Be a source of nuisance shock?	☐	☒	☐	☐
g. Affect public health?	☐	☒	☐	☐

Environmental checklist established by Cal. Code Regs., tit. 20, Div. 2, Ch. 5, Powerplant and Transmission Line Jurisdictional Investigations, Appendix B, Transmission System Safety and Nuisance

5.13.2.1 Methodology and Thresholds of Significance

The staff's analysis examines the project's compliance with national, federal, state, and local laws and policies that govern the control of field and non-field impacts of electric power lines.

5.13.2.2 Direct and Indirect Impacts

Project Components

Battery Energy Storage System

The project would include a BESS capable of storing up to 300 megawatts (MW) of electricity for 4 hours (1200 MW-hours), requiring up to 18 acres of land. As shown in **Section 3, Project Description**, **Figure 3-2**, the battery system would be located near the project substation to facilitate interconnection and metering. The BESS would also include a battery management system to control the charging and discharging of the batteries. The project would utilize lithium-iron-phosphate batteries.

Solar PV

The project consists of four PV arrays with a combined output of 300 MW. The solar PV panels would be arranged in strings, with a height of 10 feet at full tilt or slightly higher due to topography. The single-axis tracking system would be oriented along the north-to-south axis, with panels facing east in the early morning and facing west in the late afternoon. The structures supporting the PV panels would consist of steel piles mounted approximately 18 feet apart. The solar facility would be constructed in sub-arrays of installed rows of panels ranging in size from 4 to 7 MW. Each sub-array would include a direct current (DC) to alternating current (AC) inverter and a medium voltage equipment area. Each inverter-transformer station would contain an inverter, a

transformer, a battery enclosure, and a switchboard. Panels would be electrically connected into panel strings using wiring secured to the panel racking system. Underground cables would be installed to transmit the DC electricity from the panels via combiner boxes, utilizing a trunk bus system throughout the PV arrays, to inverters that convert the DC electricity to AC. The output voltage of the inverters would be stepped up to the required collection system voltage at the medium voltage pad mount transformers located near the inverter. The 34.5 kV level collection cables would be buried underground in a trench about 4 feet deep, with segments installed overhead on wood poles to connect all the solar facilities development areas to the onsite project substation. Directly embedded wood poles would be used where the collection system crosses a road or pipelines overhead. (**Section 3, Project Description**, **Figure 3-2**, LADWP SIS One line diagram).

Project substation - All collector feeder circuit voltages step up from 34.5kV to 500kV by the main transformer (34.55/500kV, 222MVA) of the project's substation. The substation comprises power and auxiliary transformers, 500 kV breakers, bus bars, low-voltage switchgear, disconnect switches, capacitor banks, a grounding grid, microwave towers, dead-end structures, a chain-link fence, and other protective devices. All project substation structures are grounded, as shown in the one-line diagram of the System Impact Study (SIS). A communication system would also be installed within the same footprint. The communication system comprises fiber optic communication cabling for the Supervisory Control and Data Acquisition (SCADA), which provides communication capabilities between substations, switchyards, and O&M facilities. (RE 2025k, Section 2.6).

Project switchyard - The proposed switchyard includes two bays, three circuit breakers, six disconnect switches, (the continuous rating of the new breakers and disconnect switches should be 4000 Amp at the 500 kV nominal voltage), series capacitor banks, grounding grids, protection devices, bus support structures, Direct Transfer Trip (DTT) receivers, a chain link fence around the switchyard, etc. The switchyard would be designed and constructed with a Breaker-and-a-half (BAAH) configuration. The Adelanto-Marketplace 500 kV transmission line would loop in and out of the switchyard to interconnect the project into the LADWP grid. The tallest structure at the switchyard would be the dead-end structures, which would be up to 175 feet above ground level and terminate the 500 kV gen-tie and utility 500 kV loop-in and outlines. All the switchyard structures are grounded, as described in the LADWP study. The applicant would own, operate, and maintain the newly built 500 kV project substation and generator tie line. The switchyard will be constructed by the applicant and transferred to LADWP for operation and maintenance purposes. (RE 2025k, Sections 2.0, 2.6).

Gen-tie-line - The approximately 1-mile 500-kV gen-tie line would be designed in accordance with Federal Energy Regulatory Commission's Good Utility Practice and LADWP design standards and specifications, including required right-of-way (ROW) width. The gen-tie would also use eleven tubular steel pole support structures and six

lattice towers, all of which would be approximately 160 feet high. A small segment of the gen-tie line, approximately 450 feet, would go under I-15 near an existing Caltrans culvert. On either end of this underground section there would be riser towers and transition to overhead tower structures. Both the underground section of the gen-tie line and the riser towers would be designed in accordance with General Order 128. (TN 261668). The 500kV gen-tie line would be constructed with a segment of cables buried underground and would connect the project's substation with the utility switchyard. The buried line segment would traverse through the existing culverts under the I-15 in a duct bank. All the gen-tie line structures are grounded, as shown in the one-line diagram of the SIS. The gen-tie line would facilitate interconnecting the project's substation with the new LADWP switchyard. (RE 2025k, Section 2; TN 261668).

a. Would the project's transmission line physically or electrically (via its electromagnetic field) affect aviation safety?

Construction and Operation

Less Than Significant Impact. The construction and operation of a solar PV, BESS, project substation, and gen-tie line options would have less than significant aviation safety impacts as described below.

Jurisdictional Project Components

The requirements in the plans, policies, and regulations listed in **Table 5.13.1** establish the standards for assessing the potential for obstruction hazards within the navigable airspace. Federal Aviation Administration (FAA) notification is required for structures that exceed 200 feet above ground level or if the structure is less than 200 feet in height but located within the restricted airspace in the approaches to public or military airports and heliports. The nearest airport (Harry Reid International Airport) is 89 miles from the project's site. Staff has assessed the potential for an aviation hazard related to the height of the proposed project's transmission lines. The project overhead gen-tie structures would be 160 feet in height and radio tower in the project substation would reach a maximum height of 200 feet and thus would not likely require marking or lighting. However, if a temporary structure, like a crane during construction, would exceed 200 feet above ground level, the applicant would need to file FAA Form 7460-1, Notice of Proposed Construction or Alteration (FAA 2024). The staff concludes that the transmission lines would not pose a significant collision risk to aviation or aircraft.

b. Would the project's physical or electrical transmission line (via its electromagnetic field interfere with radio-frequency communication?

Construction and Operation

Less Than Significant Impact. The construction and operation of a solar facility, battery energy storage system, project substation, and gen-tie line would have less than significant radio-frequency communication impacts.

Jurisdictional Project Components

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 made by the action of the electric fields on the surface of the energized conductor. The process involved is known as *corona discharge*. Still, it is also referred to as spark gap electric discharge when it occurs between gaps in conductors and insulators, or between metal fittings. Corona from a transmission line may result in interference with radio and television reception, audible noise, light, and the production of ozone. When generated, such noise manifests as perceivable interference with radio or television signal reception or other radio communication.

Since the level of interference depends on various factors, including line voltage, distance from the line to the receiving device, antenna orientation, signal level, line configuration, and weather conditions, maximum interference levels are not specified as design criteria for modern transmission lines. The level of any such interference usually depends on the magnitude of the electric fields involved and the distance from the line. Therefore, the potential for such impacts would be minimized by reducing the line's electric fields and by locating the line away from inhabited areas.

c. Would the project's transmission line physically or electrically (via its electromagnetic field) be a source of audible noise?

Construction and Operation

Less Than Significant Impact. The construction and operation of the solar facility, BESS, project substation, and gen-tie line would have less than significant audible noise impacts.

Jurisdictional Project Components

Audible noise usually results from the action of the electric field at the surface of the line conductor. It could be perceived as a crackling, frying, or hissing sound or hum, especially in wet weather. Since the noise level depends on the strength of the line's electric field, the potential for perception would be assessed by estimating the field strengths during operation. The electric field increases when the line voltage increases. Research by the Electric Power Research Institute (EPRI 1982) has validated this by showing that the fair-weather audible noise from modern transmission lines is generally indistinguishable from background noise at the edge of a right-of-way of 100 feet or more. A more detailed discussion of the proximity of potentially sensitive receptors is found in **Section 5.9, Noise and Vibration**. The proposed line right-of-way would fall mainly within the SMSP boundary and LADWP service area. Staff does not expect the proposed line operation to significantly add to the project area's current background noise levels. The audible noise level depends on the online voltage and not on a conductor's power flow level. Because line voltage remains nearly constant for a transmission line during regular operation, the audible noise associated with the 500 kV

lines in the area would be of the same magnitude before and after the project (Project description, section 2.0, Figures 6 and 7).

Federal or state regulations do not specifically mandate noise-reducing designs related to electric field intensity in terms of specific noise limits. Instead, such audible noise is limited through design, construction, or maintenance practices established based on industry research and experience, which are effective without significant impacts on online safety, efficiency, maintainability, and reliability. Since these designs are also aimed at minimizing field strengths, staff do not expect the proposed line operation to significantly add to the current background noise levels in the project area. Please refer to the staff's analysis in **Section 5.9, Noise and Vibration** section, to assess the proposed projects' noise and related facilities' noise**.**

d. Would the project's physical or electrical transmission line (via its electromagnetic field) be a fire hazard?

Construction and Operation.

Less Than Significant with Mitigation Incorporated. With incorporation of COCs, the construction and operation of the solar facility, BESS, project substation, and gen-tie line have less than significant impacts associated with a fire hazard.

Jurisdictional Project Components

The fire hazards addressed in **Table 5.13.1** are those that spark from overhead line conductors that could cause or result from direct contact between a line and nearby trees and other combustible objects.

The existing LADWP fire prevention and suppression program requirements would be implemented for the proposed project line. The applicant would comply with CCR, title 14, section 1250, article 4, establishing fire prevention standards for electric power generation facilities. Additionally, CPUC GO-95 establishes rules and guidelines for transmission line construction, including clearances from other artificial and natural structures, as well as tree-trimming requirements to mitigate fire hazards. Therefore, the applicant's intention to ensure compliance with the clearance-related aspects of GO-95 would be an essential part of this mitigation approach. However, LADWP is not bound by CPUC General Orders because it is a municipal utility. LADWP's own standards align with GO-95 and GO-128 to ensure safety, reliability, and consistency with statewide practices— which effectively incorporate the same technical rules as GO-95 and GO-128.

Although the new line would be located within the SMSP's site area, Conditions of Certification (COC) **TLSN-1** and **TLSN-2** are recommended to ensure compliance with these program requirements.

e. Would the project's physical or electrical transmission line (via its electromagnetic field) be a source of hazardous shock?

Construction and Operation

Less Than Significant with Mitigation Incorporated. With incorporation of COCs, the construction and operation of the solar facility, BESS, project substation, and gen-tie line would have less than significant hazardous shock impacts.

Hazardous shocks can result from direct or indirect contact between an individual and the energized line, whether it is overhead or underground. Such shocks can cause severe physiological harm or death. Hazardous shocks remain a driving force in the design and operation of transmission and other high-voltage lines.

No design-specific federal regulations have been established to prevent hazardous shocks from overhead power lines. Safety is ensured within the industry through compliance with the requirements specifying the minimum national safe operating clearances applicable in areas where the line may be accessible to the public.

Potentially hazardous shocks could result from electrical faults in the new SMSP equipment or the LADWP high-voltage transmission system. The existing LADWP 500-kV transmission system is located within a secured area under LADWP's access control. The New LADWP switchyard is fenced to keep individuals from entering the area where they could be exposed to associated hazardous shocks. The new SMSP's 500 kV generation tie lines would be designed by the applicable plans, policies, and regulations. Implementing the Federal Energy Regulatory Commission's Good Utility Practice and LADWP standards and specifications, and CCR, title 8, section 2700, would minimize hazardous shocks, although they are highly unlikely to occur during project operation and construction. Staff's proposed COCs, **TLSN-1** and **TLSN-3**, ensure the project will be constructed in accordance with regulations to mitigate the potential for hazardous shocks.

f. Would the project's physical or electrical transmission line (via its electromagnetic field) be a source of nuisance shock?

Construction and Operation

Less Than Significant with Mitigation Incorporated. With the incorporation of COCs, the construction and operation of the solar PV facility, BESS, project substation, and gen-tie line would not be a source of nuisance.

Nuisance shocks are caused by current flow at levels generally incapable of causing significant physiological harm. They result primarily 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.

No design-specific federal or state regulations limit nuisance shocks in the transmission line environment. For modern overhead high-voltage lines, such shocks are effectively minimized through grounding procedures specified in the National Electrical Safety Code (NESC) and the joint guidelines of the American National Standards Institute (ANSI) and the Institute of Electrical and Electronics Engineers (IEEE). Standard industry grounding practices would minimize the potential for nuisance shocks around the proposed line.

For the proposed project line, the project owner would be responsible for ensuring compliance with these grounding-related practices within the right-of-way in all cases. Staff proposes COC **TLSN-3** to provide grounding for the SMSP project.

g. Would the project's transmission line either physically or electrically (via its electromagnetic field) affect public health?

Construction and Operation

Less Than Significant with Mitigation Incorporated. With the incorporation of COCs, the construction and operation of the solar PV facility, BESS, project substation, and gen-tie line would have less than significant impacts to public health associated with physical or electrical aspects of the transmission line.

Electric and magnetic fields are created whenever electricity flows; exposure to them is generally referred to as exposure to electric and magnetic fields (EMF). There is public concern regarding the possibility of health effects from EMF exposure. The electrical transmission interconnection and other electrical devices constructed as part of the project emit EMF when in operation. These fields are typically measured near ground level, where people encounter them. To the extent they occur, EMF could impact receptors on the properties adjacent to the project site (RE 2025k, Section 2.0).

As previously stated, the Project electrical transmission interconnection and other electrical devices would be located mainly within the SMSP project site and LADWP's transmission system. There are no receptors adjacent to the Project site. Site access is restricted to station workers, incidental construction and maintenance personnel, other company personnel, regulatory inspectors, and approved guests. Because access would not be available to the public, public exposure to EMF is not expected from SMSP or the transmission facilities to be constructed as part of the project (Project description, section 2.0).

Industries and Applicant's Approach to Reducing EMF Exposures

The present focus of EMF exposure concerns the magnetic field. Unlike electric fields, magnetic fields can penetrate soil, buildings, and other materials, producing human exposures that raise health concerns. The industry seeks to reduce exposure not by setting specific exposure limits but through design guidelines that minimize exposure in each case.

In comparison to the strong magnetic fields from the more visible high-voltage power lines, CEC staff considers it essential, for perspective, to note that an individual in a home could be exposed to much stronger fields from high-voltage lines while using some common household appliances (National Institute of Environmental Health Sciences 1998). The difference between these field exposures is that the higher-level, appliance-related exposures have a short-term duration. In contrast, the exposures from power lines have a lower level but a long-term duration. Scientists have not established which exposure types would be more biologically meaningful to the individual. CEC 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 SMSP project lines, specific field strength-reducing measures would be incorporated into the proposed line design to ensure the field strength minimization currently required by the CPUC, given the concern over EMF exposure and health.

The field reduction measures that could be applied include the following:

1. Increasing the distance between the conductors and the ground to an optimal level.
2. Reducing the spacing between the conductors to an optimal level.
3. minimizing the current in the line; and
4. Arrange the current flow to maximize the cancellation effects from the interaction of conductor fields.

Long-term residential field exposures would not be a significant concern since the route of the proposed project's transmission line avoids residences. The field strengths of most significance would be encountered within the boundaries of the proposed SMSP and a LADWP-controlled area. These field intensities would depend on the effectiveness of the field-reducing measures applied. The requirements in COC **TLSN-4** for field strength measurements are intended to assess the applicant's assumed field reduction efficiency. The actual contribution to the area's field exposure levels would be documented for the proposed route from the results of the field strength measurements required in COC **TLSN-4,** as field strength measurements are intended to assess the applicant's assumed field reduction efficiency.

5.13.2.3 Cumulative Impacts

No Impact. SMSP is the only power-generating facility adjacent to other projects, so there would be no adverse cumulative impacts when SMSP is combined with other projects.

5.13.3 Project Consistency with Applicable Plans, Policies, and Regulations

Table 5.13-1 below details the staff's determination of consistency with applicable local, state, and federal plans, policies, and regulations, including any proposed

Conditions of Certification, where applicable, to ensure the jurisdictional components of the project would comply with plans, policies, and regulations. As shown in this table, the staff concludes that with the implementation of specific conditions of certification, the proposed jurisdictional components of the project would be consistent with all applicable plans, policies, and regulations. The subsection below, "Proposed Conditions of Certification," contains the full text of the referenced conditions of certification.

LADWP is not bound by CPUC General Orders because it is a municipal utility. LADWP's own standards align with GO-95 and GO-128 to ensure safety, reliability, and consistency with statewide practices— which effectively incorporate the same technical rules as GO-95 and GO-128.

TABLE 5.13-1 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS

Applicable Plans, Policies, and Regulations	Consistency and Basis For Determination
Federal	
Title 14, Part 77 of the Code of Federal Regulations (CFR)," Objects Affecting the Navigable Air Space". Describes the criteria for determining the need for a Federal Aviation Administration (FAA) "Notice of Proposed Construction or Alteration" in cases of potential obstruction hazards.	**Yes.** The Project's overhead guyed and radio-tower structures would be 200 feet, comparable to the 200-foot height of concern to the FAA. Therefore, the applicant would install lighting circuits to enhance the visibility of the gen-tie structures.
FAA Advisory Circular No. 70/7460- 1L (2015), "Proposed Construction and Alteration of Objects that May Affect the Navigation Space." Addresses the need to file the "Notice of Proposed Construction or Alteration" (Form 7460) with the FAA in cases of potential for an obstruction hazard.	**Yes.** The applicant would file Form 7460 with the FAA and get approval to install the proper lighting circuits for gen-tie structures.
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.	**Yes.** The applicant would file Form 7460 with the FAA and obtain approval to install the proper lighting circuits for certain generator tie and radio tower structures.
Title 47, CFR, section 15.205, Federal Communications Commission (FCC). Prohibits the operation of devices that can interfere with radio-frequency communication.	**Yes.** The applicant would not use equipment that emits restricted frequency bands, as defined in section 15.205 of the FCC.
Federal Energy Regulatory Commission's Good Utility Practice adapted by LADWP and LADWP's own standards and specifications.	**Yes.** The applicant would construct some Gen-tie line structures with a height of less than 120 feet. All gen-tie structures, substation components, and the switchyard would be constructed according to the electrical grounding standards. The project's underground circuits would utilize the duct banks to minimize the EMF effects. The applicant would utilize the lighting and surge arresters in the substations and switchyard as necessary, dissipating the fault currents and voltages caused by lightning and voltage surges.

TABLE 5.13-1 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS

Applicable Plans, Policies, and Regulations	Consistency and Basis For Determination
CCR, title 8, 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.	**Yes.** Gen-tie structures, circuits overhead/underground, substations, and switchyard components would be constructed according to "High Voltage Safety Orders."
National Electrical Safety Code (NESC). Specifies grounding procedures to limit nuisance shocks. It also specifies minimum conductor ground clearances.	**Yes.** All Gen-tie structures, substation components, and the switchyard would be constructed according to the NESC standards and LADWP's grounding standards. Overhead and underground grounding circuits will be designed with proper conductor sizes to dissipate the fault current. The applicant will select proper conductor sizes to satisfy the NESC standards. All the substation or switchyard components would be grounded using the underground grounding grid. The applicant will assess the soil resistivity test for the project's substation, switchyard sites, and transmission line path.
CCR, title 14, 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.	**Yes.** The applicant should refer to the Fire Prevention Standards under 1250-1258. (design, construction, and operation phases).
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 ROW and substations.	**Yes.** A fence around the substation or switchyard, along with proper Transmission line clearance, would facilitate a safety clearance zone. All the substation, switchyard, and fence components would be grounded using the underground grounding grid. Maintain the proper ROW of the transmission paths and substations to minimize the flashover and EMF effects.
American National Standards Institute (ANSI/IEEE) 644-1944 Standard Procedures for Measuring Power Frequency Electric and Magnetic Fields from AC Power Lines. Specifies standard procedures for measuring electric power frequency and magnetic fields from an operating electric line.	**Yes.** The applicant would conduct the following tests. The first test is a Corona performance test. It uses visible techniques to determine the onset of a positive corona. The second test is radio interference voltage (RIV). To minimize the flashover and EMF effects,

TABLE 5.13-1 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS	
Applicable Plans, Policies, and Regulations	**Consistency and Basis For Determination**
	the RIV voltage must be measured according to ANSI C63.2 or CISPR 16-1-1 and CISPR TR 18-2.

5.13.4 Conclusions and Recommendations

As discussed above, with the implementation of conditions of certification, the project would have a less-than-significant impact on transmission line safety and nuisance and would be consistent with applicable plans, policies, and regulations. Staff recommends adopting the conditions of certification as detailed in subsection "5.13.5 Proposed Conditions of Certification" below. The conditions below are enforceable as part of the CEC's certificate for the portions of the project constituting the site and related facilities.

5.13.5 Proposed Conditions of Certification

TLSN-1 The project owner shall construct the proposed 230-kV transmission lines according to the requirements of applicable Federal Energy Regulatory Commission's Good Utility Practice and LADWP standards and specifications, Title 8, and Group 2, High Voltage Electrical Safety Orders, sections 2700 through 2974 of the California Code of Regulations, and LADWP's EMF reduction guidelines.

Verification: At least 30 days before starting construction of the transmission lines 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 and Los Angeles Board of Water and Power Commissioners affirming that the lines will be constructed according to the requirements stated in the condition.

TLSN-2 The project owner shall ensure that the route of the proposed transmission lines is kept free of combustible material, as required by applicable Federal Energy Regulatory Commission's Good Utility Practice and LADWP standards and specifications and section 1250 of Title 14 of the California Code of Regulations.

Verification: During the first five years of plant operation, the project owner shall provide a summary of inspection results and any fire prevention activities carried out along the proposed route and provide such summaries in the Annual Compliance Report on transmission line safety and nuisance-related requirements.

TLSN-3 The project owner shall ensure that all permanent metallic objects within the proposed route are properly grounded by industry standards.

Verification: At least 30 days before energizing the lines, the project owner shall transmit a letter to the CPM confirming compliance with this condition.

TLSN-4 The project owner shall measure the maximum strengths of the line EMFs at the ROW's edge to validate the applicant's estimates for these fields. These measurements shall be made (a) according to the standard procedures of the American National Standards Institute/Institute of Electrical and Electronics Engineers (ANSI/IEEE) and (b) before and after energizing. The measurements shall be completed within six months after the start of operations.

Verification: The project owner shall file copies of the pre- and post-energizing measurements with the CPM within 60 days after the measurements are completed.

5.13.6 Recommended Mitigation Measures

There are no recommended mitigation measures for transmission line safety and nuisance.

5.13.7 References

CEC 2024b – California Energy Commission (TN 258272). Receipt of Opt-in Application, dated August 1, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

CEC 2024c – California Energy Commission (TN 258280). Notice of Receipt of an Opt-In Application for MOU Agencies and distribution list, dated August 2, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

CEC 2024d – California Energy Commission (TN 258373). Local Agency Notification of Receipt of Opt-In Application for Soda Mountain Solar Project (24-OPT-03) and distribution list, dated August 7, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

NERC (North American Electric Reliability Council) 2024 Reliability Standards for the Bulk Electric Systems of North America, Updated January 1, 2024, and ongoing.

The WECC (Western Electricity Coordinating Council) Regional Reliability Standards were updated on December 10, 2014, and are ongoing.

EPRI 1982 – Electric Power Research Institute 1982. Transmission Line Reference Book: 345 kV and above. Accessed online at: https://www.academia.edu/41079824/EPRI_Transmission_Line_Reference_Book_345_kV_and_above

NIEHS 1998 – National Institute of Environmental Health Sciences (NIEHS). 1998. An Assessment of the Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields, Working Group Report. Accessed online at: http://www.niehs.nih.gov/health/assets/docs_a_e/emf1.pdf

NIEHS 2002 – National Institute of Environmental Health Sciences (NIEHS). 2002. Electric and Magnetic Fields Associated with the Use of Electric Power. https://www.niehs.nih.gov/sites/default/files/health/materials/electric_and_magnetic_fields_associated_with_the_use_of_electric_power_questions_and_answers_english_508.pdf

RE 2025k – Resolution Environmental (TN 261595). Chapter 2_Project Description, dated February 7, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

WHO 2002 – World Health Organization (WHO). 2002, Establishing a Dialogue on Risks from Electromagnetic Fields. Accessed online at: http://www.who.int/peh-emf/publications/EMF_Risk_ALL.pdf

WHO 2024 – World Health Organization (WHO). 2024 Electromagnetic fields (EMF). Accessed online at: https://www.who.int/news-room/questions-and-answers/item/radiation-electromagnetic-fields

5.14 Transportation

This section analyzes the jurisdictional and non-jurisdictional project components. The jurisdictional project components include the construction and operation of the solar photovoltaic (PV) facility, battery energy storage system (BESS), project substation and generation intertie line (gen-tie) and construction of the utility switchyard and section of transmission loop in lines that would connect to the existing Mead-Adelanto Transmission Line. The non-jurisdictional project components include the construction and operation of the protection setting upgrades to the Marketplace and Adelanto substations and operation of the utility switchyard and section of transmission loop in lines.

5.14.1 Environmental Setting

Existing Conditions

Access to the project site would be provided via the Rasor Road Interchange on Interstate-15 (I-15), approximately 10 miles east of the City of Baker. This interchange is a "diamond" style interchange with ramps in all four quadrants.

The majority of the project site is south of I-15 and east of Rasor Road. Outside of the interchange, Rasor Road is a dirt road that is currently used primarily by off-road vehicles accessing the off-highway vehicle (OHV) facility to the south.

A portion of the project (switchyard and transmission lines) would be north of I-15. There is no roadway providing access to that area; however, the Arrowhead Trail could provide temporary (during construction) and maintenance-related access.

In the vicinity of the project, I-15 is two lanes in each direction with a moderate grade, from lower on the west to higher on the east.

Regulatory

Plans, policies, and regulations related to transportation are summarized below. CEC staff's analysis of project consistency with these requirements is presented in **Table 5.14-7**.

Federal

Code of Federal Regulations. The Code of Federal Regulations, Title 49, contains the federal rules and regulations pertaining to the transportation of goods and materials. Title 14 contains federal regulations pertaining to air transportation and aviation.

State

California Vehicle Code (CVC) and Streets and Highways Code. The California Vehicle Code and the Streets and Highways Code contain requirements applicable to

the licensing of drivers and vehicles, the transportation of hazardous materials, and right-of-way.

California State Planning Law. Government Code, Section 65302 requires that the project must conform to the General Plan, which is San Bernardino County in this case.

Manual on Uniform Traffic Control Devices (MUTCD). The MUTCD provides standards and guidelines for the design and usage of traffic control devices, such as signs, signals, and pavement markings, to ensure uniformity and consistency on roads and highways across the United States. It regulates construction-related signage and striping, offering guidelines for temporary traffic control in work zones. It ensures consistent and safe practices on roads during construction activities.

Local

San Bernardino County General Plan Circulation Element. The project is outside of the City of Baker and within San Bernardino County. The County's Circulation Element was last updated in 2007 and includes metrics related to roadway performance (congestion).

Cumulative

Table A-1 in **Appendix A** provides a list of past, present, and reasonably foreseeable projects that may be relevant to the cumulative analysis for each issue area. There are no known development projects in the area that would result in any cumulative change for transportation.

5.14.2 Environmental Impacts

TRANSPORTATION Would the Project:	**Significant and Unavoidable Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a. Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☒	☐	☐
b. Conflict or be inconsistent with CEQA Guidelines, section 15064.3, subdivision (b)?	☐	☐	☒	☐
c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
d. Result in inadequate emergency access?	☐	☐	☒	☐

Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix G, transportation.

5.14.2.1 Methodology and Thresholds of Significance

In addition to the above environmental checklist, CEC staff used the following methodology and thresholds of significance to evaluate the project.

Level of Service Analysis

The operations of roadway facilities are described with the term "level of service" (LOS). LOS is a quantified value of traffic flow from a vehicle driver's perspective based on factors such as speed, travel time, delay, and freedom to maneuver. Six levels of service are defined, ranging from LOS A (free-flow conditions) to LOS F (over-capacity conditions).

While VMT is the required transportation metric for CEQA, most agencies continue to evaluate LOS for consistency with their adopted plans and standards. For this project, the California Department of Transportation (Caltrans) and the County of San Bernardino have applicable standards for what is acceptable on their roadways as described in the Thresholds of Significance section below. Various parts of the transportation system can be evaluated with respect to LOS. In this case, the relevant locations are:

- I-15 between the Rasor Interchange and the next interchange in both directions
- The two intersections at the Rasor Interchange where the on/off-ramps intersect Rasor Road

Additionally, the off-ramps at the Rasor Interchange were evaluated to be sure that no queues would spill back to the freeway.

The traffic volumes on I-15 near Rasor Road are generally not highest during the typical commute hours, as this area does not have any major employment centers. Rather, the traffic volumes peak during the middle of the day, as reflected in the California Performance Evaluation Monitoring System (PeMS, 2025) via the on-line portal. Weekday traffic volumes are highest on Fridays in this area, which differs from the pattern in most urbanized areas, where traffic volumes are typically highest on Tuesday, Wednesday, and Thursday. While Sunday traffic volumes are high (particularly southbound), construction is expected to be Monday through Friday so the project will not be generating any traffic volume. Therefore, the project would not have any influence on Sunday conditions. There is some seasonal fluctuation in the traffic volumes, given this is a regional facility serving a large component of recreational and tourist-related travel. Major events in Las Vegas also influence traffic volumes. However, the analysis is meant to represent "typical" conditions and not the worst-case (such as the Friday before a major holiday on Monday).

Existing Conditions for I-15

A review of the most recent data, available May 2024, via (PeMS, 2025), indicated that Friday traffic volumes are notably higher than the rest of the weekdays (during the midday and PM peak), such that a separate analysis of Friday conditions was warranted

in this case. Traffic volumes on Friday, in the southbound direction, are approximately 10-20 percent higher than other weekdays between the hours of 1:00 PM and 6:00 PM.

Table 5.14-1 below identifies the existing performance on I-15 in the study area for typical weekday (Monday through Thursday) conditions, while **Table 5.14-2** presents conditions for a typical Friday.

TABLE 5.14-1 TYPICAL WEEKDAY (MONDAY – THURSDAY) EXISTING LOS FREEWAY MAILINE SEGMENT

Mainline Segment	Density (vehicles per mile per lane)			Level Of Service		
	AM Peak Hour	MD Peak Hour	PM Peak Hour	AM Peak Hour	MD Peak Hour	PM Peak Hour
I-15 Northbound Between Basin Road and Rasor Road	8.2	15.9	11.1	A	B	B
I-15 Northbound Between Rasor Road and Zzyzx Road	8.2	15.9	11.1	A	B	B
I-15 Southbound Between Basin Road and Rasor Road	6.6	13.4	13.3	A	B	B
I-15 Southbound Between Rasor Road and Zzyzx Road	6.6	13.4	13.3	A	B	B

Source: RE 2024rrr

TABLE 5.14-2 FRIDAY EXISTING LOS FREEWAY MAILINE SEGMENT

Mainline Segment	Density (vehicles per mile per lane)			Level Of Service		
	AM Peak Hour	MD Peak Hour	PM Peak Hour	AM Peak Hour	MD Peak Hour	PM Peak Hour
I-15 Northbound Between Basin Road and Rasor Road	9.9	16.4	12.3	A	B	B
I-15 Northbound Between Rasor Road and Zzyzx Road	9.9	16.4	12.3	A	B	B
I-15 Southbound Between Basin Road and Rasor Road	8.1	20.4	25.5	A	C	C
I-15 Southbound Between Rasor Road and Zzyzx Road	8.1	20.4	25.5	A	C	C

Source: RE 2024rrr

Existing Conditions for the Rasor Road Interchange

Unlike the freeway mainline, the conditions at the ramp intersections do not differ (in a statistically significant way) for Friday relative to the other weekdays. The two ramp intersections are controlled by stop-signs for the off-ramp movement, and traffic volumes are very light. The conditions are LOS A, with rarely more than one vehicle waiting at the intersection.

TABLE 5.14-3 TYPICAL WEEKDAY EXISTING LOS – INTERSECTIONS

Intersection	Delay (seconds per vehicle)			Level Of Service		
	AM Peak Hour	MD Peak Hour	PM Peak Hour	AM Peak Hour	MD Peak Hour	PM Peak Hour
I-15 Northbound Ramps & Rasor Road	9.4	9.8	9.7	A	A	A
I-15 Southbound Ramps & Rasor Road	9.3	9.6	9.3	A	A	A

Source: RE 2024rrr

Thresholds of Significance

The Caltrans' *Guide for the Preparation of Traffic Impact Studies* (December 2002) identifies the boundary between LOS C/D as the threshold of acceptability for state highway facilities, including interstates within California.

San Bernardino County's Traffic Impact Guidelines (July 9, 2019, Section 3.4.3) defines an impact, in the desert region, if the addition of project-related traffic causes the intersection to degrade from an LOS C or better to an LOS D or worse.

Vehicles Miles Travelled (VMT) Analysis

Vehicle Miles of Travel (VMT) is a measurement of the total miles of travel from a given source, typically applied daily. VMT is the product of the total number of vehicles traveling and the number of miles traveled per vehicle. In December 2018, the Governor's Office of Planning and Research (OPR) finalized new CEQA guidelines (CEQA Guidelines section 15064.3) that identify VMT as the most appropriate criterion to evaluate a project's transportation impacts. The implementation of Senate Bill (SB) 743 eliminated the use of criteria such as auto delay, level of service, and similar measures of vehicle capacity of traffic congestion as the basis for determining significant impacts as part of CEQA compliance. The SB 743 VMT criteria promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses. In compliance with SB 743 mandates, VMT was employed to assess the impacts of this project on the transportation network.

The CEQA guidelines are not specific on whether to include or exclude construction traffic, and the issue has not been specifically cited in any legal opinions. There is only one reference to "construction" in the State's April 2018 VMT Guidelines: "GHGs can be further reduced at the Project level through implementing energy-efficient construction

and travel demand management approaches." This suggests that construction-related VMT is of interest to the State. Given that the traffic generation from the project is almost entirely (99.9%) during the construction phase, it seems relevant to examine the VMT during construction.

Section 15064.3, subdivision (a), states, "For the purposes of this section, 'vehicle miles traveled' refers to the amount and distance of automobile travel attributable to a project. Here, the term 'automobile' refers to on-road passenger vehicles, specifically cars and light trucks." Based upon the above considerations, the analysis in Section 5.14.2.2 evaluates the worker (not trucks) trips to/from the site during the construction phase.

Thresholds of Significance

San Bernardino County VMT Threshold

The San Bernardino County Transportation Impact Study Guidelines[1] identify that a significant impact will occur if the project VMT per employee is more than 4 percent below the existing VMT/employee for the unincorporated County.

5.14.2.2 Direct and Indirect Impacts

a. Would the project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Construction

Less Than Significant with Mitigation Incorporated. Based on the assessment, the addition of project-generated traffic during construction would create recurring impacts to Level of Service (per San Bernardino County's standard) on Friday afternoons and all-day on Fridays of a holiday weekend. Condition of Certification (COC) **TRANS-1** addresses this issue by prohibiting construction activities after noon on Fridays and prohibiting construction all day on Fridays that precede a Federal Holiday on the following Monday.

Construction Trip Generation

The applicant reports an estimated 18-month construction period, during which 300 workers would access the project each working day. This would result in approximately 600 daily trips occurring to and from the project.

The applicant reports a total of 5,000 truckloads per month (RE 2025ii), which equates to 200 trucks per day (400 trips per day). In addition, the applicant reports that 17 water truck deliveries would occur each day (34 trips) during the construction period.

1 *Transportation Impact Study Guidelines*, San Bernardino County, July 9, 2019, Section 4.2.1

TABLE 5.14-4 CONSTRUCTION TRIP GENERATION

Trip Type	Daily		AM Peak Hour			MD Peak Hour			PM Peak Hour	
		In	Out	Total	In	Out	Total	In	Out	Total
Workers	600	300	0	300	0	0	0	0	300	300
Haul Trucks	400	60	20	80	20	20	40	20	60	80
Water Trucks	34	8	2	10	2	2	4	2	8	10
Total	1034	368	22	390	22	22	44	22	368	390

Construction Trip Distribution

Project trip distribution refers to the directions of approach and departure that vehicles would take to access and leave the site. The application documents identify that most workers would be from San Bernardino County, and that 80 percent of workers would drive to/from the south (such as Barstow and Victorville). A majority of the construction materials would likely come from both the south (San Bernardino County) and the north (Clark County, Nevada). The closest major rail depot is in Barstow, and the closest major airport is in Las Vegas.

Traffic Conditions with Construction Traffic

With construction traffic, slightly longer delays would be experienced for the off-ramp movement at the intersections; however, the intersections as a whole would continue to operate at LOS A during all hours. The only movement that is controlled (via a stop sign) is the off-ramp, while the movements across the interchange are uncontrolled and would experience no delay. The critical test is to determine if the queue of vehicles on the off-ramp would approach the freeway mainline. The results show that the queues would **not** be close to reaching the capacity of the ramp storage.

TABLE 5.14-5 WEEKDAY PROJECT CONSTRUCTION CONDITIONS- INTERSECTION QUEUEING

Intersection	Ramp Storage	Existing Queue			Queue During Construction		
		AM Peak Hour	MD Peak Hour	PM Peak Hour	AM Peak Hour	MD Peak Hour	PM Peak Hour
I-15 Northbound Ramps at Rasor Road	1500 ft	20′	20′	20′	110′	20′	20′
I-15 Northbound Ramps at Rasor Road	1500 ft	20′	20′	20′	20′	20′	50′

Note: Values listed as 20 feet were calculated as less than one vehicle on averaged, but rounded up to one vehicle.
Source: RE 2024rrr

With construction traffic, the southbound section of I-15 between Basin Road and Rasor Road would experience LOS D on a typical Friday afternoon, which is worse than the Caltrans standard of LOS C.

TABLE 5.14-6 FRIDAY PROJECT CONSTRUCTION CONDITIONS, I-15 LOS

Mainline Segment	Existing	During Construction				
	AM Peak Hour	MD Peak Hour	PM Peak Hour	AM Peak Hour	MD Peak Hour	PM Peak Hour
I-15 Northbound Between Basin Road and Rasor Road	A	B	B	B	B	B
I-15 Northbound Between Rasor Road and Zzyzx Road	A	B	B	A	B	B
I-15 Southbound Between Basin Road and Rasor Road	A	C	C	A	C	D
I-15 Southbound Between Rasor Road and Zzyzx Road	A	C	C	A	C	C

Source: RE 2024rrr

Non-Jurisdictional Project Components

Installation of line tuners, wave traps, microwave telecom links, relay protection equipment, and metering and controls equipment to upgrade the protection settings at the Marketplace and Adelanto substations, would either be carried out by LADWP staff or local labor. Either way, installation of this equipment would require limited construction workforce, generating negligible trips, and would have a less than significant traffic impact.

Operations

No Impact. During the on-going operations, the project is expected to generate less than 1 trip per day on average. The site would be remotely operated, and the only trips to the site would be for irregular security checks. Therefore, the project would not conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities.

Non-Jurisdictional Project Components

Operation of the utility switchyard and new protection equipment at the Marketplace and Adelanto substations would be carried out by LADWP staff. Existing staff would service the two substations and the new utility switchyard would likely require few, if any, additional workers to be employed. The traffic impact from operation of the non-jurisdictional project components would be negligible and less than significant.

Table 5.14-7 contains staff's determination of the project's consistency with applicable plans, policies, and regulations addressing the circulation system, including any proposed COC, where applicable, to ensure project consistency. As shown in this table, staff concludes that with implementation of specific conditions of certification, the proposed project would be consistent with all applicable plans, polices, and regulations. The subsection below, "Staff Proposed Conditions of Certification," contains the full text of the referenced COCs.

TABLE 5.14-7 CONSISTENCY WITH APPLICABLE PLANS, POLICES, AND REGULATIONS	
Applicable Plan, Policy, and Regulation	**Consistency and Basis For Determination**
Federal	
Code of Federal Regulations	
Title 49 CFR, Subtitle B, Sections 171-177 and 350-399 Requires proper handling and storage of hazardous materials during transportation.	**Yes.** The project transportation would align with all established standards for the transportation of hazardous materials. See **TRANS-3**.
Title 14 CFR, 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.	**Yes.** Construction would not exceed 200 feet above ground level and no airports are situated within 20,000 feet of the project; consequently, this requirement does not apply.
State	
California Vehicle Code (CVC)	
CVC Sections 13369, 15275 and 15278 Addresses the licensing of drivers and classifications of licenses required for the operation of particular types of vehicles. In addition, certificates permitting the operation of vehicles transporting hazardous materials are required.	**Yes.** The project would follow the guidelines specified inf these sections of the CVC. See **TRANS-4**.
CVC Section 25160 et seq. Addresses the safe transport of hazardous materials.	**Yes.** The project would follow the guidelines specified in these sections of the CVC.
CVC Sections 2500-2505 Authorizes the issuance of licenses by the Commissioner of the CHP for the transportation of hazardous materials including explosives.	**Yes.** The Project would follow the guidelines specified in these sections of the CVC.
CVC Section 31300 et seq. Requires transporters to meet proper storage and handling standards for transporting hazardous materials on public roads.	**Yes.** Transporters would comply with standards for the transportation of hazardous materials on state highways throughout construction and operations. The State Emergency Response Commission (SERC) would ensure adherence to CVC Section 31303, mandating that shippers of hazardous materials opt for the shortest route possible to and from the site.
CVC Sections 31600 - 31620 Regulates the transportation of explosive materials.	**Yes.** The project would conform to CVC §31600 – 31620.
CVC Sections 32000 - 32053 Regulates the licensing of carriers of hazardous materials and includes noticing requirements.	**Yes.** The project would conform to CVC §31600 – 31620.
CVC Sections 32100 - 32109 and 32105 Establishes special requirements for the transportation of substances presenting inhalation hazard and poisonous gases and require that shippers of inhalation or explosive materials contact the CHP and apply for a Hazardous Material Transportation License.	**Yes.** The project would comply by mandating shippers of inhalation or explosive materials to reach out to the CHP and secure a Hazardous Materials Transportation License.

TABLE 5.14-7 CONSISTENCY WITH APPLICABLE PLANS, POLICES, AND REGULATIONS	
Applicable Plan, Policy, and Regulation	**Consistency and Basis For Determination**
CVC Sections 34000 - 34121 Establishes special requirements for the transportation of flammable and combustible fluids over public roads and highways.	**Yes.** The project would conform to CVC §§34000 – 34121.
CVC Sections 34500, 34501, 34501.2, 34501.3, 34501.4, 34501.10, 34505.5–7, 34506, 34507.5 and 34510–11 Regulates the safe operation of vehicles, including those used to transport hazardous materials.	**Yes.** The project would follow the guidelines specified in these sections of the CVC.
CVC Sections 35780 Requires permits for any load that exceeds Caltrans weight, length, or width standards for public roadways.	**Yes.** Transporters would secure transportation permits for all overloads, as mandated.
CVC Sections 35550 - 35559 Regulates weight and load limitations.	**Yes.** The project would follow the guidelines specified in these sections of the CVC.
California Streets and Highways Code	
S&HC Sections 660, 670, 1450, 1460 et seq., 1470, and 1480 Regulates right-of-way encroachment and the granting of permits for encroachments on State and County roads.	**Yes.** The project would follow the guidelines specified in these sections of the S&HC.
S&HC Sections 117, 660 - 711 Requires permits from Caltrans for any roadway encroachment during truck transportation and delivery.	**Yes.** Encroachment permits would be obtained by transporters, as required.
S&HC Sections 660 - 711 Requires permits for any load that exceeds Caltrans weight, length, or width standards for public roadways.	**Yes.** Transportation permits would be obtained by transporters for all overloads, as required.
California State Planning Law	
Government Code, Section 65302 Requires that the project must conform to the General Plan.	**Yes.** The project would align with the provisions of the San Bernardino County General Plan per below.
Caltrans	
Guide for Traffic Impact Studies, Section II identifies LOS C/D as threshold of acceptability.	**Yes.** The project would meet this standard with implementation of **TRANS-1**
Local	
San Bernardino County Circulation Element	
Section III.C.2 – Requires that roadways operate at LOS E or better.	**Yes.** The level of service on I-15 near the project would function at LOS E or better during both construction and operations.

b. Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

Construction

Less Than Significant Impact. During project construction, daily trips made by workers and delivery/haul trucks to and from the project would result in an increase in VMT. However, this increase in VMT would be temporary in nature, only lasting the duration of the construction phase.

Vehicle-trip generation (for worker) as a result of project construction has been summarized in **Table 5.14-8**. The project workforce is expected to be within a 50–80-mile radius of the project site. To estimate the worker VMT for the construction phase of the project, daily worker trips were multiplied by an average trip length of 65 miles. The total worker VMT was then normalized over the 25-year project life, which was estimated as 6,500 days. As shown in Table 5.14-7, the project's daily VMT per worker is estimated to be 9. The threshold of significance is 19 (4% below existing County average). Therefore, the normalized daily VMT per worker of 9 VMT per worker for the project's construction is below the regional threshold of 19 VMT per employee. Therefore, the construction phase of the project would result in a less-than-significant VMT impact.

Therefore, the construction of the proposed project would not conflict or be inconsistent with CEQA Guidelines Sections 15064.3(b)(1), and transportation impacts would be less than significant.

TABLE 5.14-8 WORKER VMT DURING CONSTRUCTION

Item	Amount
Worker VMT per day during Construction (600 trips x 65 miles)	39,000
Worker VMT during Construction (450 days)	17,750,000
Project Life in Days (25 years @ 260 commute days/yr)	6,500
Daily Worker VMT (total divided by number of days)	2,700
Average Daily Number of Workers	300
Average VMT per Worker (daily VMT divided by number of workers)	9
County average VMT/employee (from San Bernardino County travel model)	19.8
Threshold of Significance (4% below county average)	19

Operation

No Impact. During the on-going operations, the project is expected to generate less than 1 trip per day on average. Therefore, the project-generated VMT during operations would be negligible.

c. Would the Project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Construction

Less Than Significant with Mitigation Incorporated. The project does not propose to alter any existing paved surfaces or structural features of any public roadways while constructing the project. Therefore, it would not increase any hazard due to a geometric design feature. The construction equipment proposed for this project is consistent with what is regularly accommodated on I-15 and the I-15/Rasor Interchange.

There is a potential for project construction vehicles to create dust while improving and/or using the unpaved portion of Rasor Road, which could be a hazard for adjacent

drivers on I-15. **Section 5.1, Air Quality**, proposes two COCs that would reduce impacts due to fugitive dust: COC **AQ-SC3** and COC **AQ-SC4**.

There is a potential for the solar arrays to create a glare hazard for motorists on I-15. **Section 5.15, Visual Resources**, concludes that: "With respect to project-induced glare, glare impacts would be brief (a few minutes in the morning) and would not shine directly at motorists on I-15 nor cause a nuisance to vehicular travel routes."

Operation

No Impact. The project would generate negligible trips (less than 1 per day on average) during operations, and the project would not require changes to any County roadways or intersections during operations. Consequently, there would be no potential hazard due to a geometric feature or incompatible uses.

The applicant has proposed that the project be required to prepare a construction management plan (CMP), in response to the potential effect that heavy vehicle trips generated by the project would have on the existing roadway network. Staff has incorporated the applicant's proposed mitigation into COC **TRANS-2**, to ensure consistency with applicable plans, policies, and regulations.

d. Would the Project result in inadequate emergency access?

Construction and Operation

Less Than Significant Impact. Neither construction activities nor on-going operations would adversely impact emergency vehicles. The addition of project-generated traffic during construction along study roadways and at study intersections would have a negligible effect on emergency vehicles, as all vehicles are required to yield to emergency response vehicles. The only building structure in the area is a gas station on the south side of the interchange. The project would not alter emergency access to this location.

5.14.2.3 Cumulative Impacts

Construction

No Impact. The construction period would be 18 months, and there are no known development projects in the area that would result in any cumulative change.

Operation

No Impact. Because the operational phase of the project would generate a negligible level of traffic volume (average of less than 1 trip to/from the site), there would be no cumulative impacts during the on-going operations.

5.14.3 Conclusions and Recommendations

As discussed above, with implementation of COCs described below, the project would have a less than significant impact related to transportation. CEC staff recommends adopting the conditions of certification as detailed in subsection "5.14.4 Proposed Conditions of Certification" below.

5.14.4 Proposed Conditions of Certification

TRANS-1 In order to avoid creating recurring impacts to the County's Level of Service policy, the project will cease all construction activities on Fridays at 1:00 PM, and no construction will occur on Fridays when a Federal Holiday occurs the following Monday.

Verification: The project owner shall include in its Monthly Compliance Reports (MCRs) a time-stamped photo showing that construction activities have ceased per above.

TRANS-2 The project owner shall prepare and implement a Construction Management Plan (CMP). The CMP shall address the movement of workers, vehicles, equipment, and materials, including arrival and departure schedules, carpooling, a parking/staging plan, and designated workforce and delivery routes. Traffic control plans shall be prepared for any roadway or lane closures and shall include any signage or roadway lighting improvements deemed necessary during construction. The CMP shall address means of access for emergency vehicles to the project, as well as means of maintaining access to any adjacent commercial property during the construction of the project.

Verification: At least 90 calendar days prior to the start of construction, the project owner shall submit the CMP to the County of San Bernardino for review and comment and to the compliance project manager (CPM) for review and approval.

At least 45 calendar days prior to the start of construction, the project owner shall provide copies of any comment letters received on the CMP for review and approval. After CPM review and approval, the project owner shall provide completed copies of the final CMP to any commenting entities.

TRANS-3 The project owner shall comply with limitations imposed by Caltrans and other relevant jurisdictions, including the County of San Bernardino, on vehicle sizes, weights, driver licensing, and truck routes as part of **HAZ-1**, which requires preparation of a Hazard Mitigation Business Plan for submission to San Bernardino County.

Verification: The project owner shall retain copies of permits and supporting documents on-site for CPM inspection if requested.

TRANS-4 The project owner shall ensure that permits and/or licenses are secured from the relevant administering agency, including California Highway Patrol and Caltrans for the transport of hazardous materials.

Verification: The project owner shall include in its Monthly Compliance Reports (MCRs) copies of all permits/licenses acquired by the project owner and/or subcontractors concerning the transport of hazardous substances.

5.14.5 Recommended Mitigation Measures

No mitigation measures are recommended for the non-jurisdictional project components for transportation.

5.14.6 References

OPR – Office of Planning and Research. "TECHNICAL ADVISORY - ON EVALUATING TRANSPORTATION IMPACTS IN CEQA." Adopted December 2018. Accessed on January 2025. Accessed online at: https://opr.ca.gov/docs/20190122-743_Technical_Advisory.pdf

PeMS 2025 – Caltrans. *Performance Evaluation and Monitoring System*. Accessed on January 2025. Accessed online portal at: https//pems.dot.ca.gov.

Resolution Environmental 2024 – Resolution Environmental (TN 259705). Soda Mountain Solar, Data Request Revision 1_Appendix M_Revised Transportation Section and Appendices, October 24, 2024. Available online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=23-AFC-03

RE 2024RRRrrr – Resolution Environmental (TN 259705). Appendix M Transportation Analysis - October 2024 - Revision 1, dated October 25, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025ii – Resolution Environmental (TN 264913). Updated Project Description and Responses to REV 1 DR BIO-2 and REV 1 DR ES-1, dated July 18, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

TRB 1980 – Transportation Research Board. "INTERIM MATERIALS ON HIGHWAY CAPACITY". Adopted October 8, 1980. Accessed online at: http://onlinepubs.trb.org/Onlinepubs/trcircular/212/212.pdf

TRB 2016 – Transportation Research Board (TRB). "Highway Capacity Manual, Sixth Edition: A Guide for Multimodal Mobility Analysis, 2016." Accessed online at: https://www.trb.org/publications/hcm6e.aspx

5.15 Visual Resources

5.15.1 Environmental Setting

The proposed project would be constructed on approximately 2,670 acres (proposed project site) of Bureau of Land Management (BLM)-managed land in unincorporated eastern San Bernardino County, California. The project's jurisdictional components include construction and operation of a solar photovoltaic (PV) facility, battery energy storage system (BESS), project substation, 500 kilovolt (kV) generation-intertie (gen-tie) line, water supply facilities, stormwater infrastructure, operations and maintenance buildings and structures, access roads, lighting, and fences, as well as construction of a utility switchyard and sections of transmission loop in lines that would connect to the existing Mead-Adelanto Transmission Line. The project's non-jurisdictional components would include the operation of the utility switchyard and section of transmission loop in line and towers, as well as network upgrades at the existing Marketplace and Adelanto substations. However, given the rural locations and scale of the existing Marketplace and Adelanto substations, the non-jurisdictional network upgrades (of electrical equipment such as line tuners, wave traps, microwave telecom links, relay projection equipment, and metering and controls equipment) would not be noticeable to the public, would not result in an aesthetics/visual resources impacts (construction or operation), and would not require the application of mitigation measures. Therefore, the network upgrades are not addressed further in this analysis. All of the remaining components listed above would be located at the proposed project site as described below.

The proposed project site is situated adjacent to Interstate 15 (I-15), approximately seven miles southwest of the community of Baker, California and occupies a gently sloping alluvial valley dividing the northern and southern portions of the Soda Mountains in the Mojave Desert. Generally, the landscape can be characterized as a broadly enclosed valley that is unencumbered by intervening features. The project site is visually and ecologically characteristic of the Mojave basins common in this region, composed of rural, creosote bush-dominated desert land with tan, sandy soils and various shades of low, muted-green vegetation, with some rocky outcrops. The area encompassing the project site is almost entirely undeveloped (with the exception of I-15). While the project site is classified and managed according to the BLM's Visual Resource Management (VRM) Class III, no natural features, objects, or geologic distinguishing characteristics within the project site have been recognized for their aesthetic value, and I-15 and the surrounding Soda Mountains dominate the visual landscape in the vicinity of the project site.

The project site is bounded directly to the east by the Mojave National Preserve (administered by the National Park Service [NPS]) and BLM-managed land, including the Rasor Off-Highway Vehicle (OHV) recreation area at the southeast corner, and the Soda Mountains Wilderness to the west. Rasor Road, an unimproved BLM public access road, runs from the southwest corner of the project site and splits into two forks. I-15,

the former Arrowhead Trail Highway, runs along the western boundary of the project site, with Rasor Road Services Shell Oil gas station located off I-15 southwest of the project site, along the access road to the project site. The gas station is illuminated by nighttime lighting.

I-15 is the primary travel route through the project area and typically provides viewers low-angle perspectives of the valley. Viewer attention is most typically drawn to the Soda Mountain range due to the size and dominant nature of the mountains.

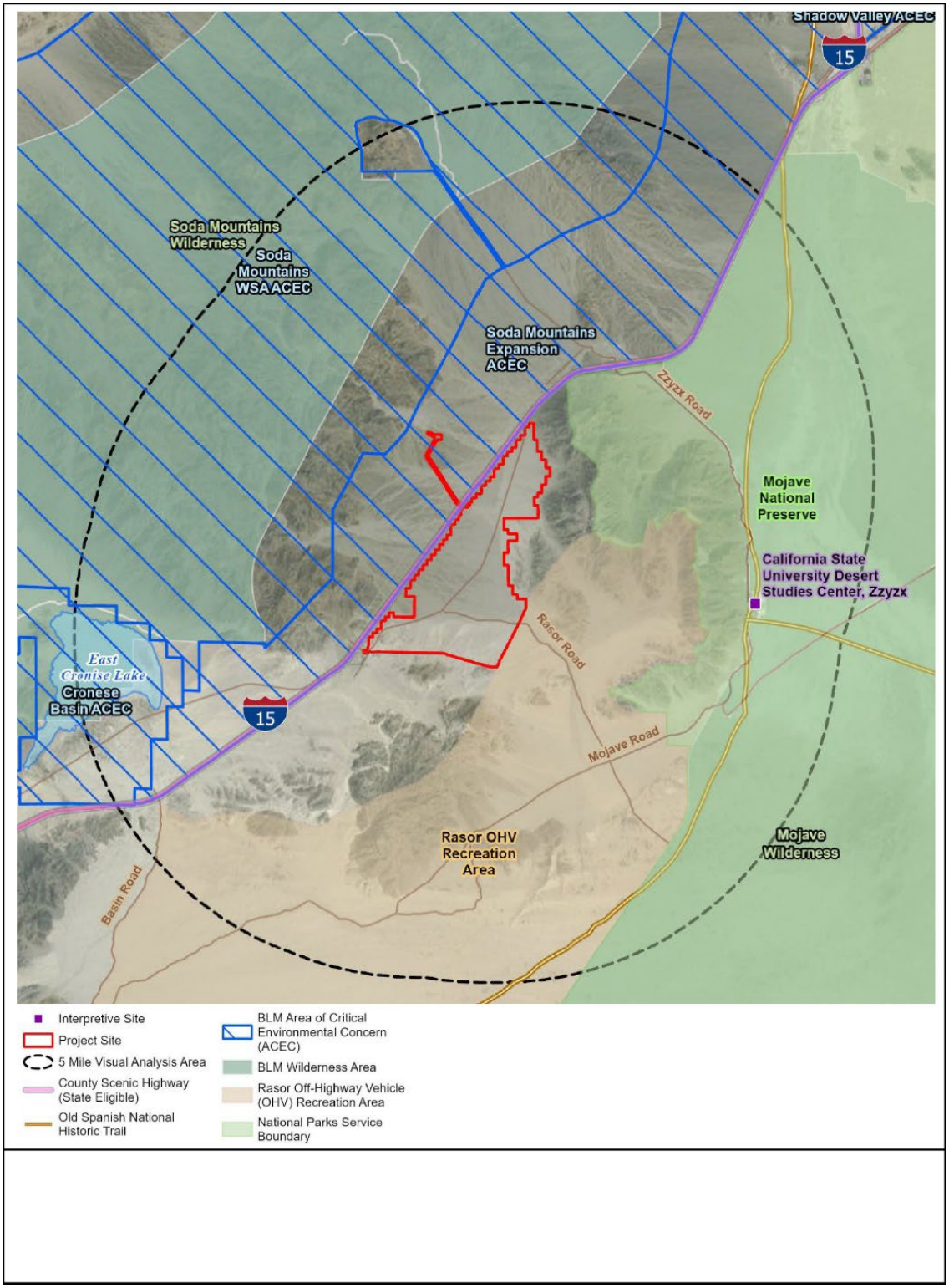
There are two transmission lines northwest of I-15 (at a distance of approximately 1.0 to 1.5 miles from I-15), opposite the project site. The transmission lines include the 500-kV Mead-Adelanto transmission line and a Southern California Edison 115-kV transmission line. An additional smaller electric distribution line is also visible to the northwest. These vertical structures stand out against the relatively low and flat landscape, and contrast with the background mountains.

The closest residence to the project location can be found next to the Rasor Road service station, approximately 260 feet southwest of the proposed project boundary. This area encompasses a stand-alone house and accommodation for four workers.

The landscape immediately surrounding the proposed project site is primarily undeveloped desert lands and, therefore, has limited sources of nighttime artificial light. No light sources currently exist on the project site. Nearby open space and rural lands, including the Mojave National Preserve and Rasor OHV recreation area, have little to no night lighting. However, adjacent (to the project site) I-15 introduces a substantial amount of night lighting from vehicle lights and the sparsely located overcrossings.

Staff also reviewed the applicant-prepared inventory of recreation and potentially sensitive scenic vista areas extending out to 5 miles of the proposed project site (**Figure 5.15-1**).

Figure 5.15-1 Designated Recreation and Potentially Sensitive Scenic Vista Areas



Source: RE 2025ff, Figure 3.1-1

Regulatory

Federal, state, and local government plans, policies, and regulations relating to aesthetics and visual resources pertinent to the proposed project and proposed project site are set forth below.

Federal

Bureau of Land Management Technical Note 457, Night Sky and Dark Environments (BLM, 2023). BLM-managed lands provide differing types of activities, developments, and visitor services that include outdoor lighting where appropriate to provide for worker and visitor safety, security, and enjoyment. Due to growing public concern and research available about light pollution, this technical note provides a set of best practices for outdoor lighting.

Per *Section 3.1.2 – Types of Light Pollution,* there are different types of light pollution and associated effects:

- Glare: possible exposure because this project uses pole-top luminaires
- Skyglow: possible exposure because this project uses pole-top luminaires
- Light trespass: not applicable to this project because lighting installations are far from adjacent recreational areas.
- Light clutter: not applicable to this project because lighting is sparse
- Over-illumination: not applicable to this project because lighting is low intensity and task driven only

Per *Section 4 – Principles of Artificial Light at Night to Avoid Light Pollution*, best practices have been identified:

- Warmer color temperature lighting (2200–3000 Kelvin) will be used.
- Automatic scheduling via lighting controls will be used to provide lighting when needed.
- When operational, this facility has no nighttime lighting requirements and, as such, all outdoor lighting will be task driven only, such as building access or security lighting.

Desert Renewable Energy Conservation Plan. The Desert Renewable Energy Conservation Plan (DRECP) is an interagency plan developed by BLM, U.S. Fish and Wildlife Service, California Energy Commission, and California Department of Fish and Wildlife (BLM, 2016). This plan was developed to address the need for a landscape approach to renewable energy and conservation planning in the California desert.

The DRECP Land Use Plan Amendment (LUPA) establishes VRM classes for lands under its direction (further listed below). The landscapes under this plan have been inventoried using the BLM's Visual Resource Inventory (VRI) system and given a VRM

classification for management direction. Each VRM class allows for landscape changes from management activities and use authorizations that contrast at different levels with the existing characteristic landscapes. The LUPA-VRM and General Public Land (GPL)-VRM measures include the following.

LUPA-VRM-1: Manage visual resources in accordance with the VRM classes.

LUPA-VRM-2: Ensure that activities with each of the VRM class polygons meets the VRM objectives described above, as measured though a visual contrast rating process.

LUPA-VRM-3: Ensure that transmission facilities are designed and located to meet the VRM class objectives for the area in which they are located. All reasonable effort must be made to reduce visual contrast of these facilities in order to meet the VRM class before pursuing Resource Management Plan amendments. This includes changes in routing, using lattice towers (vs. monopole), color treating facilities using an approved color from the BLM Environmental Color Chart CC-001 (dated June 2008, as updated April 2014, or the most recent version) (vs. galvanized) on towers and support facilities, and employing other best management practices (BMPs) to reduce contrast.

GPL-VRM-1: Development in GPLs is required to incorporate visual design standards and include the best available, most recent BMPs as determined by BLM.

GPL-VRM-2: Required Visual Resource BMPs. All development will abide by the BMPs addressed in the most recent version of Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands (BLM, 2013) or its replacement.

GPL-VRM-3: Regional mitigation is required for visual impacts in GPLs. Mitigation will be based on the VRM class and the underlying visual values (scenic quality, sensitivity, and distance zone) for the development area as it stands at the time the Record of Decision is signed for the DRECP. Compensation may involve reclamation of visual impacts that are present within other areas designated as BLM VRM Class I or II lands (so that they are no longer visible in the long term). Additional mitigation will be required where projects affect viewsheds of specially designated areas (e.g., National Scenic and Historic Trails).

National Park Service Night Sky Program. The protection of night skies, nighttime views, and environments are among the critical park features the NPS protects (NPS, 2023). Under the Night Sky Program, NPS staff monitor dark night skies and develop exterior lighting guidelines to determine the lighting that is appropriate based on a location's historic character, energy, cost, maintenance efficiency, light pollution, and wildlife. NPS works to protect natural lightscapes by minimizing light that emanates from park facilities and seeks the cooperation of park visitors, neighbors, and state and local governments to prevent or minimize light pollution that can affect park ecosystems (NPS Management Policies 4.10) (NPS, 2006).

Mojave National Preserve. The Mojave National Preserve encompasses a diverse mosaic of ecological habitats and a 10,000-year history of human connection with the desert. Offering extensive opportunities to experience desert landscapes, the preserve promotes understanding and appreciation for the increasingly threatened resources of the Mojave Desert. This remote preserve encourages a sense of discovery and a connection to wild places. Although the proposed project site is not located within the Mojave National Preserve, the visual analysis area does overlap the westernmost portion of the preserve.

The *Foundation Document Mojave National Preserve* identifies desert scenery, encompassing geology, landscape, vegetation, big sky, and wildlife as fundamental resources and values for the preserve (NPS, 2013).

General Management Plan

The *Mojave National Preserve General Management Plan* catalogs general goals and policies for preserve management, including the protection of scenic resources (NPS, 2002a). To date, the NPS has not adopted specific guidelines related to preservation of visual resources or evaluating impacts of projects within or near the preserve. The General Management Plan states that NPS will, at a future date, prepare more specific guidelines to establish visual consistency and themes in facility development. Guidelines will also be created for reaching visual compatibility with surrounding landscapes, significant architectural features, and site details. These guidelines' main objective will be to create harmony between the built and natural environments.

The following management direction is provided in the General Management Plan that affects visual resources (NPS, 2002a):

Viewsheds / Visual Quality:

1. Encourage compatible adjacent land uses and seek to mitigate potential adverse effects on park values by actively participating in planning and regulatory processes of neighboring jurisdictions, other federal, state, and local agencies, and Native Americans.
2. Prepare guidelines for the built environment to establish visual consistency and themes in facility development and to create harmony between the built environment and the natural environment.
3. Prepare a communication management plan to address the NPS goals and the need to establish sites for communication equipment.

Night Sky:

The NPS will partner with communities and local government agencies to minimize reflected light and artificial light intrusion on the dark night sky, recognizing the essential component that a carpet of stars against a black night sky is for a natural outdoor experience. The NPS will strive to set the best example in all developments that involve the use of artificial outdoor lighting, ensuring that such lighting is

> limited to basic safety requirements and shielded to the maximum extent possible to keep light on the intended subject and out of the night sky. Baseline light measurements will be established to monitor changes over time (NPS, 2002).

There are two General Management Plan land use designations within the preserve from which the project site may be seen. As described in the General Management Plan (NPS, 2002), these designations and their desired characteristics are:

> Natural Areas:
>
> Natural areas of the preserve that occur outside of designated wilderness provide an informal, self-guided desert learning experience for visitors. People are encouraged to get out of their vehicles and walk to features. The pace is slow with low to moderate levels of noise. Visitors typically focus on specific resources with few visual intrusions. Visitors experience a sense of learning through onsite interpretation or other means. The length of stay at each site is relatively short in comparison to the time visitors spend in the preserve. There is a moderate amount of social crowding and moderate interaction at points of interest and along dead-end trails. Guided ranger walks are occasionally provided for visitors at some locations. Development is limited to items such as low interpretive panels, small directional signs, and hardened dirt paths. Fences are used as a last resort to protect resources if other management efforts do not work. The tolerance for resource degradation is low to moderate, depending on the sensitivity of the resource. The degree of on-site visitor and resource management is moderate and increases or decreases with visitation levels.
>
> Wilderness:
>
> Wilderness, as a desired future condition, is a subset of the natural environment, where protection of the natural values and resources is the primary management goal. Restrictions on use of these areas are imposed by law and policy in order to provide a primitive environment free from modern mechanization and motorized travel. The landscape offers a high degree of challenge and adventure for visitors. The visual quality of the landscape contributes significantly to the visitor experience and needs to be protected. The tolerance for resource degradation is low, with the exception of designated trail corridors, where a slightly higher level of degradation is allowed within a few feet of the trail and at points where camping occurs. A minimal amount of resource and visitor management is present (NPS, 2002).

The General Management Plan also addresses scenery-related effects of external development on adjacent lands. In part, the plan provides the following direction.

> To fulfill the mandate to preserve park resources unimpaired for future generations, adopting strategies and actions beyond park boundaries has become increasingly necessary. Because ecological processes cross park boundaries, and parks typically do not incorporate the entire ecosystem or scenic vista, many activities proposed or existing on adjacent lands have the potential to significantly affect park resources, programs, visitor experiences, and wilderness values.

> Recognizing these issues, the park staff will work cooperatively with others to anticipate, avoid, and resolve potential conflicts and to address mutual interests in the quality of life for community residents (NPS, 2002).

Old Spanish National Historic Trail. The Old Spanish National Historic Trail (OSNHT) links Santa Fe and Los Angeles across six states and 2,700 miles. The Old Spanish Trail was designated by Congress as a National Historic Trail in December 2002 (Public Law 107–325). By memorandum from the Secretary of the Interior, the OSNHT is jointly administered by BLM and NPS, working in partnership with other federal, state, and local government agencies, as well as private landowners who manage or own lands along the trail route. *The Old Spanish National Historic Trail Comprehensive Administrative Strategy* guides the administrative management of the trail (NPS, 2017). The Armijo Route of the OSNHT route follows the Mojave River into the Mojave National Preserve, then travels on the east side of the Soda Mountains through Zzyzx to Baker (**Figure 5.15-1**).

BLM Solar Energy Program. Under BLM's Solar Energy Program, the BLM adopted programmatic design features for visual resources, including VRM BMPs, procedures for coordinating with BLM staff during the project application process, evaluating visual resources, analyzing potential visual effects, and avoiding or minimizing potentially significant effects.

State

California Scenic Highway System. California's Scenic Highway Program was created by the Legislature in 1963. Its purpose is to preserve and protect scenic highway corridors from change that would diminish the aesthetic value of lands adjacent to highways. The state laws governing the Scenic Highway Program are found in the Streets and Highways Code, Section 260 et seq.

The State Scenic Highway System includes a list of highways that are either eligible for designation as scenic highways or have been so designated. The status of a state scenic highway changes from eligible to officially designated when the local jurisdiction adopts a scenic corridor protection program, applies to the California Department of Transportation (Caltrans) for scenic highway approval, and receives notification from Caltrans that the highway has been designated as a state scenic highway.

I-15 is listed by Caltrans as an eligible but not designated scenic highway, which means scenic protection requirements do not apply under the Scenic Highway Program (Caltrans 2025). In order for a route to be designated as a state scenic highway, it must first be nominated for designation by the County. Although I-15 is identified by San Bernardino County as a County scenic route, I-15 has not been nominated by the County for state scenic highway status.

Local

The project is located entirely on BLM-administered public land. While the project is not subject to San Bernardino County jurisdictional authority, the following local policies, ordinances, and goals serve as indicators of potential sensitivity to changes in the visual environment for purposes of assessing visual impacts associated with implementation of the project.

San Bernardino County Countywide Plan. The San Bernardino County Policy Plan (Policy Plan) contains the long-term goals and policies that will guide County decisions, investments, and improvements toward achieving the countywide vision (San Bernardino County, 2024). The Policy Plan represents a unique approach to county planning. It serves as the County's General Plan for the unincorporated areas, which is mandated by state law, but it also includes policy direction for adult and child supportive services, healthcare, public safety, and other regional services the County administers in both incorporated and unincorporated areas.

The following policies are relevant to this analysis:

Policy LU-2.3: Compatibility with natural environment. We require that new development is located, scaled, buffered, and designed for compatibility with the surrounding natural environment and biodiversity.

Policy LU-4.1: Context-sensitive design in the Mountain/Desert Regions. We require new development to employ site and building design techniques and use building materials that reflect the natural mountain or desert environment and preserve scenic resources.

Policy LU-4.7: Dark skies. We minimize light pollution and glare to preserve views of the night sky, particularly in the Mountain and Desert regions where dark skies are fundamentally connected to community identities and local economies. We also promote the preservation of dark skies to assist the military in testing, training, and operations.

Policy IU-5.5: Energy and fuel facilities. We encourage the development and upgrade of energy and regional fuel facilities in areas that do not pose significant environmental or public health and safety hazards, and in a manner that is compatible with military operations and local community identity.

Policy NR-4.1: Preservation of scenic resources. We consider the location and scale of development to preserve regionally significant scenic vistas and natural features, including prominent hillsides, ridgelines, dominant landforms, and reservoirs.

Policy NR-4.2: Coordination with agencies. We coordinate with adjacent federal, state, local, and tribal agencies to protect scenic resources that extend beyond the County's land use authority and are important to countywide residents, businesses, and tourists.

Policy RE-4.4: Encourage siting, construction, and screening of renewable energy (RE) generation facilities to avoid, minimize or mitigate significant changes to the visual environment including minimizing light and glare.

- **RE 4.4.1:** Reduce visual impacts through a combination of minimized reflective surfaces, context sensitive color treatments, nature-oriented geometry, minimized vegetation clearing under and around arrays, conservation of pre-existing native plants, replanting of native plants as appropriate, maintenance of natural landscapes around the edges of facility complexes, and lighting design to minimize night-sky impacts, including attraction of and impact to nocturnal migratory birds.

Goal RE-5 Siting. Renewable energy facilities will be located in areas that meet County standards, local values, community needs and environmental and cultural resource protection priorities.

- **Policy RE-5.7:** Support renewable energy projects that are compatible with protection of the scenic and recreational assets that define San Bernardino County for its residents and make it a destination for tourists.
    - **RE 5.7.1:** Site RE generation facilities in a manner that will avoid, minimize or substantially mitigate adverse impacts to sensitive habitats, cultural resources, surrounding land uses, and scenic viewsheds.

San Bernardino County Development Code – Title 8 (2014). The following policies from the San Bernardino County Development Code help minimize aesthetic and light and glare impacts and are relevant to this analysis.

83.07.060 Mountain and Desert Requirements

This section provides standards for outdoor lighting in the Mountain and Desert regions of the County.

a) **Shielding Required.** All outdoor light fixtures shall be fully shielded, installed and maintained in such a manner that the shielding does not permit light trespass in excess of amounts set forth in subdivision (f).

b) **Light Pollution Standards.** Light pollution and trespass shall be minimized through the use of directional lighting, fixture location, height and the use of shielding and/or motion sensors and timers in such a manner that the light source does not permit light trespass in excess of amounts set forth in subdivision (f).

c) **Automated Controls.** Automated control systems, such as motion sensors and timers, shall be used to meet curfew requirements set forth in subdivision (d). Photocells or photo controls shall be used to extinguish all outdoor lighting automatically when sufficient daylight is available. Automated controls should be fully programmable and supported by battery or similar backup.

d) **Dark Sky Curfew.** All outdoor lighting shall be extinguished by 11:00 p.m., close of business, or when people are no longer present in exterior areas, whichever is later, except for the following.

1. Lighting used for entry and exit points of a structure, parking areas, driveways and driveway ingress/egress points; or
2. Lighting activated by a motion sensor that extinguishes no later than five minutes after activation.

e) **Lighting Color.** The correlated color temperature of all outdoor lighting shall be 3,000 Kelvin or less except for seasonal lighting.

f) **Allowable Light Trespass.** Outdoor lighting shall not cause light trespass exceeding one-tenths foot-candles measured with a light meter oriented vertically or horizontally either at the property line of the adjacent property or measured from some other point on the property where light trespass may be reasonably determined to occur due to differences in property or improvement elevations.

g) **Blinking, Flashing, or High Intensity Lighting.** Permanently installed lighting that blinks, flashes or is of high intensity or brightness that causes a light trespass is prohibited.

84.29.035 Required Findings for Approval of a Commercial Solar Energy Facility

a) In order to approve a commercial solar energy generation facility, the Planning Commission shall determine that the location of the proposed commercial solar energy facility is appropriate in relation to the desirability and future development of communities, neighborhoods, and rural residential uses, and will not lead to loss of the scenic desert qualities that are key to maintaining a vibrant desert tourist economy by making each of the findings of fact in Subdivision (c).

b) In making these findings of fact, the Planning Commission shall consider:
   1. The characteristics of the commercial solar energy facility development site and its physical and environmental setting, as well as the physical layout and design of the proposed development in relation to nearby communities, neighborhoods, and rural residential uses; and
   2. The location of other commercial solar energy generation facilities that have been constructed, approved, or applied for in the vicinity, whether within a city or unincorporated territory, or on State or Federal land.

c) The findings of fact shall include the following:
   1. The proposed commercial solar energy generation facility is either: Sufficiently separated from existing communities and existing/developing rural residential areas so as to avoid adverse effects, or of a sufficiently small size, provided with adequate setbacks, designed to be lower profile than otherwise permitted, and sufficiently screened from public view so as to not adversely affect the desirability and future development of communities, neighborhoods, and rural residential use.

2. Proposed fencing, walls, landscaping, and other perimeter features of the proposed commercial solar energy generation facility will minimize the visual impact of the project so as to blend with and be subordinate to the environment and character of the area where the facility is to be located.
3. The siting and design of the proposed commercial solar energy generation facility will be either: unobtrusive and not detract from the natural features, open space and visual qualities of the area as viewed from communities, rural residential uses, and major roadways and highways, or located in such proximity to already disturbed lands, such as electrical substations, surface mining operations, landfills, wastewater treatment facilities, etc., that it will not further detract from the natural features, open space and visual qualities of the area as viewed from communities, rural residential uses, and major roadways and highways.
4. The siting and design of project site access and maintenance roads have been incorporated in the visual analysis for the project and shall minimize visibility from public viewpoints while providing needed access to the development site.
5. The proposed commercial solar energy generation facility will minimize site grading, excavating, and filling activities by being located on land where the existing grade does not exceed an average of five percent across the developed portion of the project site, and by utilizing construction methods that minimize ground disturbance.
6. Adequate provision has been made to maintain and promote native vegetation and avoid the proliferation of invasive weeds during and following construction.
7. The proposed commercial solar energy generation facility will avoid modification of scenic natural formations.
8. For proposed facilities within two miles of the Mojave National Preserve boundaries, the location, design, and operation of the proposed commercial solar energy facility will not be a predominant visual feature of, nor substantially impair views from, hiking and backcountry camping areas within the National Preserve.
9. For proposed facilities within two miles of the boundaries of a County, State or Federal agency designated wilderness area, the location, design, and operation of the proposed commercial solar energy facility will not be a predominant visual feature of, nor substantially impair views from, the designated wilderness area.

84.29.070 Decommissioning Requirements

a) **Closure Plan.** Following the operational life of the project, the project owner shall perform site closure activities to meet federal, state, and local requirements for the rehabilitation and revegetation of the project site after decommissioning. The project owner shall prepare a Closure, Revegetation, and Rehabilitation Plan and submit it to the Planning Division for review and approval prior to building permit issuance. Under this plan, all aboveground structures and facilities shall be removed to a depth of three feet below grade and removed offsite for recycling or disposal.

Concrete, piping, and other materials existing below three feet in depth may be left in place. Areas that had been graded shall be restored to original contours unless it can be shown that there is a community benefit for the grading to remain as altered. Succulent plant species native to the area shall be salvaged prior to construction, transplanted into windrows, and maintained for later transplanting following decommissioning. Shrubs and other plant species shall be revegetated by the collection of seeds and re-seeding following decommissioning (San Bernardino County, 2024). It should be noted that the decommissioning requirements referenced here do not apply to federal land and are cited only for context.

Staff discusses the proposed project's consistency with these plans, policies, and regulations in subsection 5.15.2.

Cumulative

The landscape in the proposed project area demonstrates evidence of visible disturbances related to electric energy transmission and transportation infrastructure. These past projects may be relevant for a cumulative analysis of the proposed project and the effects pertaining to aesthetics/visual resources from these projects. Staff reviewed the projects in **Table A-1** and **Figure A-1**, in **Appendix A**, and determined the following two projects have the potential to create cumulative visual impacts in combination with the proposed project.

- Brightline West – Las Vegas to Victor Valley Electric Rail Service
- Ivanpah-Control 115 kV Transmission Line Rebuild Project

5.15.2 Environmental Impacts

VISUAL RESOURCES Except as provided in Public Resources Code Section 21099[1], would the project:	**Significant and Unavoidable Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a. Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c. In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings (public views are those that are experienced from publicly accessible vantage point)? If the project is in an	☒	☐	☐	☐

1 Public Resources Code section 21099 asks is the proposed project an "employment center project" on an "infill site" within a "transit priority area" as defined in this section? A transit priority area is an area within a half mile (2,640 feet) of a major transit stop existing or planned. Public Resources Code section 21099(d)(1) states "Aesthetic and parking impacts of a residential, mixed-use residential, or employment center project on an infill site within a transit priority area shall not be considered significant impacts on the environment."

VISUAL RESOURCES Except as provided in Public Resources Code Section 21099[1], would the project:	**Significant and Unavoidable Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?				
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☒	☐	☐

California Code of Regulations, Title 14, Division 6, Chapter 3, Article 20 Appendix G Environmental Checklist Form, I. Aesthetics as amended December 28, 2018.

In accordance with Public Resource Code section 21099, staff has determined the proposed project is not an employment center project on an infill site within a transit priority area. A transit priority area is an area within a half mile (2,640 feet) of a major transit stop. Staff viewed current Google Earth aerial and street view imagery and found no major transit stop in the vicinity.

5.15.2.1 Methodology and Thresholds of Significance

The California Energy Commission (CEC) evaluates a proposed project in accordance with the California Environmental Quality Act (CEQA) codified in California Public Resources Code (Pub. Resources Code) section (§) 21000 et seq., and the Guidelines for the Implementation of the California Environmental Quality Act (CEQA Guidelines) codified in the California Code of Regulations (Cal. Code Regs.), Title 14, § 15000 et seq.

CEQA states "'Environment' means the physical conditions which exist within the area, which will be affected by a proposed project, including land, air, water, minerals, flora, fauna, noise, and objects of historic or aesthetic significance [emphasis added]." (Pub. Resources Code § 21060.5)

The CEQA Guidelines state "Effects analyzed under CEQA must be related to a physical change." (Cal. Code Regs., tit. 14, § 15358[b])

The CEQA Guidelines also state a "'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 proposed project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance [emphasis added]." (Cal. Code Regs., tit. 14, § 15382)[2]

"The determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data. An ironclad definition of significant

4 In addition to Cal. Code Regs., tit. 14, § 15382 and also stated in Cal. Code Regs., tit. 14, § 15360 and Public Resources Code § 21060.5.

effect is not always possible because the significance of an activity may vary with the setting. For example, an activity which may not be significant in an urban area may be significant in a rural area." (Cal. Code Regs., tit. 14, § 15064[b][1])

The CEC must assess "...the physical environmental conditions in the vicinity of the project. This environmental setting will normally constitute the baseline physical conditions by which a lead agency [3] determines whether an impact is significant." (Cal. Code Regs., tit. 14, § 15125[a])

Object of Aesthetic Significance

An exact definition of an "object of aesthetic significance" is not provided in CEQA or the CEQA Guidelines. For these analyses, an object of aesthetic significance can be explained as an object subjectively designated by the federal, state, or local government and unique to it. Also, an undesignated but popularly used or appreciated area or object of aesthetic claim of significance is considered within this definition. A tour book guide and road atlas of the area (e.g., AAA, Rand McNally) are helpful. A lead agency may look to local planning thresholds when defining the aesthetic impact standard for the purpose of CEQA[4] (e.g., general plan, specific plan, zoning). A few often-designated objects of aesthetic significance at the federal, state, or local government levels have included:

- A geographic feature, geologic distinguishing characteristic or structure, or geomorphologic feature.
- A structure that embodies elements of architecture or engineering design, detail, materials, or craftsmanship that represent a significant innovation or is unique.
- A structure of unusual historical and usually aesthetic interest.
- A tree or group of trees recognized for their aesthetic, botanical, and ecological value, and/or age, rarity, and size.
- A designed landscape.

The potential physical change by the proposed project to an existing object of aesthetic significance in the area and the existing physical environment is what is analyzed.

Environmental Factor – Aesthetics

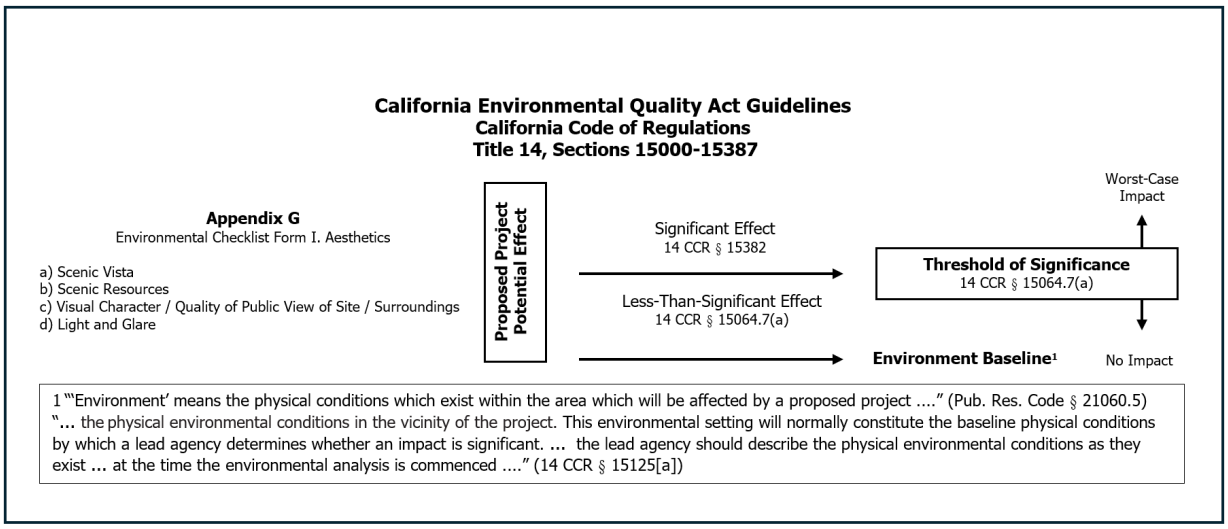
The CEQA Guidelines *Appendix G Environmental Checklist Form, I. Aesthetics* supplies questions (criteria) to answer when evaluating if a proposed project has a significant effect on the environment involving the environmental factor "Aesthetics" (shown above). Staff uses these questions in this analysis. Explanations and responses to them are presented under the subheadings Scenic Vista, Scenic Resources Within a State

3 "'Lead agency' means the public agency which has the principal responsibility for carrying out or approving a project." (Cal. Code Regs., tit. 14, § 15367)

4 *Mira Mar Mobile Community v. City of Oceanside* (2004) 119 Cal. App. 4th 477.

Scenic Highway, Visual Character or Quality of Public View of a Site and its Surroundings, and Light and Glare.

"An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency...is to be reviewed in the light of what is reasonably feasible.... The courts have looked not for perfection but for adequacy, completeness, and a good faith effort at full disclosure." (Cal. Code Regs., tit. 14, § 15151)



Threshold of Significance

The CEQA Guidelines define a *threshold of significance* as "an identifiable quantitative, qualitative or performance level of a particular environmental effect, noncompliance with which means the effect will normally be determined to be significant by the agency and compliance with which means the effect normally will be determined to be less than significant." (Cal. Code Regs., tit. 14, § 15064.7[a]) See CEQA Guidelines Level Of Effect On The Environment below.

"Thresholds of significance...may assist lead agencies in determining whether a proposed project may cause a significant impact. When using a threshold, the lead agency should briefly explain how compliance with the threshold means that the proposed project's impacts are less than significant. Compliance with the threshold does not relieve a lead agency of the obligation to consider substantial evidence indicating that the project's environmental effects may still be significant." (Cal. Code Regs., tit. 14, § 15064[b][2])

"When adopting or using thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence." (Cal. Code Regs., tit. 14, § 15064.7[c])

Staff Method

Staff evaluates: (1) the alteration to the existing *landscape* [5] by a proposed *project* [6] using the CEQA Guidelines, Appendix G, I. Aesthetics[7] and (2) the conformance of the proposed project with aesthetics- and visual resources- related plans, policies, and regulations in accordance with Public Resources Code section 25525.

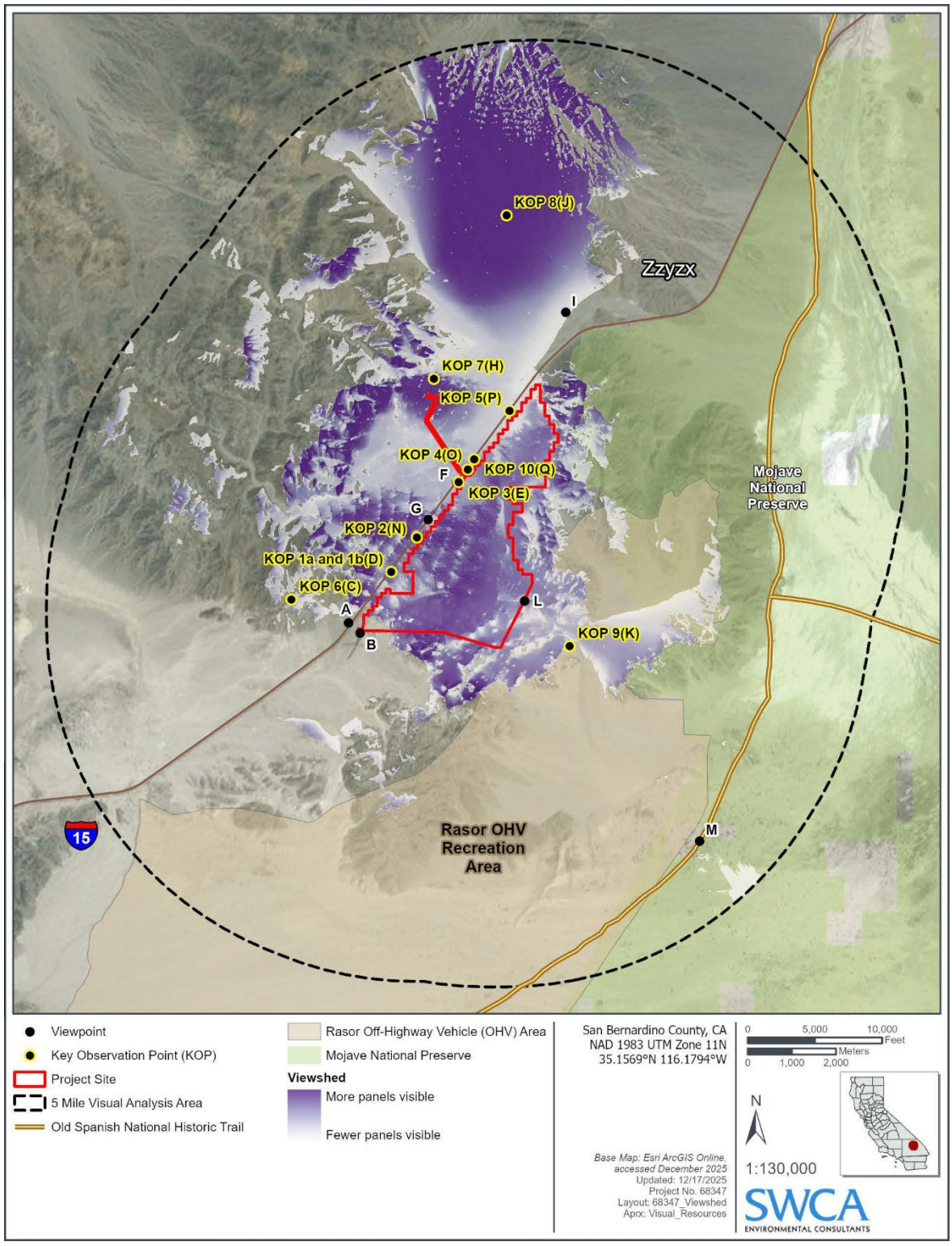
Completing an evaluation typically entails: examining aerial and street view imagery; reviewing Geographic Information System (GIS) information; analyzing site and vicinity photographs including any photographs from a key observation point (KOP, see **Figure 5.15-2**), and analyzing photo-realistic simulation(s) of the proposed project in the existing landscape. It also entails assessing elevations, architectural and site development plans, drawings, and renderings; reviewing applicable federal, state, and local government codes and regulations, maps, and plans; consulting tour book guides and road atlases; and visiting the proposed project site, KOPs, and surrounding area.

5 Landscape is defined as "The outdoor environment, natural or built, which can be directly perceived by a person visiting and using that environment. A scene is the subset of a landscape which is viewed from one location (vantage point) looking in one direction." (Hull and Revell 1989) "The term landscape clearly focuses upon the visual properties or characteristics of the environment, these include natural and man-made elements and physical and biological resources which could be identified visually; thus, non-visual biological functions, cultural/historical values, wildlife and endangered species, wilderness value, opportunities for recreation activities and a large array of tastes, smells and feelings are not included." (Daniel and Vining 1983; Amir and Gidalizon 1990)

6 A thermal or nonthermal generating facility with a capacity of 50-megawatts or more. An energy storage facility with a capacity of 200-megawatt hours or more. (See Pub. Res. Code § 25120 and 25545-25545.2)

7 California Code of Regulations, Title 14, Division 6, Chapter 3, Article 20 Appendix G Environmental Checklist Form, I. Aesthetics as amended December 28, 2018.

Figure 5.15-2 Key Observation Points and Viewshed Analysis



Source: RE 2025iiii

CEQA Guidelines Level of Effect on the Environment

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 and aesthetic significance." (Cal. Code Regs., tit. 14, § 15382) (Pub. Resources Code § 21060.5, Cal. Code Regs., tit. 14, § 15360) The physical change by the proposed project to the existing physical environment reaches the threshold of significance, "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, noncompliance with which means the effect will normally be determined to be significant by the [lead] agency...." (Cal. Code Regs., tit. 14, § 15064.7[a])

Less Than Significant Effect with Mitigation Incorporated. The physical change by the proposed project to the existing physical environment reaches the threshold of significance, "... but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed CEQA environmental document (e.g., Negative Declaration) is released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment." (Pub. Resources Code § 21064.5, Cal. Code Regs., tit. 14, § 15369.5) (Pub. Resources Code § 21002)

Less Than Significant Effect. The physical change by the proposed project to the existing physical environment does not reach the threshold of significance, "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, ... compliance with which means the effect normally will be determined to be less than significant." (Cal. Code Regs., tit. 14, § 15064.7[a])

5.15.2.2 Direct and Indirect Impacts

Scenic Vista

a. Would the project "have a substantial adverse effect on a scenic vista?"

Neither CEQA nor the CEQA Guidelines provide a definition of what constitutes a scenic vista. As already noted, lead agencies may look to local planning thresholds for guidance when defining the visual impact standard for the purposes of CEQA.[8] A general plan, specific plan, zoning, or other planning document can provide guidance.

8 *Mira Mar Mobile Community v. City of Oceanside* (2004) 119 Cal. App. 4th 477.

The CEC in its certification (approval) for a number of thermal power plant projects has used as the definition for a *scenic vista* as, "a distant view of high pictorial quality perceived through and along a corridor or opening."

In this definition, "... perceived through and along a corridor or opening" refers to the potential movement into or through a portion of landscape limited by either elevated landforms bounding the observer's field of view in a rural landscape, or dominant man-made horizontal and/or vertical massed components[9] positioned at regular intervals that bound the observer's field of view in an urban landscape. No specific observer locations form the basis for defining the visual unit boundary. Instead, a distinct change in the extent and direction of views from the ground typically determines the boundary. The space within this area is inherently variable in appearance, possessing its own distinct visual character. The scenic distinction created by the combination of components within and surrounding it enables the viewer to form a unified impression (e.g., breathtaking, stunning, unsettling, repulsive).

An example of a scenic vista in a rural landscape would be the view through and along the Yosemite Valley as seen from the Wawona Tunnel overlook in Yosemite National Park, California. In an urban landscape, two examples include the view through and along the National Mall from the Washington Monument in Washington, D.C. and the view through and along Capitol Mall from the Tower Bridge to the California State Capitol building in Sacramento, California.

Once a scenic vista is identified, an adverse effect is presumed when a sizable component(s) of the proposed project physically changes (e.g., obstructs) the scenic vista.

Jurisdictional and Non-Jurisdictional Project Components

Construction and Operation

Less Than Significant Impact. The proposed project would be constructed on approximately 2,670 acres (proposed project site) of BLM-managed land immediately adjacent to I-15 in unincorporated eastern San Bernardino County, California. Generally, the landscape can be characterized as a broadly enclosed valley that is unencumbered by intervening features. The project site is visually and ecologically characteristic of the Mojave basins common in this region, composed of rural creosote bush-dominated desert land with tan, sandy soils and various shades of low, muted-green vegetation, with some rocky outcrops.

The most publicly visible proposed project structures would include:

- approximately 1,635 acres of crystalline photovoltaic (PV) panels with an overall maximum height of 12 feet (when mounted on the linear tracker structures);

9 A "component" is an individual object that makes up the landscape, physical and visible, natural and man-made which can be described, quantified, and measured (e.g., a puzzle piece in the overall picture).

- 74 inverter structures (3-feet long, 3-feet-wide, 4-feet-tall);
- a 140,000 square-foot substation with maximum component heights of 55 feet;
- a 234,000 square-foot switchyard with maximum component heights of 100 feet;
- an approximately 1-mile long, 500-kV gen-tie line consisting of 11 tubular steel poles and 6 lattice towers, all of which would be approximately 160-feet tall;
- an 18-acre battery energy storage system (BESS) with each enclosure 20-feet long, 6-feet-wide, and 8-feet-high;
- two operations and maintenance buildings (4,950 square feet, 30-feet-high);
- an operations and maintenance facility (2,400 square feet, 35-feet-high); and
- an 8-foot-high chain link perimeter fence.

Table 5.15-1 provides a list of key Project Site Components. Refer to **Section 3, Project Description** for greater detail about the proposed project. See **Figures 5.15-3b, -4b, -5b, -6b, -7b, 8b, 9b, 9c, 10b, 11b, 12b,** and **12c** under CEQA criterion c for simulations of the proposed project as viewed from KOPs 1a through 10, respectively.

TABLE 5.15-1 PROJECT FEATURES DIMENSIONS AND FINISHES

Project Component	Dimensions/Size	Materials	Finishes
Solar Panel Arrays and Support Structures			
Solar Panels	Fencing: 1,771 acres Racking area: 1,635 acres	Crystalline PV panels	Uniformly dark in color, non-reflective
Support and Mounting Structure (Solar Tracker)	Approximately 6 to 12 feet high at maximum tilt	Steel	Galvanized steel, dull finish
Inverter Structures	74 inverters; approximate dimensions 3 feet long, 3 feet wide, 4 feet high	Rectangular metal enclosure on small concrete pad base	As manufactured, matte finish off-white
Substation, Switchyard, Gen-Tie			
Substation	140,000 square feet Maximum component height: 55 feet	Electrical equipment including support structures: galvanized steel (grey), aluminum, concrete, and other typical construction materials	Galvanized steel, dull finish
Switchyard and Loop in facilities (Construction: Jurisdictional; Operation: Non-Jurisdictional)	234,300 square feet Maximum component height: 100 feet	Electrical equipment including support structures: galvanized steel (grey), aluminum,	Galvanized steel, dull finish

TABLE 5.15-1 PROJECT FEATURES DIMENSIONS AND FINISHES			
Project Component	**Dimensions/Size**	**Materials**	**Finishes**
		concrete, and other typical construction materials	
Gen-Tie Structures	160 feet high, 10-foot base diameter	Galvanized steel and concrete	Galvanized steel, dull finish
Battery Energy Storage System (BESS)			
BESS enclosures	18 acres. Each unit: 20 feet long, 6 feet wide, 8 feet high	Metal enclosure	Painted Sudan Brown from BLM Environmental Color Chart. Matte finish.
Operation and Maintenance (O&M) Buildings, Miscellaneous			
O&M buildings	(2) 4,950 square feet, 30 feet high; (1) 2,400 square feet, 35 feet high	Pre-fabricated metal-sided structures, concrete foundations and pads	Painted Sudan Brown from BLM Environmental Color Chart. Matte finish.
Perimeter Fencing	8-foot chain link	Steel posts and wire	Galvanized steel, dull finish
Parking Area	13,200 square feet	Compacted native soil	Natural soil
Internal Access Roads	16 feet wide	Compacted native soil	Natural soil

Staff reviewed current aerial and street view imagery (Google Earth, Google Maps), United States Geological Survey (USGS) map information, and area maps and concluded the proposed project would be on a low level (valley floor and gentle slopes) relative to the surrounding terrain (mountains and ridges) and not within a formally-designated scenic vista. Additionally, while informal scenic vistas could be available from the Soda Mountain Wilderness and Mojave National Preserve, much of the views of the project from these locations would be substantially screened by intervening terrain as indicated in the viewshed map presented as **Figure 5.15-2**.

The congressionally designated alignment of the Armijo Route of the Old Spanish National Historic Trail (OSNHT) is located to the east and south of the project. However, there are no high-value sites or segments identified along this portion of the OSNHT. At its closest point, the OSNHT is approximately 3.4 miles from the project, and no visibility along the OSNHT was identified in the viewshed analysis (see **Figure 5.15-2**).

Given the absence of formally-designated scenic vistas within the project area, and limited visibility of the project from informal scenic viewing locations, construction and operation of the proposed project would result in a *less than significant visual impact on the environment* with respect to scenic vistas. However, Conditions of Certification (COCs) **VIS-1** through **VIS-6** (for jurisdictional project components) and Mitigation Measures (MMs) **VIS-1** through **VIS-3** (for non-jurisdictional project components,

utility switchyard and transmission loop in line and towers), would still be required to reduce visual contrast per VRM Class II objectives.

Scenic Resources Within a State Scenic Highway

b. Would the project "substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?"

Neither CEQA nor the CEQA Guidelines provide a definition of what constitutes a scenic resource. A *scenic resource* in addition to being designated in an adopted federal, state, or local government planning document, plan, or regulation as suggested in the above aesthetics question, may be explained as a widely recognized, natural or man-made feature tangible in the landscape. Hence, a scenic resource includes but is not limited to:

- A natural feature or object that is part of the land such as a geologic distinguishing characteristic or structure (e.g., batholith, laccolith, mesa); a geomorphologic feature produced from deposition or erosion (e.g., gorge, inselberg, moraine); a water body (e.g., lake, waterway, estuary); or a tree recognized for its aesthetic, botanical, and ecological value, or age, rarity, and size.
- A man-made feature or object that embodies elements of architecture or engineering design, detail, materials, or craftsmanship that represents a significant innovation or is unique such as the California State Capitol, Golden Gate Bridge, or Hollywood sign.
- A cultural resource,[10] historic property, or landmark. It should be recognized that cultural and historic values differ from aesthetic or scenic values (e.g., elegance, harmonious, imposing, sublime).

This analysis evaluated if the proposed project would substantially damage—eliminate or obstruct—public view[11] of a scenic resource within the viewshed of a state scenic highway and whether the proposed project would be situated so that it changes the visual appearance of a scenic resource by being in sharp contrast with the existing

10 Cultural resources encompass all the physical evidence of past human activity. These could include buildings, structures, engineering features; prehistoric sites; historic or prehistoric artifacts or objects. These nonrenewable resources often yield unique information about past societies and environments and provide answers for modern day social and conservation problems. (NRCS 2024)

11 A public view can be defined as the area visible from a location where the public has a legal and physical right of access to real property (e.g., city sidewalk, public park, town square, state highway). California Code of Regulations, Title 14, Division 6, Chapter 3, Article 20 Appendix G Environmental Checklist Form, I. Aesthetics c. states "Public views are those that are experienced from publicly accessible vantage point." The California Courts of Appeal, Fourth District wrote "Under CEQA, the question is whether a project will affect the environment of persons in general, not whether a project will affect particular persons." (*Mira Mar Mobile Community v. City of Oceanside* (2004) 119 Cal. App. 4th 477.)

environment. Staff generally uses a three-mile[12] distance zone surrounding the proposed project site for this analysis.

An adverse effect exists if the proposed project would eliminate or obstruct a public view of a scenic resource and/or change its visual appearance when viewed from a state scenic highway.

Jurisdictional and Non-Jurisdictional Project Components

Construction and Operation

No Impact. The proposed project would be constructed on approximately 2,670 acres (proposed project site) of BLM-managed land, immediately adjacent to I-15 in unincorporated eastern San Bernardino County, California. Generally, the landscape can be characterized as a broadly enclosed valley that is unencumbered by intervening features. The project site is visually and ecologically characteristic of the Mojave basins common in this region, composed of rural creosote bush-dominated desert land with tan, sandy soils and various shades of low, muted-green vegetation, with some rocky outcrops.

California Streets and Highways Code Section 263, the "State Scenic Highway System List," provides a list of highways that have been either officially designated or are eligible for designation as a state scenic highway. The project site is not within the view corridor of any officially designated state scenic highway. I-15, which crosses through the project site, is identified by Caltrans as an eligible state scenic highway. However, in order for a route to be designated as an Official State Scenic Highway, it must first be nominated for designation by the County. I-15 has not been nominated for designation by San Bernardino County for state scenic highway status. The nearest state scenic highway to the project is Interstate Route 40 approximately 25 miles to the south. Due to distance and intervening terrain, this highway is outside of the project viewshed. Therefore, there would be no impact to scenic resources within a state scenic highway.

Additionally, staff review of the San Bernardino County General Plan and County Development Code concluded there is no designated or protected scenic resource on the proposed project site or in the vicinity that would be visible from a state scenic highway. Additionally, a County ordinance identifying a specific scenic resource on the proposed project site or in the vicinity was not found.

Also, staff reviewed an inventory of scenic resources within five miles of the proposed project site prepared by the applicant and presented here as **Figure 5.15-1**. Staff also reviewed current aerial and street view imagery (Google Earth, Google Maps), and area maps and did not find a scenic resource on the proposed project site or in the vicinity or a state scenic highway in the proposed project vicinity.

12 "Based on the curve of the Earth: Standing on a flat surface with your eyes about 5 feet off the ground, the farthest edge that you can see is about 3 miles away." (Roland 2019)

Therefore, the proposed project would not eliminate or obstruct a public view of a scenic resource nor change the visual appearance of it when viewed from a state scenic highway. Therefore, the proposed project would result in *no impact on the environment* with respect to scenic resources within a state scenic highway.

Visual Character or Quality of Public View of Site and its Surroundings

c. Would the project "in non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?"

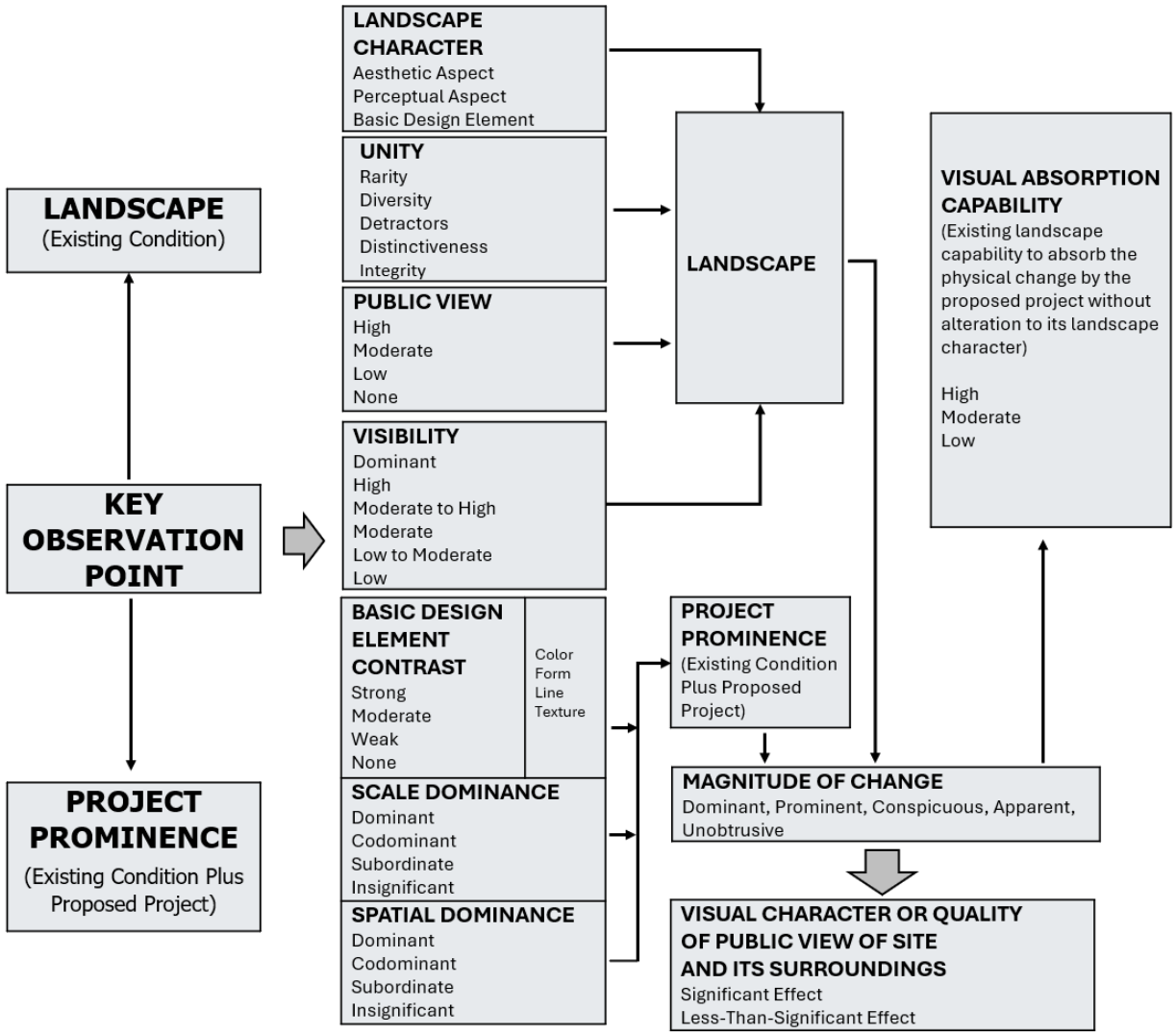
An adverse effect exists if the project in a non-urbanized area significantly degrades the existing visual character or quality of public views of the site and its surroundings, or if in an urbanized area conflicts with zoning and other regulations governing scenic quality. Based on the definition of "urbanized area" per Public Resources Code section 21071,[13] staff determined the proposed project site to be in a non-urbanized area.

Key Observation Point Evaluation

"Visual landscape assessments involve the inventory and evaluation of diverse visible attributes of the landscape for purposes of planning, design and management.…As currently practiced, visual assessments are firmly grounded in a tradition of knowing that requires the collection of empirical (often quantitative) data for analysis through systematic means. That is...the landscape has a physical reality independent of people that can be characterized through various measurements. The landscape also has a reality that depends on our individual perceptions. These perceptions can be characterized or measured by various means."[14] Staff evaluates a proposed project in the landscape using an adapted descriptive inventory methodology.[15] See the evaluation flowchart below.

13 An "urbanized area" means either "(a) An incorporated city that meets either of the following criteria: (1) Has a population of at least 100,000 persons. (2) Has a population of less than 100,000 persons if the population of that city and not more than two contiguous incorporated cities combined equals at least 100,000 persons." (Public Resources Code section 21071[a]) An urbanized area also includes unincorporated area that satisfies the criteria in Public Resources Code section 21071(b).
14 Palmer and Robin 2001, p. 149.
15 A visual landscape assessment is a process that evaluates the quality and characteristics of a landscape. Numerous techniques of landscape evaluation have been devised. These techniques can be divided into broad categories, descriptive inventories, public preference models, and quantitative holistic methods. These methods can be further subdivided into non-quantitative and quantitative approaches including ecological, formal aesthetic, phenomenological, psychological, psychophysical models. There are also direct/indirect, quantitative/non-quantitative, and subjective/objective methods. It should be noted that not all landscape evaluation techniques comply with CEQA and/or the CEQA Guidelines.

Evaluation Flowchart



"Because it is difficult to describe visual appearance in words, visual assessments of the existing environment and the consequences of project alternatives should be based on 'illustrations of actual views'....Because resources and time are always limited, it is also necessary to limit the number of views analyzed: it is essential that these be 'representative views,' neither understating nor overstating the visual effects of the project." (Smardon, 1986, p. 255)

The primary purpose of a visual simulation is to accurately portray in a realistic manner and context, a proposed activity, modification, or change in the existing physical landscape (e.g., proposed project). A visual simulation is a photographic image that has been computer-modified to show a not-yet existing feature. A visual simulation is not a "real life view." It illustrates a two-dimensional view of a proposed activity from a particular viewpoint as depicted in a photograph and not as it would appear as a three-dimensional image as seen in the field with the human eye. That being said, a visual

simulation is a useful tool to assist in the assessment and decision-making process, whereby better informed and more transparent judgments on visual-related effects can be made.

In accordance with CEQA and the CEQA Guidelines, staff assessed the physical change to the existing physical environment caused by the proposed project (project effect) in terms of aesthetics, not the sensitivity of the viewer to the physical change (viewer sensitivity).

In this analysis, a key observation point (KOP) is used. A KOP is a fixed position in a publicly accessible location where a public view of the proposed project is analyzed and evaluated in the landscape. The applicant provided 11 photographs showing the existing physical environment including the proposed project site prior to alteration from 10 different KOPs (existing condition) and 13 visual simulations of the proposed project in the existing environment from the same KOPs (existing condition plus proposed project; KOPs 6 and 9 had two simulations each depicting both east and west panel orientations). **Figure 5.15-2** displays the applicant-selected KOP locations. Staff analyzed all 11 existing condition photographs along with their 13 corresponding visual simulations. See **Figure 5.15-3a** through **Figure 5.15-13b** under the analysis for each KOP.

Staff completed Key Observation Point Evaluation Worksheets (worksheets) for each KOP. The completed worksheets have been attached to this section. See **Key Observation Point Evaluation Worksheets 1a** through **10** (see worksheets following Section 5.15-7 References). A synopsis of the worksheets is presented below. The analyses for KOPs 1a through 10 apply to jurisdictional project components. An analysis from KOP 3 was also conducted for the non-jurisdictional project components (utility switchyard and transmission loop in line and towers).

Jurisdictional and Non-Jurisdictional Project Components

Construction

Significant and Unavoidable Impact. During the construction period, earthmoving activities, construction materials, equipment, trucks, and parked vehicles would be highly visible on the site when viewed from adjacent I-15 and other locations. Construction would occur over 18 consecutive months, during which a number of activities would take place, including large-scale vegetation removal, earthwork, and installation of concrete foundations and equipment. These construction activities could result in a degree of visual contrast within the landscape that is greater than the operation phase discussed below. The predominant visual impacts would be dust and vehicular traffic caused by grading, on-site traffic, the presence of construction workers, and the gradual modification of the valley floor.

As addressed in **Section 5.1, Air Quality**, Air Quality COCs **AQ-SC3** and **AQ-SC4** (for jurisdictional project components) would minimize dust emissions. No mitigation measures for dust emissions are required for the non-jurisdictional project components.

Additionally, COCs (for jurisdictional project components) **VIS-1** (construction), **VIS-2** (design and structural surface treatments), **VIS-3** (vegetation management), and **VIS-5** (night lighting management), and MMs (for non-jurisdictional project components, utility switchyard and transmission loop in and towers) **VIS-1** (design and structural surface treatments), **VIS-2** (vegetation management), and **VIS-3** (night lighting management) would help to reduce overall landscape modification and night lighting impacts during construction. While the overall degree of the construction impact would be somewhat less during the early phases of construction (because the initial area subjected to construction would be smaller compared to full build-out of the project), the visual effects would gradually increase as more of the site is subjected to construction activities, resulting in an overall significant construction impact.

Operation

Significant and Unavoidable Impact. In general, staff concludes given the existing landscape, the proposed project (both jurisdictional and non-jurisdictional components) would substantially degrade the existing visual character or quality of public views of the site and its surroundings from all 11 KOPs, even with effective implementation of required (for jurisdictional project components) COCs **VIS-2** (design and structural surface treatments), **VIS-3** (vegetation management), and **VIS-4** (landscape screening plan), and required (for non-jurisdictional components, utility switchyard and transmission loop in line and towers) **MMs VIS-1** (design and structural surface treatments) and **VIS-2** (vegetation management).

The proposed project would be constructed on approximately 2,670 acres (proposed project site) of BLM-managed land immediately adjacent to I-15 in unincorporated eastern San Bernardino County, California. Generally, the landscape can be characterized as a broadly enclosed valley that is unencumbered by intervening features. The project site is visually and ecologically characteristic of the Mojave basins common in this region, composed of rural creosote bush-dominated desert land with tan, sandy soils and various shades of low, muted-green vegetation, with some rocky outcrops.

As previously described, the most publicly visible proposed project structures would include:

- approximately 1,635 acres of crystalline photovoltaic (PV) panels with an overall maximum height of 12 feet (when mounted on the linear tracker structures);
- 74 inverter structures (3-feet long, 3-feet-wide, 4-feet-tall);
- a 140,000 square-foot substation with maximum component heights of 55 feet;
- a 234,000 square-foot switchyard with maximum component heights of 100 feet;
- an approximately 1-mile long, 500-kV gen-tie line consisting of 11 tubular steel poles and 6 lattice towers, all of which would be approximately 160-feet tall;
- an 18-acre battery energy storage system (BESS) with each enclosure 20-feet long, 6-feet-wide, and 8-feet-high;

- two operations and maintenance buildings (4,950 square feet, 30-feet-high);
- an operations and maintenance facility (2,400 square feet, 35-feet-high); and
- an 8-foot-high chain link perimeter fence.

Table 5.15-1 (Section 5.15.1 Environmental Setting) provides a list of key project site components. Refer to **Section 3, Project Description** for greater detail about the proposed project. The following paragraphs assess the project's visual impacts from each of the 11 representative KOPs. As previously noted, KOPs 1a through 10 address jurisdictional project components. KOP 3 also addresses non-jurisdictional project components (utility switchyard and transmission loop in line and towers).

KOP 1a – Northbound I-15 South End – Looking Northeast. KOP 1a is from the northbound shoulder of I-15 adjacent to the southern portion of the proposed project site. From KOP 1, the nearest project facilities would be approximately 0.32 mile to the east. See **Figure 5.15-3a** - existing conditions of the proposed project site from Northbound I-15 and **Figure 5.15-3b** - existing conditions plus proposed project.

I-15 is a four-lane (with median) freeway that is the fourth-longest north-south transcontinental interstate highway in the United States passing through California, Nevada, Arizona, Utah, Idaho, and Montana. This roadway bisects the valley where the project would be located and provides northbound and southbound views along the vehicular corridor. This portion of I-15 has been identified as an eligible state scenic highway (but has not been nominated for designation) and is identified as a San Bernardino County scenic route.

The foreground of the view from KOP 1a encompasses the paved roadway; post-and-wire fencing; and the undeveloped, open, desert valley landscape backdropped by the alluvial fans and rugged ridgelines of the southern portion of the Soda Mountains.

Staff did not identify an "object of aesthetic significance" at or visible from this KOP. Staff conducted an evaluation of the physical change to the existing physical environment by the proposed project.

As shown in the simulation for KOP 1a, under the proposed project conditions (**Figure 5.15-3b**), the immediate foreground of the roadway and post-and-wire fencing would remain unchanged. However, the undeveloped valley floor would be substantially modified as the project would introduce forms, lines, colors, and textures associated with the PV arrays and associated infrastructure that are uncommon and not currently found in the existing landscape.

Figure 5.15-3a KOP 1a – Existing Conditions of Project Site from Northbound Interstate 15 (Looking Northeast)



Source: RE 2025ee, KOP 1a Existing Condition

Figure 5.15-3b KOP 1a – Existing Conditions of Project Site plus Proposed Project from Northbound Interstate 15 (Looking Northeast)



Source: RE 2025ee, KOP 1a Simulation with Landscaping

The addition of the angular and horizontal lines, dark colors, and textures associated with the solar arrays and trackers, and the repetitive, vertical upright forms of the post-and-wire security fence would be uncommon in this natural setting, as would be the other project structures and buildings. The moderate visual quality of the existing landscape captured in the view from KOP 1a would be degraded, and the existing rural, open space would be replaced with an inherent, semi-industrial, utilitarian landscape character.

Specifically, from KOP 1a, given the existing physical landscape (existing physical environment), the proposed project prominence (basic design element contrast, scale dominance, spatial dominance) rated strong. The visual absorption capability of the landscape rated low (primarily due to the flat, open, undeveloped landscape absent any form of vegetative or terrain screening). The magnitude of change (dominant, prominent, conspicuous, apparent, unobtrusive) in the landscape rated prominent, meaning the proposed project stands out or is striking in the view in the landscape. See the **Key Observation Point Evaluation Worksheet – Key Observation Point No. 1a**.

For the purpose of the CEQA Guidelines, and as set forth in Table 15 in the worksheet, this combination of ratings yields a conclusion that the proposed project would have a *significant effect on the environment* in the degrading of the existing visual character or quality of the public view of the site and its surroundings.

KOP 1b – Northbound I-15 South End – Looking East. KOP 1b is at the same location as KOP 1a on northbound I-15 but viewing to the east. Like KOP 1a, the nearest project facilities to KOP 1b would be approximately 0.32 mile to the east. See **Figure 5.15-4a** – existing conditions of proposed project site from northbound I-15 and **Figure 5.15-4b** – existing conditions plus proposed project. See KOP 1a above for a discussion of I-15.

The foreground of the view from KOP 1b encompasses the post-and-wire fencing along the I-15 right-of-way and the undeveloped, open, desert valley landscape, backdropped by the alluvial fans and rugged ridgelines of the southern portion of the Soda Mountains.

Staff did not identify an "object of aesthetic significance" at or visible from this KOP. Staff conducted an evaluation of the physical change to the existing physical environment by the proposed project.

As shown in the simulation for KOP 1b under the proposed project conditions (**Figure 5.15-4b**), the immediate foreground of the post-and-wire fencing would remain unchanged. However, the undeveloped valley floor would be substantially modified as the project would introduce forms, lines, colors, and textures associated with the PV arrays and accompanying infrastructure that are not currently found in the existing landscape.

Figure 5.15-4a KOP 1b – Existing Conditions of Project Site from Northbound Interstate 15 (Looking East)



Source: RE 2025ee, KOP 1b Existing Conditions

Figure 5.15-4b KOP 1b – Existing Conditions of Project Site Plus Proposed Project from Northbound Interstate 15 (Looking East)



Source: RE 2025ee, KOP 1b Simulation with Landscaping

The addition of the angular and horizontal lines, dark colors, and textures associated with the solar arrays and trackers, and the repetitive, vertical forms of the post-and-wire security fence would be uncommon in this natural setting, as would the other project structures and buildings (not captured in this view). The moderate to high visual quality of the existing landscape captured in the view from KOP 1b would be degraded, and the existing rural, open space would be replaced with an inherent, semi-industrial, utilitarian landscape character.

Specifically, from KOP 1b, given the existing physical landscape, the proposed project prominence (basic design element contrast, scale dominance, spatial dominance) rated strong. The visual absorption capability of the landscape rated low (primarily due to the flat, open, undeveloped landscape absent any form of vegetative or terrain screening). The magnitude of change (dominant, prominent, conspicuous, apparent, unobtrusive) in the landscape rated prominent, meaning the proposed project stands out or is striking in the view in the landscape. See the **Key Observation Point Evaluation Worksheet - Key Observation Point No. 1b**.

For the purpose of the CEQA Guidelines, and as set forth in Table 15 in the worksheet, this combination of ratings yields a conclusion that the proposed project would have a *significant effect on the environment* in the degrading of the existing visual character or quality of the public view of the site and its surroundings when viewed from KOP 1.

KOP 2 – Northbound I-15 South End – Looking East. KOP 2 is located slightly farther to the northeast from KOP 1a/1b on northbound I-15, viewing to the east. The nearest project facilities to KOP 2 would be approximately 0.1 mile to the east. See **Figure 5.15-5a** – existing conditions of proposed project site from northbound I-15 and **Figure 5.15-5b** – existing conditions plus proposed project. See KOP 1a above for a discussion of I-15.

The foreground of the view from KOP 2 encompasses the post-and-wire fencing along the I-15 right-of-way; and the undeveloped, open, desert valley landscape, backdropped by the alluvial fans and rugged ridgelines of the southern portion of the Soda Mountains.

Staff did not identify an "object of aesthetic significance" at or visible from this KOP. Staff conducted an evaluation of the physical change to the existing physical environment by the proposed project.

As shown in the simulation for KOP 2, under the proposed project conditions (**Figure 5.15-5b**), the immediate foreground of the post-and-wire fencing would remain unchanged. However, the undeveloped, valley floor would be substantially modified as the project would introduce forms, lines, colors, and textures associated with the PV arrays and accompanying infrastructure that are not found in the existing landscape.

Figure 5.15-5a KOP 2 – Existing Conditions of Project Site from Northbound Interstate 15 (Looking East)



Source: RE 2025ee, KOP 2 Existing Conditions

Figure 5.15-5b KOP 2 – Existing Conditions of Project Site Plus Proposed Project from Northbound Interstate 15 (Looking East)



Source: RE 2025ee, KOP 2 Simulation with Landscaping

The addition of the angular and horizontal lines, dark color, and textures associated with the solar arrays and trackers, and repetitive, vertical forms of the post-and-wire security fence would be uncommon in this natural setting, as would the other project structures and buildings (not captured in this view). The moderate to high visual quality of the existing landscape captured in the view from KOP 2 would be degraded, and the existing rural, open space would be replaced with an inherent, semi-industrial, utilitarian landscape character.

Specifically, from KOP 2, given the existing physical landscape, the proposed project prominence (basic design element contrast, scale dominance, spatial dominance) rated severe. The visual absorption capability of the landscape rated low (primarily due to the flat, open, undeveloped landscape absent any form of vegetative or terrain screening). The magnitude of change (dominant, prominent, conspicuous, apparent, unobtrusive) in the landscape rated dominant, meaning the proposed project commands or controls the view in the landscape. See the **Key Observation Point Evaluation Worksheet - Key Observation Point No. 2**.

For the purpose of the CEQA Guidelines, and as set forth in Table 15 in the worksheet, this combination of ratings yields a conclusion that the proposed project would have a *significant effect on the environment* in the degrading of the existing visual character or quality of the public view of the site and its surroundings when viewed from KOP 2.

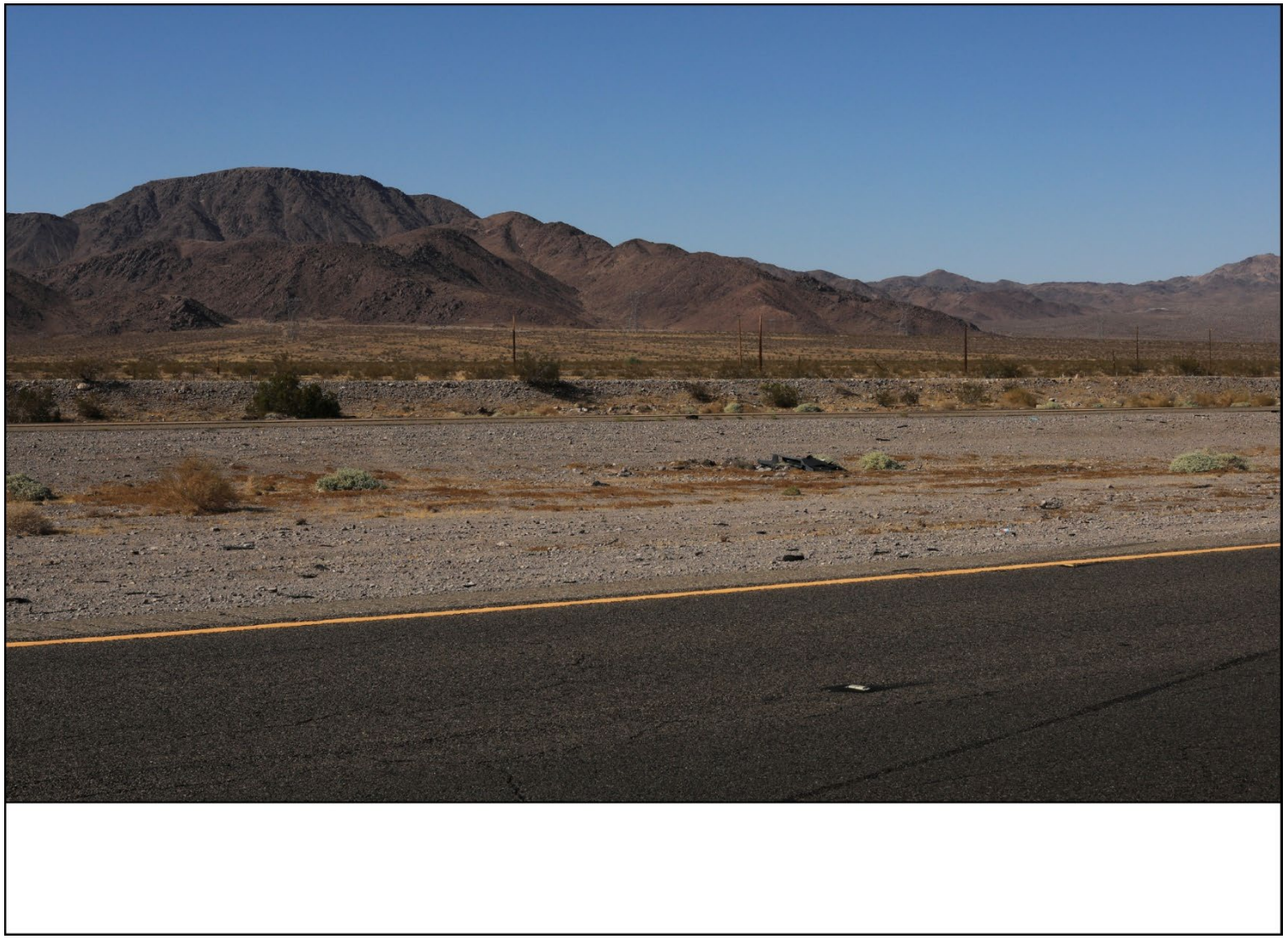
KOP 3 – Northbound I-15 Central – Looking Northwest. KOP 3 is located on northbound I-15 just to the south of where the gen-tie line would span the highway. The view is to the northwest across all lanes of I-15 toward the location of the proposed utility switchyard. The nearest project facilities (gen-tie poles) in the view from KOP 3 would be approximately 0.11 mile to the northwest. The farthest project facilities (utility switchyard and loop-in line structures) would be approximately 1.25 miles to the northwest. See **Figure 5.15-6a** – existing conditions of proposed project site from northbound I-15 and **Figure 5.15-6b** – existing conditions plus proposed project. See KOP 1a above for a discussion of I-15.

Jurisdictional Project Components

The foreground of the view from KOP 3 encompasses all lanes of I-15, two wood-pole utility lines adjacent to the west side of the highway, and a lattice structure transmission line and an H-frame transmission line farther to the west as they cross the undeveloped, open, desert valley landscape, backdropped by the rugged ridgelines of the Soda Mountains.

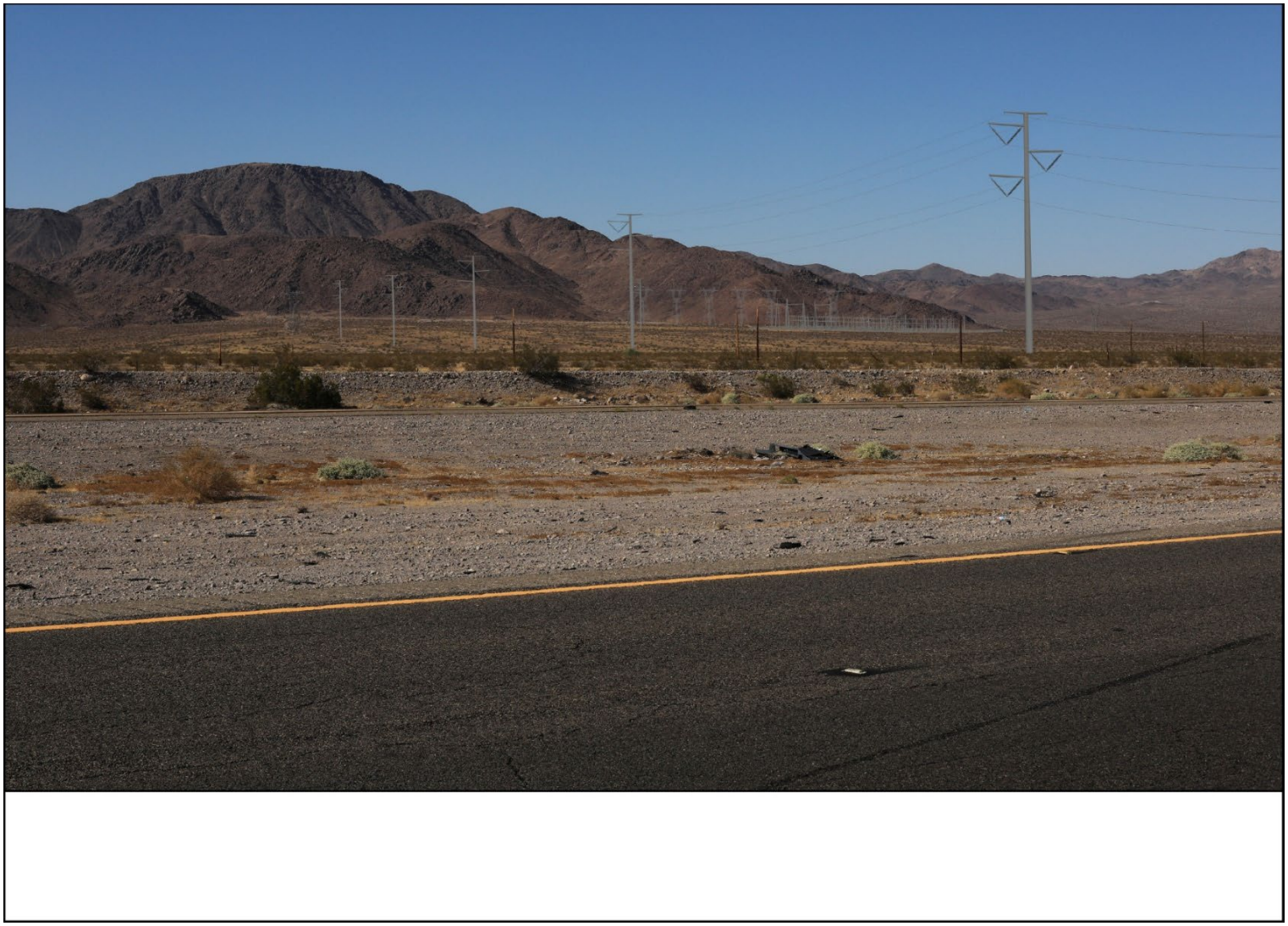
Staff did not identify an "object of aesthetic significance" at or visible from this KOP. Staff conducted an evaluation of the physical change to the existing physical environment by the proposed project.

Figure 5.15-6a KOP 3 – Existing Conditions of Project Site from Northbound Interstate 15 (Looking East)



Source: RE 2025ee, KOP 3 Existing Conditions

Figure 5.15-6b KOP 3 – Existing Conditions of Project Site Plus Proposed Project from Northbound Interstate 15 (Looking East)



Source: RE 2025ee, KOP 3 Simulation with Landscaping

As shown in the simulation for KOP 3, under the proposed project conditions (**Figure 5.15-6b**), the valley floor would be substantially modified with the addition of the prominent, linear forms and strong, vertical lines of the gen-tie structures (jurisdictional project components), which would contribute substantial industrial character to the existing landscape. The moderate visual quality of the existing landscape would be degraded, and the existing rural, open space would be even more supplanted with the industrial character of additional energy infrastructure.

Specifically, from KOP 3, given the existing physical landscape, the proposed project prominence (basic design element contrast, scale dominance, spatial dominance) rated strong. The visual absorption capability of the landscape rated low (primarily due to the flat, open, landscape absent any form of vegetative or terrain screening). The magnitude of change (dominant, prominent, conspicuous, apparent, unobtrusive) in the landscape rated dominant, meaning the proposed project commands or controls the view in the landscape. See the **Key Observation Point Evaluation Worksheet - Key Observation Point No. 3 for Jurisdictional Project Components.**

For the purpose of the CEQA Guidelines, and as set forth in Table 15 in the worksheet, this combination of ratings yields a conclusion that the jurisdictional project components of the proposed project would have a *significant effect on the environment* in the degrading of the existing visual character or quality of the public view of the site and its surroundings when viewed from KOP 3.

Non-Jurisdictional Project Components

The landscape visible from KOP 3 is as described in the preceding paragraphs for the Jurisdictional Project Components.

As shown in the simulation for KOP 3, under the proposed project conditions (**Figure 5.15-6b**), the valley floor would be substantially modified with the addition of the prominent, structurally-complex cluster of linear forms and lines of the utility switchyard and loop in transmission structures. These features would contribute substantial industrial character to the existing landscape. It should be noted that these new industrial elements would occur beyond the existing transmission infrastructure, thereby introducing a new, contiguous industrial footprint rather than merely clustering structures where development already exists. The moderate visual quality of the existing landscape would be degraded, and the existing rural, open space would be even more supplanted with the industrial character of additional energy infrastructure.

Specifically, from KOP 3, given the existing physical landscape, the proposed project prominence (basic design element contrast, scale dominance, spatial dominance) rated strong. The visual absorption capability of the landscape rated low to moderate (primarily due to the flat, open, landscape absent any form of vegetative or terrain screening, but situated more distant from I-15 and fully backdropped by the background hills). The magnitude of change (dominant, prominent, conspicuous, apparent, unobtrusive) in the landscape rated prominent, meaning the proposed project

stands out or is striking in the view in the landscape. See the **Key Observation Point Evaluation Worksheet - Key Observation Point No. 3 for Non-Jurisdictional Project Components**.

For the purpose of the CEQA Guidelines, and as set forth in Table 15 in the worksheet, this combination of ratings yields a conclusion that the Non-Jurisdictional Components of the proposed project would have a *significant effect on the environment* in the degrading of the existing visual character or quality of the public view of the site and its surroundings when viewed from KOP 3.

KOP 4 – Northbound I-15 North End – Looking East. KOP 4 is on northbound I-15, adjacent to the northern portion of the proposed project, viewing to the east. The nearest project facilities to KOP 4 would be approximately 0.5 mile to the east. See **Figure 5.15-7a** – existing conditions of proposed project site from northbound I-15 and **Figure 5.15-7b** – existing conditions plus proposed project. See KOP 1a above for a discussion of I-15.

The foreground of the view from KOP 4 encompasses the post-and-wire fencing along the I-15 right-of-way and the undeveloped, open, desert valley landscape, backdropped by the alluvial fans and rugged ridgelines of the southern portion of the Soda Mountains.

Staff did not identify an "object of aesthetic significance" at or visible from this KOP. Staff conducted an evaluation of the physical change to the existing physical environment by the proposed project.

As shown in the simulation for KOP 4, under the proposed project conditions (**Figure 5.15-7b**), the immediate foreground of the post-and-wire fencing would remain unchanged. However, the undeveloped, valley floor would be substantially modified as the project would introduce forms, lines, colors, and textures associated with the PV arrays and accompanying infrastructure, substation, and BESS that are not found in the existing landscape. The addition of the angular and horizontal lines, dark color, and textures associated with the solar arrays and trackers, and the upright forms of the substation would be uncommon in this natural setting, as would the other project structures and buildings (not captured in this view). The moderate visual quality of the existing landscape captured in the view from KOP 4 would be degraded, and the existing rural, open space would be replaced with an inherent, semi-industrial, utilitarian landscape character.

Specifically, from KOP 4, given the existing physical landscape, the proposed project prominence (basic design element contrast, scale dominance, spatial dominance) rated severe. The visual absorption capability of the landscape rated low (primarily due to the flat, open, undeveloped landscape absent any form of vegetative or terrain screening). The magnitude of change (dominant, prominent, conspicuous, apparent, unobtrusive)

Figure 5.15-7a KOP 4 – Existing Conditions of Project Site from Northbound Interstate 15 (Looking Northeast)



Source: RE 2025ee, KOP 4 Existing Conditions

Figure 5.15-7b KOP 4 – Existing Conditions of Project Site Plus Proposed Project from Northbound Interstate 15 (Looking Northeast)



Source: RE 2025ee, KOP 4 Simulation with Landscaping

in the landscape rated dominant, meaning the proposed project commands or controls the view in the landscape. See the **Key Observation Point Evaluation Worksheet - Key Observation Point No. 4**.

For the purpose of the CEQA Guidelines, and as set forth in Table 15 in the worksheet, this combination of ratings yields a conclusion that the proposed project would have a *significant effect on the environment* in the degrading of the existing visual character or quality of the public view of the site and its surroundings when viewed from KOP 4.

KOP 5 – Southbound I-15 North End – Looking Southeast. KOP 5 is on southbound I-15, adjacent to the northern portion of the proposed project, viewing to the southeast. The nearest project facilities to KOP 5 would be approximately 0.2 mile to the southeast. See **Figure 5.15-8a** – existing conditions of proposed project site from southbound I-15 and **Figure 5.15-8b** – existing conditions plus proposed project. See KOP 1a above for a discussion of I-15.

The foreground of the view from KOP 5 encompasses the northbound lanes of I-15, the post-and-wire fencing along the I-15 right-of-way, and the undeveloped, open, desert valley landscape, backdropped by the rugged ridgelines of the southern portion of the Soda Mountains.

Staff did not identify an "object of aesthetic significance" at or visible from this KOP. Staff conducted an evaluation of the physical change to the existing physical environment by the proposed project.

As shown in the simulation for KOP 5, under the proposed project conditions (**Figure 5.15-8b**), the immediate foreground of the highway corridor and post-and-wire fencing would remain unchanged. However, the undeveloped valley floor would be substantially modified as the project would introduce forms, lines, colors, and textures associated with the PV arrays and accompanying infrastructure that are not found in the existing landscape. The addition of the vertical and horizontal lines, dark color, and textures associated with the solar arrays and trackers, and the repetitive, vertical upright forms of the security fencing would be uncommon in this natural setting, as would be the other project structures and buildings (not captured in this view). The moderate visual quality of the existing landscape captured in the view from KOP 5 would be degraded, and the existing rural, open space would be replaced with an inherent, semi-industrial, utilitarian landscape character.

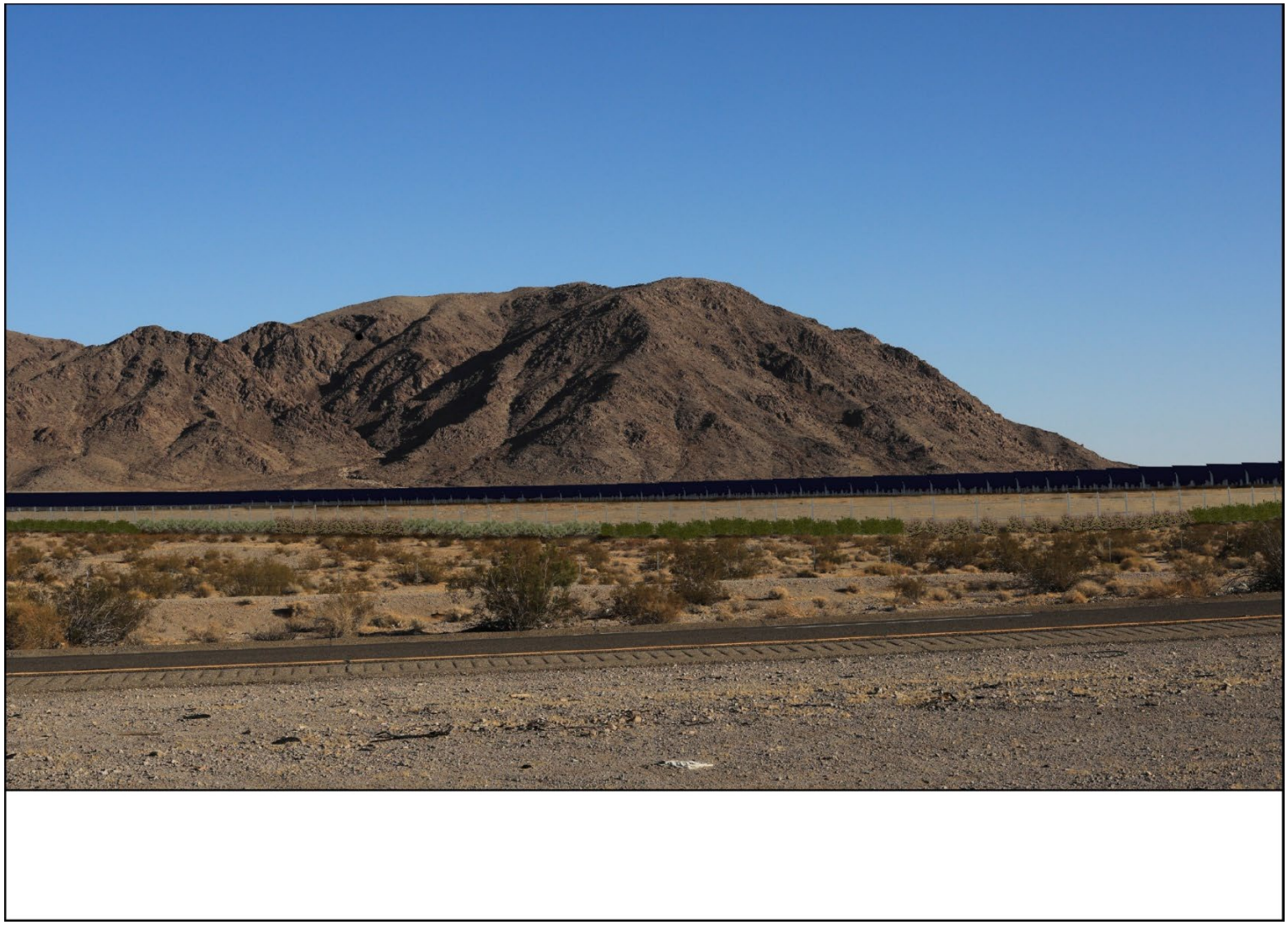
Specifically, from KOP 5, given the existing physical landscape, the proposed project prominence (basic design element contrast, scale dominance, spatial dominance) rated strong. The visual absorption capability of the landscape rated low (primarily due to the flat, open, undeveloped landscape absent any form of vegetative or terrain screening). The magnitude of change (dominant, prominent, conspicuous, apparent, unobtrusive) in the landscape rated dominant, meaning the proposed project commands or controls the view in the landscape. See the **Key Observation Point Evaluation Worksheet - Key Observation Point No. 5**.

Figure 5.15-8a KOP 5 – Existing Conditions of Project Site from Southbound Interstate 15 (Looking Southeast)



Source: RE 2025ee, KOP 5 Existing Conditions

Figure 5.15-8b KOP 5 – Existing Conditions of Project Site Plus Proposed Project from Southbound Interstate 15 (Looking Southeast)



Source: RE 2025ee, KOP 5 Simulation with Landscaping

For the purpose of the CEQA Guidelines, and as set forth in Table 15 in the worksheet, this combination of ratings yields a conclusion that the proposed project would have a *significant effect on the environment* in the degrading of the existing visual character or quality of the public view of the site and its surroundings when viewed from KOP 5.

KOP 6 – Communications Tower Access Road – Looking East. KOP 6 is from the access road to the communications tower west of I-15 and the southern portion of the proposed project site. From KOP 6, the nearest project facilities would be approximately 1.1 miles to the east. See **Figure 5.15-9a** - existing conditions of the proposed project site from the Communications Tower Access Road, **Figure 5.15-9b** – existing conditions plus proposed project with the solar panels facing east, and **Figure 5.15-9c** - existing conditions plus proposed project with the solar panels facing west.

The communications tower access road is an unpaved, gravel, road that leads from Arrowhead Trail (I-15 frontage road) to a communications tower in the nearby Soda Mountains. The view from KOP 6 encompasses a portion of the unpaved roadway; a lattice structure transmission line; an H-frame structure transmission line; several wood- pole utility lines; and I-15 with numerous trucks and passenger vehicles; all backdropped by the open, undeveloped, desert valley beyond and the more distant southern portion of the Soda Mountains.

Staff did not identify an "object of aesthetic significance" at or visible from this KOP. Staff conducted an evaluation of the physical change to the existing physical environment by the proposed project.

As shown in the simulations for KOP 6, under the proposed project conditions (**Figures 5.15-9b** and **5.15-9c**), the foreground west of I-15 would remain unchanged. However, the undeveloped, valley floor to the east of I-15 would be substantially modified as the project would introduce forms, lines, colors, and textures associated with the PV arrays that are not found in the existing landscape. The visual quality of the existing landscape captured in the view from KOP 6 would be moderate to high based on the elevated vantage and expansive views of KOP 6, the higher values for landscape unity perceived from this location (see KOP 6 Table 4 in the attached Data Tables), and the higher value of the public view (see KOP 6 Table 5 in the attached Data Tables). With implementation of the proposed project, the visual quality would be degraded, and a notable portion of the existing natural character of the valley floor would be replaced with an inherent, semi-industrial, utilitarian landscape character dominated by a contrasting dark color, unnatural geometric shapes, and strong horizontal to diagonal lines.

Figure 5.15-9a KOP 6 – Existing Conditions of Project Site from Communication Tower Access Road (Looking East)



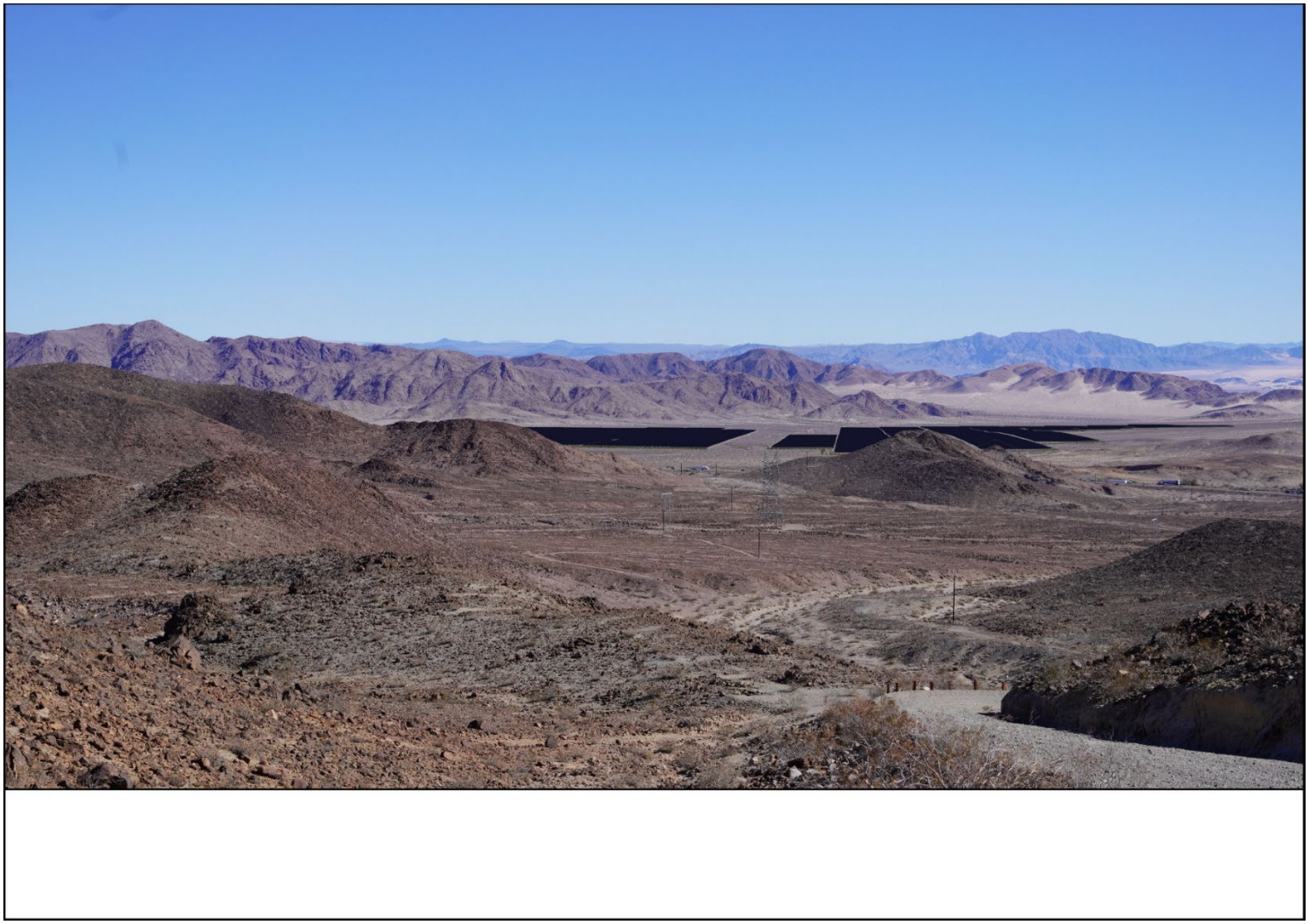
Source: RE 2025ee, KOP 6 Exitting Conditions

Figure 5.15-9b KOP 6 – Existing Conditions of Project Site Plus Proposed Project with Panels Facing East, from Communication Tower Access Road (Looking East)



Source: RE 2025ee, KOP 6 Simulation with Landscaping

Figure 5.15-9c KOP 6 – Existing Conditions of Project Site Plus Proposed Project with Panels Facing West, from Communication Tower Access Road (Looking East)



Source: RE 2025ee, KOP 6 Transmission Line Access Road, Simulated Condition with Panels, Facing West, Looking East

Specifically, from KOP 6, given the existing physical landscape, the proposed project prominence (basic design element contrast, scale dominance, spatial dominance) rated strong. The visual absorption capability of the landscape rated moderate (primarily due to the viewing distance, variable terrain and partial screening by existing landforms). The magnitude of change (dominant, prominent, conspicuous, apparent, unobtrusive) in the landscape rated prominent, meaning the proposed project stands out or is striking in the view in the landscape. See the **Key Observation Point Evaluation Worksheet - Key Observation Point No. 6**.

For the purpose of the CEQA Guidelines, and as set forth in Table 15 in the worksheet, this combination of ratings yields a conclusion that the proposed project would have a *significant effect on the environment* in the degrading of the existing visual character or quality of the public view of the site and its surroundings when viewed from KOP 6.

KOP 7 – Transmission Line Access Road – Looking Southeast. KOP 7 is from the transmission line access road, west of I-15 and the northern portion of the proposed project site, and approximately 2.45 miles southeast of its intersection with Zzyzx Road. From KOP 7, the nearest project facilities would be approximately 1.2 miles to the east. See **Figure 5.15-10a** - existing conditions of the proposed project site from the Transmission Line Access Road and **Figure 5.15-10b** – existing conditions plus proposed project.

The transmission line access road is an unpaved road that follows the existing transmission line corridor across the valley floor. The view from KOP 7 encompasses a portion of the open, undeveloped, desert valley bisected by I-15 and backdropped by the southern portion of the Soda Mountains beyond.

Staff did not identify an "object of aesthetic significance" at or visible from this KOP. Staff conducted an evaluation of the physical change to the existing physical environment by the proposed project.

As shown in the simulation for KOP 7, under the proposed project conditions (**Figure 5.15-10b**), much of the foreground valley floor west of I-15 would remain unchanged except for the addition of the gen-tie line and switchyard, the latter of which is partially visible in the right side of the image. However, the undeveloped, valley floor to the east of I-15 would be substantially modified as the project would introduce forms, lines, colors, and textures associated with the PV arrays, BESS facilities, and other project structures and buildings that are not currently found in the existing landscape. The moderate visual quality of the existing landscape captured in the view from KOP 7 would be degraded, and a notable portion of the existing natural character of the valley floor would be replaced with an inherent, semi-industrial, utilitarian landscape character dominated by a contrasting dark color; unnatural geometric shapes; and strong horizontal, vertical, and diagonal lines.

Figure 5.15-10a KOP 7 – Existing Conditions of Project Site from Transmission Line Access Road (Looking Southeast)



Source: 2025ee, KOP 7 Existing Conditions

Figure 5.15-10b KOP 7 – Existing Conditions of Project Site Plus Proposed Project, from Transmission Line Access Road (Looking Southeast)



Source: RE 2025ee, KOP 7 Simulation with Landscaping

Specifically, from KOP 7, given the existing physical landscape (existing physical environment), the proposed project prominence (basic design element contrast, scale dominance, spatial dominance) rated strong. The visual absorption capability of the landscape rated low (primarily due to the flat, open, undeveloped landscape absent any form of vegetative or terrain screening). The magnitude of change (dominant, prominent, conspicuous, apparent, unobtrusive) in the landscape rated prominent, meaning the proposed project stands out or is striking in the view in the landscape. See the **Key Observation Point Evaluation Worksheet - Key Observation Point No. 7**.

For the purpose of the CEQA Guidelines, and as set forth in Table 15 in the worksheet, this combination of ratings yields a conclusion that the proposed project would have a *significant effect on the environment* in the degrading of the existing visual character or quality of the public view of the site and its surroundings when viewed from KOP 7.

KOP 8 – Zzyzx Road – Looking East. KOP 8 is located west of I-15 on Zzyzx Road, approximately 1.7 miles west of the intersection with Arrowhead Trail and approximately 0.32 mile west of the existing transmission line corridor. From KOP 8, the nearest project facilities (switchyard or northern solar arrays) would be approximately 2.7 miles to the south (arrays) and southwest (switchyard). See **Figure 5.15-11a** - existing conditions of the proposed project site from Zzyzx Road and **Figure 5.15-11b** – existing conditions plus proposed project.

West of I-15, Zzyzx Road is an unpaved access road that leads to, and dead ends in, the Soda Mountains. The view from KOP 8 encompasses the existing transmission corridor consisting of a 500-kV, lattice structure line and a smaller, H-frame structure line. Beyond is the expansive alluvial valley, ringed by rocky ridgelines with the distant Cady Mountains in the background. I-15 is faintly visible as a linear feature crossing the valley.

Staff did not identify an "object of aesthetic significance" at or visible from this KOP. Staff conducted an evaluation of the physical change to the existing physical environment by the proposed project.

Figure 5.15-11a KOP 8 – Existing Conditions of Project Site from Zzyzx Road (Looking South)



Source: RE 2025ee, KOP 8 Existing Conditions

Figure 5.15-11b KOP 8 – Existing Conditions of Project Site Plus Proposed Project from Zzyzx Road (Looking South)



Source: RE 2025ee, KOP 8 Simulation with Landscaping

As shown in the simulation for KOP 8, under the proposed project conditions (**Figure 5.15-11b**), the undeveloped valley floor to the east of I-15 would be substantially modified as the project would introduce forms, lines, colors, and textures associated with the PV arrays that are not found in the existing landscape. Additionally, the introduction of the structurally complex forms and lines comprising the proposed gen-tie and switchyard structures would contribute additional industrial character to the existing landscape. The moderate visual quality of the existing landscape captured in the view from KOP 8 would be degraded, and a notable portion of the existing natural character of the valley floor would be replaced with an inherent, semi-industrial, utilitarian landscape character dominated by a contrasting dark color, unnatural geometric shapes, and strong horizontal to diagonal lines.

Specifically, from KOP 8, given the existing physical landscape (existing physical environment), the proposed project prominence (basic design element contrast, scale dominance, spatial dominance) rated strong. The visual absorption capability of the landscape rated moderate (primarily due to the viewing distance and partial screening by the existing transmission line corridor). The magnitude of change (dominant, prominent, conspicuous, apparent, unobtrusive) in the landscape rated prominent, meaning the proposed project stands out or is striking in the view in the landscape. See the **Key Observation Point Evaluation Worksheet - Key Observation Point No. 8**.

For the purpose of the CEQA Guidelines, and as set forth in Table 15 in the worksheet, this combination of ratings yields a conclusion that the proposed project would have a *significant effect on the environment* in the degrading of the existing visual character or quality of the public view of the site and its surroundings when viewed from KOP 8.

KOP 9 – Rasor Road and OHV Trail – Looking Northwest. KOP 9 is located adjacent to Rasor Road, approximately 0.9 mile southeast of the proposed project site. The view is to the northwest. See **Figure 5.15-12a** – existing conditions of proposed project site from Rasor Road, **Figure 5.15-12b** – existing conditions plus proposed project with the solar panels facing east, and **Figure 5.15-12c** – existing conditions plus proposed project with the solar panels facing west.

The view from KOP 9 encompasses a predominantly undeveloped, open, desert valley landscape, backdropped by the rugged ridgelines of the northern portion of the Soda Mountains. I-15 is faintly visible as a linear feature crossing the valley floor, with the occasional trucks being most noticeable.

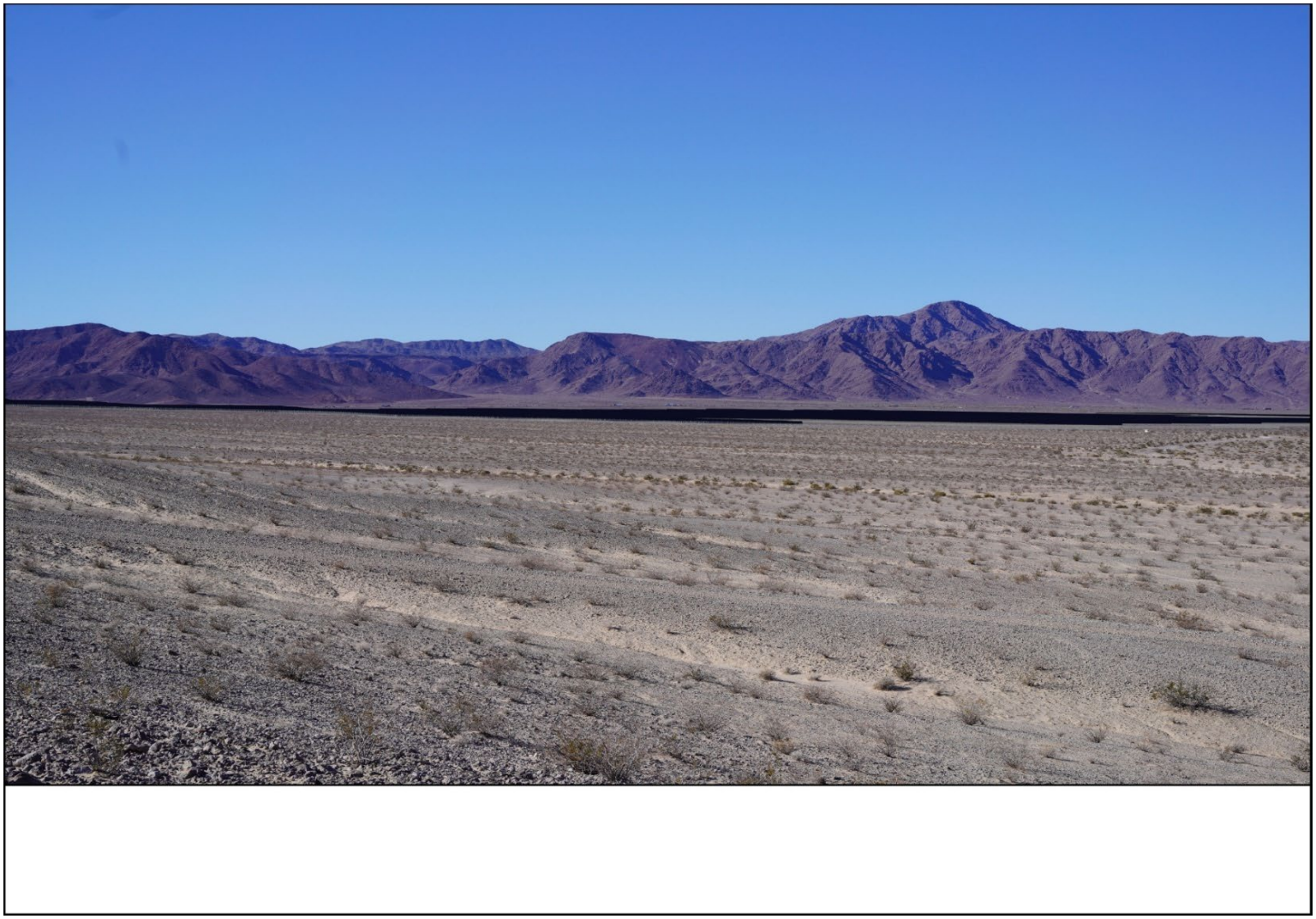
Staff did not identify an "object of aesthetic significance" at or visible from this KOP. Staff conducted an evaluation of the physical change to the existing physical environment by the proposed project.

Figure 5.15-12a KOP 9 – Existing Conditions of Project Site from Rasor Road and OHV Trail (Looking Northwest)



Source: RE 2025ee, KOP 9 Existing Conditions

Figure 5.15-12b KOP 9 – Existing Conditions of Project Site Plus Proposed Project with Panels Facing East, from Rasor Road and OHV Trail (Looking Northwest)



Source: RE 2025ee, KOP 9 Simulation with Landscaping

Figure 5.15-12c KOP 9- Existing Conditions of Project Site Plus Project with Panels Facing West, from Rasor Road and OHV Trail (Looking Northwest)



Source: RE 2025ee, KOP 9 Rasor Road and OHV Trail, Panels Facing West Simulated Condition, Looking Northwest

As shown in the simulations for KOP 9, under the proposed project conditions (**Figures 5.15-12b** and **5.15-12c**), the valley floor would be substantially modified as the project would introduce forms, lines, colors, and textures associated with the PV arrays and accompanying infrastructure that are not found in the existing landscape. The addition of the angular and horizontal lines, dark color, and textures associated with the solar arrays and trackers would be uncommon in this natural setting, as would the other project structures and buildings (not captured in this view). The moderate visual quality of the existing landscape captured in the view from KOP 9 would be degraded, and the existing rural, open space would be replaced with an inherent, semi-industrial, utilitarian landscape character.

Specifically, from KOP 9, given the existing physical landscape, the proposed project prominence (basic design element contrast, scale dominance, spatial dominance) rated strong. The visual absorption capability of the landscape rated low (primarily due to the flat, open, undeveloped landscape absent any form of vegetative or terrain screening). The magnitude of change (dominant, prominent, conspicuous, apparent, unobtrusive) in the landscape rated prominent, meaning the proposed project stands out or is striking in the view in the landscape. See the **Key Observation Point Evaluation Worksheet - Key Observation Point No. 9**.

For the purpose of the CEQA Guidelines, and as set forth in Table 15 in the worksheet, this combination of ratings yields a conclusion that the proposed project would have a *significant effect on the environment* in the degrading of the existing visual character or quality of the public view of the site and its surroundings when viewed from KOP 9.

KOP 10 – I-15 – Looking Southwest. KOP 10 is located on the I-15 median just to the northwest of where the gen-tie line would span the highway. The view is to the southwest down the center of the freeway toward the location of the proposed gen-tie span. The nearest gen-tie poles in the view from KOP 10 would be approximately 0.26 mile to the northwest. See **Figure 5.15-13a** – existing conditions of proposed project site from I-15 and **Figure 5.15-13b** – simulated condition with panels facing west.

The foreground of the view from KOP 10 encompasses all lanes of I-15 and the freeway median. More distant ridgelines are visible to the east and west of the freeway corridor. Two wood-pole utility lines are visible adjacent to the west side of the highway, and a lattice structure transmission line and an H-frame transmission line farther to the west are also visible as they ascend the ridge to the west of the freeway.

Staff did not identify an "object of aesthetic significance" at or visible from this KOP. Staff conducted an evaluation of the physical change to the existing physical environment by the proposed project.

Figure 5.15-13a KOP 10 – Existing Conditions of Gen-tie span of I-15 from I-15 Median (Looking Southwest)



Source: RE 2025ee, KOP 10 Existing Conditions

Figure 5.15-13b KOP 10 – Existing Conditions of Project Site Plus Proposed Project with Panels Facing West, from I-15 (Looking Southwest)



Source: RE 2025ee, KOP 10 Simulation with Landscaping

As shown in the simulation for KOP 10, under the proposed project conditions (**Figure 5.15-13b**), the valley floor in the immediate vicinity of I-15 and extending to both the east and west would be substantially modified with the addition of the prominent, linear forms and strong, vertical lines of the gen-tie structures, which would contribute substantial industrial character to the existing landscape. The moderate visual quality of the existing landscape would be degraded, and the existing rural, open space would be even more supplanted with the industrial character of additional energy infrastructure.

Specifically, from KOP 10, given the existing physical landscape, the proposed project prominence (basic design element contrast, scale dominance, spatial dominance) rated strong. The visual absorption capability of the landscape rated low (primarily due to the flat, open, landscape absent any form of vegetative or terrain screening). The magnitude of change (dominant, prominent, conspicuous, apparent, unobtrusive) in the landscape rated prominent, meaning the proposed project stands out or is striking in the view in the landscape. See the **Key Observation Point Evaluation Worksheet - Key Observation Point No. 10**.

For the purpose of the CEQA Guidelines, and as set forth in Table 15 in the worksheet, this combination of ratings yields a conclusion that the proposed project would have a *significant effect on the environment* in the degrading of the existing visual character or quality of the public view of the site and its surroundings when viewed from KOP 10.

Table 5.15-2 provides staff's determination of the project's consistency with plans, policies, and regulations governing scenic quality including any proposed COC, where applicable, to achieve consistency.

TABLE 5.15-2 PROJECT CONSISTENCY WITH PLANS, POLICIES, AND REGULATIONS	
Applicable Plan, Policy, and Regulation	**Consistency and Basis For Determination**
Federal	
Desert Renewable Energy Conservation Plan (DRECP). The DRECP Land Use Plan Amendment (LUPA) establishes Visual Resource Management (VRM) Classes for lands administered by BLM. Each VRM class allows for specific landscape changes from Management Activities. The LUPA-VRM and General Public Land (GPL)-VRM measures include the following: • **LUPA-VRM-1:** Manage visual resources in accordance with VRM classes. • **LUPA-VRM-2:** Ensure that activities within each of the VRM class polygons meets the VRM objectives. • **LUPA-VRM-3:** Ensure that transmission facilities are designed and located to meet the VRM class objectives for the area in which they are located.	**No.** The project site is located within lands categorized VRM Class III. The VRM Class III management objective is: *To partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate* [or less]*. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.* The proposed project would create strong degrees of visual contrast when viewed from all 11 of the representative KOPs. The resulting level of change to the landscape would substantially degrade the existing visual character or quality of the public view of the site and its surroundings.
• **GPL-VRM-1:** Development in GPLs is required to incorporate visual design standards and include the best available, most recent BMPs as determined by the BLM.	**No.** The application contains statements demonstrating the intent to incorporate a variety of proposed measures (APM AES-1, AES-2, AES-3, AES-4, and AES-5) as part of the proposed project to avoid or substantially lessen potentially significant impacts to visual and aesthetic resources. These measures would be consistent with BLM's BMPs and would include siting and design measures, surface treatment of structures, application of colorants to reduce contrast caused by exposing soils and rocks, avoiding unnecessary land disturbance, employing an off-set in the grid layout to reduce visual contrast caused by long straight roads, implementing landscaping to screen glint and glare, implementation of a glint and glare mitigation and monitoring program, and night lighting control measures. However, the project still conflicts with the BLM VRM Class III management objective, and ongoing coordination between the applicant and the BLM is occurring with the intent to resolve inconsistencies with DRECP GPL VRM requirements.
• **GPL-VRM-2:** All development will abide by the BMPs addressed in the most recent version of *Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands* (BLM, 2013) or its replacement.	**No.** The application contains statements demonstrating the intent to incorporate a variety of proposed measures as part of the proposed project to avoid or substantially lessen potentially significant impacts to visual and aesthetic resources. While these measures would be consistent with BLM's BMPs, the project still conflicts with the BLM VRM Class III management objective, and ongoing coordination between the applicant and the BLM is

TABLE 5.15-2 PROJECT CONSISTENCY WITH PLANS, POLICIES, AND REGULATIONS	
Applicable Plan, Policy, and Regulation	**Consistency and Basis For Determination**
	occurring with the intent to resolve inconsistencies with DRECP GPL VRM requirements.
• **GPL-VRM-3:** Regional mitigation is required for visual impacts in GPLs. Mitigation will be based on the VRI class and the underlying visual values (scenic quality, sensitivity, and distance zone) for the development area…Compensation may involve reclamation of visual impacts that are present within other areas designated as BLM VRM Class I or II lands…Additional mitigation will be required where projects affect viewshed of specially designated areas (e.g., National Scenic and Historic Trails).	**No.** Despite the application's statements demonstrating the intent to implement measures consistent with BLM's BMPs, substantial visual impacts would remain. However, no additional mitigation or compensation has been proposed.
National Park Service Night Sky Program. Under the Night Sky Program, NPS staff monitor dark night skies and develop exterior lighting guidelines to determine the lighting that is appropriate based on a location's historic character, energy, cost, maintenance efficiency, light pollution, and wildlife. NPS works to protect natural lightscapes by minimizing light that emanates from park facilities, and seeks the cooperation of park visitors, neighbors, and state and local governments to prevent or minimize light pollution that can affect park ecosystems.	**Yes.** The application contains statements demonstrating the intent to implement shielding, directional light, non-reflectance materials, and other light pollution and reflectance facility design measures. Staff concludes that the level of new light, glare, and reflectance emitted by the project would have a less than significant effect on the environment with effective implementation of the Staff-proposed COCs (see COCs **VIS-5** and **VIS-6** and **MM VIS-3**, under 5.15.5).
Mojave National Preserve General Management Plan. The General Management Plan presents several goals and policies that address the protection of scenic resources though specific guidelines related to the preservation of visual resources and the evaluation of projects for visual consistency with the Preserve's goals have not yet been adopted.	**Yes.** Based on the viewshed analysis, sensitive viewing locations within the Mojave National Preserve (e.g., Soda Dry Lake, Zzyzx Spring, and the Desert Studies Center) located within the project study area (see **Figure 5.15-2**) would have no or very limited views of the project due to intervening terrain. Other sensitive viewing locations within the Preserve beyond the project study area are located 10 or more miles distant from the project. Given the low-profile of the solar arrays, intervening terrain, considerable viewing distance, and atmospheric conditions, the project would have minimal to no visual impact on views from the Preserve.
Old Spanish National Historic Trail. The congressionally designated alignment of the Armijo Route of the Old Spanish National Historic Trail (OSNHT) is present just outside of the visual analysis area to the east and south of the project. At its closest point, the OSNHT is approximately 3.4 miles from the project, and no project visibility from the OSNHT was indicated in the viewshed analysis (see **Figure 5.15-3**).	**Yes.** The project would not visually impact views from the OSNHT as indicated in the viewshed map presented as **Figure 5.15-2**.

TABLE 5.15-2 PROJECT CONSISTENCY WITH PLANS, POLICIES, AND REGULATIONS	
Applicable Plan, Policy, and Regulation	**Consistency and Basis For Determination**
BLM Solar Energy Program. Under BLM's Solar Energy Program, the BLM adopted programmatic design features for visual resources, including VRM BMPs, procedures for coordinating with BLM staff during the project application process, evaluating visual resources, analyzing potential visual effects, and avoiding or minimizing potentially significant effects.	**Yes.** The application contains statements demonstrating the intent to incorporate a variety of proposed measures as part of the proposed project to avoid or substantially lessen potentially significant impacts to visual and aesthetic resources. These measures would be consistent with BLM's BMPs and would include siting and design measures, surface treatment of structures, avoiding unnecessary land disturbance, landscaping to screen glint and glare, implementation of a glint and glare mitigation and monitoring program, and night lighting control measures. These measures are incorporated here in the COCs and MMs.
State	
California Scenic Highway System. Section 263 of the Streets and Highways Code, the "State Scenic Highway System List" provides a list of highways that have been either officially designated or are eligible for designation as a state scenic highway.	**Yes.** The "State Scenic Highway System List" shows the proposed project site is not along or within the viewshed of a designated state scenic highway.
Local	
San Bernardino County Countywide Plan	
Land Use Element	
Goal LU-2 Land Use Mix and Compatibility. An arrangement of land uses that balances the lifestyle of existing residents, the needs of future generations, opportunities for commercial and industrial development, and the value of the natural environment. • Policy LU-2.3 Compatibility with natural environment. We require that new development is located, scaled, buffered, and designed for compatibility with the surrounding natural environment and biodiversity.	**No.** Although the application contains statements demonstrating the intent to incorporate a variety of proposed measures as part of the proposed project to avoid or substantially lessen potentially significant impacts to visual and aesthetic resources (incorporated here as COCs and MMs as appropriate), the project would still substantially degrade the existing visual character or quality of public views of the site and its surroundings. Therefore, the project would not be compatible with the surrounding natural environment.
Goal LU-4 Community Design. Preservation and enhancement of unique community identities and their relationship with the natural environment. • Policy LU-4.1 Context-sensitive design in the Mountain/Desert regions. We require that new development employ site and building design techniques and use building materials that reflect the natural mountain or desert environment and preserve scenic resources.	**No.** As documented in this analysis, the project would substantially degrade the existing visual character or quality of public views of the site and its surroundings. The project would not use building materials that reflect the natural mountain and desert environment and, therefore, would not preserve the scenic resources of the site and its surroundings.
• Policy LU-4.7 Dark skies. The County minimizes light pollution and glare to preserve views of the night sky, particularly in the Mountain and Desert regions where	**Yes.** The application contains statements demonstrating the intent to implement shielding, directional light, non-reflectance materials, and other light pollution and reflectance facility design

TABLE 5.15-2 PROJECT CONSISTENCY WITH PLANS, POLICIES, AND REGULATIONS	
Applicable Plan, Policy, and Regulation	**Consistency and Basis For Determination**
dark skies are fundamentally connected to community identities and local economies. We also promote the preservation of dark skies to assist the military in testing, training, and operations.	measures. Staff concludes that the level of new light, glare, and reflectance emitted by the project would have a less than significant effect on the environment with effective implementation of Staff-proposed COCs **VIS-5** and **VIS-6** and **MM VIS-3**.
Natural Resources Element	
Goal NR-4 Scenic Resources. Scenic resources that highlight the natural environment and reinforce the identity of local communities and the county. • Policy NR-4.1 Preservation of scenic resources. We consider the location and scale of development to preserve regionally significant scenic vistas and natural features, including prominent hillsides, ridgelines, dominant landforms, and reservoirs.	**No.** As documented in this analysis, the project would substantially degrade the existing visual character or quality of public views of the site and its surroundings including the desert valley landscape and the surrounding Soda Mountains.
• Policy NR-4.2 Coordination with agencies. We coordinate with adjacent federal, state, local, and tribal agencies to protect scenic resources that extend beyond the County's land use authority and are important to countywide residents, businesses, and tourists.	**Yes.** The results of staff's analysis will be made available for review and comment by federal, state, local, and tribal agencies.
Renewable Energy & Conservation Element	
Goal RE-4 Environmental Compatibility. The County will establish a new era of sustainable energy production and consumption in the context of sound resource conservation and renewable energy development practices that reduce greenhouse gases and dependency on fossil fuels. • Policy RE-4.4 Encourage siting, construction, and screening of renewable energy (RE) generation facilities to avoid, minimize or mitigate significant changes to the visual environment including minimizing light and glare.	**Partially.** As documented in this analysis, staff has concluded that project visual impacts would be reduced with effective implementation of COCs **VIS-2** (Design and Structural Surface Treatments), **VIS-3** (Vegetation Management), and **VIS-4** (Landscape Screening Plan), and MMs **VIS-1** (Design and Structural Surface Treatments) and **VIS-2** (Vegetation Management), though not to the level that would be less than significant. However, staff has also concluded that the level of new light, glare, and reflectance emitted by the project would have a less than significant effect on the environment with effective implementation of staff-proposed COCs **VIS-5** and **VIS-6** and **MM VIS-3**.
• Policy RE 4.4.1 Reduce visual impacts through a combination of minimized reflective surfaces, context sensitive color treatments, nature-oriented geometry, minimized vegetation clearing under and around arrays, conservation of pre-existing native plants, replanting of native plants as appropriate, maintenance of natural landscapes around the edges of facility complexes, and lighting design to minimize night-sky impacts, including attraction of and impact to nocturnal migratory birds.	**Yes.** As documented in this analysis, project visual impacts would be reduced with effective implementation of staff-proposed COCs **VIS-1** through **VIS-6** and MMs **VIS-1** through **VIS-4**, though not to the level that would be less than significant. However, staff has also concluded that the level of new light, glare, and reflectance emitted by the project would have a less than significant effect on the environment with effective implementation of staff-proposed COCs **VIS-5** and **VIS-6** and **MM VIS-3**.

TABLE 5.15-2 PROJECT CONSISTENCY WITH PLANS, POLICIES, AND REGULATIONS	
Applicable Plan, Policy, and Regulation	**Consistency and Basis For Determination**
Goal RE-5 Siting. Renewable energy facilities will be located in areas that meet County standards, local values, community needs and environmental and cultural resource protection priorities. • Policy RE-5.7 Support renewable energy projects that are compatible with protection of the scenic and recreational assets that define San Bernardino County for its residents and make it a destination for tourists.	**No.** As documented in this analysis, the project would substantially degrade the existing visual character or quality of public views of the site and its surroundings, which would not be compatible with the protection of the scenic and recreational assets in the surrounding desert valley landscape and Soda Mountains.
○ RE 5.7.1 Site RE generation facilities in a manner that will avoid, minimize or substantially mitigate adverse impacts to sensitive habitats, cultural resources, surrounding land uses, and scenic viewsheds.	**No.** As documented in this analysis, the project would substantially degrade the existing visual character or quality of public views of the site and its surroundings and scenic viewsheds.
San Bernardino County Development Code – Title 8 (2014)	
Division 3: Countywide Development Standards	
83.07. Light Trespass	
83.07.060 Mountain and Desert Requirements	
a) Shielding Required. All outdoor light fixtures shall be fully shielded, installed and maintained in such a manner that the shielding does not permit light trespass in excess of amounts set forth in subdivision (f).	**Yes.** The application contains statements demonstrating the intent to implement shielding, directional light, non-reflectance materials, and other light pollution and reflectance facility design measures. Staff concludes that the level of new light, glare, and reflectance emitted by the project would have a less than significant effect on the environment with effective implementation of staff-proposed COCs **VIS-5** and **VIS-6** and **MM VIS-3**.
b) Light Pollution Standards. Light pollution and trespass shall be minimized through the use of directional lighting, fixture location, height and the use of shielding and/or motion sensors and timers in such a manner that the light source does not permit light trespass in excess of amounts set forth in subdivision (f).	**Yes.** See a) above.
c) Automated Controls. Automated control systems, such as motion sensors and timers, shall be used to meet curfew requirements set forth in subdivision (d). Photocells or photo controls shall be used to extinguish all outdoor lighting automatically when sufficient daylight is available. Automated controls should be fully programmable and supported by battery or similar backup.	**Yes.** See a) above.
d) Dark Sky Curfew. All outdoor lighting shall be extinguished by 11:00 p.m., close of business, or when people are no longer	**Yes.** See a) above.

TABLE 5.15-2 PROJECT CONSISTENCY WITH PLANS, POLICIES, AND REGULATIONS	
Applicable Plan, Policy, and Regulation	**Consistency and Basis For Determination**
present in exterior areas, whichever is later, except for the following. 1. Lighting used for entry and exit points of a structure, parking areas, driveways and driveway ingress/egress points; or 2. Lighting activated by a motion sensor that extinguishes no later than five minutes after activation.	
e) Lighting Color. The correlated color temperature of all outdoor lighting shall be 3,000 Kelvin or less except for seasonal lighting.	**Yes.** See a) above.
f) Allowable Light Trespass. Outdoor lighting shall not cause light trespass exceeding one-tenths foot-candles measured with a light meter oriented vertically or horizontally either at the property line of the adjacent property or measured from some other point on the property where light trespass may be reasonably determined to occur due to differences in property or improvement elevations.	**Yes.** See a) above.
g) Blinking, Flashing, or High Intensity Lighting. Permanently installed lighting that blinks, flashes or is of high intensity or brightness that causes a light trespass is prohibited.	**Potentially No.** There is the potential for the FAA to require FAA (flashing) hazard lights on some portion of the 1.5-mile, overhead gen-tie transmission line that would connect the solar facility to the existing electrical grid.
Division 4: Standards for Specific Land Uses and Activities	
84.29: Renewable Energy Generation Facilities	
84.29.035 Required Findings for Approval of a Commercial Solar Energy Facility	
a) In order to approve a commercial solar energy generation facility, the Planning Commission shall determine that the location of the proposed commercial solar energy facility is appropriate in relation to the desirability and future development of communities, neighborhoods, and rural residential uses, and will not lead to loss of the scenic desert qualities that are key to maintaining a vibrant desert tourist economy by making each of the findings of fact in Subdivision (c).	**No.** As documented in this analysis, the project would substantially degrade the existing visual character or quality of public views of the site and its surroundings, which would lead to the loss of the scenic desert qualities in the surrounding desert landscape.
c) The findings of fact shall include the following: 2. Proposed fencing, walls, landscaping, and other perimeter features of the proposed commercial solar energy generation facility will minimize the visual impact of the project so as to blend with	**No.** Despite effective implementation of COC **VIS-4** (Landscape Screening Plan), the project would still be a dominant visual feature in the landscape, and it would not effectively blend with the natural landscape character of the area.

TABLE 5.15-2 PROJECT CONSISTENCY WITH PLANS, POLICIES, AND REGULATIONS	
Applicable Plan, Policy, and Regulation	**Consistency and Basis For Determination**
and be subordinate to the environment and character of the area where the facility is to be located.	
3. The siting and design of the proposed commercial solar energy generation facility will be either: (A) unobtrusive and not detract from the natural features, open space and visual qualities of the area as viewed from communities, rural residential uses, and major roadways and highways, or (B) located in such proximity to already disturbed lands, such as electrical substations, surface mining operations, landfills, wastewater treatment facilities, etc., that it will not further detract from the natural features, open space and visual qualities of the area as viewed from communities, rural residential uses, and major roadways and highways.	**No.** As documented in this analysis, the project would substantially detract from the natural features, open space, and visual qualities of the project area as viewed from I-15 and would not be located in proximity to already disturbed lands such that it would not further detract from the natural features, open space, and visual qualities of the project area.
4. The siting and design of project site access and maintenance roads have been incorporated in the visual analysis for the project and shall minimize visibility from public viewpoints while providing needed access to the development site.	**Yes.** The siting of the project's access roads have been designed such that their visibility from public viewpoints is minimized while providing needed access to the project site. The widening of Rasor Road (a primary access road to the project) from 20 feet to 26 feet over a distance of approximately 0.4 mile would not be a noticeable change to the casual observer and motorist on I-15 and would likely not be noticed by recreational travelers on Rasor Road in the context of the more visually-dominant surrounding solar arrays and facilities.
7. The proposed commercial solar energy generation facility will avoid modification of scenic natural formations.	**Yes.** There are no known scenic natural formations at the project site that would be modified by the project.
8. For proposed facilities within two miles of the Mojave National Preserve boundaries, the location, design, and operation of the proposed commercial solar energy facility will not be a predominant visual feature of, nor substantially impair views from, hiking and backcountry camping areas within the National Preserve.	**Likely Yes.** Although the project would be prominently visible from a limited few locations within the Mojave National Preserve, it does not appear that the project would substantially impair views from known or popular backcountry hiking or camping areas.
9. For proposed facilities within two miles of the boundaries of a County, State or Federal agency designated wilderness area, the location, design, and operation of the proposed commercial solar energy facility will not be a predominant visual feature of, nor substantially impair views from, the designated wilderness area.	**No.** The project would constitute a predominant visual feature and substantially impair views from the Soda Mountains Wilderness Study Area.
84.29.040 Solar Energy Development Standards	

TABLE 5.15-2 PROJECT CONSISTENCY WITH PLANS, POLICIES, AND REGULATIONS	
Applicable Plan, Policy, and Regulation	**Consistency and Basis For Determination**
(b) Glare. Solar energy facilities shall be designed to preclude daytime glare on any abutting residential land use zoning district, residential parcel, or public right-of-way.	**Yes.** The application contains statements demonstrating the intent to implement shielding, directional light, non-reflectance materials, and other light pollution and reflectance facility design measures. Staff concludes that the level of new light, glare, and reflectance emitted by the project would have a less than significant effect on the environment with effective implementation of staff-proposed COCs **VIS-5** and **VIS-6**.
(c) Night Lighting. Outdoor lighting within a commercial solar energy generation facility shall comply with the provisions of Chapter 83.07 of this Development Code.	**Yes.** The application contains statements demonstrating the intent to implement shielding, directional light, non-reflectance materials, and other light pollution and reflectance facility design measures. Staff concludes that the level of new light, glare, and reflectance emitted by the project would have a less than significant effect on the environment with effective implementation of staff-proposed COCs **VIS-5** and **VIS-6,** and **MM VIS-3**.

Light and Glare

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 proposed project would be constructed on approximately 2,670 acres (proposed project site) of BLM-managed land, immediately adjacent to I-15 in unincorporated eastern San Bernardino County, California. Generally, the landscape can be characterized as a broadly enclosed valley that is unencumbered by intervening features. The project site is visually and ecologically characteristic of the Mojave basins common in this region, composed of rural, creosote bush-dominated desert land with tan, sandy soils and various shades of low, muted-green vegetation, with some rocky outcrops.

While existing nighttime lighting conditions vary throughout the area, no light sources currently exist on the project site. Open space and rural lands, including the Mojave National Preserve and Rasor OHV recreation area, generally have little to no night lighting. However, I-15 introduces a substantial amount of lighting in the nighttime environment from vehicle lights and from sparsely located overcrossings.

Construction of the proposed project would generally occur during daytime hours. However, at limited times, some construction activities may be required at night, and these activities would require temporary lighting for safety. Nighttime safety lighting would be portable and used only to illuminate work areas. The laydown yard may also be lit at night for security during construction.

Project use of uncontrolled or excessive lighting would be noticeable to nearby motorists on I-15. Nighttime lighting could also affect the nighttime experience for

dispersed recreational users in the surrounding wilderness and recreational areas. Excessive lighting can also cause an adverse effect to viewers of the night sky via sky glow, which diminishes the visibility of the nighttime sky and stars. Prevention of off-site light spillage for ground observers does not necessarily prevent back-reflected light (i.e., light reflected off the ground and/or structures from down-directed lamps) from diminishing the visibility of the night sky. Normally, the contribution of project-related lighting is negligible when in an environment with abundant light sources; however, the project area is highly valued in terms of the quality of its nighttime skies. This is attributable to the scarce and scattered nature of existing light sources in the surrounding area and the prevalence of federally administered land in the region, which limits opportunities for development.

As shown in **Appendix 5.15A, Outdoor Lighting Impact Assessment Report**, the project would require permanent lighting at the Rasor Road site entrance, O&M buildings, substation, and switchyard. Some portable lighting also could be required for essential nighttime maintenance activities. The project's O&M area would be located near the project substation, somewhat concentrating new visible light sources as seen from I-15 but also introducing noticeable lighting into an existing undeveloped desert area where no artificial lighting outside of the freeway corridor exists. Northwest of the freeway, the project switchyard would introduce additional noticeable lighting to the affected viewsheds and would draw attention, both as point-source lights and by altering the nighttime landscape character from primarily undeveloped to developed. These new sources of visible light would be seen from viewing locations along I-15 (KOPs 1a, 1b, 2–5, and 10) and from recreation areas (KOPs 6–9). Given the relatively sparse development in the surrounding area and the general lack of stationary nighttime lighting, the introduction of nighttime task lighting would constitute a potentially significant impact, absent implementation of the lighting conditions of certification described below.

Therefore, light, glare, and reflectance emitted from the proposed project were assessed to determine if each would create an adverse effect to the existing physical environment off site and skyward (light pollution and reflectance).

Light Pollution

"Light pollution is the human-made alteration of outdoor light levels from those occurring naturally." (DarkSky, 2024) Light pollution "occurs when outdoor lighting is misdirected, misplaced, unshielded, excessive or unnecessary. As a result, light spills unnecessarily upward and outward, causing glare, light trespass, and a nighttime urban 'sky glow' overhead, indicating wasted energy and obscuring the stars overhead," and clutter.[16] (Dark Sky Society, 2024)

DarkSky International (formerly the International Dark-Sky Association) is a recognized, worldwide authority in combating light pollution. DarkSky International recognizes to

16 Clutter is the bright, confusing, and excessive grouping of light sources.

minimize the harmful effects of light pollution. Lighting should: only be on when needed; only light the area that needs it; be no brighter than necessary; minimize blue light emissions;[17] and be fully shielded.[18]

The DarkSky International "DarkSky Approved" program offers luminaires that significantly reduce light pollution and minimize nocturnal habitat disruption. The DarkSky Approved program provides an objective, third-party certification for lighting-related products that minimize glare, reduce light trespass, and preserve the natural night sky.[19] Outdoor luminaires certified by the program incorporate features such as shielding, no uplight allowance (BUG Rating U0[20]), dimming capabilities to one percent of their full rating, and emission control that limits visible light in the 380 to 520 nanometers (nm)[21] range to no more than seven percent.[22] The proposed project would be required to be consistent with DarkSky principles.

Artificial Light and Nocturnal Creatures. "Scientific evidence suggests that artificial light at night has negative and deadly effects on many creatures, including amphibians, birds, mammals, insects, and plants.…Predators use light to hunt, and prey species use darkness as cover."[23]

"Keeping the light LOW (mounting the fixture as low as possible) and SHIELDED (fully shielding the light so bulbs and/or glowing lenses are not visible) cuts down on the amount of glare and light visible to the animals, so that there is less opportunity for them to get trapped, repelled, or have their day/night patterns altered. Keeping the light LONG wavelength (ambers and reds) actually makes the light that is visible seem dimmer to nocturnal animals that primarily use rod vision. The rod system's peak sensitivity is at 496 nm [nanometers], so a low-pressure sodium light, with its emitted

17 Studies show exposure to blue light can cause eye strain, fatigue, headaches, and sleeplessness.
18 "Fully shielded**"** means a luminaire constructed in a manner that all light emitted from the fixture, either directly from the lamp or a defusing element, or indirectly by reflection or refraction from any part of the luminaire is projected below the horizontal plane, as determined by a photometric test or certified by the manufacturer.
19 To see a list of DarkSky Approved products, manufacturers, and retailers visit the DarkSky International website <www.darksky.org>.
20 "A BUG Rating stands for backlight, uplight, and glare. Backlight (B) is the light directed behind the fixture, uplight (U) is any light directed upward above the horizontal plane of the luminaire, and glare (G) is the amount of light emitted from the luminaire at high angles. The backlight, uplight, and glare ratings are assigned a value between 0 and 5 (with lower on the scale being more desirable) depending on the maximum amount of light in these zones based on thresholds defined by the Illuminating Engineering Society (IES) and enforced by the International Dark-Sky Association (IDA)" [now named DarkSky International].
21 The human eye can view the segment of the electromagnetic radiation spectrum wavelengths between 380 to 700 nanometers. This segment is known as "visible light."
22 The human eye can view the segment of the electromagnetic radiation spectrum wavelengths between 380 to 700 nanometers. This segment is known as "visible light."
23 DarkSky International maintains an Artificial Light at Night (ALAN) Database. It provides the latest scientific literature on how light pollution affects wildlife. (DarkSky 2024)

light at 589 nm, should seem 1/10th as bright to an animal using purely rod vision vs. an animal that uses rods and cones to see." (FFWCC, 2024)

"Some Institutes and even cities have adopted a "Lights Out" program in which exterior lighting as well as interior lights in tall buildings are dimmed or turned off during periods of bird migration. Bare bulbs or upward pointing lights are replaced with hooded fixtures that only shine downward. If lights can't be turned off, then use flat lens, and reduce the number of lights and intensity. Both the height of the pole and the intensity of the lamp should be adjusted to only direct light where needed...." (NIEHS, 2015)

Safety and Security Lighting. "Each organization should ensure a minimum level of light for their respective property areas that complies with all applicable regulations and industry guidelines. Security lighting requirements should be specified by a lighting engineer. Ideally, lighting requirements will be identified as part of a security survey. The lighting program should consider the following:

- Lighting should not illuminate security/protection officers or patrols. Where security patrols cannot be kept out of the zones of illumination, a judgment must be made between the advantages of the lighting and the reduction in patrol effectiveness.
- Lighting must be combined with surveillance. The deterrent effect of lighting depends on the fear of detection. This may also require video surveillance or security/protection officers on static posts and mobile patrols.
- Lighting must not cause nuisances or hazards to neighbors, such as light pollution or light trespass. Lighting may adversely affect adjoining or adjacent properties such as residential properties, roadways, airports, harbors, neighboring commercial buildings, or properties.
- Lighting must be cost-effective and compatible with site conditions. It may not be economical to illuminate very large areas. Take into account both the existing lighting outside the perimeter and the lighting installed within the site for operational or safety purposes." (Fenelly and Perry, 2017)

Reflectance

Reflectance is the proportion of perpendicular, incident light reflected from the surface or body of a material. All surfaces reflect light. Light reflects off the surface in a very predictable manner.

"Reflectivity is defined as the property of a material to reflect the light or radiation. It is a measurement of reflectance irrespective of the thickness of a material." (Electrical4U, 2020)

Exterior surface coatings and materials that diffuse illumination or collection, reflectance, and scattering are of utmost importance. "An ideal coating is non-specular (to decrease geometrical effects) durable, high in reflectance and spectrally flat over a wide wavelength range to give a flat spectral response in input or output." (Labsphere,

Inc., 2024) Materials with a non-shiny, textured or matte/powder finish are preferable to glossy or shiny finishes. A few examples of materials and surface treatments that should be avoided if possible: any material with a reflectance greater than 35 percent; any shiny, highly reflective materials even for small surfaces; large, smooth surfaces; and large expanses of glass.

The Master Painters Institute (MPI) provides guidelines and standards for the architectural paint and coatings sector in the United States and Canada. "In order to provide Coatings Specifiers with a common language to describe Paint Finishes, MPI includes GLOSS and SHEEN measurements as part of the criteria for many of its MPI category specifications. MPI specifies the following seven GLOSS levels" (Rodda Paint Company, 2024):

- Gloss Level 1 – Flat (traditional matte finish)
- Gloss Level 2 – Satin/Pearl (high side sheen Flat, "Velvet-like" finish)
- Gloss Level 3 – Eggshell (traditional "Eggshell-like" finish)
- Gloss Level 4 – Low Gloss ("Satin-like" finish)
- Gloss Level 5 – Semi Gloss (traditional Semi-Gloss)
- Gloss Level 6 – Gloss (traditional Gloss)
- Gloss Level 7 – High Gloss (High Gloss)

Construction and Operation of Permanent Facility

Less Than Significant with Mitigation / Conditions of Certification Incorporated. The proposed project would be constructed on approximately 2,670 acres (proposed project site) of BLM-managed land, immediately adjacent to I-15 in unincorporated eastern San Bernardino County, California. Generally, the landscape can be characterized as a broadly enclosed valley that is unencumbered by intervening features. The project site is visually and ecologically characteristic of the Mojave basins common in this region, composed of rural, creosote bush-dominated desert land with tan, sandy soils and various shades of low, muted-green vegetation, with some rocky outcrops.

Given the existing physical environment, there is very little nighttime emission of artificial light, and during daytime there are few surfaces that create noticeable glare or high reflectance. Specifically, as previously noted, except for adjacent I-15, the landscape surrounding the proposed project is primarily an undeveloped desert basin and, therefore, has limited sources of artificial light at night. However, the nighttime viewing conditions are influenced by existing lighting from I-15 (automobiles and trucks). Limited lighting exists at Beacon Station and at nearby overpasses (Rasor Road and Zzyzx Road).

Staff reviewed the "World Atlas Night Sky Brightness" interactive map given the location of the proposed project. The map delineates physical radiance (brightness) homogeneously over an area from a relative location by color levels (a light pollution

map).[24] See **Figure 5.15-14**. It shows brightness in the general area to be minimal, ranging from C2 (Typical truly dark site) to C3 (Rural sky) on the Bortle Scale.

A project-specific conceptual lighting plan is provided as **Appendix 5.15-A, Outdoor Lighting Impact Assessment Report**. As proposed, outdoor lighting would be for site and building access and security purposes only. Outdoor lighted areas would include parking areas (approximately 13,000 square feet); facility entrances to the switchyard, BESS yard, HV substation, and equipment storage areas; and at the Rasor Road north and south I-15 on/off ramps. LED luminaires would be either pole top-mounted (25-foot poles) or wall-mounted (10-foot wallpacks). Luminaires would be controlled by a photocell, have automatic shut-off past operating hours, and utilize auto dim to 50 percent when unoccupied during operating hours. All luminaires are proposed to be 2200K-3000K CCT.

Additionally, as required in COC **VIS-5** (for jurisdictional project components) and MM(for non-jurisdictional project components, utility switchyard and transmission loop in line and towers) **VIS-3** (night lighting management), all proposed project light fixtures are to be motion-sensitive; fully shielded (BUG Rating U0); directed on-site and downward to minimize the potential for glare, backscatter, spillover onto adjacent land and uses, and skyglow; and have the International Dark-Sky Association Fixture Seal of Approval.

With respect to impacts on nearby astronomical observatories, the closest observatory is Mt. Potosi Observatory, approximately 67 miles to the northeast of the project site in Mountain Springs, Nevada. Given the limited amount of potential night lighting emanating from the project site, and the substantial distance to the observatory, no night lighting impacts to the observatory research programs would be expected.

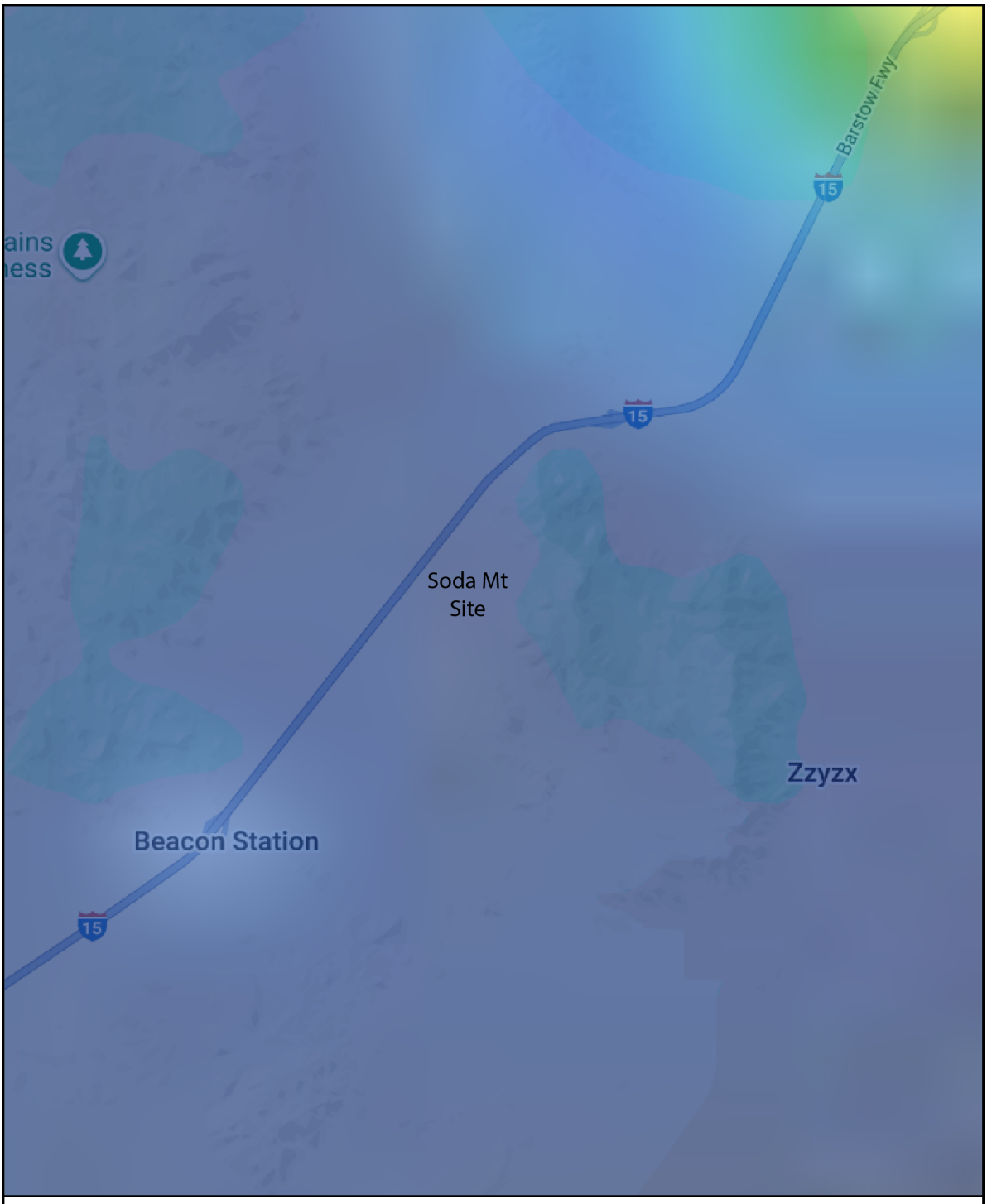
Glare

Glare is a visual discomfort experienced from high luminance or high range of luminance. For exterior environments at night, glare occurs when the range of luminance in a visual field is too large.

The proposed project would use PV panels that are uniformly dark in color, non-reflective, and designed to be highly absorptive of all light that strikes their glass surfaces. The project would use an anti-reflective coating designed to generate electricity rather than reflect light. The solar panels are also designed to track the sun to maximize panel exposure to sunlight, which would direct most reflected light back toward the sun in a skyward direction.

24 The "World Atlas Night Sky Brightness" is an interactive map which delineates physical radiance homogeneously over an area from a relative location by color levels provided on The Dark Sky Map: Best Locations for Stargazing website <https://www.darkskymap.com/nightSkyBrightness>. (Dark Sky Map 2025)

Figure 5.15-14 Night Sky Brightness



The map shows night sky brightness emitted in the proposed project and surrounding area, which is rated between C2 (Typical truly dark site) and C3 (Rural sky) on the Bortle scale (bluish color). Source: "World Atlas Night Sky Brightness," Dark Sky Map: Best Locations for Stargazing, https://www.darkskymap.com/nightSkyBrightness, accessed on June 4, 2025.

Source: Dark Sky Map 2025

PV panels have a lower index of refraction/reflectivity than common sources of glare in residential environments. The glare and reflectance levels from a given PV system are, for example, lower than the glare and reflectance levels of steel, snow, standard glass, plexiglass, and smooth water. The glare and reflectance levels of the panels are further reduced with the application of anti-reflective coatings. PV suppliers typically use stippled glass for panels as the "texturing" of the glass allows more light energy to be channeled/transmitted through the glass while weakening the reflected light. With the application of anti-reflective coatings and use of modern glass technology, the PV panels would display overall low reflectivity.

As documented in the ForgeSolar Glare Analysis Report presented as **Appendix 5.15B**, the project would create a new source of glare. Potentially affected observers would be travelers on I-15 and recreationalists in the OHV area. As summarized in **Table 5.15-3**, (below), the project could produce glare over the course of a typical year at two of the glare receptor locations. Glare analysis point receptors (referred to as OPs) 4 (KOP 1b) and 8 (KOP 7) could receive green glare.

Travelers along I-15 northbound and southbound (OPs 1–13) experience views that are northeast, east, and southwest of the project and have primarily superior views of the landscape. Travelers at these locations and along these routes (travel directions being northeast and southwest) would experience "0" minutes of potential glint or glare; therefore, there would be no glare impacts to drivers along these vehicular travel routes. However, a stationary viewer standing along I-15 and facing southeast (away from the direction of travel of motorists on I-15), represented by OP 4 (KOP 1b), could experience up to 329 minutes per year of green ocular impact, though that location would not represent the position of a traveling motorist. The glare as characterized in this scenario would originate from a section of PV array 4, the southernmost array area, and would occur from mid-November to the end of January from 6:00 a.m. to 7:30 a.m. for approximately 8 minutes per day. However, it should be noted that the Solar Glare Hazard Analysis Tool (SGHAT) software does not account for cloud cover nor the effects of landscape screening (i.e., trees and shrubs) between the viewer and the panels. As the proposed landscaping along the site perimeter matures, it could potentially filter or block a portion of the potential glare reflected off the panels.

Point receptor 8 (KOP 7), located near the proposed project substation west of I-15 and over one mile from the nearest array, could experience up to 198 minutes per year of green ocular impact; the glare would occur from the beginning of November to the beginning of February from 6:30 a.m. to 8:00 a.m. for approximately 5 minutes per day. As for KOP 1b, the modeling results do not account for the potential vegetative screening, which could mitigate some of limited glare that may be experienced at KOP 7.

Regarding the nearest airport, two potential flight paths were considered. The closest airport considered in the analysis includes the public Baker Airport, approximately 5.8 miles to the northeast. During takeoff and landing procedures, airborne viewers (e.g., pilots) would be elevated relative to the project site. The results of the glare analysis

conducted for this project indicate that airborne viewers would not experience glare within the two 2-mile-long takeoff and landing flight path segments analyzed to meet Federal Aviation Administration (FAA) requirements. Glare results for the analysis are summarized in **Table 5.15-3** for each photo receptor and path analyzed. Five of the receptor locations coincided with locations selected as KOPs to assess overall visual impacts of the proposed project.

TABLE 5.15-3 TOTAL ANNUAL GLARE RECEIVED AT EACH RECEPTOR LOCATION

Receptor Location Number (and KOP# if Applicable)	**Green Glare (minutes)**	**Yellow Glare (minutes)**	**Red Glare (minutes)**	**Glare Results**
Baker Airport – Northwest Runway	0	0	0	No glare produced over the course of a typical year.
Baker Airport – Southeast Runway	0	0	0	No glare produced over the course of a typical year.
1	0	0	0	No glare produced over the course of a typical year.
2	0	0	0	No glare produced over the course of a typical year.
3 (KOP 6)	0	0	0	No glare produced over the course of a typical year.
4 (KOP 1b)	329	0	0	**Glare observed:** 329 minutes of green glare per year.
5	0	0	0	No glare produced over the course of a typical year.
6	0	0	0	No glare produced over the course of a typical year.
7	0	0	0	No glare produced over the course of a typical year.
8 (KOP 7)	198	0	0	**Glare observed:** 198 minutes of green glare per year.
9	0	0	0	No glare produced over the course of a typical year.
10 (KOP 8)	0	0	0	No glare produced over the course of a typical year.
11 (KOP 9)	0	0	0	No glare produced over the course of a typical year.
12	0	0	0	No glare produced over the course of a typical year.
13	0	0	0	No glare produced over the course of a typical year.
I-15 – Northbound	0	0	0	No glare produced over the course of a typical year.
I-15 – Southbound	0	0	0	No glare produced over the course of a typical year.

The finishes of materials proposed to be used as exterior surfaces include dulled, metallic components that would be coated with surface treatments that would be predominantly flat and non-reflective to minimize the potential for glare from project

facilities. Further information on the materials used for the exterior proposed project components is listed in **Table 5.15-1** in Section 5.15-1 Existing Conditions.

Conclusion

Although construction night lighting is expected to be infrequent and short-term, any new artificial light traversing off the proposed project site and the construction laydown area(s) in the existing physical environment during the night has the potential to create light trespass that would be a potentially significant effect on the environment before mitigation.

With respect to project-induced glare, based on the SGHAT analysis summarized in Table 5.15-3, glare impacts would be brief (a few minutes in the morning) and would not shine directly at motorists on I-15 nor cause a nuisance to vehicular travel routes.

Airborne viewers from Baker Airport would not experience glare within the 2-mile-long takeoff and landing flight path segments analyzed to meet FAA requirements.

The Opt-In application contains statements and proposed measures demonstrating the intent to implement shielding, directional light, non-reflectance materials, and other light pollution, reflectance, and glare abatement facility design measures. Shielding is a key element in night-sky-friendly lighting. Fully shielded fixtures, also known as "full-cutoff" fixtures, are the gold standard. No light escapes upward or outward, and a passerby is not blinded by the glare from an exposed bulb. With respect to the potential for glare impacts, the Applicant has supplied renderings of the facility that show a majority of the components would have a dulled, light or dark grey color, which is intended to minimize the occurrence of glare.

Given the limited amount of potential night lighting emanating from the project site, and the substantial distance to the Mt. Potosi Observatory in Mountain Spring, Nevada, no night lighting impacts to the observatory research programs would be expected.

Therefore, staff concludes that the level of new light, glare, and reflectance emitted by the proposed project and from the construction laydown area(s) in the existing landscape would have a *less than significant effect on the environment* with effective implementation of the staff-proposed COCs (for jurisdictional project components) **VIS-2** (design and structural surface treatments), **VIS-4** (landscape screening plan), **VIS-5** (night lighting management), and **VIS-6** (glint and glare mitigation and monitoring) and MMs (for non-jurisdictional project components, utility switchyard and transmission loop in line and towers) **VIS-1** (design and structural surface treatments), and **VIS-3** (night lighting management).

5.15.2.3 Cumulative Impacts

Cumulative impacts of the proposed project must be discussed if the incremental effect of the project, combined with the effects of other projects is "cumulatively considerable" (Cal. Code Regs, tit., 14 § 15130[a]).

In accordance with CEQA Guidelines, section 15130(b), "… the discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the proposed project alone. The discussion should be guided by standards of practicality and reasonableness and should 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])

"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[a])

Figure A-1 and **Table A-1** in **Appendix A** provides a map of cumulative projects. **Table A-1** provides a descriptive listing of the cumulative projects. Of those projects, there are two (an electric rail line and a rebuild of an existing 115 kV subtransmission line) that are located sufficiently close to the proposed project and would also be adjacent to I-15 such that the incremental effects of construction activities attributable to the proposed project could become cumulatively considerable if construction activities at these projects were to occur at the same time, or before or after construction of the proposed project. Construction activities including the use, storage, and movement of equipment and materials, and night lighting on or from these cumulative projects may combine with activities, equipment operation, and night lighting on the proposed project site. The construction activities may lead to a continued presence of construction activity including light emission in the immediate area for several years. Therefore, for the purpose of the CEQA Guidelines, Staff concludes that, given the scales of the proposed project and two cumulative projects, the proposed project would have a cumulative considerable effect on the environment during construction, even with implementation of COCs **VIS-1** through **VIS-3** and **VIS-5.**

With respect to proposed project operation, only cumulative project No. 2 would be close enough, be situated within the I-15 corridor, and share sufficiently similar industrial character to potentially contribute to a cumulatively considerable impact with the proposed project. Similar to the proposed project, a rebuild of an existing 115 kV subtransmission line would include electric transmission facilities and would likely exhibit visual characteristics similar to the proposed project's gen-tie line and substation (jurisdictional project components), and switchyard and loop in transmission structures (non-jurisdictional project components). Therefore, daytime visibility of the proposed project and a rebuild of an existing 115 kV subtransmission line would result in cumulatively considerable aesthetics effects including the perception of the increased industrialization of the landscape along this portion of I-15, even with implementation of COCs **VIS-2** through **VIS-4** (for jurisdictional project components) and MMs for non-jurisdictional project components, utility switchyard and transmission loop in line and towers) **VIS-1** and **VIS-2**. In comparison, the rail line would not exhibit visual characteristics similar to the proposed project nor be as visually prominent and is not

expected to result in cumulatively considerable aesthetics effects with the proposed project. Therefore, for the purpose of the CEQA Guidelines, Staff that the proposed project could result in a *cumulatively considerable effect on the environment* during operation.

While a rebuild of an existing 115 kV subtransmission line would have no night lighting in the vicinity of the proposed project, Cumulative Project No. 1 would have the potential to result in a cumulatively considerable night lighting impact in conjunction with the proposed project. However, staff concludes that with implementation of COCs **VIS-2, VIS-4, VIS-5** (for jurisdictional project components)**,** and **MMs VIS-1** and **VIS-3** (for non-jurisdictional project components- utility switchyard and transmission loop in lines and towers), the incremental night lighting effects contribution of the proposed project would not be cumulatively considerable. Therefore, for the purpose of the CEQA Guidelines, staff concludes that the proposed project (both jurisdictional and non-jurisdictional project components) would have a *less than significant cumulative effect on the environment* from night lighting, and with effective implementation of COCs **VIS-2**, **VIS-4,** and **VIS-5** and **MMs VIS-1** and **VIS-3**, the project's incremental contribution is not cumulatively considerable.

5.15.4 Conclusions and Recommendations

As discussed, explained, and conditioned in this section (see below), the proposed project would have a *significant effect on the environment* for the purposes of the CEQA Guidelines Appendix G Environmental Checklist Form, I. Aesthetics and would conflict with several identified regulations relating to aesthetics/visual resources and the preservation of scenic quality.

Staff reviewed current aerial and street view imagery (Google Earth, Google Maps), USGS map information, other area maps, and photographs showing the proposed project site and vicinity. Staff also reviewed proposed project site development plans, elevations, drawings, photo-realistic simulations, and renderings, etc. Staff conducted an evaluation of the physical change to the existing physical environment by the proposed project and concluded it would be significant.

The proposed project would be constructed on approximately 2,670 acres (proposed project site) of BLM-managed land, immediately adjacent to I-15 in unincorporated eastern San Bernardino County, California. Generally, the landscape can be characterized as a broadly enclosed valley that is unencumbered by intervening features. The project site is visually and ecologically characteristic of the Mojave basins common in this region, composed of rural, creosote bush-dominated desert land with tan, sandy soils and various shades of low, muted-green vegetation, with some rocky outcrops.

As previously described, the most publicly visible proposed project structures would include:

- approximately 1,635 acres of crystalline photovoltaic (PV) panels with an overall maximum height of 12 feet (when mounted on the linear tracker structures);
- 74 inverter structures (3-feet long, 3-feet-wide, 4-feet-tall);
- a 140,000 square-foot substation with maximum component heights of 55 feet;
- a 234,000 square-foot switchyard with maximum component heights of 100 feet;
- an approximately 1-mile long, 500-kV gen-tie line consisting of 11 tubular steel poles and 6 lattice towers, all of which would be approximately 160-feet tall;
- an 18-acre battery energy storage system (BESS) with each enclosure 20-feet long, 6-feet-wide, and 8-feet-high;
- an operations and maintenance building (5,000 square feet, 30-feet-high);
- an operations and maintenance facility (2,400 square feet, 35-feet-high); and
- an 8-foot-high chain link perimeter fence.

Staff evaluated 11 applicant-submitted KOPs. Staff completed a KOP Evaluation Worksheet for each KOP and concluded from all 11 of the KOPs that given the existing physical environment and observable land use character that the color, form, texture, scale, structure heights, and equipment on the proposed project site cannot be fully camouflaged or screened to reduce impacts to less than significant.

Therefore, at all 11 KOPs, the proposed project would create a *significant effect on the environment*. Staff has also concluded that with implementation of COCs **VIS-2** through **VIS-4**, and **MMs VIS-1** and **VIS-2**, the application of surface colors and finishes, combined with the restoration and revegetation of temporarily impacted areas, and installation of landscape screening would reduce the proposed project's impact on the visual character or quality of public views of the site and its surroundings but not to a level that would be less than significant.

Staff also concluded that the level of new light, glare, and reflectance emitted by the proposed project and from the construction laydown area(s) in the existing landscape would have a *less than significant effect on the environment* with effective implementation of the staff-proposed COCs **VIS-2** and **VIS-4** through **VIS-6**, and **MMs VIS-1** and **VIS-3**.

Staff also concluded that the proposed project's degradation of the existing visual character or quality of the public views, and visibility of the proposed project would result in conflicts with several federal and San Bernardino County visual resource management objectives, principles, or policies. Staff has concluded that even with implementation of COCs **VIS-1** through **VIS-6** and **MMs VIS-1** through **VIS-3**, the instances of regulatory conflicts would remain.

5.15.5 Proposed Conditions of Certification

If the CEC decides to certify the proposed project, staff recommends Conditions of Certification (COCs) **VIS-1** through **VIS-6**.

VIS-1 Construction Prior to the start of construction activities, including disturbance to project-related construction activity areas (e.g., laydown areas), the project owner shall conduct one or more pre-construction meetings with a U.S. Bureau of Land Management (BLM) landscape architect and/or scenic resources specialist (or designee). At these meetings, the project owner shall present a Scenic Resources Mitigation plan (plan), or equivalent documentation acceptable to the BLM, including designs and drawings.

The plan shall address, at a minimum:

- grading
- drainage
- revegetation
- vegetation clearing and edge feathering
- methods for demonstrating and monitoring conformance with BLM Visual Resources Management (VRM) objectives.

The project owner shall submit the plan to the BLM for review and comment and simultaneously to the Compliance Program Manager (CPM) for review and approval. The plan shall satisfy the above requirements and include the following mitigation measures:

1. Clearly delineate construction boundaries and minimize surface disturbance.
2. Preserve existing native vegetation to the extent feasible.
3. Preserve existing rocks, vegetation, and drainage patterns to the extent feasible.
4. Utilize undulating disturbance edges, contoured grading, and topsoil salvage/replacement.
5. Control erosion.
6. Implement dust suppression techniques.
7. Restore exposed soils to original contour and vegetation.
8. Mulch and spread slash from vegetation removal to cover fresh soil disturbances, except in sensitive viewing areas. Slash piles shall not be left in sensitive viewing areas.
9. Employ brush-beating, mowing, or protective surface matting rather than removing vegetation, where feasible.

10. If graveled surfaces are used, reduce visual color contrast with approved color-treatment practices.
11. Discuss visual impact mitigation objectives and activities with equipment operators before construction begins.
12. Do not apply paint or permanent discoloring agents to rocks or vegetation to indicate construction limits.
13. Remove all stakes and flagging from the construction area and dispose of them in an approved facility.

The plan shall also include:

- Identification of all field contacts
- Field inspection schedules and daily contractor meetings
- Assignment and roles of compliance monitoring crews
- Reporting and communication protocols
- Procedures for construction deviations from the approved plan
- Identification and resolution of non-compliance issues
- Requirements for maintaining daily logs and weekly reports, including electronic filing on a shared site.

Verification:

a. The project owner shall submit the Scenic Resources Mitigation Plan to the BLM for review and comment and simultaneously to the CPM for review and approval at least ninety (90) days prior to the start of construction activities.

b. If the CPM determines that revisions are required, the project owner shall submit a revised plan incorporating the specified changes. All revisions must be reviewed and approved by the CPM prior to the start of construction activities.

c. The project owner shall include in the Annual Compliance Report (ACR) to the CEC a description of the condition of the disturbed construction activity areas. The report shall include:

   1. A list of maintenance and restoration activities performed during the reporting year.
   2. A tentative schedule of maintenance and restoration activities planned for the upcoming year.
   3. Reporting shall continue until the restoration of the project-related disturbed construction activity areas is complete and a final inspection has been issued by the CPM.

VIS-2 Design and Structural Surface Treatments The project owner shall integrate visual design elements into the construction plans, details, shop drawings, and specifications. These shall include, but not be limited to, grubbing and clearing, vegetation thinning and clearing, grading, revegetation, drainage, and structural plans. Visual design elements within the plans shall be measurable by size and monitored while under construction, while operational, and when decommissioned.

The project owner shall vary the grid layout to reduce contrast caused by long, straight roads and arrays to the extent feasible without reducing operational effectiveness. The result shall be that no road extends from one side of the solar field to the other in a straight line. To further reduce contrast caused by exposing un-oxidized soils and rock in roadways, spot applications of a product such as Permeon shall be used to dull and darken the ground plane in a short time at select locations of concern from KOPs.

The project owner shall color-treat structures to reduce contrasts with the existing landscape. The applicant shall treat surfaces of all permanent, large project structures and buildings (array supports, operations and maintenance building, inverters, electrical enclosures, gen-tie poles, conductors, tanks, pipes, and walls) and chain-link fences visible to the public such that: (a) their colors minimize visual intrusion and contrast by blending with (matching) the existing characteristic landscape colors; (b) their colors and finishes do not create excessive glare from surface brightness; and (c) their colors and finishes are consistent with local policies and ordinances.

Treated or painted facilities shall be kept in good repair and retreated or repainted when color fades or flakes. Color-treated solar panel backs/supports shall be kept in good repair and retreated when color fades and/or flakes.

The transmission line conductors shall be non-specular and non-reflective, and the insulators shall be non-reflective and non-refractive.

Following consultation with the BLM Visual Resources specialist, and other representatives as deemed necessary, the project owner shall submit a specific Surface Treatment Plan for the BLM and CPM's review that will satisfy these requirements. The consultation would be in-field at the agencies' election or as a desktop review if preferred by the agencies. The treatment plan shall include:

a. A description of the overall rationale for the proposed surface treatment, including the selection of the proposed color(s) and finishes based on the characteristic landscape. Colors will be field tested using the actual distances from the KOPs to the proposed structures, using the proposed colors painted on representative surfaces.
b. A list of each major project structure, building, tank, pipe, and wall; the transmission line towers and/or poles; and fencing. The color(s) and finishes

proposed for each shall be specified. Colors must be identified by vendor, name, and pantone number, or according to a universal designation system.

c. One set of color brochures or color chips showing each proposed color and finish.

d. A specific schedule for completion of the treatment.

e. A procedure to ensure proper treatment maintenance for the life of the project.

The project owner shall not specify to the vendors the treatment of any buildings or structures treated during manufacture, or perform the final treatment on any buildings or structures treated in the field, until the project owner receives notification of approval of the treatment plan by the CPM. Subsequent modifications to the treatment plan are prohibited without the CPM's approval.

Verification:

a. The project owner shall submit an exterior surface coating, color, finish, and materials plan to the BLM for review and comment, and simultaneously to the CPM for review and approval, ninety (90) days prior to executing a contract to purchase coatings, colors, finishes, and materials with a vendor. No construction of affected structures may begin until plan approval is received.

b. If the CPM determines that the exterior surface coatings, colors, finishes, and materials plan requires a revision, the project owner shall provide to the CPM a plan with the specified revision(s) for review and comment by the BLM and approval by the CPM before any action or activity with the vendor is executed.

c. Exterior surface coatings, colors, finishes, and materials shall be installed/applied (completed) on the exterior surfaces of the large/major buildings, equipment, and structures prior to the start of commercial operation.

d. The project owner shall notify the BLM and CPM that exterior surface coatings, colors, finishes, and materials of all listed buildings, equipment, and structures have been completed and are ready for inspection. With this notification, the project owner shall supply to the BLM and CPM one set of color photographs showing the project from the key observation points evaluated for the project certification and individual color photographs showing the completed exterior surface coatings, colors, finishes, and materials for all project buildings, structures, transmission line structures or poles, screening structures, and any other building, equipment, and structure as requested by the BLM. Color photographs may be electronically filed or manually filed on electronic media.

e. The project owner shall supply a description of the condition (status) of the exterior surface coatings, colors, finishes, and materials for the large/major

buildings, equipment, structures, and others as needed for the reporting year in the Annual Compliance Report. The report shall include:

1. The condition of the exterior surfaces of buildings, equipment, and structures at the end of the reporting year.
2. A listing of maintenance activities performed during the reporting year.
3. A tentative time schedule for maintenance activities for the upcoming year.

VIS-3 Vegetation Management Vegetation and ground disturbance associated with access road construction and distribution line installations shall be minimized and shall take advantage of existing clearings wherever feasible. Areas along all off-site access roads, all off-site distribution line corridors, and all internal access roads 16-feet wide or wider, as well as all graveled surfaces, areas to be permanently cleared of vegetation, and (if applicable) cut slopes shall be treated with rock stains or other color treatment appropriate with the surrounding landscape.

Openings in vegetation for facilities, structures, and roads shall be feathered and shaped to repeat the size, shape, and characteristics of naturally occurring openings.

The project owner shall maintain any revegetated surfaces until self-sustaining vegetation, which does not require supplemental water or fertilizer, is re-established and visually adapted to the undisturbed surrounding vegetation. No new disturbances shall be created during operation of the project without approval by the CPM. If necessary, interim restoration shall be undertaken during the operating life of the project as soon as possible after disturbances.

Verification:

a. The project owner shall submit a vegetation management plan to the BLM for review and comment, and simultaneously to the CPM for review and approval, ninety (90) days prior to executing a contract to purchase landscaping-related improvements for the project.

b. If the CPM determines the vegetation management plan requires a revision, the project owner shall provide to the CPM a plan with the specified revision(s) for review by the BLM and approval by the CPM before any action or activity is executed.

c. The project owner shall notify the BLM and CPM when the planting/installation of the vegetative materials has been completed and is ready for inspection. With this notification, the project owner shall supply to the BLM and CPM one set of color photographs showing all plantings on the project. Color photographs may be electronically filed or manually filed on electronic media. After inspection, if the CPM requires a modification to an

element of the plan (e.g., design, installation, location), the project owner shall have 30 days after receiving the notification to complete the modification and request a follow-up inspection.

d. The project owner shall supply a description of the condition (status) of the plantings/installations (and any needed irrigation activities) and maintenance activities performed during the reporting year in the Annual Compliance Report.

VIS-4 Landscape Screening Plan The project owner shall plant/install and maintain the trees and shrubs as described in the Conceptual Landscape Design Plan (Appendix B Visual Resources Technical Report – February 2025 – Revision 1, [TN 261602]) provided here as **Appendix 5.15C, Conceptual Landscape Design Plan**.

The project owner shall submit to the BLM for review and comment, and simultaneously to the CPM for review and approval, a landscape screening plan for the project that includes the following.

a. The plan shall be presented at a reasonable scale. The plan shall include (at a minimum) descriptions of site preparation, vegetation to be installed, erosion control measures, schedule, maintenance and monitoring plans, performance standards, weed abatement measures, and any irrigation requirements.

b. A maintenance plan that includes procedures for the upkeep of the landscape-related improvements and the irrigation system for the life of the project.

c. A monitoring plan that includes monitoring methods, performance standards, and general site requirements.

Verification:

a. The project owner shall submit a landscape screening plan to the BLM for review, and simultaneously to the CPM for review and approval, ninety (90) days prior to executing a contract to purchase landscaping-related improvements for the project.

b. If the CPM determines the landscape screening plan requires a revision, the project owner shall provide a plan with the specified revision(s) to the BLM for review and to the CPM for approval before any action or activity is executed.

c. The project owner shall notify the BLM and CPM when the planting/installation of the vegetative materials has been completed and is ready for inspection. With this notification, the project owner shall supply to the BLM and CPM one set of color photographs showing all plantings on the project. Color photographs may be electronically filed or manually filed on electronic media. After inspection, if the CPM requires a modification to an element of the plan (e.g., design, installation, location), the project owner

shall have 30 days after receiving the notification to complete the modification and request a follow-up inspection.

d. The project owner shall supply a description of the condition (status) of the plantings/installations (and any needed irrigation activities) and maintenance activities performed during the reporting year in the Annual Compliance Report.

VIS-5 Night Lighting Management New outdoor light and glare emitted from the project site and construction laydown areas shall not result in light being a pollutant off site and skyward ("light pollution"). The project owner shall include use of luminaires that shall:

a. Only be on when needed;

b. Only light the area that needs it;

c. Illuminate no brighter than necessary;

d. Minimize blue light emissions;

e. Be fully shielded (BUG Rating U0);

f. Be DarkSky International "DarkSky Approved" program products; and

g. Comply with the applicable adopted outdoor lighting standards of the County of San Bernardino.

Building off the lighting analyses and plans submitted to date (Appendix B Visual Resources Technical Report – February 2025 – Revision 1, Appendix D: Outdoor Lighting Impact Assessment Report [TN 261602]), the project owner shall submit to the BLM for review and comment, and simultaneously to the CPM for review and approval, a night lighting management plan or equivalent plan prepared for the project that satisfies the above requirements and includes the following.

1. One set of product brochures and/or printouts (e.g., diagram, drawing) showing and describing the types of outdoor luminaires to be applied/installed to buildings, equipment, structures, and other locations on the project site (lighting schedule).
2. A diagram(s) or drawing(s) of the project site showing the approximate location of the installation/placement of each luminaire and its direction and angle (luminaire location).

Verification:

a. The project owner shall submit a night lighting management plan to the BLM for review and comment, and simultaneously to the CPM for review and approval, ninety (90) days prior to executing a contract to purchase permanent, outdoor luminaires for the project.

b. If the CPM determines the night lighting management plan requires a revision, the project owner shall provide a plan with the specified revision(s)

to the BLM for review and to the CPM for approval before any action or activity with the vendor is executed.

c. The project owner shall notify the BLM and CPM when the installation of the luminaires has been completed and is ready for inspection. After inspection, if the CPM requires a modification to a luminaire(s) (e.g., design, installation, location), the project owner shall have 30 days after receiving the notification to complete the modification and request a follow-up inspection.

d. Within 48 hours of the project owner receiving any light and glare complaint, the project owner shall supply the BLM and CPM with a completed complaint resolution form report as specified in the Compliance Conditions, a proposal to resolve the complaint, and a time schedule for resolution. The project owner shall notify the BLM and CPM within 48 hours after completing/resolving the complaint.

VIS-6 Glint and Glare Mitigation and Monitoring Consistent with *Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands* (BLM, 2013), the project owner shall prepare and submit to the BLM and CPM a glint and glare mitigation and monitoring plan (see **Appendix 5.15B**, **ForgeSolar Glare Analysis Report**) that identifies mitigation measures to reduce the potential health, safety, and visual impacts associated with glint and glare, and provides for monitoring of the effectiveness and maintenance of such measures. The goals of the mitigation shall be to ensure that glare with the potential for temporary after-image effects is not visible to drivers on I-15, and that glare visible from observation points does not exceed a cumulative total duration of 30 minutes per day (consistent with the thresholds used in the ForgeSolar Glare Analysis Report in Appendix 5.15B). Mitigation measures to achieve these goals shall include, but not be limited to:

1. Program solar tracker arrays contributing to glare to turn away from affected KOPs during the times of day when glare visible at that KOP is generated.
2. Use solar panels made with textured glass surfaces to diffuse reflected light. If the use of textured glass panels is infeasible, the plan shall describe the reasons for the infeasibility.
3. Employ materials to reduce the effect of glare where such materials would not result in greater adverse visual impacts than the glint or glare that would be offset and would not result in shading the solar panels. These materials may include fencing with privacy slats, fabric screening of a BLM standard environmental color (that is identified through a site study for color and texture selection and approved by the BLM), earthen berms, or vegetative screening.
4. If glare with the potential for temporary after-image remains visible to drivers on I-15, coordinate with Caltrans to place signs warning drivers of the potential for hazardous glare.

Verification:

a. The project owner shall submit a glint and glare mitigation and monitoring plan to the BLM for review and comment, and simultaneously to the CEC for review and approval, ninety (90) days prior to executing any contract to purchase project components subject to the plan.

b. If the CPM determines the glint and glare mitigation plan requires a revision, the project owner shall provide a plan with the specified revision(s) for review by the BLM and approval by the CPM before any action or activity with the vendor is executed.

c. The project owner shall notify the BLM and CPM when the installation of any project components subject to the plan has been completed and is ready for inspection. After inspection, if the CPM requires a modification, the project owner shall have 30 days after receiving the notification to complete the modification and request a follow-up inspection.

d. Within 48 hours of the project owner receiving any glint or glare complaint, the project owner shall supply the BLM and CPM with a completed complaint resolution form report as specified in the Compliance Conditions, a proposal to resolve the complaint, and a time schedule for resolution. The project owner shall notify the BLM and CPM within 48 hours after completing/resolving the complaint.

5.15.5 Recommended Mitigation Measures

The following mitigation measures are recommended for the non-jurisdictional project components -utility switchyard and transmission loop in line and towers.

MM VIS-1 Design and Structural Surface Treatments Los Angeles Department of Water and Power (LADWP) shall integrate visual design elements into the construction plans, details, shop drawings, and specifications. These shall include, but not be limited to, grubbing and clearing, vegetation thinning and clearing, grading, revegetation, drainage, and structural plans. Visual design elements within the plans shall be measurable by size and monitored while under construction, while operational, and when decommissioned.

LADWP shall color-treat structures to reduce contrasts with the existing landscape. LADWP shall treat surfaces of all permanent, large project structures and buildings and chain-link fences visible to the public such that: (a) their colors minimize visual intrusion and contrast by blending with (matching) the existing characteristic landscape colors; (b) their colors and finishes do not create excessive glare from surface brightness; and (c) their colors and finishes are consistent with local policies and ordinances.

Treated or painted facilities shall be kept in good repair and retreated or repainted when color fades or flakes. Color-treated structures shall be kept in good repair and retreated when color fades and/or flakes.

The transmission line conductors shall be non-specular and non-reflective, and the insulators shall be non-reflective and non-refractive.

Following consultation with the BLM Visual Resources specialist, and other representatives as deemed necessary, LADWP shall submit a specific Surface Treatment Plan for the BLM's review that will satisfy these requirements. The consultation would be in-field at the agencies' election or as a desktop review if preferred by the agencies. The treatment plan shall include:

a. A description of the overall rationale for the proposed surface treatment, including the selection of the proposed color(s) and finishes based on the characteristic landscape. Colors will be field tested using the actual distances from the KOPs to the proposed structures, using the proposed colors painted on representative surfaces.
b. A list of each major project structure and building; the transmission line towers and/or poles; and fencing. The color(s) and finishes proposed for each shall be specified. Colors must be identified by vendor, name, and pantone number, or according to a universal designation system.
c. One set of color brochures or color chips showing each proposed color and finish.
d. A specific schedule for completion of the treatment.
e. A procedure to ensure proper treatment maintenance for the life of the project.

LADWP 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 LADWP receives notification of approval of the treatment plan by the BLM. Subsequent modifications to the treatment plan are prohibited without the BLM's approval.

MM VIS-2 Vegetation Management Vegetation and ground disturbance associated with access road construction and transmission loop in line installations shall be minimized and shall take advantage of existing clearings wherever feasible. Areas along all off-site access roads, all off-site transmission line corridors, and all internal access roads 16-feet wide or wider, as well as all graveled surfaces, areas to be permanently cleared of vegetation, and (if applicable) cut slopes shall be treated with rock stains or other color treatment appropriate with the surrounding landscape.

Openings in vegetation for facilities, structures, and roads shall be feathered and shaped to repeat the size, shape, and characteristics of naturally occurring openings.

LADWP shall maintain any revegetated surfaces until self-sustaining vegetation, which does not require supplemental water or fertilizer, is re-established and visually adapted to the undisturbed surrounding vegetation. No new disturbances shall be created during operation of the project without approval by the BLM. If necessary, interim restoration shall be undertaken during the operating life of the project as soon as possible after disturbances.

MM VIS-3 Night Lighting Management New outdoor light and glare emitted from the utility switchyard site and construction laydown areas shall not result in light being a pollutant off site and skyward ("light pollution"). LADWP shall include use of luminaires that shall:

a. Only be on when needed;
b. Only light the area that needs it;
c. Illuminate no brighter than necessary;
d. Minimize blue light emissions;
e. Be fully shielded (BUG Rating U0);
f. Be DarkSky International "DarkSky Approved" program products; and
g. Comply with the applicable adopted outdoor lighting standards of the County of San Bernardino.

Building off the lighting analyses and plans submitted to date (Appendix B Visual Resources Technical Report – February 2025 – Revision 1, Appendix D: Outdoor Lighting Impact Assessment Report [TN 261602]), LADWP shall submit to the BLM for approval, a night lighting management plan or equivalent plan prepared for the project that satisfies the above requirements and includes the following.

1. One set of product brochures and/or printouts (e.g., diagram, drawing) showing and describing the types of outdoor luminaires to be applied/installed to buildings, equipment, structures, and other locations on the project site (lighting schedule).
2. A diagram(s) or drawing(s) of the project site showing the approximate location of the installation/placement of each luminaire and its direction and angle (luminaire location).

5.15.6 References

Amir and Gidalizon 1990 – S. Amir and E. Gidalizon (Amir and Gidalizon). "Expert-based method for the evaluation of visual absorption capacity of the landscape." Journal of Environmental Management, Vol. 30, No. 3, April 1990, cited by The

James Hutton Institute, August 12, 2014. Accessed on May 7, 2025. Available online at: https://macaulay.webarchive.hutton.ac.uk/ccw/task-two/evaluate.html

Bureau of Land Management (BLM). 2012. *Approved Resource Management Plan Amendments/Record of Decision (ROD) for Solar Energy Development in Six Southwestern States.* Available at: https://blmsolar.anl.gov/documents/docs/peis/Solar_PEIS_ROD.pdf. Accessed June 2024.

———. 2013. *Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands.* Available at: https://blmwyomingvisual.anl.gov/docs/BLM_RenewableEnergyVisualBMPs_LowRes.pdf. Accessed July 10, 2025.

———. 2016. Desert Renewable Energy Conservation Plan. Available at: https://eplanning.blm.gov/public_projects/lup/66459/133474/163144/DRECP_BLM_LUPA.pdf. Accessed on July 7, 2025.

———. 2023. Night Sky and Dark Environments: Best Management Practices for Artificial Light at Night on BLM Managed Lands. Technical Note 457. Accessed on July 10, 2025. Available at: https://www.blm.gov/noc/blm-library/night-sky-and-dark-environments-best-management-practices-artificial-light-night.

California Code of Regulations, Title 14 section 15000 et sequentes.

California Code of Regulations, Title 14, Division 6, Chapter 3, Appendix G Environmental Checklist Form, I. Aesthetics as amended December 27, 2024. Accessed on May 7, 2025. https://regulations.justia.com/states/california/title-14/division-6/chapter-3/appendix-g/

Caltrans 2025 – California Department of Transportation (Caltrans). California State Scenic Highway System Map and Scenic Highway System Lists. Accessed on: May 6, 2025. Accessed online at: https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways

California Public Resources Code section 21000 et sequentes.

California Public Resources Code section 21060.5

California Public Resources Code section 21099

California Public Resources Code section 25525

Daniel and Vining 1983 – T. Daniel and J. Vining (Daniel and Vining). "Methodological Issues in the Assessment of Landscape Quality," Behaviour and the Natural Environment (eds. Altman, I. and Wohwill, J.), Plenum Press. New York, 1983, pp. 39-83 cited by The James Hutton Institute, August 12, 2014. Accessed on May 7, 2025. Available online at: http://www.macaulay.ac.uk/ccw/task-two/evaluate.html

DarkSky 2024 – DarkSky International (DarkSky). Accessed on May 8, 2025. Available online at: https://www.darksky.org

Dark Sky Map 2025 – The Dark Sky Map: Best Locations for Stargazing, "World Atlas Night Sky Brightness," Accessed on May 8, 2025. Accessed online at: https://www.darkskymap.com/nightSkyBrightness

Dark Sky Society 2024 – Dark Sky Society. What is Light Pollution? Accessed on May 8, 2025. Accessed online at: https://www.darkskysociety.org/handouts/whatislp.pdf

Electrical4U 2020 – Electrical4U, "What is Reflectance?" October 11, 2020. Accessed on May 8, 2025. Available online at: https://www.electrical4u.com/-what-is-reflectance/

Fenelly and Perry 2017 – Fennelly, Lawrence J. CPOI, CSSI, CHL-III, CSSP-1, Marianna A. Perry M.S., CPP, CSSP-1, Physical Security: 150 Things You Should Know, Second Edition, Butterworth-Heinemann, ISBN 978-0-12-809487-7, 2017. Accessed on May 8, 2025. Accessed online at: https://www.sciencedirect.com/topics/computer-science/security-lighting

FFWCC 2024 – Florida Fish and Wildlife Conservation Commission (FFWCC), "About Lighting Pollution," n.d., Accessed on May 8, 2025. https://myfwc.com/conservation/you-conserve/lighting/pollution/

Governor's Office of Planning and Research. "2018 CEQA Guidelines Update." Accessed on May 7, 2025. Accessed online at: https://opr.ca.gov/ceqa/guidelines/updates.html

Hull and Revell 1989 – R. Hull, and G. Revell (Hull and Revell). "Issues in sampling landscapes for visual quality assessments," Landscape and Urban Planning, Vol. 17, No. 4, August 1989, pp. 323-330 cited by The James Hutton Institute, August 12, 2014. Accessed on May 8, 2025. Accessed online at: https://www.sciencedirect.com/science/article/abs/pii/0169204689900868

Labsphere, Inc. 2024 – Labsphere, Inc. "Technical Guide: Reflectance Coatings and Materials," n.d. Accessed on May 8, 2025. Accessed online at: https://www.labsphere.com/wp-content/uploads/2024/05/ReflectanceCoatingsMaterialsTechGuideRev04.pdf

Mira Mar Mobile Community v. City of Oceanside (2004) 119 Cal. App. 4th 477.

National Park Service (NPS). 2002. Mojave National Preserve General Management Plan, Figure 2. Existing Land Uses and Desired Future Conditions. Available at: https://www.nps.gov/moja/learn/management/gmp.htm. Accessed July 10, 2025.

———. 2013. Foundation Document Mojave National Preserve. Available at: http://npshistory.com/publications/foundation-documents/moja-fd-2013.pdf. Accessed July 10, 2025.

———. 2017. Old Spanish National Historic Trail Comprehensive Administrative Strategy. Available at: https://parkplanning.nps.gov/document.cfm?documentID=83540. Accessed July 10, 2025.

———. 2023. Managing Lightscapes. Available at: https://www.nps.gov/subjects/nightskies/management.htm. Accessed July 10, 2025.

NIEHS 2015 – National Institute of Environmental Health Sciences, "The Impact of Artificial Lighting on Nocturnal Wildlife," April 20, 2015. Accessed on May 8, 2025. Accessed online at: https://kids.niehs.nih.gov/topics/natural-world/wildlife/ecology/lighting

NRCS 2024 – U.S. Department of Agriculture Natural Resources Conservation Service, Cultural Resources (NRCS). Accessed on July 10, 2025. Accessed online at: https://www.nrcs.usda.gov/cultural-resources.

Palmer and Robin 2001 – J. Palmer and R. Hoffman, "Rating reliability and representation validity in scenic landscape assessments," Landscape and Urban Planning, Vol. 54, 2001.

RE 2025ee – Resolution Environmental (TN 264864). Appendix B Visual Resources Technical Report - Revised July 2025, dated July 18, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025ff – Resolution Environmental (TN 264865). 3-1 Aesthetics - Revision July 2025, dated July 18, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025iiii – Resolution Environmental (TN 267965). Data request responses, dated December 18, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

Rodda Paint Company 2024 – Rodda Paint Company, "Selecting Gloss Level," n.d. Accessed on May 8, 2025. Accessed online at: https://www.roddapaint.com/how-to/selecting-gloss-level/

Roland 2019 – James Roland, "How Far Can We See and Why?" May 23, 2019, <https://www.healthline.com/health/how-far-can-the-human-eye-see>, accessed on May 5, 2025.)

San Bernardino County. 2014. San Bernardino County Development Code Title 8. Available at: https://lus.sbcounty.gov/planning-home/development-code/. Accessed July 10, 2025.

———. 2024. San Bernardino County Countywide Plan. Available at: https://countywideplan.com/. Accessed July 10, 2025.

Smardon 1986 – Smardon, R.C., J.F. Palmer, J.P. Felleman, (Smardon). Foundations for Visual Project Analysis, Wiley, New York, 1986.

Key Observation Point Evaluation Worksheets

KOP 1a Interstate 15 Looking Northeast – Summary Sheet for Worksheet Tables

LANDSCAPE			
Table 3 LANDSCAPE CHARACTER	Aesthetic Aspect		See attached Table 3.
	Perceptual Aspect		
	Basic Design Element		
	Landscape	**Rating**	Write the rating selected in the attached Table 4.
Table 4 UNITY	Rarity	**Moderate to High**	
	Diversity	**Low to Moderate**	
	Detractors	**Moderate**	
	Distinctiveness	**Low to Moderate**	
	Integrity	**Moderate**	
	Rating	**Checkbox**	Check (**√**) the rating selected in the attached Tables 5 and 6.
Table 5 PUBLIC VIEW	High		
	Moderate	**√**	
	Low		
	None		
Table 6 VISIBILITY	Dominant		
	High	**√**	
	Moderate to High		
	Moderate		
	Low to Moderate		
	Low		

PROJECT PROMINENCE			
Table 7 Basic Design Element Contrast			
Basic Design Element	**Rating**	**Weight**	**Points**
Color	**Strong = 3**	x 3	**9**
	Moderate = 2		
	Weak = 1		
	None = 0		
Form	Strong = 3	x 2	**4**
	Moderate = 2		
	Weak = 1		
	None = 0		
Line	**Strong = 3**	x 1	**3**
	Moderate = 2		
	Weak = 1		
	None = 0		
Texture	Strong = 3	x 1	**1**
	Moderate = 2		
	Weak = 1		
	None = 0		
		Maximum 21 points	**17**

KOP 1a Interstate 15 Looking Northeast – Summary Sheet for Worksheet Tables (cont'd)

Table 8 SCALE DOMINANCE				
Rating				**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.			12
Codominant	**The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.**			**8**
Subordinate	The project is of significant size but occupies a minor part of the landscape.			4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.			0
		Single highest points	Maximum 12 points	**8**

Table 9 SPATIAL DOMINANCE				
Category	**Rating**	**Single Highest Rating**		**Points**
Spatial composition of the landscape.	prominent	Dominant 2-3 categories rated prominent.		6
	significant			
	inconspicuous	Codominant 1 category rated prominent, or 2 categories rated significant.		4
Spatial position of the project.	prominent			
	significant			
	inconspicuous	**Subordinate** 1 category rated significant.		**2**
Backdrop to the project.	prominent			
	inconspicuous	Insignificant All categories rated inconspicuous.		0
		Single highest points	Maximum 6 points	**2**

Table 10 PROJECT PROMINENCE RATING*	
Total Points	**Rating**
32-39	Severe
24-31	**Strong**
16-23	Moderate
8-15	Weak
0-7	Negligible
***(Add Points from Tables 7, 8, and 9)**	**Rating = Strong**

Tables 11 and 12 VISUAL ABSORPTION CAPABILITY			
Table 11 CAPABILITY **Table 12 ABSORPTION**	**Rating**	**Checkbox**	The existing landscape's ability to absorb the physical change by the proposed project without an alteration to its visual character.
	High		
	Moderate		
	Low	**√**	

Table 13 MAGNITUDE OF CHANGE		
		Checkbox
Dominant	Project commands or controls the view in the landscape.	
Prominent	**Project stands out or is striking in the view in the landscape.**	**√**
Conspicuous	Project is clearly visible and noticeable within the view in the landscape.	
Apparent	Project visible or evident within the view in the landscape.	
Unobtrusive	Project indistinct or not obvious within the view in the landscape.	

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS		
CEQA Guidelines Level of Effect on the Environment	**Significant Effect**	**√**
	Less Than Significant Effect	

KOP 1a Full Evaluation Worksheets (Tables 3 through 15)

Table 3 LANDSCAPE CHARACTER

Aesthetic	**Description**								Check (√) the description that best describes the aspect of the landscape.
Balance	harmonious		balanced	√	discordant		chaotic		
Complexity	uniform		simple	√	diverse		complex		
Dynamic	sweeping		spreading	√	disperse		channeled		
Enclosure	expansive		open	√	enclosed		constrained		
Pattern (two-dims.)	formal		organized	√	regular		random		
Perceptual									
Pleasure	beautiful		attractive		pleasant	√	unpleasant		nasty
Security	intimate		comfortable	√	safe		unsettling		threatening
Stimulus	inspiring		challenging		interesting	√	bland		monotonous
Tranquility	inaccessible		remote		vacant		peaceful	√	busy
Basic Design Element									
Color	monochrome		muted	√	colorful		garish		The basic design elements are the source of visual contrast in the landscape that an individual sees and responds to when viewing a space.
Form	angular	√	curvilinear		horizontal	√	rounded		
Line	straight	√	curved	√	vertical	√	horizontal	√	
Texture	smooth	√	textured	√	rough	√	very rough		
Scale	intimate		small		large	√	vast		

Adapted from Carys Swanwick, "Landscape Character Assessment Guidance for England and Scotland," prepared for The Countryside Agency and Scottish Natural Heritage, 2002, pp. 30-36.

Table 4 UNITY

Landscape	**Rating**					**Guidance**
	High	**Moderate to High**	**Moderate**	**Low to Moderate**	**Low**	
Rarity	rare	√			common	Are there many examples of this type of landscape in the region?
Diversity	orderly			√	muddled	Is there a recognizable order of the landscape features in view or are there too many patterns overlapping?
Detractors	many		√		few	Are there landscape features out of place?
Distinctiveness	distinct			√	indistinct	Is it easy to remember the landscape? Patterns dramatic or take some finding?
Integrity	whole		√		remnant	What patterns in the landscape are evident? Are sections missing and to what extent?

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 36.

KOP 1a Full Evaluation Worksheets (cont'd)

Table 5 PUBLIC VIEW	
Rating	
High	
	Public view includes areas where the aesthetic value is protected by federal, state, county or city, law, ordinance, regulation, or standard. Public view includes federal, state, county, city designated areas of aesthetic, cultural, and recreational claim, such as: a park, outdoor recreation area, etc.; coastal or forest reserve, open space preserve, urban green space, etc.; scenic overlook, scenic river, scenic trail, etc.; historic building, district, or site; a site having a cultural resource. Public view includes a federal or state designated scenic byway, highway, or road; designated scenic highway or road of regional importance; a segment of travel route, such as a road, rail line, pedestrian and equestrian trail, bicycle path near a designated area of aesthetic claim and leading directly to it. View approaching an area of aesthetic, cultural, and recreational claim that may be closely related to the appreciation of the aesthetic, cultural, and recreational significance at that designation. Public view includes an urban residential use area and segment of road that serves as the primary access route to it.
Moderate	
√	Public view includes undesignated but popularly used or appreciated area of aesthetic, cultural, and recreational claim of significance in the region. Public view includes a highway or road locally designated as a scenic route and of importance only to the local population, or informally designated as such in road atlases, road maps, and tour book guides. Public view includes segments of travel routes, such as roads, pedestrian and equestrian trails, bicycle paths that are near and are the primary access to protected or popularly used undesignated areas important for their aesthetic, cultural, or recreational claim. Public view includes a segment of travel route near a designated area of aesthetic claim serving as a secondary access route to the area. Public view includes a rural residential use area and segment of road that serves as the primary access route to it within one mile. Public view includes a maintained religious facility or cemetery.
Low	
	Public view includes an agricultural, commercial, industrial, manufacturing, research, and development use area. Public view includes a small aggregation of dwellings.
None	
	No public view.
Adapted from Aspen Environmental Group, "Final Environmental Impact Report Tranquillon Ridge Oil and Gas Development Project" prepared for County of Santa Barbara Planning and Development. Santa Barbara, CA, April 2008, Vol. 1, pp. 5.13-5-6, and "Final Environmental Impact Report Southern California International Gateway Project," Appendix B Aesthetics Visual Resource Methodology, Los Angeles Harbor Department, Los Angeles, CA, March 2013.	

KOP 1a Full Evaluation Worksheets (cont'd)

Table 6 VISIBILITY	
Rating	
Dominant Dominates view because project would fill most of visual field for views in its general direction. Stark contrast in form, line, color, texture, luminance, or motion may contribute to view dominance.	An object with strong visual contrast that is of such enormous size that it occupies most of the visual field, and views of it cannot be avoided except by turning the head greater than 45 degrees from a direct view of the object. The object is the major focus of visual attention, and its large apparent size is a major factor in its view dominance. In addition to size, contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of the project detracts noticeably from views of other landscape components.
High Strongly attracts visual attention of views in general direction of project. Attention may be drawn by stark contrast in form, line, color, or texture, luminance, or motion.	An object that is not of large size, but contrasts with the surrounding landscape components so strongly that it is a major focus of visual attention, drawing viewer attention immediately, and tending to hold viewer attention. In addition to stark contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of project interferes noticeably with views of nearby landscape components.
Moderate to High Plainly visible, could not be missed by casual observer, but does not strongly attract visual attention, or dominate view because of apparent size, for views in general direction of project.	An object that is obvious and with enough size or contrast to compete with other landscape components, but with insufficient visual contrast to strongly attract visual attention and insufficient size to occupy most of the observer's visual field.
Moderate Visible after brief glance in general direction of project and unlikely to be missed by casual observer.	An object that can be easily detected after a brief look and would be visible to most casual observers, but without enough size or contrast to compete with major landscape components.
Low to Moderate Visible when scanning in general direction of project; otherwise, likely to be missed by casual observer.	An object that is very small and/or faint, but when the observer is scanning the horizon or looking more closely at an area can be detected without extended viewing. A casual observer could sometimes notice it; however, most people would not notice it without some active looking.
Low Visible only after extended, close viewing; otherwise, invisible.	An object that is near the extreme limit of visibility. A person who was not aware of it in advance and looking for it could not see it. Even under those circumstances, the object can only be seen after looking at it closely for an extended period.
Adapted from R.G. Sullivan, L.B. Kirchler, T. Lahti, S. Roche, K. Beckman, B. Cantwell, P. Richmond, "Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes," University of Chicago Argonne, LLC submitted to the National Association of Environmental Professionals 37th Annual Conference Proceedings, Portland, Oregon, May 21-24, 2012, p. 17.	

KOP 1a Full Evaluation Worksheets (cont'd)

Table 7 BASIC DESIGN ELEMENT CONTRAST

Element	Rating[1]	Weight	Points	
Color	**Strong = 3** Moderate = 2 Weak = 1 None = 0	x 3	**9**	Color is "the light-reflecting qualities of a project's surface (for example, dark or light, blue or gray) in relation to background colors."[2] "Colors that harmonize well seem to belong together and produce pleasing visual effects. Colors that do not harmonize are disturbing to the viewer."[3] Contrast in color depends on the exterior surface degree of lightness or darkness, gradation or variety of a color, the degree of saturation or brilliance of a color in the project to those that continue to exist in the landscape.
Form	Strong = 3 **Moderate = 2** Weak = 1 None = 0	x 2	**4**	Form is "the configuration and outline of the project in terms of masses, patterns, and linear elements. For example, a structure may have a bulky, vertical, geometric silhouette which contrasts with an irregular horizontal landscape of rolling hills."[4] Forms exist in three dimensions (height, length, width). For example, the shape is a square its form is a cube. Forms that are bold, regular, solid, or vertical tend to prevail in the landscape. Contrast in form depends on how alike the form(s) of the project is to those that continue to exist in the landscape.
Line	**Strong = 3** Moderate = 2 Weak = 1 None = 0	x 1	**3**	"Line is the path, real or imagined that the eye follows when perceiving abrupt differences when objects are aligned in a one-dimensional sequence."[5] "Line in the landscape is created by the edge between two materials, the outline or silhouette of a form, or a long linear feature."[6] Properties of lines: straight, diagonal, curved, vertical, horizontal. Contrast in line depends on edge types and interruption, or introduction of edges, bands, and silhouette lines in the project to those that continue to exist in the landscape.
Texture	Strong = 3 Moderate = 2 **Weak = 1** None = 0	x 1	**1**	Texture is "the aggregation of small forms or color mixtures into a continuous surface pattern; the aggregated parts are enough that they do not appear as discrete objects in the composition of the scene."[7] "Details of the surface pattern, as in smooth polished metal surfaces versus the rough, uneven textures of the foliage of trees and bushes"[8] Contrast in texture depends on the relative dimensions of the surface variations from large to small, spacing of surface variations, and the degree of uniform recurrence and symmetrical arrangement of the surface variation in the project to those that continue to exist in the landscape.
	Overall Rating[9]		**+17**	
	Maximum 21 points			

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, CA, 1979.

[1] **Strong** — the project contrast demands attention will not be overlooked and is dominant in the landscape. **Moderate** — the project contrast begins to attract attention and begins to dominate the characteristic landscape. **Weak** — the project contrast can be seen but does not attract attention. **None** — the project contrast is not visible or perceived. (U.S. Department of Interior Bureau of Land Management Manual 8431-Visual Resources Contrast Rating, January 17, 1986.)

[2] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[3] U.S. Department of Transportation Federal Highway Administration, "A Guide to Visual Quality in Noise Barrier Design," Chapter 3. Visual Design Principles, n.d.

[4] Sheppard, p. 46.

[5] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[6] Gail Hansen, "Basic Principles of Landscape Design." Florida Cooperative Extension Service Institute of Food and Agricultural Science, University of Florida, Gainesville, Florida, July 2010.

[7] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[8] Sheppard, p. 47.

[9] Overall Rating is for descriptive purpose: Strong — 1-3 ratings Strong or 3 ratings Moderate; Moderate — 1-2 ratings Moderate with no higher ratings; Weak — 1-3 ratings Weak with no higher ratings; None — all ratings None.

KOP 1a Full Evaluation Worksheets (cont'd)

Table 8 SCALE DOMINANCE			
Rating			**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.		12
Codominant	**The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.**		**8**
Subordinate	The project is of significant size but occupies a minor part of the landscape.		4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.		0
	Single highest points	Maximum 12 points	**8**
Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.			

KOP 1a Full Evaluation Worksheets (cont'd)

Table 9 SPATIAL DOMINANCE

Category				Single Highest Rating
Spatial composition of the landscape	"[T]he arrangement of objects and voids in the landscape can be categorized by their spatial composition .... Some compositions, especially those which are distinctly focal, enclosed, or feature-oriented, are more vulnerable to modifications than others, depending upon how strongly the spatial configuration draws the eye to certain locations."[1]			Dominant 2-3 categories rated prominent = 6 points Codominant 1 category rated prominent, or 2 categories rated significant = 4 points **Subordinate** 1 category rated significant **= 2 points** Insignificant All categories rated inconspicuous = 0 points
	Rating	**Description**		
	prominent	Feature[2], Focal[2], or Enclosed[2] landscape.		
	significant	Panoramic,[2] or weak focal, feature or enclosed landscape.		
	inconspicuous	Canopied,[2] indistinct or obscured landscape.		
Spatial position of the project	"Spatial position of the project in relation to the three-dimensional arrangement of objects and voids in the landscape. Important spatial aspects of the project include relationship to the skyline, location in topographic spaces such as focal valleys or broad plains, and position with regard to streetscapes and architectural arrangements."[3]			
	Rating	**Description**		
	prominent	High Level,[4] High Slope,[4] Interfluve[4]		
	significant	Low Level,[4] Lowslope,[4] Midslope[4]		
	inconspicuous	Basin Floor,[4] Footslope,[4] Toeslope[4]		
Backdrop to the project	"[T]he backdrop against which an object is seen affects its visual contrast. Modifications seen against the sky or water are usually more prominent than against a land backdrop."[5]			
	Rating	**Description**		
	prominent	All or a significant part of the project will be seen against sky or water.		
	inconspicuous	All or a significant part of the project will be seen against land.		
		Single highest points	Maximum 6 points	**2**

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.

[1] U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.

[2] **Canopied** — landscape where features overhead (above eye level) create a canopy or ceiling. **Enclosed** — a space, large or small surrounded by continuous grouping of objects creating walls and floor. It may have a large vertical dimension, but typically a restricted horizontal one. **Feature** — landscape dominated by a feature or a group of objects in the distance to which the eye is drawn. **Focal** — converging lines in the landscape or progressions of aligned objects lead the eye to a focal point in the landscape. **Panoramic** — a broad horizontal composition. Little or no sense of boundary restriction; no apparent limit to the view. Foreground or middle ground objects do not substantially block viewing of background objects. (U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.)

[3] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[4] **Basin Floor** — nearly level to gently sloping, bottom surface of an intermontane basin. **Footslope** — the gently inclined hillslope at the foot of a hill. **High Level** — level top of plateau. **High Slope** — geomorphic component that forms the uppermost inclined surface at the top of a slope (e.g., shoulder slope, upper slope). **Interfluve** — linear top of ridge, hill, or mountain. **Low Level** — valley floor, or shoreline representing the former position of an alluvial plain, lake, or shore. **Lowslope** — inner gently inclined surface at the base of a slope. Surface profile is generally concave and a transition between midslope or backslope, and toeslope. **Midslope** — intermediate slope position between high and low (e.g., middle slope). (Adapted from T. Liang [1951]; J.B. Dalrymple, R.J. Blong, and A. Conacher. [1968]) **Toeslope** — the gently inclined surface at the base of a hillslope. Toeslope in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors. (USDA Soil Survey Manual Handbook No. 18, issued March 2017 as amended February 2018).

[5] U.S. Department of Interior Bureau of Land Management Manual H-8431-1.

KOP 1a Full Evaluation Worksheets (cont'd)

Table 11 CAPABILITY							
Category	For each category check (√) the rating that best describes the existing landscape.						
		Rating					
		High		Moderate		Low	
Topography		High amount of topographic diversity and variety.		Moderate amount of topographic diversity and variety.	√	Low amount of topographic diversity and variety.	
Land Use Pattern	If project in rural landscape	Small natural or vegetated areas. Man-made structures dominant in the view.		Natural areas of local significance. Man-made structures widespread but not dominant in the view.		Remote natural areas of regional significance. Man-made structures and features limited and scattered.	√
	If project in urban landscape	Developed areas including commercial development. Large-scale infrastructure or structures may be common and more dominant.		Suburban or mostly developed areas with components of local importance. Large-scale infrastructure or structures may be visible but not dominant.		Clustered development surrounded by rural scattered development. Large-scale infrastructure or structures limited and scattered.	
Visual Variety		Landscape exhibits a high degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit high degree of variety in landforms and vegetation.		Landscape exhibits a moderate degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit moderate variety in landforms and vegetation.		Landscape exhibits a low degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit minimal variety in landforms and vegetation.	√
Major Focal Points or Features		Focal points or features in the viewshed that are either natural or man-made, commonly found, minimal local importance/value, or contribute little to the character of the landscape or are indistinct.		Focal points or features in the viewshed that are either natural or man-made, somewhat commonly found, local importance/value, or make a minor contribution to the character of the landscape.		Focal points or features in the viewshed that are either natural or man-made and are unusual or rare, regional importance/value, or make a major contribution to the character of the landscape or are somewhat distinctive.	√

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 17, and L. Blocker, T. Slider, J. Ruchman, J. Mosier, L. Kok, J. Silbemagle, J. Beard, D. Wagner, G. Brogan, D. Jones, N. Laughlinn, L. Anderson, "Landscape Aesthetic (AH 701-i) - Visual Absorption Capability (Appendix C)," United States Department of Agriculture Forest Service, 1995, pp. C-1-C-8.

KOP 1a Full Evaluation Worksheets (cont'd)

Table 12 ABSORPTION	
For each question circle the applicable rating for the absorption of the landscape; High = H, Moderate = M, Low = L.	
Exposure	**Rating**
What is the level of exposure of the project in the landscape? The higher the level of exposure, the lower the absorption.	H M (L)
What is the intensity of the observation of the project? The more the project is observed from certain intensive land uses the lower its absorption (e.g., view from a densely populated residential area versus a heavy manufacturing and processing area).	H M (L)
What is the view distance to the project? The farther the viewing distance to the project from the vantage point the lower its exposure the higher its absorption. Is the project more than three miles away?	H M (L)
What is the project's distance from an urban skyline or a natural skyline (e.g., high-rise buildings or a mountain range against a backdrop of sky)? The closer the project is to an urban or natural skyline the lower its absorption.	H (M) L
What is the project's topographic position in the landscape? As the project's position increases its absorption decreases (e.g., toeslope to summit).	(H) M L
Focal Point	
Is the project near a focal point in the landscape? A focal point is a converging of lines in the landscape or progressions of aligned objects that lead the eye to a point. A focal point gives the viewer something interesting to look at in the view. The closer the project is to a focal point the greater viewer scrutiny the lower the absorption.	H (M) L
Does the edge(s) in the landscape have a diverse background but have the propensity to become a focal point? An edge is a transitional linear place where one space or landscape becomes part of another. An edge has a high absorption due to a diverse background, a low absorption due to the propensity to become a focal point (e.g., city meets country, a woodland edge, an alpine tree line, coastline).	H (M) L
Trees & Vegetation	
Are trees and vegetation in the landscape missing, deficient, or uniform? The greater the density of trees and vegetation, the greater the coverage, the greater the capacity of an area to absorb physical change.	H M (L)
What is the type(s) of tree(s) and vegetation in the landscape? Tree and vegetation types vary the absorption of the physical change. A uniformly tall, dense stand of trees has screening ability. Vegetation types such as evergreen shrubs and similar have greater absorption than dwarf shrubs, ornamental grasses, and grass-like plants. Trees and vegetation can provide high absorption in the foreground but lower absorption in the background.	H M (L)
Disturbed Surface Area	
Period of time to restore the project's disturbed surface area to its pre-construction activity condition? The longer the time to restore the disturbed area to its undisturbed original condition after the construction phase the lower the absorption; 1 year = high, 2 to 3 years = moderate, 3 years or more = low.	H M (L)
Adapted from S. Amir, E. Gidalizon, "Expert-based method for the evaluation of visual absorption capacity of the landscape*," Journal of Environmental Management, 1990, Vol. 30, pp. 251-263, and W.C. Yeomans, "A Proposed Biophysical Approach to Visual Absorption Capability (VAC),[1]" Pacific Southwest Forest and Range Experimental Station, Berkeley, California, 1979 submitted to the National Conference on Applied Techniques for Analysis and Management of Visual Resource, Incline Village, Nevada, April 23-25, 1979, pp. 172-181.	

KOP 1a Full Evaluation Worksheets (cont'd)

Table 13 MAGNITUDE OF CHANGE				
Dominant	**Prominent**	**Conspicuous**	**Apparent**	**Unobtrusive**
Project commands or controls the view in the landscape. Project causes a very large alteration to the landscape or features within the landscape such that there is a fundamental change from the existing physical condition.	**Project stands out or is striking in the view in the landscape.** Project causes a large alteration to the landscape or features within the landscape such that there is an unmistakable change from the existing physical condition.	Project is clearly visible and noticeable within the view in the landscape. Project causes a moderate alteration to the landscape or features within the landscape such that there is a distinct change from the existing physical condition.	Project visible or evident within the view in the landscape. Project causes a small alteration to the landscape or features within the landscape such that there is a perceptible change from the existing physical condition.	Project indistinct or not obvious within the view in the landscape. Project causes a very small alteration to the landscape, or features within the landscape such that there is a de minimis change from the existing physical condition.
Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 20.				

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS							
Landscape		**Project Prominence**		**Visual Absorption Capability**	**Magnitude Of Change**		**CEQA Guidelines Level of Effect On The Environment** (See Table 15)
Table	**Rating**	**Rating**		**Rating**			
Landscape Character	See Table 3	Severe		High	Dominant		**Significant Effect**
Unity	**Moderate**	**Strong**	√		**Prominent**	√	
Public View	**Moderate**	Moderate		Moderate	Conspicuous		
Visibility	**High**	Weak		**Low**	Apparent		Less Than Significant Effect
		Negligible			Unobtrusive		

KOP 1a Full Evaluation Worksheets (cont'd)

Table 15 CEQA GUIDELINES LEVEL OF EFFECT ON THE ENVIRONMENT

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 and aesthetic significance." (14 CCR § 15382) (Pub. Res. Code § 21060.5, 14 CCR § 15360) The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, noncompliance with which means the effect will normally be determined to be significant by the [lead] agency...." (14 CCR § 15064.7[a])

Less Than Significant Effect with Mitigation Incorporated. The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "... but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed [CEQA environmental document (e.g., Negative Declaration) is] released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment." (Pub. Res. Code § 21064.5, 14 CCR § 15369.5) (Pub. Res. Code § 21002)

Less Than Significant Effect. The physical change by the proposed project to the existing physical condition does not reach the threshold of significance "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, ... compliance with which means the effect normally will be determined to be less than significant." (14 CCR § 15064.7[a])

Key Observation Point Evaluation Worksheets

KOP 1b Interstate 15 Looking East – Summary Sheet for Worksheet Tables

LANDSCAPE			
Table 3 LANDSCAPE CHARACTER	Aesthetic Aspect		See attached Table 3.
	Perceptual Aspect		
	Basic Design Element		
	Landscape	**Rating**	Write the rating selected in the attached Table 4.
Table 4 UNITY	Rarity	**Moderate to High**	
	Diversity	**Moderate**	
	Detractors	**Low**	
	Distinctiveness	**Moderate**	
	Integrity	**Moderate to High**	
	Rating	**Checkbox**	Check (**√**) the rating selected in the attached Tables 5 and 6.
Table 5 PUBLIC VIEW	High		
	Moderate	**√**	
	Low		
	None		
Table 6 VISIBILITY	Dominant		
	High	**√**	
	Moderate to High		
	Moderate		
	Low to Moderate		
	Low		

PROJECT PROMINENCE			
Table 7 Basic Design Element Contrast			
Basic Design Element	**Rating**	**Weight**	**Points**
Color	**Strong = 3**	x 3	**9**
	Moderate = 2		
	Weak = 1		
	None = 0		
Form	Strong = 3	x 2	**4**
	Moderate = 2		
	Weak = 1		
	None = 0		
Line	**Strong = 3**	x 1	**3**
	Moderate = 2		
	Weak = 1		
	None = 0		
Texture	Strong = 3	x 1	**2**
	Moderate = 2		
	Weak = 1		
	None = 0		
		Maximum 21 points	**18**

KOP 1b Interstate 15 Looking East – Summary Sheet for Worksheet Tables (cont'd)

Table 8 SCALE DOMINANCE				
Rating				**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.			12
Codominant	**The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.**			**8**
Subordinate	The project is of significant size but occupies a minor part of the landscape.			4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.			0
		Single highest points	Maximum 12 points	**8**

Table 9 SPATIAL DOMINANCE				
Category	**Rating**	**Single Highest Rating**		**Points**
Spatial composition of the landscape.	prominent	Dominant 2-3 categories rated prominent.		6
	significant			
	inconspicuous	Codominant 1 category rated prominent, or 2 categories rated significant.		4
Spatial position of the project.	prominent			
	significant			
	inconspicuous	**Subordinate** 1 category rated significant.		**2**
Backdrop to the project.	prominent			
	inconspicuous	Insignificant All categories rated inconspicuous.		0
		Single highest points	Maximum 6 points	**2**

Table 10 PROJECT PROMINENCE RATING*	
Total Points	**Rating**
32-39	Severe
24-31	**Strong**
16-23	Moderate
8-15	Weak
0-7	Negligible
***(Add Points from Tables 7, 8, and 9)**	**Rating = Strong**

Tables 11 and 12 VISUAL ABSORPTION CAPABILITY			
Table 11 CAPABILITY **Table 12 ABSORPTION**	**Rating**	**Checkbox**	The existing landscape's ability to absorb the physical change by the proposed project without an alteration to its visual character.
	High		
	Moderate		
	Low	**√**	

Table 13 MAGNITUDE OF CHANGE		
		Checkbox
Dominant	Project commands or controls the view in the landscape.	
Prominent	**Project stands out or is striking in the view in the landscape.**	**√**
Conspicuous	Project is clearly visible and noticeable within the view in the landscape.	
Apparent	Project visible or evident within the view in the landscape.	
Unobtrusive	Project indistinct or not obvious within the view in the landscape.	

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS		
CEQA Guidelines Level of Effect on the Environment	**Significant Effect**	**√**
	Less Than Significant Effect	

KOP 1b Full Evaluation Worksheets (Tables 3 through 15)

Table 3 LANDSCAPE CHARACTER

Aesthetic	**Description**								Check (√) the description that best describes the aspect of the landscape.
Balance	harmonious		balanced	√	discordant		chaotic		
Complexity	uniform		simple	√	diverse		complex		
Dynamic	sweeping		spreading	√	disperse		channeled		
Enclosure	expansive		open	√	enclosed		constrained		
Pattern (two-dims.)	formal		organized	√	regular		random		
Perceptual									
Pleasure	beautiful		attractive		pleasant	√	unpleasant		nasty
Security	intimate		comfortable	√	safe		unsettling		threatening
Stimulus	inspiring		challenging		interesting	√	bland		monotonous
Tranquility	inaccessible		remote		vacant		peaceful	√	busy
Basic Design Element									
Color	monochrome		muted	√	colorful		garish		The basic design elements are the source of visual contrast in the landscape that an individual sees and responds to when viewing a space.
Form	angular	√	curvilinear		horizontal	√	rounded		
Line	straight	√	curved	√	vertical	√	horizontal	√	
Texture	smooth	√	textured	√	rough	√	very rough	√	
Scale	intimate		small		large	√	vast		

Adapted from Carys Swanwick, "Landscape Character Assessment Guidance for England and Scotland," prepared for The Countryside Agency and Scottish Natural Heritage, 2002, pp. 30-36.

Table 4 UNITY

Landscape	**Rating**					**Guidance**
	High	**Moderate to High**	**Moderate**	**Low to Moderate**	**Low**	
Rarity	rare	√			common	Are there many examples of this type of landscape in the region?
Diversity	orderly		√		muddled	Is there a recognizable order of the landscape features in view or are there too many patterns overlapping?
Detractors	many				√	Are there landscape features out of place?
Distinctiveness	distinct		√		indistinct	Is it easy to remember the landscape? Patterns dramatic or take some finding?
Integrity	whole	√			remnant	What patterns in the landscape are evident? Are sections missing and to what extent?

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 36.

KOP 1b Full Evaluation Worksheets (cont'd)

Table 5 PUBLIC VIEW	
Rating	
High	
	Public view includes areas where the aesthetic value is protected by federal, state, county or city, law, ordinance, regulation, or standard. Public view includes federal, state, county, city designated areas of aesthetic, cultural, and recreational claim, such as: a park, outdoor recreation area, etc.; coastal or forest reserve, open space preserve, urban green space, etc.; scenic overlook, scenic river, scenic trail, etc.; historic building, district, or site; a site having a cultural resource. Public view includes a federal or state designated scenic byway, highway, or road; designated scenic highway or road of regional importance; a segment of travel route, such as a road, rail line, pedestrian and equestrian trail, bicycle path near a designated area of aesthetic claim and leading directly to it. View approaching an area of aesthetic, cultural, and recreational claim that may be closely related to the appreciation of the aesthetic, cultural, and recreational significance at that designation. Public view includes an urban residential use area and segment of road that serves as the primary access route to it.
Moderate	
√	Public view includes undesignated but popularly used or appreciated area of aesthetic, cultural, and recreational claim of significance in the region. Public view includes a highway or road locally designated as a scenic route and of importance only to the local population, or informally designated as such in road atlases, road maps, and tour book guides. Public view includes segments of travel routes, such as roads, pedestrian and equestrian trails, bicycle paths that are near and are the primary access to protected or popularly used undesignated areas important for their aesthetic, cultural, or recreational claim. Public view includes a segment of travel route near a designated area of aesthetic claim serving as a secondary access route to the area. Public view includes a rural residential use area and segment of road that serves as the primary access route to it within one mile. Public view includes a maintained religious facility or cemetery.
Low	
	Public view includes an agricultural, commercial, industrial, manufacturing, research, and development use area. Public view includes a small aggregation of dwellings.
None	
	No public view.

Adapted from Aspen Environmental Group, "Final Environmental Impact Report Tranquillon Ridge Oil and Gas Development Project" prepared for County of Santa Barbara Planning and Development. Santa Barbara, CA, April 2008, Vol. 1, pp. 5.13-5-6, and "Final Environmental Impact Report Southern California International Gateway Project," Appendix B Aesthetics Visual Resource Methodology, Los Angeles Harbor Department, Los Angeles, CA, March 2013.

KOP 1b Full Evaluation Worksheets (cont'd)

Table 6 VISIBILITY	
Rating	
Dominant Dominates view because project would fill most of visual field for views in its general direction. Stark contrast in form, line, color, texture, luminance, or motion may contribute to view dominance.	An object with strong visual contrast that is of such enormous size that it occupies most of the visual field, and views of it cannot be avoided except by turning the head greater than 45 degrees from a direct view of the object. The object is the major focus of visual attention, and its large apparent size is a major factor in its view dominance. In addition to size, contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of the project detracts noticeably from views of other landscape components.
High Strongly attracts visual attention of views in general direction of project. Attention may be drawn by stark contrast in form, line, color, or texture, luminance, or motion.	An object that is not of large size, but contrasts with the surrounding landscape components so strongly that it is a major focus of visual attention, drawing viewer attention immediately, and tending to hold viewer attention. In addition to stark contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of project interferes noticeably with views of nearby landscape components.
Moderate to High Plainly visible, could not be missed by casual observer, but does not strongly attract visual attention, or dominate view because of apparent size, for views in general direction of project.	An object that is obvious and with enough size or contrast to compete with other landscape components, but with insufficient visual contrast to strongly attract visual attention and insufficient size to occupy most of the observer's visual field.
Moderate Visible after brief glance in general direction of project and unlikely to be missed by casual observer.	An object that can be easily detected after a brief look and would be visible to most casual observers, but without enough size or contrast to compete with major landscape components.
Low to Moderate Visible when scanning in general direction of project; otherwise, likely to be missed by casual observer.	An object that is very small and/or faint, but when the observer is scanning the horizon or looking more closely at an area can be detected without extended viewing. A casual observer could sometimes notice it; however, most people would not notice it without some active looking.
Low Visible only after extended, close viewing; otherwise, invisible.	An object that is near the extreme limit of visibility. A person who was not aware of it in advance and looking for it could not see it. Even under those circumstances, the object can only be seen after looking at it closely for an extended period.
Adapted from R.G. Sullivan, L.B. Kirchler, T. Lahti, S. Roche, K. Beckman, B. Cantwell, P. Richmond, "Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes," University of Chicago Argonne, LLC submitted to the National Association of Environmental Professionals 37th Annual Conference Proceedings, Portland, Oregon, May 21-24, 2012, p. 17.	

KOP 1b Full Evaluation Worksheets (cont'd)

Table 7 BASIC DESIGN ELEMENT CONTRAST

Element	Rating[1]	Weight	Points	
Color	**Strong = 3**	x 3	**9**	Color is "the light-reflecting qualities of a project's surface (for example, dark or light, blue or gray) in relation to background colors."[2] "Colors that harmonize well seem to belong together and produce pleasing visual effects. Colors that do not harmonize are disturbing to the viewer."[3] Contrast in color depends on the exterior surface degree of lightness or darkness, gradation or variety of a color, the degree of saturation or brilliance of a color in the project to those that continue to exist in the landscape.
	Moderate = 2			
	Weak = 1			
	None = 0			
Form	Strong = 3	x 2	**4**	Form is "the configuration and outline of the project in terms of masses, patterns, and linear elements. For example, a structure may have a bulky, vertical, geometric silhouette which contrasts with an irregular horizontal landscape of rolling hills."[4] Forms exist in three dimensions (height, length, width). For example, the shape is a square its form is a cube. Forms that are bold, regular, solid, or vertical tend to prevail in the landscape. Contrast in form depends on how alike the form(s) of the project is to those that continue to exist in the landscape.
	Moderate = 2			
	Weak = 1			
	None = 0			
Line	**Strong = 3**	x 1	**3**	"Line is the path, real or imagined that the eye follows when perceiving abrupt differences when objects are aligned in a one-dimensional sequence."[5] "Line in the landscape is created by the edge between two materials, the outline or silhouette of a form, or a long linear feature."[6] Properties of lines: straight, diagonal, curved, vertical, horizontal. Contrast in line depends on edge types and interruption, or introduction of edges, bands, and silhouette lines in the project to those that continue to exist in the landscape.
	Moderate = 2			
	Weak = 1			
	None = 0			
Texture	Strong = 3	x 1	**2**	Texture is "the aggregation of small forms or color mixtures into a continuous surface pattern; the aggregated parts are enough that they do not appear as discrete objects in the composition of the scene."[7] "Details of the surface pattern, as in smooth polished metal surfaces versus the rough, uneven textures of the foliage of trees and bushes"[8] Contrast in texture depends on the relative dimensions of the surface variations from large to small, spacing of surface variations, and the degree of uniform recurrence and symmetrical arrangement of the surface variation in the project to those that continue to exist in the landscape.
	Moderate = 2			
	Weak = 1			
	None = 0			
	Overall Rating[9]		**+18**	
	Maximum 21 points			

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, CA, 1979.

[1] **Strong** — the project contrast demands attention will not be overlooked and is dominant in the landscape. **Moderate** — the project contrast begins to attract attention and begins to dominate the characteristic landscape. **Weak** — the project contrast can be seen but does not attract attention. **None** — the project contrast is not visible or perceived. (U.S. Department of Interior Bureau of Land Management Manual 8431-Visual Resources Contrast Rating, January 17, 1986.)

[2] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[3] U.S. Department of Transportation Federal Highway Administration, "A Guide to Visual Quality in Noise Barrier Design," Chapter 3. Visual Design Principles, n.d.

[4] Sheppard, p. 46.

[5] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[6] Gail Hansen, "Basic Principles of Landscape Design." Florida Cooperative Extension Service Institute of Food and Agricultural Science, University of Florida, Gainesville, Florida, July 2010.

[7] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[8] Sheppard, p. 47.

[9] Overall Rating is for descriptive purpose: Strong — 1-3 ratings Strong or 3 ratings Moderate; Moderate — 1-2 ratings Moderate with no higher ratings; Weak — 1-3 ratings Weak with no higher ratings; None — all ratings None.

KOP 1b Full Evaluation Worksheets (cont'd)

Table 8 SCALE DOMINANCE			
Rating			**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.		12
Codominant	**The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.**		**8**
Subordinate	The project is of significant size but occupies a minor part of the landscape.		4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.		0
	Single highest points	Maximum 12 points	**8**
Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.			

KOP 1b Full Evaluation Worksheets (cont'd)

Table 9 SPATIAL DOMINANCE

Category				Single Highest Rating
Spatial composition of the landscape	"[T]he arrangement of objects and voids in the landscape can be categorized by their spatial composition .... Some compositions, especially those which are distinctly focal, enclosed, or feature-oriented, are more vulnerable to modifications than others, depending upon how strongly the spatial configuration draws the eye to certain locations."[1]			Dominant 2-3 categories rated prominent = 6 points Codominant 1 category rated prominent, or 2 categories rated significant = 4 points **Subordinate** 1 category rated significant **= 2 points** Insignificant All categories rated inconspicuous = 0 points
	Rating	**Description**		
	prominent	Feature[2], Focal[2], or Enclosed[2] landscape.		
	significant	Panoramic,[2] or weak focal, feature or enclosed landscape.		
	inconspicuous	Canopied,[2] indistinct or obscured landscape.		
Spatial position of the project	"Spatial position of the project in relation to the three-dimensional arrangement of objects and voids in the landscape. Important spatial aspects of the project include relationship to the skyline, location in topographic spaces such as focal valleys or broad plains, and position with regard to streetscapes and architectural arrangements."[3]			
	Rating	**Description**		
	prominent	High Level,[4] High Slope,[4] Interfluve[4]		
	significant	Low Level,[4] Lowslope,[4] Midslope[4]		
	inconspicuous	Basin Floor,[4] Footslope,[4] Toeslope[4]		
Backdrop to the project	"[T]he backdrop against which an object is seen affects its visual contrast. Modifications seen against the sky or water are usually more prominent than against a land backdrop."[5]			
	Rating	**Description**		
	prominent	All or a significant part of the project will be seen against sky or water.		
	inconspicuous	All or a significant part of the project will be seen against land.		
		Single highest points	Maximum 6 points	**2**

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.

[1] U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.

[2] **Canopied** — landscape where features overhead (above eye level) create a canopy or ceiling. **Enclosed** — a space, large or small surrounded by continuous grouping of objects creating walls and floor. It may have a large vertical dimension, but typically a restricted horizontal one. **Feature** — landscape dominated by a feature or a group of objects in the distance to which the eye is drawn. **Focal** — converging lines in the landscape or progressions of aligned objects lead the eye to a focal point in the landscape. **Panoramic** — a broad horizontal composition. Little or no sense of boundary restriction; no apparent limit to the view. Foreground or middle ground objects do not substantially block viewing of background objects. (U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.)

[3] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[4] **Basin Floor** — nearly level to gently sloping, bottom surface of an intermontane basin. **Footslope** — the gently inclined hillslope at the foot of a hill. **High Level** — level top of plateau. **High Slope** — geomorphic component that forms the uppermost inclined surface at the top of a slope (e.g., shoulder slope, upper slope). **Interfluve** — linear top of ridge, hill, or mountain. **Low Level** — valley floor, or shoreline representing the former position of an alluvial plain, lake, or shore. **Lowslope** — inner gently inclined surface at the base of a slope. Surface profile is generally concave and a transition between midslope or backslope, and toeslope. **Midslope** — intermediate slope position between high and low (e.g., middle slope). (Adapted from T. Liang [1951]; J.B. Dalrymple, R.J. Blong, and A. Conacher. [1968]) **Toeslope** — the gently inclined surface at the base of a hillslope. Toeslope in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors. (USDA Soil Survey Manual Handbook No. 18, issued March 2017 as amended February 2018).

[5] U.S. Department of Interior Bureau of Land Management Manual H-8431-1.

KOP 1b Full Evaluation Worksheets (cont'd)

Table 11 CAPABILITY

Category		For each category check (√) the rating that best describes the existing landscape.					
		Rating					
		High		Moderate		Low	
Topography		High amount of topographic diversity and variety.		Moderate amount of topographic diversity and variety.	√	Low amount of topographic diversity and variety.	
Land Use Pattern	If project in rural landscape	Small natural or vegetated areas. Man-made structures dominant in the view.		Natural areas of local significance. Man-made structures widespread but not dominant in the view.		Remote natural areas of regional significance. Man-made structures and features limited and scattered.	√
	If project in urban landscape	Developed areas including commercial development. Large-scale infrastructure or structures may be common and more dominant.		Suburban or mostly developed areas with components of local importance. Large-scale infrastructure or structures may be visible but not dominant.		Clustered development surrounded by rural scattered development. Large-scale infrastructure or structures limited and scattered.	
Visual Variety		Landscape exhibits a high degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit high degree of variety in landforms and vegetation.		Landscape exhibits a moderate degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit moderate variety in landforms and vegetation.	√	Landscape exhibits a low degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit minimal variety in landforms and vegetation.	
Major Focal Points or Features		Focal points or features in the viewshed that are either natural or man-made, commonly found, minimal local importance/value, or contribute little to the character of the landscape or are indistinct.		Focal points or features in the viewshed that are either natural or man-made, somewhat commonly found, local importance/value, or make a minor contribution to the character of the landscape.		Focal points or features in the viewshed that are either natural or man-made and are unusual or rare, regional importance/value, or make a major contribution to the character of the landscape or are somewhat distinctive.	√

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 17, and L. Blocker, T. Slider, J. Ruchman, J. Mosier, L. Kok, J. Silbemagle, J. Beard, D. Wagner, G. Brogan, D. Jones, N. Laughlinn, L. Anderson, "Landscape Aesthetic (AH 701-i) - Visual Absorption Capability (Appendix C)," United States Department of Agriculture Forest Service, 1995, pp. C-1-C-8.

KOP 1b Full Evaluation Worksheets (cont'd)

Table 12 ABSORPTION	
For each question circle the applicable rating for the absorption of the landscape; High = H, Moderate = M, Low = L.	
Exposure	**Rating**
What is the level of exposure of the project in the landscape? The higher the level of exposure, the lower the absorption.	H M (L)
What is the intensity of the observation of the project? The more the project is observed from certain intensive land uses the lower its absorption (e.g., view from a densely populated residential area versus a heavy manufacturing and processing area).	H M (L)
What is the view distance to the project? The farther the viewing distance to the project from the vantage point the lower its exposure the higher its absorption. Is the project more than three miles away?	H M (L)
What is the project's distance from an urban skyline or a natural skyline (e.g., high-rise buildings or a mountain range against a backdrop of sky)? The closer the project is to an urban or natural skyline the lower its absorption.	H (M) L
What is the project's topographic position in the landscape? As the project's position increases its absorption decreases (e.g., toeslope to summit).	(H) M L
Focal Point	
Is the project near a focal point in the landscape? A focal point is a converging of lines in the landscape or progressions of aligned objects that lead the eye to a point. A focal point gives the viewer something interesting to look at in the view. The closer the project is to a focal point the greater viewer scrutiny the lower the absorption.	H (M) L
Does the edge(s) in the landscape have a diverse background but have the propensity to become a focal point? An edge is a transitional linear place where one space or landscape becomes part of another. An edge has a high absorption due to a diverse background, a low absorption due to the propensity to become a focal point (e.g., city meets country, a woodland edge, an alpine tree line, coastline).	H (M) L
Trees & Vegetation	
Are trees and vegetation in the landscape missing, deficient, or uniform? The greater the density of trees and vegetation, the greater the coverage, the greater the capacity of an area to absorb physical change.	H M (L)
What is the type(s) of tree(s) and vegetation in the landscape? Tree and vegetation types vary the absorption of the physical change. A uniformly tall, dense stand of trees has screening ability. Vegetation types such as evergreen shrubs and similar have greater absorption than dwarf shrubs, ornamental grasses, and grass-like plants. Trees and vegetation can provide high absorption in the foreground but lower absorption in the background.	H M (L)
Disturbed Surface Area	
Period of time to restore the project's disturbed surface area to its pre-construction activity condition? The longer the time to restore the disturbed area to its undisturbed original condition after the construction phase the lower the absorption; 1 year = high, 2 to 3 years = moderate, 3 years or more = low.	H M (L)
Adapted from S. Amir, E. Gidalizon, "Expert-based method for the evaluation of visual absorption capacity of the landscape*," Journal of Environmental Management, 1990, Vol. 30, pp. 251-263, and W.C. Yeomans, "A Proposed Biophysical Approach to Visual Absorption Capability (VAC),[1]" Pacific Southwest Forest and Range Experimental Station, Berkeley, California, 1979 submitted to the National Conference on Applied Techniques for Analysis and Management of Visual Resource, Incline Village, Nevada, April 23-25, 1979, pp. 172-181.	

KOP 1b Full Evaluation Worksheets (cont'd)

Table 13 MAGNITUDE OF CHANGE				
Dominant	**Prominent**	**Conspicuous**	**Apparent**	**Unobtrusive**
Project commands or controls the view in the landscape. Project causes a very large alteration to the landscape or features within the landscape such that there is a fundamental change from the existing physical condition.	**Project stands out or is striking in the view in the landscape.** Project causes a large alteration to the landscape or features within the landscape such that there is an unmistakable change from the existing physical condition.	Project is clearly visible and noticeable within the view in the landscape. Project causes a moderate alteration to the landscape or features within the landscape such that there is a distinct change from the existing physical condition.	Project visible or evident within the view in the landscape. Project causes a small alteration to the landscape or features within the landscape such that there is a perceptible change from the existing physical condition.	Project indistinct or not obvious within the view in the landscape. Project causes a very small alteration to the landscape, or features within the landscape such that there is a de minimis change from the existing physical condition.
Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 20.				

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS							
Landscape		**Project Prominence**		**Visual Absorption Capability**	**Magnitude Of Change**		**CEQA Guidelines Level of Effect On The Environment** (See Table 15)
Table	**Rating**	**Rating**		**Rating**			
Landscape Character	See Table 3	Severe		High Moderate **Low**	Dominant		**Significant Effect** Less Than Significant Effect
Unity	**Moderate to High**	**Strong**	√		**Prominent**	√	
Public View	**Moderate**	Moderate			Conspicuous		
Visibility	**High**	Weak			Apparent		
		Negligible			Unobtrusive		

KOP 1b Full Evaluation Worksheets (cont'd)

Table 15 CEQA GUIDELINES LEVEL OF EFFECT ON THE ENVIRONMENT

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 and aesthetic significance." (14 CCR § 15382) (Pub. Res. Code § 21060.5, 14 CCR § 15360) The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, noncompliance with which means the effect will normally be determined to be significant by the [lead] agency...." (14 CCR § 15064.7[a])

Less Than Significant Effect with Mitigation Incorporated. The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "... but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed [CEQA environmental document (e.g., Negative Declaration) is] released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment." (Pub. Res. Code § 21064.5, 14 CCR § 15369.5) (Pub. Res. Code § 21002)

Less Than Significant Effect. The physical change by the proposed project to the existing physical condition does not reach the threshold of significance "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, ... compliance with which means the effect normally will be determined to be less than significant." (14 CCR § 15064.7[a])

Key Observation Point Evaluation Worksheets

KOP 2 Interstate 15 Looking East – Summary Sheet for Worksheet Tables

LANDSCAPE			
Table 3 LANDSCAPE CHARACTER	Aesthetic Aspect		See attached Table 3.
	Perceptual Aspect		
	Basic Design Element		
	Landscape	**Rating**	Write the rating selected in the attached Table 4.
Table 4 UNITY	Rarity	**Moderate to High**	
	Diversity	**Moderate**	
	Detractors	**Low**	
	Distinctiveness	**Moderate**	
	Integrity	**Moderate to High**	
	Rating	**Checkbox**	Check (**√**) the rating selected in the attached Tables 5 and 6.
Table 5 PUBLIC VIEW	High		
	Moderate	**√**	
	Low		
	None		
Table 6 VISIBILITY	Dominant		
	High	**√**	
	Moderate to High		
	Moderate		
	Low to Moderate		
	Low		

PROJECT PROMINENCE			
Table 7 Basic Design Element Contrast			
Basic Design Element	Rating	**Weight**	**Points**
Color	**Strong = 3**	x 3	**9**
	Moderate = 2		
	Weak = 1		
	None = 0		
Form	**Strong = 3**	x 2	**6**
	Moderate = 2		
	Weak = 1		
	None = 0		
Line	**Strong = 3**	x 1	**3**
	Moderate = 2		
	Weak = 1		
	None = 0		
Texture	Strong = 3	x 1	**2**
	Moderate = 2		
	Weak = 1		
	None = 0		
		Maximum 21 points	**+20**

KOP 2 Interstate 15 Looking East – Summary Sheet for Worksheet Tables (cont'd)

Table 8 SCALE DOMINANCE				
Rating				**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.			12
Codominant	**The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.**			**8**
Subordinate	The project is of significant size but occupies a minor part of the landscape.			4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.			0
		Single highest points	Maximum 12 points	**8**

Table 9 SPATIAL DOMINANCE				
Category	**Rating**	**Single Highest Rating**		**Points**
Spatial composition of the landscape.	**prominent**	Dominant 2-3 categories rated prominent.		6
	significant			
	inconspicuous	**Codominant** 1 category rated prominent, or 2 categories rated significant.		**4**
Spatial position of the project.	prominent			
	significant			
	inconspicuous	Subordinate 1 category rated significant.		2
Backdrop to the project.	prominent			
	inconspicuous	Insignificant All categories rated inconspicuous.		0
		Single highest points	Maximum 6 points	**4**

Table 10 PROJECT PROMINENCE RATING*	
Total Points	**Rating**
32-39	**Severe**
24-31	Strong
16-23	Moderate
8-15	Weak
0-7	Negligible
***(Add Points from Tables 7, 8, and 9)**	**Rating = Severe**

Tables 11 and 12 VISUAL ABSORPTION CAPABILITY			
Table 11 CAPABILITY **Table 12 ABSORPTION**	**Rating**	**Checkbox**	The existing landscape's ability to absorb the physical change by the proposed project without an alteration to its visual character.
	High		
	Moderate		
	Low	**√**	

Table 13 MAGNITUDE OF CHANGE		
		Checkbox
Dominant	Project commands or controls the view in the landscape.	**√**
Prominent	Project stands out or is striking in the view in the landscape.	
Conspicuous	Project is clearly visible and noticeable within the view in the landscape.	
Apparent	Project visible or evident within the view in the landscape.	
Unobtrusive	Project indistinct or not obvious within the view in the landscape.	

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS		
CEQA Guidelines Level of Effect on the Environment	**Significant Effect**	**√**
	Less Than Significant Effect	

KOP 2 Full Evaluation Worksheets (Tables 3 through 15)

Table 3 LANDSCAPE CHARACTER

Aesthetic	**Description**								Check (√) the description that best describes the aspect of the landscape.	
Balance	harmonious		balanced	√	discordant		chaotic			
Complexity	uniform		simple		diverse	√	complex			
Dynamic	sweeping		spreading	√	disperse		channeled			
Enclosure	expansive		open	√	enclosed		constrained			
Pattern (two-dims.)	formal		organized		regular	√	random			
Perceptual										
Pleasure	beautiful		attractive	√	pleasant		unpleasant		nasty	
Security	intimate		comfortable	√	safe		unsettling		threatening	
Stimulus	inspiring		challenging		interesting	√	bland		monotonous	
Tranquility	inaccessible		remote	√	vacant		peaceful	√	busy	
Basic Design Element										
Color	monochrome		muted	√	colorful		garish		The basic design elements are the source of visual contrast in the landscape that an individual sees and responds to when viewing a space.	
Form	angular	√	curvilinear		horizontal	√	rounded	√		
Line	straight	√	curved	√	vertical	√	horizontal	√		
Texture	smooth	√	textured	√	rough	√	very rough	√		
Scale	intimate		small		large	√	vast			

Adapted from Carys Swanwick, "Landscape Character Assessment Guidance for England and Scotland," prepared for The Countryside Agency and Scottish Natural Heritage, 2002, pp. 30-36.

Table 4 UNITY

Landscape	**Rating**					**Guidance**
	High	**Moderate to High**	**Moderate**	**Low to Moderate**	**Low**	
Rarity	rare	√			common	Are there many examples of this type of landscape in the region?
Diversity	orderly		√		muddled	Is there a recognizable order of the landscape features in view or are there too many patterns overlapping?
Detractors	many				√	Are there landscape features out of place?
Distinctiveness	distinct		√		indistinct	Is it easy to remember the landscape? Patterns dramatic or take some finding?
Integrity	whole	√			remnant	What patterns in the landscape are evident? Are sections missing and to what extent?

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 36.

KOP 2 Full Evaluation Worksheets (cont'd)

Table 5 PUBLIC VIEW	
Rating	
High	
	Public view includes areas where the aesthetic value is protected by federal, state, county or city, law, ordinance, regulation, or standard. Public view includes federal, state, county, city designated areas of aesthetic, cultural, and recreational claim, such as: a park, outdoor recreation area, etc.; coastal or forest reserve, open space preserve, urban green space, etc.; scenic overlook, scenic river, scenic trail, etc.; historic building, district, or site; a site having a cultural resource. Public view includes a federal or state designated scenic byway, highway, or road; designated scenic highway or road of regional importance; a segment of travel route, such as a road, rail line, pedestrian and equestrian trail, bicycle path near a designated area of aesthetic claim and leading directly to it. View approaching an area of aesthetic, cultural, and recreational claim that may be closely related to the appreciation of the aesthetic, cultural, and recreational significance at that designation. Public view includes an urban residential use area and segment of road that serves as the primary access route to it.
Moderate	
√	Public view includes undesignated but popularly used or appreciated area of aesthetic, cultural, and recreational claim of significance in the region. Public view includes a highway or road locally designated as a scenic route and of importance only to the local population, or informally designated as such in road atlases, road maps, and tour book guides. Public view includes segments of travel routes, such as roads, pedestrian and equestrian trails, bicycle paths that are near and are the primary access to protected or popularly used undesignated areas important for their aesthetic, cultural, or recreational claim. Public view includes a segment of travel route near a designated area of aesthetic claim serving as a secondary access route to the area. Public view includes a rural residential use area and segment of road that serves as the primary access route to it within one mile. Public view includes a maintained religious facility or cemetery.
Low	
	Public view includes an agricultural, commercial, industrial, manufacturing, research, and development use area. Public view includes a small aggregation of dwellings.
None	
	No public view.

Adapted from Aspen Environmental Group, "Final Environmental Impact Report Tranquillon Ridge Oil and Gas Development Project" prepared for County of Santa Barbara Planning and Development. Santa Barbara, CA, April 2008, Vol. 1, pp. 5.13-5-6, and "Final Environmental Impact Report Southern California International Gateway Project," Appendix B Aesthetics Visual Resource Methodology, Los Angeles Harbor Department, Los Angeles, CA, March 2013.

KOP 2 Full Evaluation Worksheets (cont'd)

Table 6 VISIBILITY	
Rating	
Dominant Dominates view because project would fill most of visual field for views in its general direction. Stark contrast in form, line, color, texture, luminance, or motion may contribute to view dominance.	An object with strong visual contrast that is of such enormous size that it occupies most of the visual field, and views of it cannot be avoided except by turning the head greater than 45 degrees from a direct view of the object. The object is the major focus of visual attention, and its large apparent size is a major factor in its view dominance. In addition to size, contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of the project detracts noticeably from views of other landscape components.
High Strongly attracts visual attention of views in general direction of project. Attention may be drawn by stark contrast in form, line, color, or texture, luminance, or motion.	An object that is not of large size, but contrasts with the surrounding landscape components so strongly that it is a major focus of visual attention, drawing viewer attention immediately, and tending to hold viewer attention. In addition to stark contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of project interferes noticeably with views of nearby landscape components.
Moderate to High Plainly visible, could not be missed by casual observer, but does not strongly attract visual attention, or dominate view because of apparent size, for views in general direction of project.	An object that is obvious and with enough size or contrast to compete with other landscape components, but with insufficient visual contrast to strongly attract visual attention and insufficient size to occupy most of the observer's visual field.
Moderate Visible after brief glance in general direction of project and unlikely to be missed by casual observer.	An object that can be easily detected after a brief look and would be visible to most casual observers, but without enough size or contrast to compete with major landscape components.
Low to Moderate Visible when scanning in general direction of project; otherwise, likely to be missed by casual observer.	An object that is very small and/or faint, but when the observer is scanning the horizon or looking more closely at an area can be detected without extended viewing. A casual observer could sometimes notice it; however, most people would not notice it without some active looking.
Low Visible only after extended, close viewing; otherwise, invisible.	An object that is near the extreme limit of visibility. A person who was not aware of it in advance and looking for it could not see it. Even under those circumstances, the object can only be seen after looking at it closely for an extended period.
Adapted from R.G. Sullivan, L.B. Kirchler, T. Lahti, S. Roche, K. Beckman, B. Cantwell, P. Richmond, "Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes," University of Chicago Argonne, LLC submitted to the National Association of Environmental Professionals 37th Annual Conference Proceedings, Portland, Oregon, May 21-24, 2012, p. 17.	

Table 7 BASIC DESIGN ELEMENT CONTRAST

Element	Rating[1]	Weight	Points	
Color	**Strong = 3**	x 3	**9**	Color is "the light-reflecting qualities of a project's surface (for example, dark or light, blue or gray) in relation to background colors."[2] "Colors that harmonize well seem to belong together and produce pleasing visual effects. Colors that do not harmonize are disturbing to the viewer."[3] Contrast in color depends on the exterior surface degree of lightness or darkness, gradation or variety of a color, the degree of saturation or brilliance of a color in the project to those that continue to exist in the landscape.
	Moderate = 2			
	Weak = 1			
	None = 0			
Form	**Strong = 3**	x 2	**6**	Form is "the configuration and outline of the project in terms of masses, patterns, and linear elements. For example, a structure may have a bulky, vertical, geometric silhouette which contrasts with an irregular horizontal landscape of rolling hills."[4] Forms exist in three dimensions (height, length, width). For example, the shape is a square its form is a cube. Forms that are bold, regular, solid, or vertical tend to prevail in the landscape. Contrast in form depends on how alike the form(s) of the project is to those that continue to exist in the landscape.
	Moderate = 2			
	Weak = 1			
	None = 0			
Line	**Strong = 3**	x 1	**3**	"Line is the path, real or imagined that the eye follows when perceiving abrupt differences when objects are aligned in a one-dimensional sequence."[5] "Line in the landscape is created by the edge between two materials, the outline or silhouette of a form, or a long linear feature."[6] Properties of lines: straight, diagonal, curved, vertical, horizontal. Contrast in line depends on edge types and interruption, or introduction of edges, bands, and silhouette lines in the project to those that continue to exist in the landscape.
	Moderate = 2			
	Weak = 1			
	None = 0			
Texture	Strong = 3	x 1	**2**	Texture is "the aggregation of small forms or color mixtures into a continuous surface pattern; the aggregated parts are enough that they do not appear as discrete objects in the composition of the scene."[7] "Details of the surface pattern, as in smooth polished metal surfaces versus the rough, uneven textures of the foliage of trees and bushes"[8] Contrast in texture depends on the relative dimensions of the surface variations from large to small, spacing of surface variations, and the degree of uniform recurrence and symmetrical arrangement of the surface variation in the project to those that continue to exist in the landscape.
	Moderate = 2			
	Weak = 1			
	None = 0			
	Overall Rating[9]		**+20**	
	Maximum 21 points			

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, CA, 1979.

[1] **Strong** — the project contrast demands attention will not be overlooked and is dominant in the landscape. **Moderate** — the project contrast begins to attract attention and begins to dominate the characteristic landscape. **Weak** — the project contrast can be seen but does not attract attention. **None** — the project contrast is not visible or perceived. (U.S. Department of Interior Bureau of Land Management Manual 8431-Visual Resources Contrast Rating, January 17, 1986.)

[2] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[3] U.S. Department of Transportation Federal Highway Administration, "A Guide to Visual Quality in Noise Barrier Design," Chapter 3. Visual Design Principles, n.d.

[4] Sheppard, p. 46.

[5] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[6] Gail Hansen, "Basic Principles of Landscape Design." Florida Cooperative Extension Service Institute of Food and Agricultural Science, University of Florida, Gainesville, Florida, July 2010.

[7] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[8] Sheppard, p. 47.

[9] Overall Rating is for descriptive purpose: Strong — 1-3 ratings Strong or 3 ratings Moderate; Moderate — 1-2 ratings Moderate with no higher ratings; Weak — 1-3 ratings Weak with no higher ratings; None — all ratings None.

KOP 2 Full Evaluation Worksheets (cont'd)

Table 8 SCALE DOMINANCE			
Rating			**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.		12
Codominant	**The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.**		**8**
Subordinate	The project is of significant size but occupies a minor part of the landscape.		4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.		0
	Single highest points	Maximum 12 points	**8**
Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.			

KOP 2 Full Evaluation Worksheets (cont'd)

Table 9 SPATIAL DOMINANCE

Category				Single Highest Rating
Spatial composition of the landscape	"[T]he arrangement of objects and voids in the landscape can be categorized by their spatial composition .... Some compositions, especially those which are distinctly focal, enclosed, or feature-oriented, are more vulnerable to modifications than others, depending upon how strongly the spatial configuration draws the eye to certain locations."[1]			Dominant 2-3 categories rated prominent = 6 points **Codominant** 1 category rated prominent, or 2 categories rated significant **= 4 points** Subordinate 1 category rated significant = 2 points Insignificant All categories rated inconspicuous = 0 points
	Rating	**Description**		
	prominent	Feature[2], Focal[2], or Enclosed[2] landscape.		
	significant	Panoramic,[2] or weak focal, feature or enclosed landscape.		
	inconspicuous	Canopied,[2] indistinct or obscured landscape.		
Spatial position of the project	"Spatial position of the project in relation to the three-dimensional arrangement of objects and voids in the landscape. Important spatial aspects of the project include relationship to the skyline, location in topographic spaces such as focal valleys or broad plains, and position with regard to streetscapes and architectural arrangements."[3]			
	Rating	**Description**		
	prominent	High Level,[4] High Slope,[4] Interfluve[4]		
	significant	Low Level,[4] Lowslope,[4] Midslope[4]		
	inconspicuous	Basin Floor,[4] Footslope,[4] Toeslope[4]		
Backdrop to the project	"[T]he backdrop against which an object is seen affects its visual contrast. Modifications seen against the sky or water are usually more prominent than against a land backdrop."[5]			
	Rating	**Description**		
	prominent	All or a significant part of the project will be seen against sky or water.		
	inconspicuous	All or a significant part of the project will be seen against land.		
		Single highest points	Maximum 6 points	**4**

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.

[1] U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.

[2] **Canopied** — landscape where features overhead (above eye level) create a canopy or ceiling. **Enclosed** — a space, large or small surrounded by continuous grouping of objects creating walls and floor. It may have a large vertical dimension, but typically a restricted horizontal one. **Feature** — landscape dominated by a feature or a group of objects in the distance to which the eye is drawn. **Focal** — converging lines in the landscape or progressions of aligned objects lead the eye to a focal point in the landscape. **Panoramic** — a broad horizontal composition. Little or no sense of boundary restriction; no apparent limit to the view. Foreground or middle ground objects do not substantially block viewing of background objects. (U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.)

[3] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[4] **Basin Floor** — nearly level to gently sloping, bottom surface of an intermontane basin. **Footslope** — the gently inclined hillslope at the foot of a hill. **High Level** — level top of plateau. **High Slope** — geomorphic component that forms the uppermost inclined surface at the top of a slope (e.g., shoulder slope, upper slope). **Interfluve** — linear top of ridge, hill, or mountain. **Low Level** — valley floor, or shoreline representing the former position of an alluvial plain, lake, or shore. **Lowslope** — inner gently inclined surface at the base of a slope. Surface profile is generally concave and a transition between midslope or backslope, and toeslope. **Midslope** — intermediate slope position between high and low (e.g., middle slope). (Adapted from T. Liang [1951]; J.B. Dalrymple, R.J. Blong, and A. Conacher. [1968]) **Toeslope** — the gently inclined surface at the base of a hillslope. Toeslope in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors. (USDA Soil Survey Manual Handbook No. 18, issued March 2017 as amended February 2018).

[5] U.S. Department of Interior Bureau of Land Management Manual H-8431-1.

KOP 2 Full Evaluation Worksheets (cont'd)

Table 11 CAPABILITY

Category		For each category check (√) the rating that best describes the existing landscape.					
		Rating					
		High		Moderate		Low	
Topography		High amount of topographic diversity and variety.	√	Moderate amount of topographic diversity and variety.		Low amount of topographic diversity and variety.	
Land Use Pattern	If project in rural landscape	Small natural or vegetated areas. Man-made structures dominant in the view.		Natural areas of local significance. Man-made structures widespread but not dominant in the view.		Remote natural areas of regional significance. Man-made structures and features limited and scattered.	√
	If project in urban landscape	Developed areas including commercial development. Large-scale infrastructure or structures may be common and more dominant.		Suburban or mostly developed areas with components of local importance. Large-scale infrastructure or structures may be visible but not dominant.		Clustered development surrounded by rural scattered development. Large-scale infrastructure or structures limited and scattered.	
Visual Variety		Landscape exhibits a high degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit high degree of variety in landforms and vegetation.		Landscape exhibits a moderate degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit moderate variety in landforms and vegetation.	√	Landscape exhibits a low degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit minimal variety in landforms and vegetation.	
Major Focal Points or Features		Focal points or features in the viewshed that are either natural or man-made, commonly found, minimal local importance/value, or contribute little to the character of the landscape or are indistinct.		Focal points or features in the viewshed that are either natural or man-made, somewhat commonly found, local importance/value, or make a minor contribution to the character of the landscape.		Focal points or features in the viewshed that are either natural or man-made and are unusual or rare, regional importance/value, or make a major contribution to the character of the landscape or are somewhat distinctive.	√

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 17, and L. Blocker, T. Slider, J. Ruchman, J. Mosier, L. Kok, J. Silbemagle, J. Beard, D. Wagner, G. Brogan, D. Jones, N. Laughlinn, L. Anderson, "Landscape Aesthetic (AH 701-i) - Visual Absorption Capability (Appendix C)," United States Department of Agriculture Forest Service, 1995, pp. C-1-C-8.

KOP 2 Full Evaluation Worksheets (cont'd)

Table 12 ABSORPTION	
For each question circle the applicable rating for the absorption of the landscape; High = H, Moderate = M, Low = L.	
Exposure	**Rating**
What is the level of exposure of the project in the landscape? The higher the level of exposure, the lower the absorption.	H M (L)
What is the intensity of the observation of the project? The more the project is observed from certain intensive land uses the lower its absorption (e.g., view from a densely populated residential area versus a heavy manufacturing and processing area).	H M (L)
What is the view distance to the project? The farther the viewing distance to the project from the vantage point the lower its exposure the higher its absorption. Is the project more than three miles away?	H M (L)
What is the project's distance from an urban skyline or a natural skyline (e.g., high-rise buildings or a mountain range against a backdrop of sky)? The closer the project is to an urban or natural skyline the lower its absorption.	H (M) L
What is the project's topographic position in the landscape? As the project's position increases its absorption decreases (e.g., toeslope to summit).	(H) M L
Focal Point	
Is the project near a focal point in the landscape? A focal point is a converging of lines in the landscape or progressions of aligned objects that lead the eye to a point. A focal point gives the viewer something interesting to look at in the view. The closer the project is to a focal point the greater viewer scrutiny the lower the absorption.	H (M) L
Does the edge(s) in the landscape have a diverse background but have the propensity to become a focal point? An edge is a transitional linear place where one space or landscape becomes part of another. An edge has a high absorption due to a diverse background, a low absorption due to the propensity to become a focal point (e.g., city meets country, a woodland edge, an alpine tree line, coastline).	H (M) L
Trees & Vegetation	
Are trees and vegetation in the landscape missing, deficient, or uniform? The greater the density of trees and vegetation, the greater the coverage, the greater the capacity of an area to absorb physical change.	H M (L)
What is the type(s) of tree(s) and vegetation in the landscape? Tree and vegetation types vary the absorption of the physical change. A uniformly tall, dense stand of trees has screening ability. Vegetation types such as evergreen shrubs and similar have greater absorption than dwarf shrubs, ornamental grasses, and grass-like plants. Trees and vegetation can provide high absorption in the foreground but lower absorption in the background.	H M (L)
Disturbed Surface Area	
Period of time to restore the project's disturbed surface area to its pre-construction activity condition? The longer the time to restore the disturbed area to its undisturbed original condition after the construction phase the lower the absorption; 1 year = high, 2 to 3 years = moderate, 3 years or more = low.	H M (L)
Adapted from S. Amir, E. Gidalizon, "Expert-based method for the evaluation of visual absorption capacity of the landscape*," Journal of Environmental Management, 1990, Vol. 30, pp. 251-263, and W.C. Yeomans, "A Proposed Biophysical Approach to Visual Absorption Capability (VAC),[1]" Pacific Southwest Forest and Range Experimental Station, Berkeley, California, 1979 submitted to the National Conference on Applied Techniques for Analysis and Management of Visual Resource, Incline Village, Nevada, April 23-25, 1979, pp. 172-181.	

KOP 2 Full Evaluation Worksheets (cont'd)

Table 13 MAGNITUDE OF CHANGE				
Dominant	**Prominent**	**Conspicuous**	**Apparent**	**Unobtrusive**
Project commands or controls the view in the landscape. Project causes a very large alteration to the landscape or features within the landscape such that there is a fundamental change from the existing physical condition.	Project stands out or is striking in the view in the landscape. Project causes a large alteration to the landscape or features within the landscape such that there is an unmistakable change from the existing physical condition.	Project is clearly visible and noticeable within the view in the landscape. Project causes a moderate alteration to the landscape or features within the landscape such that there is a distinct change from the existing physical condition.	Project visible or evident within the view in the landscape. Project causes a small alteration to the landscape or features within the landscape such that there is a perceptible change from the existing physical condition.	Project indistinct or not obvious within the view in the landscape. Project causes a very small alteration to the landscape, or features within the landscape such that there is a de minimis change from the existing physical condition.
Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 20.				

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS							
Landscape		**Project Prominence**		**Visual Absorption Capability**	**Magnitude Of Change**		**CEQA Guidelines Level of Effect On The Environment** (See Table 15)
Table	**Rating**	**Rating**		**Rating**			
Landscape Character	See Table 3	**Severe**	√	High Moderate **Low**	**Dominant**	√	**Significant Effect** Less Than Significant Effect
Unity	**Moderate to High**	Strong			Prominent		
Public View	**Moderate**	Moderate			Conspicuous		
Visibility	**High**	Weak			Apparent		
		Negligible			Unobtrusive		

KOP 2 Full Evaluation Worksheets (cont'd)

Table 15 CEQA GUIDELINES LEVEL OF EFFECT ON THE ENVIRONMENT

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 and aesthetic significance." (14 CCR § 15382) (Pub. Res. Code § 21060.5, 14 CCR § 15360) The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, noncompliance with which means the effect will normally be determined to be significant by the [lead] agency...." (14 CCR § 15064.7[a])

Less Than Significant Effect with Mitigation Incorporated. The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "... but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed [CEQA environmental document (e.g., Negative Declaration) is] released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment." (Pub. Res. Code § 21064.5, 14 CCR § 15369.5) (Pub. Res. Code § 21002)

Less Than Significant Effect. The physical change by the proposed project to the existing physical condition does not reach the threshold of significance "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, ... compliance with which means the effect normally will be determined to be less than significant." (14 CCR § 15064.7[a])

Key Observation Point Evaluation Worksheets

KOP 3 Interstate 15 Looking Northwest – Summary Sheet for Worksheet Tables for Jurisdictional Project Components

LANDSCAPE			
Table 3 LANDSCAPE CHARACTER	Aesthetic Aspect		See attached Table 3.
	Perceptual Aspect		
	Basic Design Element		
	Landscape	**Rating**	Write the rating selected in the attached Table 4.
Table 4 UNITY	Rarity	**Moderate**	
	Diversity	**Moderate**	
	Detractors	**Low to Moderate**	
	Distinctiveness	**Low to Moderate**	
	Integrity	**Moderate**	
	Rating	**Checkbox**	Check (**√**) the rating selected in the attached Tables 5 and 6.
Table 5 PUBLIC VIEW	High		
	Moderate	**√**	
	Low		
	None		
Table 6 VISIBILITY	Dominant		
	High	**√**	
	Moderate to High		
	Moderate		
	Low to Moderate		
	Low		

PROJECT PROMINENCE			
Table 7 Basic Design Element Contrast			
Basic Design Element	**Rating**	**Weight**	**Points**
Color	Strong = 3	x 3	**6**
	Moderate = 2		
	Weak = 1		
	None = 0		
Form	Strong = 3	x 2	**4**
	Moderate = 2		
	Weak = 1		
	None = 0		
Line	**Strong = 3**	x 1	**3**
	Moderate = 2		
	Weak = 1		
	None = 0		
Texture	Strong = 3	x 1	**1**
	Moderate = 2		
	Weak = 1		
	None = 0		
		Maximum 21 points	**+14**

KOP 3 Interstate 15 Looking Northwest – Summary Sheet for Worksheet Tables for Jurisdictional Project Components (cont'd)

Table 8 SCALE DOMINANCE		
Rating		**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.	12
Codominant	**The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.**	**8**
Subordinate	The project is of significant size but occupies a minor part of the landscape.	4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.	0
	Single highest points / Maximum 12 points	**8**

Table 9 SPATIAL DOMINANCE			
Category	**Rating**	**Single Highest Rating**	**Points**
Spatial composition of the landscape.	**prominent**	**Dominant** 2-3 categories rated prominent.	**6**
	significant		
	inconspicuous	Codominant 1 category rated prominent, or 2 categories rated significant.	4
Spatial position of the project.	**prominent**		
	significant		
	inconspicuous	Subordinate 1 category rated significant.	2
Backdrop to the project.	prominent		
	inconspicuous	Insignificant All categories rated inconspicuous.	0
		Single highest points / Maximum 6 points	**6**

Table 10 PROJECT PROMINENCE RATING*	
Total Points	**Rating**
32-39	Severe
24-31	**Strong**
16-23	Moderate
8-15	Weak
0-7	Negligible
***(Add Points from Tables 7, 8, and 9)**	**Rating = Strong**

Tables 11 and 12 VISUAL ABSORPTION CAPABILITY			
Table 11 CAPABILITY Table 12 ABSORPTION	**Rating**	**Checkbox**	The existing landscape's ability to absorb the physical change by the proposed project without an alteration to its visual character.
	High		
	Moderate		
	Low	**√**	

Table 13 MAGNITUDE OF CHANGE		
		Checkbox
Dominant	**Project commands or controls the view in the landscape.**	**√**
Prominent	Project stands out or is striking in the view in the landscape.	
Conspicuous	Project is clearly visible and noticeable within the view in the landscape.	
Apparent	Project visible or evident within the view in the landscape.	
Unobtrusive	Project indistinct or not obvious within the view in the landscape.	

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS		
CEQA Guidelines Level of Effect on the Environment	**Significant Effect**	**√**
	Less Than Significant Effect	

KOP 3 Full Evaluation Worksheets (Tables 3 through 15) for Jurisdictional Project Components

Table 3 LANDSCAPE CHARACTER

Aesthetic	**Description**								Check (√) the description that best describes the aspect of the landscape.
Balance	harmonious		balanced	√	discordant		chaotic		
Complexity	uniform		simple	√	diverse		complex		
Dynamic	sweeping		spreading	√	disperse		channeled		
Enclosure	expansive		open	√	enclosed		constrained		
Pattern (two-dims.)	formal		organized		regular	√	random		
Perceptual									
Pleasure	beautiful		attractive		pleasant	√	unpleasant		nasty
Security	intimate		comfortable		safe	√	unsettling		threatening
Stimulus	inspiring		challenging		interesting	√	bland		monotonous
Tranquility	inaccessible		remote		vacant		peaceful	√	busy
Basic Design Element									
Color	monochrome		muted	√	colorful		garish		The basic design elements are the source of visual contrast in the landscape that an individual sees and responds to when viewing a space.
Form	angular	√	curvilinear		horizontal	√	rounded	√	
Line	straight	√	curved	√	vertical	√	horizontal	√	
Texture	smooth		textured	√	rough	√	very rough		
Scale	intimate		small		large		vast		

Adapted from Carys Swanwick, "Landscape Character Assessment Guidance for England and Scotland," prepared for The Countryside Agency and Scottish Natural Heritage, 2002, pp. 30-36.

Table 4 UNITY

Landscape	**Rating**					**Guidance**
	High	**Moderate to High**	**Moderate**	**Low to Moderate**	**Low**	
Rarity	rare		√		common	Are there many examples of this type of landscape in the region?
Diversity	orderly		√		muddled	Is there a recognizable order of the landscape features in view or are there too many patterns overlapping?
Detractors	many			√	few	Are there landscape features out of place?
Distinctiveness	distinct			√	indistinct	Is it easy to remember the landscape? Patterns dramatic or take some finding?
Integrity	whole		√		remnant	What patterns in the landscape are evident? Are sections missing and to what extent?

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 36.

KOP 3 Full Evaluation Worksheets for Jurisdictional Project Components (cont'd)

Table 5 PUBLIC VIEW	
Rating	
High	
	Public view includes areas where the aesthetic value is protected by federal, state, county or city, law, ordinance, regulation, or standard. Public view includes federal, state, county, city designated areas of aesthetic, cultural, and recreational claim, such as: a park, outdoor recreation area, etc.; coastal or forest reserve, open space preserve, urban green space, etc.; scenic overlook, scenic river, scenic trail, etc.; historic building, district, or site; a site having a cultural resource. Public view includes a federal or state designated scenic byway, highway, or road; designated scenic highway or road of regional importance; a segment of travel route, such as a road, rail line, pedestrian and equestrian trail, bicycle path near a designated area of aesthetic claim and leading directly to it. View approaching an area of aesthetic, cultural, and recreational claim that may be closely related to the appreciation of the aesthetic, cultural, and recreational significance at that designation. Public view includes an urban residential use area and segment of road that serves as the primary access route to it.
Moderate	
√	Public view includes undesignated but popularly used or appreciated area of aesthetic, cultural, and recreational claim of significance in the region. Public view includes a highway or road locally designated as a scenic route and of importance only to the local population, or informally designated as such in road atlases, road maps, and tour book guides. Public view includes segments of travel routes, such as roads, pedestrian and equestrian trails, bicycle paths that are near and are the primary access to protected or popularly used undesignated areas important for their aesthetic, cultural, or recreational claim. Public view includes a segment of travel route near a designated area of aesthetic claim serving as a secondary access route to the area. Public view includes a rural residential use area and segment of road that serves as the primary access route to it within one mile. Public view includes a maintained religious facility or cemetery.
Low	
	Public view includes an agricultural, commercial, industrial, manufacturing, research, and development use area. Public view includes a small aggregation of dwellings.
None	
	No public view.

Adapted from Aspen Environmental Group, "Final Environmental Impact Report Tranquillon Ridge Oil and Gas Development Project" prepared for County of Santa Barbara Planning and Development. Santa Barbara, CA, April 2008, Vol. 1, pp. 5.13-5-6, and "Final Environmental Impact Report Southern California International Gateway Project," Appendix B Aesthetics Visual Resource Methodology, Los Angeles Harbor Department, Los Angeles, CA, March 2013.

KOP 3 Full Evaluation Worksheets for Jurisdictional Project Components (cont'd)

Table 6 VISIBILITY	
Rating	
Dominant Dominates view because project would fill most of visual field for views in its general direction. Stark contrast in form, line, color, texture, luminance, or motion may contribute to view dominance.	An object with strong visual contrast that is of such enormous size that it occupies most of the visual field, and views of it cannot be avoided except by turning the head greater than 45 degrees from a direct view of the object. The object is the major focus of visual attention, and its large apparent size is a major factor in its view dominance. In addition to size, contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of the project detracts noticeably from views of other landscape components.
High Strongly attracts visual attention of views in general direction of project. Attention may be drawn by stark contrast in form, line, color, or texture, luminance, or motion.	An object that is not of large size, but contrasts with the surrounding landscape components so strongly that it is a major focus of visual attention, drawing viewer attention immediately, and tending to hold viewer attention. In addition to stark contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of project interferes noticeably with views of nearby landscape components.
Moderate to High Plainly visible, could not be missed by casual observer, but does not strongly attract visual attention, or dominate view because of apparent size, for views in general direction of project.	An object that is obvious and with enough size or contrast to compete with other landscape components, but with insufficient visual contrast to strongly attract visual attention and insufficient size to occupy most of the observer's visual field.
Moderate Visible after brief glance in general direction of project and unlikely to be missed by casual observer.	An object that can be easily detected after a brief look and would be visible to most casual observers, but without enough size or contrast to compete with major landscape components.
Low to Moderate Visible when scanning in general direction of project; otherwise, likely to be missed by casual observer.	An object that is very small and/or faint, but when the observer is scanning the horizon or looking more closely at an area can be detected without extended viewing. A casual observer could sometimes notice it; however, most people would not notice it without some active looking.
Low Visible only after extended, close viewing; otherwise, invisible.	An object that is near the extreme limit of visibility. A person who was not aware of it in advance and looking for it could not see it. Even under those circumstances, the object can only be seen after looking at it closely for an extended period.
Adapted from R.G. Sullivan, L.B. Kirchler, T. Lahti, S. Roche, K. Beckman, B. Cantwell, P. Richmond, "Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes," University of Chicago Argonne, LLC submitted to the National Association of Environmental Professionals 37th Annual Conference Proceedings, Portland, Oregon, May 21-24, 2012, p. 17.	

KOP 3 Full Evaluation Worksheets for Jurisdictional Project Components (cont'd)

Table 7 BASIC DESIGN ELEMENT CONTRAST

Element	Rating[1]	Weight	Points	
Color	Strong = 3 **Moderate = 2** Weak = 1 None = 0	x 3	**6**	Color is "the light-reflecting qualities of a project's surface (for example, dark or light, blue or gray) in relation to background colors."[2] "Colors that harmonize well seem to belong together and produce pleasing visual effects. Colors that do not harmonize are disturbing to the viewer."[3] Contrast in color depends on the exterior surface degree of lightness or darkness, gradation or variety of a color, the degree of saturation or brilliance of a color in the project to those that continue to exist in the landscape.
Form	Strong = 3 **Moderate = 2** Weak = 1 None = 0	x 2	**4**	Form is "the configuration and outline of the project in terms of masses, patterns, and linear elements. For example, a structure may have a bulky, vertical, geometric silhouette which contrasts with an irregular horizontal landscape of rolling hills."[4] Forms exist in three dimensions (height, length, width). For example, the shape is a square its form is a cube. Forms that are bold, regular, solid, or vertical tend to prevail in the landscape. Contrast in form depends on how alike the form(s) of the project is to those that continue to exist in the landscape.
Line	**Strong = 3** Moderate = 2 Weak = 1 None = 0	x 1	**3**	"Line is the path, real or imagined that the eye follows when perceiving abrupt differences when objects are aligned in a one-dimensional sequence."[5] "Line in the landscape is created by the edge between two materials, the outline or silhouette of a form, or a long linear feature."[6] Properties of lines: straight, diagonal, curved, vertical, horizontal. Contrast in line depends on edge types and interruption, or introduction of edges, bands, and silhouette lines in the project to those that continue to exist in the landscape.
Texture	Strong = 3 Moderate = 2 **Weak = 1** None = 0	x 1	**1**	Texture is "the aggregation of small forms or color mixtures into a continuous surface pattern; the aggregated parts are enough that they do not appear as discrete objects in the composition of the scene."[7] "Details of the surface pattern, as in smooth polished metal surfaces versus the rough, uneven textures of the foliage of trees and bushes"[8] Contrast in texture depends on the relative dimensions of the surface variations from large to small, spacing of surface variations, and the degree of uniform recurrence and symmetrical arrangement of the surface variation in the project to those that continue to exist in the landscape.
	Overall Rating[9]		**+14**	
	Maximum 21 points			

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, CA, 1979.

[1] **Strong** — the project contrast demands attention will not be overlooked and is dominant in the landscape. **Moderate** — the project contrast begins to attract attention and begins to dominate the characteristic landscape. **Weak** — the project contrast can be seen but does not attract attention. **None** — the project contrast is not visible or perceived. (U.S. Department of Interior Bureau of Land Management Manual 8431-Visual Resources Contrast Rating, January 17, 1986.)

[2] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[3] U.S. Department of Transportation Federal Highway Administration, "A Guide to Visual Quality in Noise Barrier Design," Chapter 3. Visual Design Principles, n.d.

[4] Sheppard, p. 46.

[5] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[6] Gail Hansen, "Basic Principles of Landscape Design." Florida Cooperative Extension Service Institute of Food and Agricultural Science, University of Florida, Gainesville, Florida, July 2010.

[7] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[8] Sheppard, p. 47.

[9] Overall Rating is for descriptive purpose: Strong — 1-3 ratings Strong or 3 ratings Moderate; Moderate — 1-2 ratings Moderate with no higher ratings; Weak — 1-3 ratings Weak with no higher ratings; None — all ratings None.

KOP 3 Full Evaluation Worksheets for Jurisdictional Project Components (cont'd)

Table 8 SCALE DOMINANCE			
Rating			**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.		12
Codominant	**The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.**		**8**
Subordinate	The project is of significant size but occupies a minor part of the landscape.		4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.		0
	Single highest points	Maximum 12 points	**8**
Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.			

KOP 3 Full Evaluation Worksheets for Jurisdictional Project Components (cont'd)

Table 9 SPATIAL DOMINANCE

Category				Single Highest Rating
Spatial composition of the landscape	"[T]he arrangement of objects and voids in the landscape can be categorized by their spatial composition .... Some compositions, especially those which are distinctly focal, enclosed, or feature-oriented, are more vulnerable to modifications than others, depending upon how strongly the spatial configuration draws the eye to certain locations."[1]			**Dominant** 2-3 categories rated prominent **= 6 points** Codominant 1 category rated prominent, or 2 categories rated significant = 4 points Subordinate 1 category rated significant = 2 points Insignificant All categories rated inconspicuous = 0 points
	Rating	**Description**		
	prominent	Feature[2], Focal[2], or Enclosed[2] landscape.		
	significant	Panoramic,[2] or weak focal, feature or enclosed landscape.		
	inconspicuous	Canopied,[2] indistinct or obscured landscape.		
Spatial position of the project	"Spatial position of the project in relation to the three-dimensional arrangement of objects and voids in the landscape. Important spatial aspects of the project include relationship to the skyline, location in topographic spaces such as focal valleys or broad plains, and position with regard to streetscapes and architectural arrangements."[3]			
	Rating	**Description**		
	prominent	High Level,[4] High Slope,[4] Interfluve[4]		
	significant	Low Level,[4] Lowslope,[4] Midslope[4]		
	inconspicuous	Basin Floor,[4] Footslope,[4] Toeslope[4]		
Backdrop to the project	"[T]he backdrop against which an object is seen affects its visual contrast. Modifications seen against the sky or water are usually more prominent than against a land backdrop."[5]			
	Rating	**Description**		
	prominent	All or a significant part of the project will be seen against sky or water.		
	inconspicuous	All or a significant part of the project will be seen against land.		
		Single highest points	Maximum 6 points	**6**

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.

[1] U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.

[2] **Canopied** — landscape where features overhead (above eye level) create a canopy or ceiling. **Enclosed** — a space, large or small surrounded by continuous grouping of objects creating walls and floor. It may have a large vertical dimension, but typically a restricted horizontal one. **Feature** — landscape dominated by a feature or a group of objects in the distance to which the eye is drawn. **Focal** — converging lines in the landscape or progressions of aligned objects lead the eye to a focal point in the landscape. **Panoramic** — a broad horizontal composition. Little or no sense of boundary restriction; no apparent limit to the view. Foreground or middle ground objects do not substantially block viewing of background objects. (U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.)

[3] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[4] **Basin Floor** — nearly level to gently sloping, bottom surface of an intermontane basin. **Footslope** — the gently inclined hillslope at the foot of a hill. **High Level** — level top of plateau. **High Slope** — geomorphic component that forms the uppermost inclined surface at the top of a slope (e.g., shoulder slope, upper slope). **Interfluve** — linear top of ridge, hill, or mountain. **Low Level** — valley floor, or shoreline representing the former position of an alluvial plain, lake, or shore. **Lowslope** — inner gently inclined surface at the base of a slope. Surface profile is generally concave and a transition between midslope or backslope, and toeslope. **Midslope** — intermediate slope position between high and low (e.g., middle slope). (Adapted from T. Liang [1951]; J.B. Dalrymple, R.J. Blong, and A. Conacher. [1968]) **Toeslope** — the gently inclined surface at the base of a hillslope. Toeslope in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors. (USDA Soil Survey Manual Handbook No. 18, issued March 2017 as amended February 2018).

[5] U.S. Department of Interior Bureau of Land Management Manual H-8431-1.

KOP 3 Full Evaluation Worksheets for Jurisdictional Project Components (cont'd)

Table 11 CAPABILITY							
Category	For each category check (√) the rating that best describes the existing landscape.						
		Rating					
		High		Moderate		Low	
Topography		High amount of topographic diversity and variety.		Moderate amount of topographic diversity and variety.	√	Low amount of topographic diversity and variety.	
Land Use Pattern	If project in rural landscape	Small natural or vegetated areas. Man-made structures dominant in the view.		Natural areas of local significance. Man-made structures widespread but not dominant in the view.	√	Remote natural areas of regional significance. Man-made structures and features limited and scattered.	
	If project in urban landscape	Developed areas including commercial development. Large-scale infrastructure or structures may be common and more dominant.		Suburban or mostly developed areas with components of local importance. Large-scale infrastructure or structures may be visible but not dominant.		Clustered development surrounded by rural scattered development. Large-scale infrastructure or structures limited and scattered.	
Visual Variety		Landscape exhibits a high degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit high degree of variety in landforms and vegetation.		Landscape exhibits a moderate degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit moderate variety in landforms and vegetation.		Landscape exhibits a low degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit minimal variety in landforms and vegetation.	√
Major Focal Points or Features		Focal points or features in the viewshed that are either natural or man-made, commonly found, minimal local importance/value, or contribute little to the character of the landscape or are indistinct.		Focal points or features in the viewshed that are either natural or man-made, somewhat commonly found, local importance/value, or make a minor contribution to the character of the landscape.	√	Focal points or features in the viewshed that are either natural or man-made and are unusual or rare, regional importance/value, or make a major contribution to the character of the landscape or are somewhat distinctive.	
Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 17, and L. Blocker, T. Slider, J. Ruchman, J. Mosier, L. Kok, J. Silbemagle, J. Beard, D. Wagner, G. Brogan, D. Jones, N. Laughlinn, L. Anderson, "Landscape Aesthetic (AH 701-i) - Visual Absorption Capability (Appendix C)," United States Department of Agriculture Forest Service, 1995, pp. C-1-C-8.							

KOP 3 Full Evaluation Worksheets for Jurisdictional Project Components (cont'd)

Table 12 ABSORPTION	
For each question circle the applicable rating for the absorption of the landscape; High = H, Moderate = M, Low = L.	
Exposure	**Rating**
What is the level of exposure of the project in the landscape? The higher the level of exposure, the lower the absorption.	**H M (L)**
What is the intensity of the observation of the project? The more the project is observed from certain intensive land uses the lower its absorption (e.g., view from a densely populated residential area versus a heavy manufacturing and processing area).	**H M (L)**
What is the view distance to the project? The farther the viewing distance to the project from the vantage point the lower its exposure the higher its absorption. Is the project more than three miles away?	**H M (L)**
What is the project's distance from an urban skyline or a natural skyline (e.g., high-rise buildings or a mountain range against a backdrop of sky)? The closer the project is to an urban or natural skyline the lower its absorption.	**H M (L)**
What is the project's topographic position in the landscape? As the project's position increases its absorption decreases (e.g., toeslope to summit).	**H M (L)**
Focal Point	
Is the project near a focal point in the landscape? A focal point is a converging of lines in the landscape or progressions of aligned objects that lead the eye to a point. A focal point gives the viewer something interesting to look at in the view. The closer the project is to a focal point the greater viewer scrutiny the lower the absorption.	**H (M) L**
Does the edge(s) in the landscape have a diverse background but have the propensity to become a focal point? An edge is a transitional linear place where one space or landscape becomes part of another. An edge has a high absorption due to a diverse background, a low absorption due to the propensity to become a focal point (e.g., city meets country, a woodland edge, an alpine tree line, coastline).	**H (M) L**
Trees & Vegetation	
Are trees and vegetation in the landscape missing, deficient, or uniform? The greater the density of trees and vegetation, the greater the coverage, the greater the capacity of an area to absorb physical change.	**H M (L)**
What is the type(s) of tree(s) and vegetation in the landscape? Tree and vegetation types vary the absorption of the physical change. A uniformly tall, dense stand of trees has screening ability. Vegetation types such as evergreen shrubs and similar have greater absorption than dwarf shrubs, ornamental grasses, and grass-like plants. Trees and vegetation can provide high absorption in the foreground but lower absorption in the background.	**H M (L)**
Disturbed Surface Area	
Period of time to restore the project's disturbed surface area to its pre-construction activity condition? The longer the time to restore the disturbed area to its undisturbed original condition after the construction phase the lower the absorption; 1 year = high, 2 to 3 years = moderate, 3 years or more = low.	**H M (L)**
Adapted from S. Amir, E. Gidalizon, "Expert-based method for the evaluation of visual absorption capacity of the landscape*," Journal of Environmental Management, 1990, Vol. 30, pp. 251-263, and W.C. Yeomans, "A Proposed Biophysical Approach to Visual Absorption Capability (VAC),[1]" Pacific Southwest Forest and Range Experimental Station, Berkeley, California, 1979 submitted to the National Conference on Applied Techniques for Analysis and Management of Visual Resource, Incline Village, Nevada, April 23-25, 1979, pp. 172-181.	

KOP 3 Full Evaluation Worksheets for Jurisdictional Project Components (cont'd)

Table 13 MAGNITUDE OF CHANGE				
Dominant	**Prominent**	**Conspicuous**	**Apparent**	**Unobtrusive**
Project commands or controls the view in the landscape. Project causes a very large alteration to the landscape or features within the landscape such that there is a fundamental change from the existing physical condition.	Project stands out or is striking in the view in the landscape. Project causes a large alteration to the landscape or features within the landscape such that there is an unmistakable change from the existing physical condition.	Project is clearly visible and noticeable within the view in the landscape. Project causes a moderate alteration to the landscape or features within the landscape such that there is a distinct change from the existing physical condition.	Project visible or evident within the view in the landscape. Project causes a small alteration to the landscape or features within the landscape such that there is a perceptible change from the existing physical condition.	Project indistinct or not obvious within the view in the landscape. Project causes a very small alteration to the landscape, or features within the landscape such that there is a de minimis change from the existing physical condition.
Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 20.				

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS							
Landscape		**Project Prominence**		**Visual Absorption Capability**	**Magnitude Of Change**		**CEQA Guidelines Level of Effect On The Environment** (See Table 15)
Table	**Rating**	**Rating**		**Rating**			
Landscape Character	See Table 3	Severe		High Moderate **Low**	**Dominant**	√	**Significant Effect** Less Than Significant Effect
Unity	**Moderate**	**Strong**	√		Prominent		
Public View	**Moderate**	Moderate			Conspicuous		
Visibility	**High**	Weak			Apparent		
		Negligible			Unobtrusive		

KOP 3 Full Evaluation Worksheets for Jurisdictional Project Components (cont'd)

Table 15 CEQA GUIDELINES LEVEL OF EFFECT ON THE ENVIRONMENT

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 and aesthetic significance." (14 CCR § 15382) (Pub. Res. Code § 21060.5, 14 CCR § 15360) The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, noncompliance with which means the effect will normally be determined to be significant by the [lead] agency...." (14 CCR § 15064.7[a])

Less Than Significant Effect with Mitigation Incorporated. The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "... but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed [CEQA environmental document (e.g., Negative Declaration) is] released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment." (Pub. Res. Code § 21064.5, 14 CCR § 15369.5) (Pub. Res. Code § 21002)

Less Than Significant Effect. The physical change by the proposed project to the existing physical condition does not reach the threshold of significance "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, ... compliance with which means the effect normally will be determined to be less than significant." (14 CCR § 15064.7[a])

Key Observation Point Evaluation Worksheets

KOP 3 Interstate 15 Looking Northwest – Summary Sheet for Worksheet Tables for Non-Jurisdictional Project Components

LANDSCAPE			
Table 3 LANDSCAPE CHARACTER	Aesthetic Aspect		See attached Table 3.
	Perceptual Aspect		
	Basic Design Element		
	Landscape	**Rating**	Write the rating selected in the attached Table 4.
Table 4 UNITY	Rarity	**Moderate**	
	Diversity	**Moderate**	
	Detractors	**Low to Moderate**	
	Distinctiveness	**Low to Moderate**	
	Integrity	**Moderate**	
	Rating	**Checkbox**	Check (**√**) the rating selected in the attached Tables 5 and 6.
Table 5 PUBLIC VIEW	High		
	Moderate	**√**	
	Low		
	None		
Table 6 VISIBILITY	Dominant		
	High		
	Moderate to High	**√**	
	Moderate		
	Low to Moderate		
	Low		

PROJECT PROMINENCE			
Table 7 Basic Design Element Contrast			
Basic Design Element	**Rating**	**Weight**	**Points**
Color	Strong = 3	x 3	**6**
	Moderate = 2		
	Weak = 1		
	None = 0		
Form	Strong = 3	x 2	**4**
	Moderate = 2		
	Weak = 1		
	None = 0		
Line	Strong = 3	x 1	**2**
	Moderate = 2		
	Weak = 1		
	None = 0		
Texture	Strong = 3	x 1	**1**
	Moderate = 2		
	Weak = 1		
	None = 0		
		Maximum 21 points	**+13**

KOP 3 Interstate 15 Looking Northwest – Summary Sheet for Worksheet Tables for Non-Jurisdictional Project Components (cont'd)

Table 8 SCALE DOMINANCE				
Rating				**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.			12
Codominant	**The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.**			**8**
Subordinate	The project is of significant size but occupies a minor part of the landscape.			4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.			0
		Single highest points	Maximum 12 points	**8**

Table 9 SPATIAL DOMINANCE				
Category	**Rating**	**Single Highest Rating**		**Points**
Spatial composition of the landscape.	**prominent**	Dominant 2-3 categories rated prominent.		6
	significant			
	inconspicuous	**Codominant** 1 category rated prominent, or 2 categories rated significant.		**4**
Spatial position of the project.	prominent			
	significant			
	inconspicuous	Subordinate 1 category rated significant.		2
Backdrop to the project.	prominent			
	inconspicuous	Insignificant All categories rated inconspicuous.		0
		Single highest points	Maximum 6 points	**4**

Table 10 PROJECT PROMINENCE RATING*	
Total Points	**Rating**
32-39	Severe
24-31	**Strong**
16-23	Moderate
8-15	Weak
0-7	Negligible
***(Add Points from Tables 7, 8, and 9)**	**Rating = Strong**

Tables 11 and 12 VISUAL ABSORPTION CAPABILITY			
Table 11 CAPABILITY **Table 12 ABSORPTION**	**Rating**	**Checkbox**	The existing landscape's ability to absorb the physical change by the proposed project without an alteration to its visual character.
	High		
	Moderate	**√**	
	Low	**√**	

Table 13 MAGNITUDE OF CHANGE		
		Checkbox
Dominant	Project commands or controls the view in the landscape.	
Prominent	**Project stands out or is striking in the view in the landscape.**	**√**
Conspicuous	Project is clearly visible and noticeable within the view in the landscape.	
Apparent	Project visible or evident within the view in the landscape.	
Unobtrusive	Project indistinct or not obvious within the view in the landscape.	

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS		
CEQA Guidelines Level of Effect on the Environment	**Significant Effect**	**√**
	Less Than Significant Effect	

KOP 3 Full Evaluation Worksheets (Tables 3 through 15) for Non-Jurisdictional Project Components

Table 3 LANDSCAPE CHARACTER

Aesthetic	**Description**								Check (√) the description that best describes the aspect of the landscape.
Balance	harmonious		balanced	√	discordant		chaotic		
Complexity	uniform		simple	√	diverse		complex		
Dynamic	sweeping		spreading	√	disperse		channeled		
Enclosure	expansive		open	√	enclosed		constrained		
Pattern (two-dims.)	formal		organized		regular	√	random		
Perceptual									
Pleasure	beautiful		attractive		pleasant	√	unpleasant		nasty
Security	intimate		comfortable		safe	√	unsettling		threatening
Stimulus	inspiring		challenging		interesting	√	bland		monotonous
Tranquility	inaccessible		remote		vacant		peaceful	√	busy
Basic Design Element									
Color	monochrome		muted	√	colorful		garish		The basic design elements are the source of visual contrast in the landscape that an individual sees and responds to when viewing a space.
Form	angular	√	curvilinear		horizontal	√	rounded	√	
Line	straight	√	curved	√	vertical	√	horizontal	√	
Texture	smooth		textured	√	rough	√	very rough		
Scale	intimate		small		large		vast		

Adapted from Carys Swanwick, "Landscape Character Assessment Guidance for England and Scotland," prepared for The Countryside Agency and Scottish Natural Heritage, 2002, pp. 30-36.

Table 4 UNITY

Landscape	**Rating**					**Guidance**
	High	**Moderate to High**	**Moderate**	**Low to Moderate**	**Low**	
Rarity	rare		√		common	Are there many examples of this type of landscape in the region?
Diversity	orderly		√		muddled	Is there a recognizable order of the landscape features in view or are there too many patterns overlapping?
Detractors	many			√	few	Are there landscape features out of place?
Distinctiveness	distinct			√	indistinct	Is it easy to remember the landscape? Patterns dramatic or take some finding?
Integrity	whole		√		remnant	What patterns in the landscape are evident? Are sections missing and to what extent?

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 36.

KOP 3 Full Evaluation Worksheets for Non-Jurisdictional Project Components (cont'd)

Table 5 PUBLIC VIEW	
Rating	
High	
	Public view includes areas where the aesthetic value is protected by federal, state, county or city, law, ordinance, regulation, or standard. Public view includes federal, state, county, city designated areas of aesthetic, cultural, and recreational claim, such as: a park, outdoor recreation area, etc.; coastal or forest reserve, open space preserve, urban green space, etc.; scenic overlook, scenic river, scenic trail, etc.; historic building, district, or site; a site having a cultural resource. Public view includes a federal or state designated scenic byway, highway, or road; designated scenic highway or road of regional importance; a segment of travel route, such as a road, rail line, pedestrian and equestrian trail, bicycle path near a designated area of aesthetic claim and leading directly to it. View approaching an area of aesthetic, cultural, and recreational claim that may be closely related to the appreciation of the aesthetic, cultural, and recreational significance at that designation. Public view includes an urban residential use area and segment of road that serves as the primary access route to it.
Moderate	
√	Public view includes undesignated but popularly used or appreciated area of aesthetic, cultural, and recreational claim of significance in the region. Public view includes a highway or road locally designated as a scenic route and of importance only to the local population, or informally designated as such in road atlases, road maps, and tour book guides. Public view includes segments of travel routes, such as roads, pedestrian and equestrian trails, bicycle paths that are near and are the primary access to protected or popularly used undesignated areas important for their aesthetic, cultural, or recreational claim. Public view includes a segment of travel route near a designated area of aesthetic claim serving as a secondary access route to the area. Public view includes a rural residential use area and segment of road that serves as the primary access route to it within one mile. Public view includes a maintained religious facility or cemetery.
Low	
	Public view includes an agricultural, commercial, industrial, manufacturing, research, and development use area. Public view includes a small aggregation of dwellings.
None	
	No public view.

Adapted from Aspen Environmental Group, "Final Environmental Impact Report Tranquillon Ridge Oil and Gas Development Project" prepared for County of Santa Barbara Planning and Development. Santa Barbara, CA, April 2008, Vol. 1, pp. 5.13-5-6, and "Final Environmental Impact Report Southern California International Gateway Project," Appendix B Aesthetics Visual Resource Methodology, Los Angeles Harbor Department, Los Angeles, CA, March 2013.

KOP 3 Full Evaluation Worksheets for Jurisdictional Project Components (cont'd)

Table 6 VISIBILITY	
Rating	
Dominant Dominates view because project would fill most of visual field for views in its general direction. Stark contrast in form, line, color, texture, luminance, or motion may contribute to view dominance.	An object with strong visual contrast that is of such enormous size that it occupies most of the visual field, and views of it cannot be avoided except by turning the head greater than 45 degrees from a direct view of the object. The object is the major focus of visual attention, and its large apparent size is a major factor in its view dominance. In addition to size, contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of the project detracts noticeably from views of other landscape components.
High Strongly attracts visual attention of views in general direction of project. Attention may be drawn by stark contrast in form, line, color, or texture, luminance, or motion.	An object that is not of large size, but contrasts with the surrounding landscape components so strongly that it is a major focus of visual attention, drawing viewer attention immediately, and tending to hold viewer attention. In addition to stark contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of project interferes noticeably with views of nearby landscape components.
Moderate to High Plainly visible, could not be missed by casual observer, but does not strongly attract visual attention, or dominate view because of apparent size, for views in general direction of project.	An object that is obvious and with enough size or contrast to compete with other landscape components, but with insufficient visual contrast to strongly attract visual attention and insufficient size to occupy most of the observer's visual field.
Moderate Visible after brief glance in general direction of project and unlikely to be missed by casual observer.	An object that can be easily detected after a brief look and would be visible to most casual observers, but without enough size or contrast to compete with major landscape components.
Low to Moderate Visible when scanning in general direction of project; otherwise, likely to be missed by casual observer.	An object that is very small and/or faint, but when the observer is scanning the horizon or looking more closely at an area can be detected without extended viewing. A casual observer could sometimes notice it; however, most people would not notice it without some active looking.
Low Visible only after extended, close viewing; otherwise, invisible.	An object that is near the extreme limit of visibility. A person who was not aware of it in advance and looking for it could not see it. Even under those circumstances, the object can only be seen after looking at it closely for an extended period.
Adapted from R.G. Sullivan, L.B. Kirchler, T. Lahti, S. Roche, K. Beckman, B. Cantwell, P. Richmond, "Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes," University of Chicago Argonne, LLC submitted to the National Association of Environmental Professionals 37th Annual Conference Proceedings, Portland, Oregon, May 21-24, 2012, p. 17.	

KOP 3 Full Evaluation Worksheets for Non-Jurisdictional Project Components (cont'd)

Table 7 BASIC DESIGN ELEMENT CONTRAST

Element	Rating[1]	Weight	Points	
Color	Strong = 3 **Moderate = 2** Weak = 1 None = 0	x 3	**6**	Color is "the light-reflecting qualities of a project's surface (for example, dark or light, blue or gray) in relation to background colors."[2] "Colors that harmonize well seem to belong together and produce pleasing visual effects. Colors that do not harmonize are disturbing to the viewer."[3] Contrast in color depends on the exterior surface degree of lightness or darkness, gradation or variety of a color, the degree of saturation or brilliance of a color in the project to those that continue to exist in the landscape.
Form	Strong = 3 **Moderate = 2** Weak = 1 None = 0	x 2	**4**	Form is "the configuration and outline of the project in terms of masses, patterns, and linear elements. For example, a structure may have a bulky, vertical, geometric silhouette which contrasts with an irregular horizontal landscape of rolling hills."[4] Forms exist in three dimensions (height, length, width). For example, the shape is a square its form is a cube. Forms that are bold, regular, solid, or vertical tend to prevail in the landscape. Contrast in form depends on how alike the form(s) of the project is to those that continue to exist in the landscape.
Line	Strong = 3 **Moderate = 2** Weak = 1 None = 0	x 1	**2**	"Line is the path, real or imagined that the eye follows when perceiving abrupt differences when objects are aligned in a one-dimensional sequence."[5] "Line in the landscape is created by the edge between two materials, the outline or silhouette of a form, or a long linear feature."[6] Properties of lines: straight, diagonal, curved, vertical, horizontal. Contrast in line depends on edge types and interruption, or introduction of edges, bands, and silhouette lines in the project to those that continue to exist in the landscape.
Texture	Strong = 3 Moderate = 2 **Weak = 1** None = 0	x 1	**1**	Texture is "the aggregation of small forms or color mixtures into a continuous surface pattern; the aggregated parts are enough that they do not appear as discrete objects in the composition of the scene."[7] "Details of the surface pattern, as in smooth polished metal surfaces versus the rough, uneven textures of the foliage of trees and bushes"[8] Contrast in texture depends on the relative dimensions of the surface variations from large to small, spacing of surface variations, and the degree of uniform recurrence and symmetrical arrangement of the surface variation in the project to those that continue to exist in the landscape.
	Overall Rating[9]		**+13**	
	Maximum 21 points			

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, CA, 1979.

[1] **Strong** — the project contrast demands attention will not be overlooked and is dominant in the landscape. **Moderate** — the project contrast begins to attract attention and begins to dominate the characteristic landscape. **Weak** — the project contrast can be seen but does not attract attention. **None** — the project contrast is not visible or perceived. (U.S. Department of Interior Bureau of Land Management Manual 8431-Visual Resources Contrast Rating, January 17, 1986.)

[2] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[3] U.S. Department of Transportation Federal Highway Administration, "A Guide to Visual Quality in Noise Barrier Design," Chapter 3. Visual Design Principles, n.d.

[4] Sheppard, p. 46.

[5] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[6] Gail Hansen, "Basic Principles of Landscape Design." Florida Cooperative Extension Service Institute of Food and Agricultural Science, University of Florida, Gainesville, Florida, July 2010.

[7] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[8] Sheppard, p. 47.

[9] Overall Rating is for descriptive purpose: Strong — 1-3 ratings Strong or 3 ratings Moderate; Moderate — 1-2 ratings Moderate with no higher ratings; Weak — 1-3 ratings Weak with no higher ratings; None — all ratings None.

KOP 3 Full Evaluation Worksheets for Non-Jurisdictional Project Components (cont'd)

Table 8 SCALE DOMINANCE			
Rating			**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.		12
Codominant	**The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.**		**8**
Subordinate	The project is of significant size but occupies a minor part of the landscape.		4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.		0
	Single highest points	Maximum 12 points	**8**
Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.			

KOP 3 Full Evaluation Worksheets for Non-Jurisdictional Project Components (cont'd)

Table 9 SPATIAL DOMINANCE

Category			Single Highest Rating
Spatial composition of the landscape	"[T]he arrangement of objects and voids in the landscape can be categorized by their spatial composition .... Some compositions, especially those which are distinctly focal, enclosed, or feature-oriented, are more vulnerable to modifications than others, depending upon how strongly the spatial configuration draws the eye to certain locations."[1]		Dominant 2-3 categories rated prominent = 6 points **Codominant** 1 category rated prominent, or 2 categories rated significant **= 4 points** Subordinate 1 category rated significant = 2 points Insignificant All categories rated inconspicuous = 0 points
	Rating	**Description**	
	prominent	Feature[2], Focal[2], or Enclosed[2] landscape.	
	significant	Panoramic,[2] or weak focal, feature or enclosed landscape.	
	inconspicuous	Canopied,[2] indistinct or obscured landscape.	
Spatial position of the project	"Spatial position of the project in relation to the three-dimensional arrangement of objects and voids in the landscape. Important spatial aspects of the project include relationship to the skyline, location in topographic spaces such as focal valleys or broad plains, and position with regard to streetscapes and architectural arrangements."[3]		
	Rating	**Description**	
	prominent	High Level,[4] High Slope,[4] Interfluve[4]	
	significant	Low Level,[4] Lowslope,[4] Midslope[4]	
	inconspicuous	Basin Floor,[4] Footslope,[4] Toeslope[4]	
Backdrop to the project	"[T]he backdrop against which an object is seen affects its visual contrast. Modifications seen against the sky or water are usually more prominent than against a land backdrop."[5]		
	Rating	**Description**	
	prominent	All or a significant part of the project will be seen against sky or water.	
	inconspicuous	All or a significant part of the project will be seen against land.	
		Single highest points / Maximum 6 points	**4**

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.

[1] U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.

[2] **Canopied** — landscape where features overhead (above eye level) create a canopy or ceiling. **Enclosed** — a space, large or small surrounded by continuous grouping of objects creating walls and floor. It may have a large vertical dimension, but typically a restricted horizontal one. **Feature** — landscape dominated by a feature or a group of objects in the distance to which the eye is drawn. **Focal** — converging lines in the landscape or progressions of aligned objects lead the eye to a focal point in the landscape. **Panoramic** — a broad horizontal composition. Little or no sense of boundary restriction; no apparent limit to the view. Foreground or middle ground objects do not substantially block viewing of background objects. (U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.)

[3] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[4] **Basin Floor** — nearly level to gently sloping, bottom surface of an intermontane basin. **Footslope** — the gently inclined hillslope at the foot of a hill. **High Level** — level top of plateau. **High Slope** — geomorphic component that forms the uppermost inclined surface at the top of a slope (e.g., shoulder slope, upper slope). **Interfluve** — linear top of ridge, hill, or mountain. **Low Level** — valley floor, or shoreline representing the former position of an alluvial plain, lake, or shore. **Lowslope** — inner gently inclined surface at the base of a slope. Surface profile is generally concave and a transition between midslope or backslope, and toeslope. **Midslope** — intermediate slope position between high and low (e.g., middle slope). (Adapted from T. Liang [1951]; J.B. Dalrymple, R.J. Blong, and A. Conacher. [1968]) **Toeslope** — the gently inclined surface at the base of a hillslope. Toeslope in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors. (USDA Soil Survey Manual Handbook No. 18, issued March 2017 as amended February 2018).

[5] U.S. Department of Interior Bureau of Land Management Manual H-8431-1.

KOP 3 Full Evaluation Worksheets for Non-Jurisdictional Project Components (cont'd)

Table 11 CAPABILITY

Category		For each category check (√) the rating that best describes the existing landscape.					
		Rating					
		High		Moderate		Low	
Topography		High amount of topographic diversity and variety.		Moderate amount of topographic diversity and variety.	√	Low amount of topographic diversity and variety.	
Land Use Pattern	If project in rural landscape	Small natural or vegetated areas. Man-made structures dominant in the view.		Natural areas of local significance. Man-made structures widespread but not dominant in the view.	√	Remote natural areas of regional significance. Man-made structures and features limited and scattered.	
	If project in urban landscape	Developed areas including commercial development. Large-scale infrastructure or structures may be common and more dominant.		Suburban or mostly developed areas with components of local importance. Large-scale infrastructure or structures may be visible but not dominant.		Clustered development surrounded by rural scattered development. Large-scale infrastructure or structures limited and scattered.	
Visual Variety		Landscape exhibits a high degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit high degree of variety in landforms and vegetation.		Landscape exhibits a moderate degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit moderate variety in landforms and vegetation.		Landscape exhibits a low degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit minimal variety in landforms and vegetation.	√
Major Focal Points or Features		Focal points or features in the viewshed that are either natural or man-made, commonly found, minimal local importance/value, or contribute little to the character of the landscape or are indistinct.		Focal points or features in the viewshed that are either natural or man-made, somewhat commonly found, local importance/value, or make a minor contribution to the character of the landscape.	√	Focal points or features in the viewshed that are either natural or man-made and are unusual or rare, regional importance/value, or make a major contribution to the character of the landscape or are somewhat distinctive.	

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 17, and L. Blocker, T. Slider, J. Ruchman, J. Mosier, L. Kok, J. Silbemagle, J. Beard, D. Wagner, G. Brogan, D. Jones, N. Laughlinn, L. Anderson, "Landscape Aesthetic (AH 701-i) - Visual Absorption Capability (Appendix C)," United States Department of Agriculture Forest Service, 1995, pp. C-1-C-8.

KOP 3 Full Evaluation Worksheets for Non-Jurisdictional Project Components (cont'd)

Table 12 ABSORPTION	
For each question circle the applicable rating for the absorption of the landscape; High = H, Moderate = M, Low = L.	
Exposure	**Rating**
What is the level of exposure of the project in the landscape? The higher the level of exposure, the lower the absorption.	H (M) L
What is the intensity of the observation of the project? The more the project is observed from certain intensive land uses the lower its absorption (e.g., view from a densely populated residential area versus a heavy manufacturing and processing area).	H (M) L
What is the view distance to the project? The farther the viewing distance to the project from the vantage point the lower its exposure the higher its absorption. Is the project more than three miles away?	H (M) L
What is the project's distance from an urban skyline or a natural skyline (e.g., high-rise buildings or a mountain range against a backdrop of sky)? The closer the project is to an urban or natural skyline the lower its absorption.	H M (L)
What is the project's topographic position in the landscape? As the project's position increases its absorption decreases (e.g., toeslope to summit).	H (M) L
Focal Point	
Is the project near a focal point in the landscape? A focal point is a converging of lines in the landscape or progressions of aligned objects that lead the eye to a point. A focal point gives the viewer something interesting to look at in the view. The closer the project is to a focal point the greater viewer scrutiny the lower the absorption.	H M (L)
Does the edge(s) in the landscape have a diverse background but have the propensity to become a focal point? An edge is a transitional linear place where one space or landscape becomes part of another. An edge has a high absorption due to a diverse background, a low absorption due to the propensity to become a focal point (e.g., city meets country, a woodland edge, an alpine tree line, coastline).	H (M) L
Trees & Vegetation	
Are trees and vegetation in the landscape missing, deficient, or uniform? The greater the density of trees and vegetation, the greater the coverage, the greater the capacity of an area to absorb physical change.	H M (L)
What is the type(s) of tree(s) and vegetation in the landscape? Tree and vegetation types vary the absorption of the physical change. A uniformly tall, dense stand of trees has screening ability. Vegetation types such as evergreen shrubs and similar have greater absorption than dwarf shrubs, ornamental grasses, and grass-like plants. Trees and vegetation can provide high absorption in the foreground but lower absorption in the background.	H M (L)
Disturbed Surface Area	
Period of time to restore the project's disturbed surface area to its pre-construction activity condition? The longer the time to restore the disturbed area to its undisturbed original condition after the construction phase the lower the absorption; 1 year = high, 2 to 3 years = moderate, 3 years or more = low.	H M (L)
Adapted from S. Amir, E. Gidalizon, "Expert-based method for the evaluation of visual absorption capacity of the landscape*," Journal of Environmental Management, 1990, Vol. 30, pp. 251-263, and W.C. Yeomans, "A Proposed Biophysical Approach to Visual Absorption Capability (VAC),[1]" Pacific Southwest Forest and Range Experimental Station, Berkeley, California, 1979 submitted to the National Conference on Applied Techniques for Analysis and Management of Visual Resource, Incline Village, Nevada, April 23-25, 1979, pp. 172-181.	

KOP 3 Full Evaluation Worksheets For Non-Jurisdictional Project Components (cont'd)

Table 13 MAGNITUDE OF CHANGE

Dominant	Prominent	Conspicuous	Apparent	Unobtrusive
Project commands or controls the view in the landscape.	**Project stands out or is striking in the view in the landscape.**	Project is clearly visible and noticeable within the view in the landscape.	Project visible or evident within the view in the landscape.	Project indistinct or not obvious within the view in the landscape.
Project causes a very large alteration to the landscape or features within the landscape such that there is a fundamental change from the existing physical condition.	Project causes a large alteration to the landscape or features within the landscape such that there is an unmistakable change from the existing physical condition.	Project causes a moderate alteration to the landscape or features within the landscape such that there is a distinct change from the existing physical condition.	Project causes a small alteration to the landscape or features within the landscape such that there is a perceptible change from the existing physical condition.	Project causes a very small alteration to the landscape, or features within the landscape such that there is a de minimis change from the existing physical condition.

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 20.

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS

Landscape		Project Prominence		Visual Absorption Capability	Magnitude Of Change		CEQA Guidelines Level of Effect On The Environment (See Table 15)
Table	**Rating**	**Rating**		**Rating**			
Landscape Character	See Table 3	Severe		High	Dominant		**Significant Effect**
Unity	**Moderate**	**Strong**	√		**Prominent**	√	
Public View	**Moderate**	Moderate		**Moderate**	Conspicuous		
Visibility	**Moderate to High**	Weak			Apparent		
		Negligible		**Low**	Unobtrusive		Less Than Significant Effect

KOP 3 Full Evaluation Worksheets for Non-Jurisdictional Project Components (cont'd)

Table 15 CEQA GUIDELINES LEVEL OF EFFECT ON THE ENVIRONMENT

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 and aesthetic significance." (14 CCR § 15382) (Pub. Res. Code § 21060.5, 14 CCR § 15360) The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, noncompliance with which means the effect will normally be determined to be significant by the [lead] agency...." (14 CCR § 15064.7[a])

Less Than Significant Effect with Mitigation Incorporated. The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "... but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed [CEQA environmental document (e.g., Negative Declaration) is] released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment." (Pub. Res. Code § 21064.5, 14 CCR § 15369.5) (Pub. Res. Code § 21002)

Less Than Significant Effect. The physical change by the proposed project to the existing physical condition does not reach the threshold of significance "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, ... compliance with which means the effect normally will be determined to be less than significant." (14 CCR § 15064.7[a])

Key Observation Point Evaluation Worksheets

KOP 4 Interstate 15 Looking Northeast – Summary Sheet for Worksheet Tables

LANDSCAPE			
Table 3 LANDSCAPE CHARACTER	Aesthetic Aspect		See attached Table 3.
	Perceptual Aspect		
	Basic Design Element		
	Landscape	**Rating**	Write the rating selected in the attached Table 4.
Table 4 UNITY	Rarity	**Low to Moderate**	
	Diversity	**Moderate**	
	Detractors	**Low to Moderate**	
	Distinctiveness	**Low to Moderate**	
	Integrity	**Moderate to High**	
	Rating	**Checkbox**	Check (**√**) the rating selected in the attached Tables 5 and 6.
Table 5 PUBLIC VIEW	High		
	Moderate	**√**	
	Low		
	None		
Table 6 VISIBILITY	Dominant		
	High	**√**	
	Moderate to High		
	Moderate		
	Low to Moderate		
	Low		

PROJECT PROMINENCE			
Table 7 Basic Design Element Contrast			
Basic Design Element	**Rating**	**Weight**	**Points**
Color	**Strong = 3**	x 3	**9**
	Moderate = 2		
	Weak = 1		
	None = 0		
Form	**Strong = 3**	x 2	**6**
	Moderate = 2		
	Weak = 1		
	None = 0		
Line	**Strong = 3**	x 1	**3**
	Moderate = 2		
	Weak = 1		
	None = 0		
Texture	Strong = 3	x 1	**2**
	Moderate = 2		
	Weak = 1		
	None = 0		
		Maximum 21 points	**+20**

KOP 4 Interstate 15 Looking Northeast – Summary Sheet for Worksheet Tables (cont'd)

Table 8 SCALE DOMINANCE				
Rating				**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.			12
Codominant	**The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.**			**8**
Subordinate	The project is of significant size but occupies a minor part of the landscape.			4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.			0
		Single highest points	Maximum 12 points	**8**

Table 9 SPATIAL DOMINANCE				
Category	**Rating**	**Single Highest Rating**		**Points**
Spatial composition of the landscape.	**prominent**	Dominant 2-3 categories rated prominent.		6
	significant			
	inconspicuous	**Codominant** 1 category rated prominent, or 2 categories rated significant.		**4**
Spatial position of the project.	prominent			
	significant			
	inconspicuous	Subordinate 1 category rated significant.		2
Backdrop to the project.	prominent			
	inconspicuous	Insignificant All categories rated inconspicuous.		0
		Single highest points	Maximum 6 points	**4**

Table 10 PROJECT PROMINENCE RATING*	
Total Points	**Rating**
32-39	**Severe**
24-31	Strong
16-23	Moderate
8-15	Weak
0-7	Negligible
***(Add Points from Tables 7, 8, and 9)**	**Rating = Severe**

Tables 11 and 12 VISUAL ABSORPTION CAPABILITY			
	Rating	**Checkbox**	The existing landscape's ability to absorb the physical change by the proposed project without an alteration to its visual character.
Table 11 CAPABILITY **Table 12 ABSORPTION**	High		
	Moderate		
	Low	**√**	

Table 13 MAGNITUDE OF CHANGE		
		Checkbox
Dominant	**Project commands or controls the view in the landscape.**	**√**
Prominent	Project stands out or is striking in the view in the landscape.	
Conspicuous	Project is clearly visible and noticeable within the view in the landscape.	
Apparent	Project visible or evident within the view in the landscape.	
Unobtrusive	Project indistinct or not obvious within the view in the landscape.	

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS		
CEQA Guidelines Level of Effect on the Environment	**Significant Effect**	**√**
	Less Than Significant Effect	

KOP 4 Full Evaluation Worksheets (Tables 3 through 15)

Table 3 LANDSCAPE CHARACTER

Aesthetic	**Description**								Check (√) the description that best describes the aspect of the landscape.
Balance	harmonious		balanced	√	discordant		chaotic		
Complexity	uniform		simple		diverse	√	complex		
Dynamic	sweeping		spreading	√	disperse		channeled		
Enclosure	expansive		open	√	enclosed		constrained		
Pattern (two-dims.)	formal		organized		regular	√	random		
Perceptual									
Pleasure	beautiful		attractive		pleasant	√	unpleasant		nasty
Security	intimate		comfortable	√	safe		unsettling		threatening
Stimulus	inspiring		challenging		interesting	√	bland		monotonous
Tranquility	inaccessible		remote	√	vacant		peaceful	√	busy
Basic Design Element									
Color	monochrome		muted	√	colorful		garish		The basic design elements are the source of visual contrast in the landscape that an individual sees and responds to when viewing a space.
Form	angular	√	curvilinear		horizontal	√	rounded		
Line	straight	√	curved	√	vertical	√	horizontal	√	
Texture	smooth	√	textured	√	rough		very rough		
Scale	intimate		small		large	√	vast		

Adapted from Carys Swanwick, "Landscape Character Assessment Guidance for England and Scotland," prepared for The Countryside Agency and Scottish Natural Heritage, 2002, pp. 30-36.

Table 4 UNITY

Landscape	**Rating**					**Guidance**
	High	**Moderate to High**	**Moderate**	**Low to Moderate**	**Low**	
Rarity	rare			√	common	Are there many examples of this type of landscape in the region?
Diversity	orderly		√		muddled	Is there a recognizable order of the landscape features in view or are there too many patterns overlapping?
Detractors	many			√	few	Are there landscape features out of place?
Distinctiveness	distinct			√	indistinct	Is it easy to remember the landscape? Patterns dramatic or take some finding?
Integrity	whole	√			remnant	What patterns in the landscape are evident? Are sections missing and to what extent?

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 36.

KOP 4 Full Evaluation Worksheets (cont'd)

Table 5 PUBLIC VIEW	
Rating	
High	
	Public view includes areas where the aesthetic value is protected by federal, state, county or city, law, ordinance, regulation, or standard. Public view includes federal, state, county, city designated areas of aesthetic, cultural, and recreational claim, such as: a park, outdoor recreation area, etc.; coastal or forest reserve, open space preserve, urban green space, etc.; scenic overlook, scenic river, scenic trail, etc.; historic building, district, or site; a site having a cultural resource. Public view includes a federal or state designated scenic byway, highway, or road; designated scenic highway or road of regional importance; a segment of travel route, such as a road, rail line, pedestrian and equestrian trail, bicycle path near a designated area of aesthetic claim and leading directly to it. View approaching an area of aesthetic, cultural, and recreational claim that may be closely related to the appreciation of the aesthetic, cultural, and recreational significance at that designation. Public view includes an urban residential use area and segment of road that serves as the primary access route to it.
Moderate	
√	Public view includes undesignated but popularly used or appreciated area of aesthetic, cultural, and recreational claim of significance in the region. Public view includes a highway or road locally designated as a scenic route and of importance only to the local population, or informally designated as such in road atlases, road maps, and tour book guides. Public view includes segments of travel routes, such as roads, pedestrian and equestrian trails, bicycle paths that are near and are the primary access to protected or popularly used undesignated areas important for their aesthetic, cultural, or recreational claim. Public view includes a segment of travel route near a designated area of aesthetic claim serving as a secondary access route to the area. Public view includes a rural residential use area and segment of road that serves as the primary access route to it within one mile. Public view includes a maintained religious facility or cemetery.
Low	
	Public view includes an agricultural, commercial, industrial, manufacturing, research, and development use area. Public view includes a small aggregation of dwellings.
None	
	No public view.

Adapted from Aspen Environmental Group, "Final Environmental Impact Report Tranquillon Ridge Oil and Gas Development Project" prepared for County of Santa Barbara Planning and Development. Santa Barbara, CA, April 2008, Vol. 1, pp. 5.13-5-6, and "Final Environmental Impact Report Southern California International Gateway Project," Appendix B Aesthetics Visual Resource Methodology, Los Angeles Harbor Department, Los Angeles, CA, March 2013.

KOP 4 Full Evaluation Worksheets (cont'd)

Table 6 VISIBILITY	
Rating	
Dominant Dominates view because project would fill most of visual field for views in its general direction. Stark contrast in form, line, color, texture, luminance, or motion may contribute to view dominance.	An object with strong visual contrast that is of such enormous size that it occupies most of the visual field, and views of it cannot be avoided except by turning the head greater than 45 degrees from a direct view of the object. The object is the major focus of visual attention, and its large apparent size is a major factor in its view dominance. In addition to size, contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of the project detracts noticeably from views of other landscape components.
High Strongly attracts visual attention of views in general direction of project. Attention may be drawn by stark contrast in form, line, color, or texture, luminance, or motion.	An object that is not of large size, but contrasts with the surrounding landscape components so strongly that it is a major focus of visual attention, drawing viewer attention immediately, and tending to hold viewer attention. In addition to stark contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of project interferes noticeably with views of nearby landscape components.
Moderate to High Plainly visible, could not be missed by casual observer, but does not strongly attract visual attention, or dominate view because of apparent size, for views in general direction of project.	An object that is obvious and with enough size or contrast to compete with other landscape components, but with insufficient visual contrast to strongly attract visual attention and insufficient size to occupy most of the observer's visual field.
Moderate Visible after brief glance in general direction of project and unlikely to be missed by casual observer.	An object that can be easily detected after a brief look and would be visible to most casual observers, but without enough size or contrast to compete with major landscape components.
Low to Moderate Visible when scanning in general direction of project; otherwise, likely to be missed by casual observer.	An object that is very small and/or faint, but when the observer is scanning the horizon or looking more closely at an area can be detected without extended viewing. A casual observer could sometimes notice it; however, most people would not notice it without some active looking.
Low Visible only after extended, close viewing; otherwise, invisible.	An object that is near the extreme limit of visibility. A person who was not aware of it in advance and looking for it could not see it. Even under those circumstances, the object can only be seen after looking at it closely for an extended period.
Adapted from R.G. Sullivan, L.B. Kirchler, T. Lahti, S. Roche, K. Beckman, B. Cantwell, P. Richmond, "Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes," University of Chicago Argonne, LLC submitted to the National Association of Environmental Professionals 37th Annual Conference Proceedings, Portland, Oregon, May 21-24, 2012, p. 17.	

KOP 4 Full Evaluation Worksheets (cont'd)

Table 7 BASIC DESIGN ELEMENT CONTRAST

Element	Rating[1]	Weight	Points	
Color	**Strong = 3** Moderate = 2 Weak = 1 None = 0	x 3	**9**	Color is "the light-reflecting qualities of a project's surface (for example, dark or light, blue or gray) in relation to background colors."[2] "Colors that harmonize well seem to belong together and produce pleasing visual effects. Colors that do not harmonize are disturbing to the viewer."[3] Contrast in color depends on the exterior surface degree of lightness or darkness, gradation or variety of a color, the degree of saturation or brilliance of a color in the project to those that continue to exist in the landscape.
Form	**Strong = 3** Moderate = 2 Weak = 1 None = 0	x 2	**6**	Form is "the configuration and outline of the project in terms of masses, patterns, and linear elements. For example, a structure may have a bulky, vertical, geometric silhouette which contrasts with an irregular horizontal landscape of rolling hills."[4] Forms exist in three dimensions (height, length, width). For example, the shape is a square its form is a cube. Forms that are bold, regular, solid, or vertical tend to prevail in the landscape. Contrast in form depends on how alike the form(s) of the project is to those that continue to exist in the landscape.
Line	**Strong = 3** Moderate = 2 Weak = 1 None = 0	x 1	**3**	"Line is the path, real or imagined that the eye follows when perceiving abrupt differences when objects are aligned in a one-dimensional sequence."[5] "Line in the landscape is created by the edge between two materials, the outline or silhouette of a form, or a long linear feature."[6] Properties of lines: straight, diagonal, curved, vertical, horizontal. Contrast in line depends on edge types and interruption, or introduction of edges, bands, and silhouette lines in the project to those that continue to exist in the landscape.
Texture	Strong = 3 **Moderate = 2** Weak = 1 None = 0	x 1	**2**	Texture is "the aggregation of small forms or color mixtures into a continuous surface pattern; the aggregated parts are enough that they do not appear as discrete objects in the composition of the scene."[7] "Details of the surface pattern, as in smooth polished metal surfaces versus the rough, uneven textures of the foliage of trees and bushes"[8] Contrast in texture depends on the relative dimensions of the surface variations from large to small, spacing of surface variations, and the degree of uniform recurrence and symmetrical arrangement of the surface variation in the project to those that continue to exist in the landscape.
	Overall Rating[9]		**20**	
	Maximum 21 points			

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, CA, 1979.

[1] **Strong** — the project contrast demands attention will not be overlooked and is dominant in the landscape. **Moderate** — the project contrast begins to attract attention and begins to dominate the characteristic landscape. **Weak** — the project contrast can be seen but does not attract attention. **None** — the project contrast is not visible or perceived. (U.S. Department of Interior Bureau of Land Management Manual 8431-Visual Resources Contrast Rating, January 17, 1986.)

[2] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[3] U.S. Department of Transportation Federal Highway Administration, "A Guide to Visual Quality in Noise Barrier Design," Chapter 3. Visual Design Principles, n.d.

[4] Sheppard, p. 46.

[5] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[6] Gail Hansen, "Basic Principles of Landscape Design." Florida Cooperative Extension Service Institute of Food and Agricultural Science, University of Florida, Gainesville, Florida, July 2010.

[7] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[8] Sheppard, p. 47.

[9] Overall Rating is for descriptive purpose: Strong — 1-3 ratings Strong or 3 ratings Moderate; Moderate — 1-2 ratings Moderate with no higher ratings; Weak — 1-3 ratings Weak with no higher ratings; None — all ratings None.

KOP 4 Full Evaluation Worksheets (cont'd)

Table 8 SCALE DOMINANCE			
Rating			**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.		12
Codominant	**The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.**		**8**
Subordinate	The project is of significant size but occupies a minor part of the landscape.		4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.		0
	Single highest points	Maximum 12 points	**8**
Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.			

KOP 4 Full Evaluation Worksheets (cont'd)

Table 9 SPATIAL DOMINANCE

Category				Single Highest Rating
Spatial composition of the landscape	"[T]he arrangement of objects and voids in the landscape can be categorized by their spatial composition .... Some compositions, especially those which are distinctly focal, enclosed, or feature-oriented, are more vulnerable to modifications than others, depending upon how strongly the spatial configuration draws the eye to certain locations."[1]			Dominant 2-3 categories rated prominent = 6 points **Codominant** 1 category rated prominent, or 2 categories rated significant **= 4 points** Subordinate 1 category rated significant = 2 points Insignificant All categories rated inconspicuous = 0 points
	Rating	**Description**		
	prominent	Feature[2], Focal[2], or Enclosed[2] landscape.		
	significant	Panoramic,[2] or weak focal, feature or enclosed landscape.		
	inconspicuous	Canopied,[2] indistinct or obscured landscape.		
Spatial position of the project	"Spatial position of the project in relation to the three-dimensional arrangement of objects and voids in the landscape. Important spatial aspects of the project include relationship to the skyline, location in topographic spaces such as focal valleys or broad plains, and position with regard to streetscapes and architectural arrangements."[3]			
	Rating	**Description**		
	prominent	High Level,[4] High Slope,[4] Interfluve[4]		
	significant	Low Level,[4] Lowslope,[4] Midslope[4]		
	inconspicuous	Basin Floor,[4] Footslope,[4] Toeslope[4]		
Backdrop to the project	"[T]he backdrop against which an object is seen affects its visual contrast. Modifications seen against the sky or water are usually more prominent than against a land backdrop."[5]			
	Rating	**Description**		
	prominent	All or a significant part of the project will be seen against sky or water.		
	inconspicuous	All or a significant part of the project will be seen against land.		
		Single highest points	Maximum 6 points	**4**

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.

[1] U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.

[2] **Canopied** — landscape where features overhead (above eye level) create a canopy or ceiling. **Enclosed** — a space, large or small surrounded by continuous grouping of objects creating walls and floor. It may have a large vertical dimension, but typically a restricted horizontal one. **Feature** — landscape dominated by a feature or a group of objects in the distance to which the eye is drawn. **Focal** — converging lines in the landscape or progressions of aligned objects lead the eye to a focal point in the landscape. **Panoramic** — a broad horizontal composition. Little or no sense of boundary restriction; no apparent limit to the view. Foreground or middle ground objects do not substantially block viewing of background objects. (U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.)

[3] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[4] **Basin Floor** — nearly level to gently sloping, bottom surface of an intermontane basin. **Footslope** — the gently inclined hillslope at the foot of a hill. **High Level** — level top of plateau. **High Slope** — geomorphic component that forms the uppermost inclined surface at the top of a slope (e.g., shoulder slope, upper slope). **Interfluve** — linear top of ridge, hill, or mountain. **Low Level** — valley floor, or shoreline representing the former position of an alluvial plain, lake, or shore. **Lowslope** — inner gently inclined surface at the base of a slope. Surface profile is generally concave and a transition between midslope or backslope, and toeslope. **Midslope** — intermediate slope position between high and low (e.g., middle slope). (Adapted from T. Liang [1951]; J.B. Dalrymple, R.J. Blong, and A. Conacher. [1968]) **Toeslope** — the gently inclined surface at the base of a hillslope. Toeslope in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors. (USDA Soil Survey Manual Handbook No. 18, issued March 2017 as amended February 2018).

[5] U.S. Department of Interior Bureau of Land Management Manual H-8431-1.

KOP 4 Full Evaluation Worksheets (cont'd)

Table 11 CAPABILITY

Category		For each category check (√) the rating that best describes the existing landscape.					
		Rating					
		High		Moderate		Low	
Topography		High amount of topographic diversity and variety.		Moderate amount of topographic diversity and variety.	√	Low amount of topographic diversity and variety.	
Land Use Pattern	If project in rural landscape	Small natural or vegetated areas. Man-made structures dominant in the view.		Natural areas of local significance. Man-made structures widespread but not dominant in the view.		Remote natural areas of regional significance. Man-made structures and features limited and scattered.	√
	If project in urban landscape	Developed areas including commercial development. Large-scale infrastructure or structures may be common and more dominant.		Suburban or mostly developed areas with components of local importance. Large-scale infrastructure or structures may be visible but not dominant.		Clustered development surrounded by rural scattered development. Large-scale infrastructure or structures limited and scattered.	
Visual Variety		Landscape exhibits a high degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit high degree of variety in landforms and vegetation.		Landscape exhibits a moderate degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit moderate variety in landforms and vegetation.	√	Landscape exhibits a low degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit minimal variety in landforms and vegetation.	
Major Focal Points or Features		Focal points or features in the viewshed that are either natural or man-made, commonly found, minimal local importance/value, or contribute little to the character of the landscape or are indistinct.		Focal points or features in the viewshed that are either natural or man-made, somewhat commonly found, local importance/value, or make a minor contribution to the character of the landscape.		Focal points or features in the viewshed that are either natural or man-made and are unusual or rare, regional importance/value, or make a major contribution to the character of the landscape or are somewhat distinctive.	√

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 17, and L. Blocker, T. Slider, J. Ruchman, J. Mosier, L. Kok, J. Silbemagle, J. Beard, D. Wagner, G. Brogan, D. Jones, N. Laughlinn, L. Anderson, "Landscape Aesthetic (AH 701-i) - Visual Absorption Capability (Appendix C)," United States Department of Agriculture Forest Service, 1995, pp. C-1-C-8.

KOP 4 Full Evaluation Worksheets (cont'd)

Table 12 ABSORPTION	
For each question circle the applicable rating for the absorption of the landscape; High = H, Moderate = M, Low = L.	
Exposure	**Rating**
What is the level of exposure of the project in the landscape? The higher the level of exposure, the lower the absorption.	H M (L)
What is the intensity of the observation of the project? The more the project is observed from certain intensive land uses the lower its absorption (e.g., view from a densely populated residential area versus a heavy manufacturing and processing area).	H M (L)
What is the view distance to the project? The farther the viewing distance to the project from the vantage point the lower its exposure the higher its absorption. Is the project more than three miles away?	H M (L)
What is the project's distance from an urban skyline or a natural skyline (e.g., high-rise buildings or a mountain range against a backdrop of sky)? The closer the project is to an urban or natural skyline the lower its absorption.	H (M) L
What is the project's topographic position in the landscape? As the project's position increases its absorption decreases (e.g., toeslope to summit).	H (M) L
Focal Point	
Is the project near a focal point in the landscape? A focal point is a converging of lines in the landscape or progressions of aligned objects that lead the eye to a point. A focal point gives the viewer something interesting to look at in the view. The closer the project is to a focal point the greater viewer scrutiny the lower the absorption.	H (M) L
Does the edge(s) in the landscape have a diverse background but have the propensity to become a focal point? An edge is a transitional linear place where one space or landscape becomes part of another. An edge has a high absorption due to a diverse background, a low absorption due to the propensity to become a focal point (e.g., city meets country, a woodland edge, an alpine tree line, coastline).	H (M) L
Trees & Vegetation	
Are trees and vegetation in the landscape missing, deficient, or uniform? The greater the density of trees and vegetation, the greater the coverage, the greater the capacity of an area to absorb physical change.	H M (L)
What is the type(s) of tree(s) and vegetation in the landscape? Tree and vegetation types vary the absorption of the physical change. A uniformly tall, dense stand of trees has screening ability. Vegetation types such as evergreen shrubs and similar have greater absorption than dwarf shrubs, ornamental grasses, and grass-like plants. Trees and vegetation can provide high absorption in the foreground but lower absorption in the background.	H M (L)
Disturbed Surface Area	
Period of time to restore the project's disturbed surface area to its pre-construction activity condition? The longer the time to restore the disturbed area to its undisturbed original condition after the construction phase the lower the absorption; 1 year = high, 2 to 3 years = moderate, 3 years or more = low.	H M (L)
Adapted from S. Amir, E. Gidalizon, "Expert-based method for the evaluation of visual absorption capacity of the landscape*," Journal of Environmental Management, 1990, Vol. 30, pp. 251-263, and W.C. Yeomans, "A Proposed Biophysical Approach to Visual Absorption Capability (VAC),[1]" Pacific Southwest Forest and Range Experimental Station, Berkeley, California, 1979 submitted to the National Conference on Applied Techniques for Analysis and Management of Visual Resource, Incline Village, Nevada, April 23-25, 1979, pp. 172-181.	

KOP 4 Full Evaluation Worksheets (cont'd)

Table 13 MAGNITUDE OF CHANGE				
Dominant	**Prominent**	**Conspicuous**	**Apparent**	**Unobtrusive**
Project commands or controls the view in the landscape. Project causes a very large alteration to the landscape or features within the landscape such that there is a fundamental change from the existing physical condition.	Project stands out or is striking in the view in the landscape. Project causes a large alteration to the landscape or features within the landscape such that there is an unmistakable change from the existing physical condition.	Project is clearly visible and noticeable within the view in the landscape. Project causes a moderate alteration to the landscape or features within the landscape such that there is a distinct change from the existing physical condition.	Project visible or evident within the view in the landscape. Project causes a small alteration to the landscape or features within the landscape such that there is a perceptible change from the existing physical condition.	Project indistinct or not obvious within the view in the landscape. Project causes a very small alteration to the landscape, or features within the landscape such that there is a de minimis change from the existing physical condition.
Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 20.				

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS							
Landscape		**Project Prominence**		**Visual Absorption Capability**	**Magnitude Of Change**		**CEQA Guidelines Level of Effect On The Environment** (See Table 15)
Table	**Rating**	**Rating**		**Rating**			
Landscape Character	See Table 3	**Severe**	√	High Moderate **Low**	**Dominant**	√	**Significant Effect** Less Than Significant Effect
Unity	**Low to Moderate**	Strong			Prominent		
Public View	**Moderate**	Moderate			Conspicuous		
Visibility	**High**	Weak			Apparent		
		Negligible			Unobtrusive		

KOP 4 Full Evaluation Worksheets (cont'd)

Table 15 CEQA GUIDELINES LEVEL OF EFFECT ON THE ENVIRONMENT

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 and aesthetic significance." (14 CCR § 15382) (Pub. Res. Code § 21060.5, 14 CCR § 15360) The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, noncompliance with which means the effect will normally be determined to be significant by the [lead] agency...." (14 CCR § 15064.7[a])

Less Than Significant Effect with Mitigation Incorporated. The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "... but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed [CEQA environmental document (e.g., Negative Declaration) is] released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment." (Pub. Res. Code § 21064.5, 14 CCR § 15369.5) (Pub. Res. Code § 21002)

Less Than Significant Effect. The physical change by the proposed project to the existing physical condition does not reach the threshold of significance "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, ... compliance with which means the effect normally will be determined to be less than significant." (14 CCR § 15064.7[a])

Key Observation Point Evaluation Worksheets

KOP 5 Interstate 15 Looking Southeast – Summary Sheet for Worksheet Tables

LANDSCAPE			
Table 3 LANDSCAPE CHARACTER	Aesthetic Aspect		See attached Table 3.
	Perceptual Aspect		
	Basic Design Element		
	Landscape	**Rating**	Write the rating selected in the attached Table 4.
Table 4 UNITY	Rarity	**Low to Moderate**	
	Diversity	**Moderate**	
	Detractors	**Moderate**	
	Distinctiveness	**Low to Moderate**	
	Integrity	**Moderate**	
	Rating	**Checkbox**	Check (**√**) the rating selected in the attached Tables 5 and 6.
Table 5 PUBLIC VIEW	High		
	Moderate	**√**	
	Low		
	None		
Table 6 VISIBILITY	Dominant		
	High		
	Moderate to High	**√**	
	Moderate		
	Low to Moderate		
	Low		

PROJECT PROMINENCE			
Table 7 Basic Design Element Contrast			
Basic Design Element	**Rating**	**Weight**	**Points**
Color	**Strong = 3**	x 3	**9**
	Moderate = 2		
	Weak = 1		
	None = 0		
Form	Strong = 3	x 2	**4**
	Moderate = 2		
	Weak = 1		
	None = 0		
Line	**Strong = 3**	x 1	**3**
	Moderate = 2		
	Weak = 1		
	None = 0		
Texture	Strong = 3	x 1	**1**
	Moderate = 2		
	Weak = 1		
	None = 0		
		Maximum 21 points	**+17**

KOP 5 Interstate 15 Looking Southeast – Summary Sheet for Worksheet Tables (cont'd)

Table 8 SCALE DOMINANCE

Rating		Points
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.	12
Codominant	**The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.**	**8**
Subordinate	The project is of significant size but occupies a minor part of the landscape.	4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.	0
	Single highest points / Maximum 12 points	**8**

Table 9 SPATIAL DOMINANCE

Category	Rating	Single Highest Rating	Points
Spatial composition of the landscape.	**prominent**	Dominant 2-3 categories rated prominent.	6
	significant		
	inconspicuous	**Codominant** 1 category rated prominent, or 2 categories rated significant.	**4**
Spatial position of the project.	prominent		
	significant		
	inconspicuous	Subordinate 1 category rated significant.	2
Backdrop to the project.	prominent		
	inconspicuous	Insignificant All categories rated inconspicuous.	0
		Single highest points / Maximum 6 points	**4**

Table 10 PROJECT PROMINENCE RATING*

Total Points	Rating
32-39	Severe
24-31	**Strong**
16-23	Moderate
8-15	Weak
0-7	Negligible
***(Add Points from Tables 7, 8, and 9)**	**Rating = Strong**

Tables 11 and 12 VISUAL ABSORPTION CAPABILITY

	Rating	Checkbox	
Table 11 CAPABILITY **Table 12 ABSORPTION**	High		The existing landscape's ability to absorb the physical change by the proposed project without an alteration to its visual character.
	Moderate		
	Low	**√**	

Table 13 MAGNITUDE OF CHANGE

		Checkbox
Dominant	**Project commands or controls the view in the landscape.**	**√**
Prominent	Project stands out or is striking in the view in the landscape.	
Conspicuous	Project is clearly visible and noticeable within the view in the landscape.	
Apparent	Project visible or evident within the view in the landscape.	
Unobtrusive	Project indistinct or not obvious within the view in the landscape.	

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS

CEQA Guidelines Level of Effect on the Environment	**Significant Effect**	**√**
	Less Than Significant Effect	

KOP 5 Full Evaluation Worksheets (Tables 3 through 15)

Table 3 LANDSCAPE CHARACTER

Aesthetic	**Description**								Check (√) the description that best describes the aspect of the landscape.
Balance	harmonious		balanced	√	discordant		chaotic		
Complexity	uniform		simple		diverse	√	complex		
Dynamic	sweeping		spreading	√	disperse		channeled		
Enclosure	expansive		open	√	enclosed		constrained		
Pattern (two-dims.)	formal		organized		regular	√	random		
Perceptual									
Pleasure	beautiful		attractive		pleasant	√	unpleasant		nasty
Security	intimate		comfortable	√	safe		unsettling		threatening
Stimulus	inspiring		challenging		interesting	√	bland		monotonous
Tranquility	inaccessible		remote	√	vacant		peaceful	√	busy
Basic Design Element									
Color	monochrome		muted	√	colorful		garish		The basic design elements are the source of visual contrast in the landscape that an individual sees and responds to when viewing a space.
Form	angular	√	curvilinear		horizontal	√	rounded		
Line	straight	√	curved	√	vertical	√	horizontal	√	
Texture	smooth	√	textured	√	rough		very rough		
Scale	intimate		small		large	√	vast		

Adapted from Carys Swanwick, "Landscape Character Assessment Guidance for England and Scotland," prepared for The Countryside Agency and Scottish Natural Heritage, 2002, pp. 30-36.

Table 4 UNITY

Landscape	**Rating**					**Guidance**
	High	**Moderate to High**	**Moderate**	**Low to Moderate**	**Low**	
Rarity	rare			√	common	Are there many examples of this type of landscape in the region?
Diversity	orderly		√		muddled	Is there a recognizable order of the landscape features in view or are there too many patterns overlapping?
Detractors	many		√		few	Are there landscape features out of place?
Distinctiveness	distinct			√	indistinct	Is it easy to remember the landscape? Patterns dramatic or take some finding?
Integrity	whole		√		remnant	What patterns in the landscape are evident? Are sections missing and to what extent?

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 36.

KOP 5 Full Evaluation Worksheets (cont'd)

Table 5 PUBLIC VIEW	
Rating	
High	
	Public view includes areas where the aesthetic value is protected by federal, state, county or city, law, ordinance, regulation, or standard. Public view includes federal, state, county, city designated areas of aesthetic, cultural, and recreational claim, such as: a park, outdoor recreation area, etc.; coastal or forest reserve, open space preserve, urban green space, etc.; scenic overlook, scenic river, scenic trail, etc.; historic building, district, or site; a site having a cultural resource. Public view includes a federal or state designated scenic byway, highway, or road; designated scenic highway or road of regional importance; a segment of travel route, such as a road, rail line, pedestrian and equestrian trail, bicycle path near a designated area of aesthetic claim and leading directly to it. View approaching an area of aesthetic, cultural, and recreational claim that may be closely related to the appreciation of the aesthetic, cultural, and recreational significance at that designation. Public view includes an urban residential use area and segment of road that serves as the primary access route to it.
Moderate	
√	Public view includes undesignated but popularly used or appreciated area of aesthetic, cultural, and recreational claim of significance in the region. Public view includes a highway or road locally designated as a scenic route and of importance only to the local population, or informally designated as such in road atlases, road maps, and tour book guides. Public view includes segments of travel routes, such as roads, pedestrian and equestrian trails, bicycle paths that are near and are the primary access to protected or popularly used undesignated areas important for their aesthetic, cultural, or recreational claim. Public view includes a segment of travel route near a designated area of aesthetic claim serving as a secondary access route to the area. Public view includes a rural residential use area and segment of road that serves as the primary access route to it within one mile. Public view includes a maintained religious facility or cemetery.
Low	
	Public view includes an agricultural, commercial, industrial, manufacturing, research, and development use area. Public view includes a small aggregation of dwellings.
None	
	No public view.
Adapted from Aspen Environmental Group, "Final Environmental Impact Report Tranquillon Ridge Oil and Gas Development Project" prepared for County of Santa Barbara Planning and Development. Santa Barbara, CA, April 2008, Vol. 1, pp. 5.13-5-6, and "Final Environmental Impact Report Southern California International Gateway Project," Appendix B Aesthetics Visual Resource Methodology, Los Angeles Harbor Department, Los Angeles, CA, March 2013.	

KOP 5 Full Evaluation Worksheets (cont'd)

Table 6 VISIBILITY	
Rating	
Dominant Dominates view because project would fill most of visual field for views in its general direction. Stark contrast in form, line, color, texture, luminance, or motion may contribute to view dominance.	An object with strong visual contrast that is of such enormous size that it occupies most of the visual field, and views of it cannot be avoided except by turning the head greater than 45 degrees from a direct view of the object. The object is the major focus of visual attention, and its large apparent size is a major factor in its view dominance. In addition to size, contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of the project detracts noticeably from views of other landscape components.
High Strongly attracts visual attention of views in general direction of project. Attention may be drawn by stark contrast in form, line, color, or texture, luminance, or motion.	An object that is not of large size, but contrasts with the surrounding landscape components so strongly that it is a major focus of visual attention, drawing viewer attention immediately, and tending to hold viewer attention. In addition to stark contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of project interferes noticeably with views of nearby landscape components.
Moderate to High Plainly visible, could not be missed by casual observer, but does not strongly attract visual attention, or dominate view because of apparent size, for views in general direction of project.	An object that is obvious and with enough size or contrast to compete with other landscape components, but with insufficient visual contrast to strongly attract visual attention and insufficient size to occupy most of the observer's visual field.
Moderate Visible after brief glance in general direction of project and unlikely to be missed by casual observer.	An object that can be easily detected after a brief look and would be visible to most casual observers, but without enough size or contrast to compete with major landscape components.
Low to Moderate Visible when scanning in general direction of project; otherwise, likely to be missed by casual observer.	An object that is very small and/or faint, but when the observer is scanning the horizon or looking more closely at an area can be detected without extended viewing. A casual observer could sometimes notice it; however, most people would not notice it without some active looking.
Low Visible only after extended, close viewing; otherwise, invisible.	An object that is near the extreme limit of visibility. A person who was not aware of it in advance and looking for it could not see it. Even under those circumstances, the object can only be seen after looking at it closely for an extended period.
Adapted from R.G. Sullivan, L.B. Kirchler, T. Lahti, S. Roche, K. Beckman, B. Cantwell, P. Richmond, "Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes," University of Chicago Argonne, LLC submitted to the National Association of Environmental Professionals 37th Annual Conference Proceedings, Portland, Oregon, May 21-24, 2012, p. 17.	

KOP 5 Full Evaluation Worksheets (cont'd)

Table 7 BASIC DESIGN ELEMENT CONTRAST

Element	Rating[1]	Weight	Points	
Color	**Strong = 3** Moderate = 2 Weak = 1 None = 0	x 3	**9**	Color is "the light-reflecting qualities of a project's surface (for example, dark or light, blue or gray) in relation to background colors."[2] "Colors that harmonize well seem to belong together and produce pleasing visual effects. Colors that do not harmonize are disturbing to the viewer."[3] Contrast in color depends on the exterior surface degree of lightness or darkness, gradation or variety of a color, the degree of saturation or brilliance of a color in the project to those that continue to exist in the landscape.
Form	Strong = 3 **Moderate = 2** Weak = 1 None = 0	x 2	**4**	Form is "the configuration and outline of the project in terms of masses, patterns, and linear elements. For example, a structure may have a bulky, vertical, geometric silhouette which contrasts with an irregular horizontal landscape of rolling hills."[4] Forms exist in three dimensions (height, length, width). For example, the shape is a square its form is a cube. Forms that are bold, regular, solid, or vertical tend to prevail in the landscape. Contrast in form depends on how alike the form(s) of the project is to those that continue to exist in the landscape.
Line	**Strong = 3** Moderate = 2 Weak = 1 None = 0	x 1	**3**	"Line is the path, real or imagined that the eye follows when perceiving abrupt differences when objects are aligned in a one-dimensional sequence."[5] "Line in the landscape is created by the edge between two materials, the outline or silhouette of a form, or a long linear feature."[6] Properties of lines: straight, diagonal, curved, vertical, horizontal. Contrast in line depends on edge types and interruption, or introduction of edges, bands, and silhouette lines in the project to those that continue to exist in the landscape.
Texture	Strong = 3 Moderate = 2 **Weak = 1** None = 0	x 1	**1**	Texture is "the aggregation of small forms or color mixtures into a continuous surface pattern; the aggregated parts are enough that they do not appear as discrete objects in the composition of the scene."[7] "Details of the surface pattern, as in smooth polished metal surfaces versus the rough, uneven textures of the foliage of trees and bushes"[8] Contrast in texture depends on the relative dimensions of the surface variations from large to small, spacing of surface variations, and the degree of uniform recurrence and symmetrical arrangement of the surface variation in the project to those that continue to exist in the landscape.
	Overall Rating[9]		**+17**	
	Maximum 21 points			

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, CA, 1979.

[1] **Strong** — the project contrast demands attention will not be overlooked and is dominant in the landscape. **Moderate** — the project contrast begins to attract attention and begins to dominate the characteristic landscape. **Weak** — the project contrast can be seen but does not attract attention. **None** — the project contrast is not visible or perceived. (U.S. Department of Interior Bureau of Land Management Manual 8431-Visual Resources Contrast Rating, January 17, 1986.)

[2] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[3] U.S. Department of Transportation Federal Highway Administration, "A Guide to Visual Quality in Noise Barrier Design," Chapter 3. Visual Design Principles, n.d.

[4] Sheppard, p. 46.

[5] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[6] Gail Hansen, "Basic Principles of Landscape Design." Florida Cooperative Extension Service Institute of Food and Agricultural Science, University of Florida, Gainesville, Florida, July 2010.

[7] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[8] Sheppard, p. 47.

[9] Overall Rating is for descriptive purpose: Strong — 1-3 ratings Strong or 3 ratings Moderate; Moderate — 1-2 ratings Moderate with no higher ratings; Weak — 1-3 ratings Weak with no higher ratings; None — all ratings None.

KOP 5 Full Evaluation Worksheets (cont'd)

Table 8 SCALE DOMINANCE			
Rating			**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.		12
Codominant	**The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.**		**8**
Subordinate	The project is of significant size but occupies a minor part of the landscape.		4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.		0
	Single highest points	Maximum 12 points	**8**
Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.			

KOP 5 Full Evaluation Worksheets (cont'd)

Table 9 SPATIAL DOMINANCE

Category				Single Highest Rating
Spatial composition of the landscape	"[T]he arrangement of objects and voids in the landscape can be categorized by their spatial composition .... Some compositions, especially those which are distinctly focal, enclosed, or feature-oriented, are more vulnerable to modifications than others, depending upon how strongly the spatial configuration draws the eye to certain locations."[1]			Dominant 2-3 categories rated prominent = 6 points **Codominant** 1 category rated prominent, or 2 categories rated significant **= 4 points** Subordinate 1 category rated significant = 2 points Insignificant All categories rated inconspicuous = 0 points
	Rating	**Description**		
	prominent	Feature[2], Focal[2], or Enclosed[2] landscape.		
	significant	Panoramic,[2] or weak focal, feature or enclosed landscape.		
	inconspicuous	Canopied,[2] indistinct or obscured landscape.		
Spatial position of the project	"Spatial position of the project in relation to the three-dimensional arrangement of objects and voids in the landscape. Important spatial aspects of the project include relationship to the skyline, location in topographic spaces such as focal valleys or broad plains, and position with regard to streetscapes and architectural arrangements."[3]			
	Rating	**Description**		
	prominent	High Level,[4] High Slope,[4] Interfluve[4]		
	significant	Low Level,[4] Lowslope,[4] Midslope[4]		
	inconspicuous	Basin Floor,[4] Footslope,[4] Toeslope[4]		
Backdrop to the project	"[T]he backdrop against which an object is seen affects its visual contrast. Modifications seen against the sky or water are usually more prominent than against a land backdrop."[5]			
	Rating	**Description**		
	prominent	All or a significant part of the project will be seen against sky or water.		
	inconspicuous	All or a significant part of the project will be seen against land.		
		Single highest points	Maximum 6 points	**4**

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.

[1] U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.

[2] **Canopied** — landscape where features overhead (above eye level) create a canopy or ceiling. **Enclosed** — a space, large or small surrounded by continuous grouping of objects creating walls and floor. It may have a large vertical dimension, but typically a restricted horizontal one. **Feature** — landscape dominated by a feature or a group of objects in the distance to which the eye is drawn. **Focal** — converging lines in the landscape or progressions of aligned objects lead the eye to a focal point in the landscape. **Panoramic** — a broad horizontal composition. Little or no sense of boundary restriction; no apparent limit to the view. Foreground or middle ground objects do not substantially block viewing of background objects. (U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.)

[3] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[4] **Basin Floor** — nearly level to gently sloping, bottom surface of an intermontane basin. **Footslope** — the gently inclined hillslope at the foot of a hill. **High Level** — level top of plateau. **High Slope** — geomorphic component that forms the uppermost inclined surface at the top of a slope (e.g., shoulder slope, upper slope). **Interfluve** — linear top of ridge, hill, or mountain. **Low Level** — valley floor, or shoreline representing the former position of an alluvial plain, lake, or shore. **Lowslope** — inner gently inclined surface at the base of a slope. Surface profile is generally concave and a transition between midslope or backslope, and toeslope. **Midslope** — intermediate slope position between high and low (e.g., middle slope). (Adapted from T. Liang [1951]; J.B. Dalrymple, R.J. Blong, and A. Conacher. [1968]) **Toeslope** — the gently inclined surface at the base of a hillslope. Toeslope in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors. (USDA Soil Survey Manual Handbook No. 18, issued March 2017 as amended February 2018).

[5] U.S. Department of Interior Bureau of Land Management Manual H-8431-1.

KOP 5 Full Evaluation Worksheets (cont'd)

Table 11 CAPABILITY

Category		For each category check (√) the rating that best describes the existing landscape.					
		Rating					
		High		Moderate		Low	
Topography		High amount of topographic diversity and variety.		Moderate amount of topographic diversity and variety.	√	Low amount of topographic diversity and variety.	
Land Use Pattern	If project in rural landscape	Small natural or vegetated areas. Man-made structures dominant in the view.		Natural areas of local significance. Man-made structures widespread but not dominant in the view.		Remote natural areas of regional significance. Man-made structures and features limited and scattered.	√
	If project in urban landscape	Developed areas including commercial development. Large-scale infrastructure or structures may be common and more dominant.		Suburban or mostly developed areas with components of local importance. Large-scale infrastructure or structures may be visible but not dominant.		Clustered development surrounded by rural scattered development. Large-scale infrastructure or structures limited and scattered.	
Visual Variety		Landscape exhibits a high degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit high degree of variety in landforms and vegetation.		Landscape exhibits a moderate degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit moderate variety in landforms and vegetation.	√	Landscape exhibits a low degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit minimal variety in landforms and vegetation.	
Major Focal Points or Features		Focal points or features in the viewshed that are either natural or man-made, commonly found, minimal local importance/value, or contribute little to the character of the landscape or are indistinct.		Focal points or features in the viewshed that are either natural or man-made, somewhat commonly found, local importance/value, or make a minor contribution to the character of the landscape.		Focal points or features in the viewshed that are either natural or man-made and are unusual or rare, regional importance/value, or make a major contribution to the character of the landscape or are somewhat distinctive.	√

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 17, and L. Blocker, T. Slider, J. Ruchman, J. Mosier, L. Kok, J. Silbemagle, J. Beard, D. Wagner, G. Brogan, D. Jones, N. Laughlinn, L. Anderson, "Landscape Aesthetic (AH 701-i) - Visual Absorption Capability (Appendix C)," United States Department of Agriculture Forest Service, 1995, pp. C-1-C-8.

KOP 5 Full Evaluation Worksheets (cont'd)

Table 12 ABSORPTION	
For each question circle the applicable rating for the absorption of the landscape; High = H, Moderate = M, Low = L.	
Exposure	**Rating**
What is the level of exposure of the project in the landscape? The higher the level of exposure, the lower the absorption.	H M (L)
What is the intensity of the observation of the project? The more the project is observed from certain intensive land uses the lower its absorption (e.g., view from a densely populated residential area versus a heavy manufacturing and processing area).	H M (L)
What is the view distance to the project? The farther the viewing distance to the project from the vantage point the lower its exposure the higher its absorption. Is the project more than three miles away?	H M (L)
What is the project's distance from an urban skyline or a natural skyline (e.g., high-rise buildings or a mountain range against a backdrop of sky)? The closer the project is to an urban or natural skyline the lower its absorption.	H (M) L
What is the project's topographic position in the landscape? As the project's position increases its absorption decreases (e.g., toeslope to summit).	H (M) L
Focal Point	
Is the project near a focal point in the landscape? A focal point is a converging of lines in the landscape or progressions of aligned objects that lead the eye to a point. A focal point gives the viewer something interesting to look at in the view. The closer the project is to a focal point the greater viewer scrutiny the lower the absorption.	H (M) L
Does the edge(s) in the landscape have a diverse background but have the propensity to become a focal point? An edge is a transitional linear place where one space or landscape becomes part of another. An edge has a high absorption due to a diverse background, a low absorption due to the propensity to become a focal point (e.g., city meets country, a woodland edge, an alpine tree line, coastline).	H (M) L
Trees & Vegetation	
Are trees and vegetation in the landscape missing, deficient, or uniform? The greater the density of trees and vegetation, the greater the coverage, the greater the capacity of an area to absorb physical change.	H M (L)
What is the type(s) of tree(s) and vegetation in the landscape? Tree and vegetation types vary the absorption of the physical change. A uniformly tall, dense stand of trees has screening ability. Vegetation types such as evergreen shrubs and similar have greater absorption than dwarf shrubs, ornamental grasses, and grass-like plants. Trees and vegetation can provide high absorption in the foreground but lower absorption in the background.	H M (L)
Disturbed Surface Area	
Period of time to restore the project's disturbed surface area to its pre-construction activity condition? The longer the time to restore the disturbed area to its undisturbed original condition after the construction phase the lower the absorption; 1 year = high, 2 to 3 years = moderate, 3 years or more = low.	H M (L)
Adapted from S. Amir, E. Gidalizon, "Expert-based method for the evaluation of visual absorption capacity of the landscape*," Journal of Environmental Management, 1990, Vol. 30, pp. 251-263, and W.C. Yeomans, "A Proposed Biophysical Approach to Visual Absorption Capability (VAC),[1]" Pacific Southwest Forest and Range Experimental Station, Berkeley, California, 1979 submitted to the National Conference on Applied Techniques for Analysis and Management of Visual Resource, Incline Village, Nevada, April 23-25, 1979, pp. 172-181.	

KOP 5 Full Evaluation Worksheets (cont'd)

Table 13 MAGNITUDE OF CHANGE				
Dominant	**Prominent**	**Conspicuous**	**Apparent**	**Unobtrusive**
Project commands or controls the view in the landscape. Project causes a very large alteration to the landscape or features within the landscape such that there is a fundamental change from the existing physical condition.	Project stands out or is striking in the view in the landscape. Project causes a large alteration to the landscape or features within the landscape such that there is an unmistakable change from the existing physical condition.	Project is clearly visible and noticeable within the view in the landscape. Project causes a moderate alteration to the landscape or features within the landscape such that there is a distinct change from the existing physical condition.	Project visible or evident within the view in the landscape. Project causes a small alteration to the landscape or features within the landscape such that there is a perceptible change from the existing physical condition.	Project indistinct or not obvious within the view in the landscape. Project causes a very small alteration to the landscape, or features within the landscape such that there is a de minimis change from the existing physical condition.
Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 20.				

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS							
Landscape		**Project Prominence**		**Visual Absorption Capability**	**Magnitude Of Change**		**CEQA Guidelines Level of Effect On The Environment** (See Table 15)
Table	**Rating**	**Rating**		**Rating**			
Landscape Character	See Table 3	Severe		High Moderate **Low**	**Dominant**	√	**Significant Effect** Less Than Significant Effect
Unity	**Low to Moderate**	**Strong**	√		Prominent		
Public View	**Moderate**	Moderate			Conspicuous		
Visibility	**High**	Weak			Apparent		
		Negligible			Unobtrusive		

KOP 5 Full Evaluation Worksheets (cont'd)

Table 15 CEQA GUIDELINES LEVEL OF EFFECT ON THE ENVIRONMENT

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 and aesthetic significance." (14 CCR § 15382) (Pub. Res. Code § 21060.5, 14 CCR § 15360) The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, noncompliance with which means the effect will normally be determined to be significant by the [lead] agency...." (14 CCR § 15064.7[a])

Less Than Significant Effect with Mitigation Incorporated. The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "... but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed [CEQA environmental document (e.g., Negative Declaration) is] released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment." (Pub. Res. Code § 21064.5, 14 CCR § 15369.5) (Pub. Res. Code § 21002)

Less Than Significant Effect. The physical change by the proposed project to the existing physical condition does not reach the threshold of significance "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, ... compliance with which means the effect normally will be determined to be less than significant." (14 CCR § 15064.7[a])

Key Observation Point Evaluation Worksheets

KOP 6 Transmission Line Access Road Looking East

Summary Sheet for Worksheet Tables

LANDSCAPE			
Table 3 LANDSCAPE CHARACTER	Aesthetic Aspect		See attached Table 3.
	Perceptual Aspect		
	Basic Design Element		
	Landscape	**Rating**	Write the rating selected in the attached Table 4.
Table 4 UNITY	Rarity	**Moderate to High**	
	Diversity	**Moderate to High**	
	Detractors	**Moderate**	
	Distinctiveness	**Moderate to High**	
	Integrity	**Moderate**	
	Rating	**Checkbox**	Check (**√**) the rating selected in the attached Tables 5 and 6.
Table 5 PUBLIC VIEW	**High**	**√**	
	Moderate		
	Low		
	None		
Table 6 VISIBILITY	Dominant		
	High		
	Moderate to High	**√**	
	Moderate		
	Low to Moderate		
	Low		

PROJECT PROMINENCE			
Table 7 Basic Design Element Contrast			
Basic Design Element	Rating	**Weight**	**Points**
Color	**Strong = 3**	x 3	**9**
	Moderate = 2		
	Weak = 1		
	None = 0		
Form	Strong = 3	x 2	**4**
	Moderate = 2		
	Weak = 1		
	None = 0		
Line	Strong = 3	x 1	**2**
	Moderate = 2		
	Weak = 1		
	None = 0		
Texture	Strong = 3	x 1	**1**
	Moderate = 2		
	Weak = 1		
	None = 0		
		Maximum 21 points	**+16**

KOP 6 Transmission Line Access Road Looking East
Summary Sheet for Worksheet Tables (cont'd)

Table 8 SCALE DOMINANCE

Rating		Points
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.	12
Codominant	**The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.**	**8**
Subordinate	The project is of significant size but occupies a minor part of the landscape.	4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.	0
	Single highest points / Maximum 12 points	**8**

Table 9 SPATIAL DOMINANCE

Category	Rating	Single Highest Rating	Points
Spatial composition of the landscape.	prominent	Dominant 2-3 categories rated prominent.	6
	significant		
	inconspicuous	Codominant 1 category rated prominent, or 2 categories rated significant.	4
Spatial position of the project.	prominent		
	significant		
	inconspicuous	**Subordinate** 1 category rated significant.	**2**
Backdrop to the project.	prominent		
	inconspicuous	Insignificant All categories rated inconspicuous.	0
		Single highest points / Maximum 6 points	**2**

Table 10 PROJECT PROMINENCE RATING*

Total Points	Rating
32-39	Severe
24-31	**Strong**
16-23	Moderate
8-15	Weak
0-7	Negligible
***(Add Points from Tables 7, 8, and 9)**	**Rating = Strong**

Tables 11 and 12 VISUAL ABSORPTION CAPABILITY

	Rating	Checkbox	
Table 11 CAPABILITY **Table 12 ABSORPTION**	High		The existing landscape's ability to absorb the physical change by the proposed project without an alteration to its visual character.
	Moderate	**√**	
	Low		

Table 13 MAGNITUDE OF CHANGE

		Checkbox
Dominant	Project commands or controls the view in the landscape.	
Prominent	**Project stands out or is striking in the view in the landscape.**	**√**
Conspicuous	Project is clearly visible and noticeable within the view in the landscape.	
Apparent	Project visible or evident within the view in the landscape.	
Unobtrusive	Project indistinct or not obvious within the view in the landscape.	

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS

CEQA Guidelines Level of Effect on the Environment	**Significant Effect**	**√**
	Less Than Significant Effect	

KOP 6 Full Evaluation Worksheets (Tables 3 through 15)

Table 3 LANDSCAPE CHARACTER

Aesthetic	**Description**										Check (√) the description that best describes the aspect of the landscape.
Balance	harmonious		balanced	√	discordant		chaotic				
Complexity	uniform		simple		diverse	√	complex				
Dynamic	sweeping	√	spreading		disperse		channeled				
Enclosure	expansive	√	open		enclosed		constrained				
Pattern (two-dims.)	formal		organized		regular	√	random				
Perceptual											
Pleasure	beautiful		attractive	√	pleasant		unpleasant		nasty		
Security	intimate		comfortable		safe	√	unsettling		threatening		
Stimulus	inspiring	√	challenging		interesting		bland		monotonous		
Tranquility	inaccessible		remote	√	vacant		peaceful	√	busy		
Basic Design Element											
Color	monochrome		muted	√	colorful		garish		The basic design elements are the source of visual contrast in the landscape that an individual sees and responds to when viewing a space.		
Form	angular	√	curvilinear		horizontal	√	rounded	√			
Line	straight		curved	√	vertical	√	horizontal	√			
Texture	smooth		textured	√	rough	√	very rough				
Scale	intimate		small		large		vast	√			

Adapted from Carys Swanwick, "Landscape Character Assessment Guidance for England and Scotland," prepared for The Countryside Agency and Scottish Natural Heritage, 2002, pp. 30-36.

Table 4 UNITY

Landscape	**Rating**					**Guidance**
	High	**Moderate to High**	**Moderate**	**Low to Moderate**	**Low**	
Rarity	rare	√			common	Are there many examples of this type of landscape in the region?
Diversity	orderly	√			muddled	Is there a recognizable order of the landscape features in view or are there too many patterns overlapping?
Detractors	many		√		few	Are there landscape features out of place?
Distinctiveness	distinct	√			indistinct	Is it easy to remember the landscape? Patterns dramatic or take some finding?
Integrity	whole		√		remnant	What patterns in the landscape are evident? Are sections missing and to what extent?

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 36.

KOP 6 Full Evaluation Worksheets (cont'd)

Table 5 PUBLIC VIEW	
Rating	
High	
√	Public view includes areas where the aesthetic value is protected by federal, state, county or city, law, ordinance, regulation, or standard. Public view includes federal, state, county, city designated areas of aesthetic, cultural, and recreational claim, such as: a park, outdoor recreation area, etc.; coastal or forest reserve, open space preserve, urban green space, etc.; scenic overlook, scenic river, scenic trail, etc.; historic building, district, or site; a site having a cultural resource. Public view includes a federal or state designated scenic byway, highway, or road; designated scenic highway or road of regional importance; a segment of travel route, such as a road, rail line, pedestrian and equestrian trail, bicycle path near a designated area of aesthetic claim and leading directly to it. View approaching an area of aesthetic, cultural, and recreational claim that may be closely related to the appreciation of the aesthetic, cultural, and recreational significance at that designation. Public view includes an urban residential use area and segment of road that serves as the primary access route to it.
Moderate	
	Public view includes undesignated but popularly used or appreciated area of aesthetic, cultural, and recreational claim of significance in the region. Public view includes a highway or road locally designated as a scenic route and of importance only to the local population, or informally designated as such in road atlases, road maps, and tour book guides. Public view includes segments of travel routes, such as roads, pedestrian and equestrian trails, bicycle paths that are near and are the primary access to protected or popularly used undesignated areas important for their aesthetic, cultural, or recreational claim. Public view includes a segment of travel route near a designated area of aesthetic claim serving as a secondary access route to the area. Public view includes a rural residential use area and segment of road that serves as the primary access route to it within one mile. Public view includes a maintained religious facility or cemetery.
Low	
	Public view includes an agricultural, commercial, industrial, manufacturing, research, and development use area. Public view includes a small aggregation of dwellings.
None	
	No public view.

Adapted from Aspen Environmental Group, "Final Environmental Impact Report Tranquillon Ridge Oil and Gas Development Project" prepared for County of Santa Barbara Planning and Development. Santa Barbara, CA, April 2008, Vol. 1, pp. 5.13-5-6, and "Final Environmental Impact Report Southern California International Gateway Project," Appendix B Aesthetics Visual Resource Methodology, Los Angeles Harbor Department, Los Angeles, CA, March 2013.

KOP 6 Full Evaluation Worksheets (cont'd)

Table 6 VISIBILITY	
Rating	
Dominant Dominates view because project would fill most of visual field for views in its general direction. Stark contrast in form, line, color, texture, luminance, or motion may contribute to view dominance.	An object with strong visual contrast that is of such enormous size that it occupies most of the visual field, and views of it cannot be avoided except by turning the head greater than 45 degrees from a direct view of the object. The object is the major focus of visual attention, and its large apparent size is a major factor in its view dominance. In addition to size, contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of the project detracts noticeably from views of other landscape components.
High Strongly attracts visual attention of views in general direction of project. Attention may be drawn by stark contrast in form, line, color, or texture, luminance, or motion.	An object that is not of large size, but contrasts with the surrounding landscape components so strongly that it is a major focus of visual attention, drawing viewer attention immediately, and tending to hold viewer attention. In addition to stark contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of project interferes noticeably with views of nearby landscape components.
Moderate to High Plainly visible, could not be missed by casual observer, but does not strongly attract visual attention, or dominate view because of apparent size, for views in general direction of project.	An object that is obvious and with enough size or contrast to compete with other landscape components, but with insufficient visual contrast to strongly attract visual attention and insufficient size to occupy most of the observer's visual field.
Moderate Visible after brief glance in general direction of project and unlikely to be missed by casual observer.	An object that can be easily detected after a brief look and would be visible to most casual observers, but without enough size or contrast to compete with major landscape components.
Low to Moderate Visible when scanning in general direction of project; otherwise, likely to be missed by casual observer.	An object that is very small and/or faint, but when the observer is scanning the horizon or looking more closely at an area can be detected without extended viewing. A casual observer could sometimes notice it; however, most people would not notice it without some active looking.
Low Visible only after extended, close viewing; otherwise, invisible.	An object that is near the extreme limit of visibility. A person who was not aware of it in advance and looking for it could not see it. Even under those circumstances, the object can only be seen after looking at it closely for an extended period.
Adapted from R.G. Sullivan, L.B. Kirchler, T. Lahti, S. Roche, K. Beckman, B. Cantwell, P. Richmond, "Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes," University of Chicago Argonne, LLC submitted to the National Association of Environmental Professionals 37th Annual Conference Proceedings, Portland, Oregon, May 21-24, 2012, p. 17.	

KOP 6 Full Evaluation Worksheets (cont'd)

Table 7 BASIC DESIGN ELEMENT CONTRAST

Element	Rating[1]	Weight	Points	
Color	**Strong = 3** Moderate = 2 Weak = 1 None = 0	x 3	**9**	Color is "the light-reflecting qualities of a project's surface (for example, dark or light, blue or gray) in relation to background colors."[2] "Colors that harmonize well seem to belong together and produce pleasing visual effects. Colors that do not harmonize are disturbing to the viewer."[3] Contrast in color depends on the exterior surface degree of lightness or darkness, gradation or variety of a color, the degree of saturation or brilliance of a color in the project to those that continue to exist in the landscape.
Form	Strong = 3 **Moderate = 2** Weak = 1 None = 0	x 2	**4**	Form is "the configuration and outline of the project in terms of masses, patterns, and linear elements. For example, a structure may have a bulky, vertical, geometric silhouette which contrasts with an irregular horizontal landscape of rolling hills."[4] Forms exist in three dimensions (height, length, width). For example, the shape is a square its form is a cube. Forms that are bold, regular, solid, or vertical tend to prevail in the landscape. Contrast in form depends on how alike the form(s) of the project is to those that continue to exist in the landscape.
Line	Strong = 3 **Moderate = 2** Weak = 1 None = 0	x 1	**2**	"Line is the path, real or imagined that the eye follows when perceiving abrupt differences when objects are aligned in a one-dimensional sequence."[5] "Line in the landscape is created by the edge between two materials, the outline or silhouette of a form, or a long linear feature."[6] Properties of lines: straight, diagonal, curved, vertical, horizontal. Contrast in line depends on edge types and interruption, or introduction of edges, bands, and silhouette lines in the project to those that continue to exist in the landscape.
Texture	Strong = 3 Moderate = 2 **Weak = 1** None = 0	x 1	**1**	Texture is "the aggregation of small forms or color mixtures into a continuous surface pattern; the aggregated parts are enough that they do not appear as discrete objects in the composition of the scene."[7] "Details of the surface pattern, as in smooth polished metal surfaces versus the rough, uneven textures of the foliage of trees and bushes"[8] Contrast in texture depends on the relative dimensions of the surface variations from large to small, spacing of surface variations, and the degree of uniform recurrence and symmetrical arrangement of the surface variation in the project to those that continue to exist in the landscape.
	Overall Rating[9]		**+16**	
	Maximum 21 points			

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, CA, 1979.

[1] **Strong** — the project contrast demands attention will not be overlooked and is dominant in the landscape. **Moderate** — the project contrast begins to attract attention and begins to dominate the characteristic landscape. **Weak** — the project contrast can be seen but does not attract attention. **None** — the project contrast is not visible or perceived. (U.S. Department of Interior Bureau of Land Management Manual 8431-Visual Resources Contrast Rating, January 17, 1986.)

[2] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[3] U.S. Department of Transportation Federal Highway Administration, "A Guide to Visual Quality in Noise Barrier Design," Chapter 3. Visual Design Principles, n.d.

[4] Sheppard, p. 46.

[5] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[6] Gail Hansen, "Basic Principles of Landscape Design." Florida Cooperative Extension Service Institute of Food and Agricultural Science, University of Florida, Gainesville, Florida, July 2010.

[7] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[8] Sheppard, p. 47.

[9] Overall Rating is for descriptive purpose: Strong — 1-3 ratings Strong or 3 ratings Moderate; Moderate — 1-2 ratings Moderate with no higher ratings; Weak — 1-3 ratings Weak with no higher ratings; None — all ratings None.

KOP 6 Full Evaluation Worksheets (cont'd)

Table 8 SCALE DOMINANCE			
Rating			**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.		12
Codominant	**The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.**		**8**
Subordinate	The project is of significant size but occupies a minor part of the landscape.		4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.		0
	Single highest points	Maximum 12 points	**8**
Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.			

KOP 6 Full Evaluation Worksheets (cont'd)

Table 9 SPATIAL DOMINANCE

Category				Single Highest Rating
Spatial composition of the landscape	"[T]he arrangement of objects and voids in the landscape can be categorized by their spatial composition .... Some compositions, especially those which are distinctly focal, enclosed, or feature-oriented, are more vulnerable to modifications than others, depending upon how strongly the spatial configuration draws the eye to certain locations."[1]			Dominant 2-3 categories rated prominent = 6 points Codominant 1 category rated prominent, or 2 categories rated significant = 4 points **Subordinate** 1 category rated significant **= 2 points** Insignificant All categories rated inconspicuous = 0 points
	Rating	**Description**		
	prominent	Feature[2], Focal[2], or Enclosed[2] landscape.		
	significant	Panoramic,[2] or weak focal, feature or enclosed landscape.		
	inconspicuous	Canopied,[2] indistinct or obscured landscape.		
Spatial position of the project	"Spatial position of the project in relation to the three-dimensional arrangement of objects and voids in the landscape. Important spatial aspects of the project include relationship to the skyline, location in topographic spaces such as focal valleys or broad plains, and position with regard to streetscapes and architectural arrangements."[3]			
	Rating	**Description**		
	prominent	High Level,[4] High Slope,[4] Interfluve[4]		
	significant	Low Level,[4] Lowslope,[4] Midslope[4]		
	inconspicuous	Basin Floor,[4] Footslope,[4] Toeslope[4]		
Backdrop to the project	"[T]he backdrop against which an object is seen affects its visual contrast. Modifications seen against the sky or water are usually more prominent than against a land backdrop."[5]			
	Rating	**Description**		
	prominent	All or a significant part of the project will be seen against sky or water.		
	inconspicuous	All or a significant part of the project will be seen against land.		
		Single highest points	Maximum 6 points	**2**

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.

[1] U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.

[2] **Canopied** — landscape where features overhead (above eye level) create a canopy or ceiling. **Enclosed** — a space, large or small surrounded by continuous grouping of objects creating walls and floor. It may have a large vertical dimension, but typically a restricted horizontal one. **Feature** — landscape dominated by a feature or a group of objects in the distance to which the eye is drawn. **Focal** — converging lines in the landscape or progressions of aligned objects lead the eye to a focal point in the landscape. **Panoramic** — a broad horizontal composition. Little or no sense of boundary restriction; no apparent limit to the view. Foreground or middle ground objects do not substantially block viewing of background objects. (U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.)

[3] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[4] **Basin Floor** — nearly level to gently sloping, bottom surface of an intermontane basin. **Footslope** — the gently inclined hillslope at the foot of a hill. **High Level** — level top of plateau. **High Slope** — geomorphic component that forms the uppermost inclined surface at the top of a slope (e.g., shoulder slope, upper slope). **Interfluve** — linear top of ridge, hill, or mountain. **Low Level** — valley floor, or shoreline representing the former position of an alluvial plain, lake, or shore. **Lowslope** — inner gently inclined surface at the base of a slope. Surface profile is generally concave and a transition between midslope or backslope, and toeslope. **Midslope** — intermediate slope position between high and low (e.g., middle slope). (Adapted from T. Liang [1951]; J.B. Dalrymple, R.J. Blong, and A. Conacher. [1968]) **Toeslope** — the gently inclined surface at the base of a hillslope. Toeslope in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors. (USDA Soil Survey Manual Handbook No. 18, issued March 2017 as amended February 2018).

[5] U.S. Department of Interior Bureau of Land Management Manual H-8431-1.

KOP 6 Full Evaluation Worksheets (cont'd)

Table 11 CAPABILITY							
Category	For each category check (√) the rating that best describes the existing landscape.						
		Rating					
		High		Moderate		Low	
Topography		High amount of topographic diversity and variety.	√	Moderate amount of topographic diversity and variety.		Low amount of topographic diversity and variety.	
Land Use Pattern	If project in rural landscape	Small natural or vegetated areas. Man-made structures dominant in the view.		Natural areas of local significance. Man-made structures widespread but not dominant in the view.		Remote natural areas of regional significance. Man-made structures and features limited and scattered.	√
	If project in urban landscape	Developed areas including commercial development. Large-scale infrastructure or structures may be common and more dominant.		Suburban or mostly developed areas with components of local importance. Large-scale infrastructure or structures may be visible but not dominant.		Clustered development surrounded by rural scattered development. Large-scale infrastructure or structures limited and scattered.	
Visual Variety		Landscape exhibits a high degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit high degree of variety in landforms and vegetation.		Landscape exhibits a moderate degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit moderate variety in landforms and vegetation.	√	Landscape exhibits a low degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit minimal variety in landforms and vegetation.	
Major Focal Points or Features		Focal points or features in the viewshed that are either natural or man-made, commonly found, minimal local importance/value, or contribute little to the character of the landscape or are indistinct.		Focal points or features in the viewshed that are either natural or man-made, somewhat commonly found, local importance/value, or make a minor contribution to the character of the landscape.		Focal points or features in the viewshed that are either natural or man-made and are unusual or rare, regional importance/value, or make a major contribution to the character of the landscape or are somewhat distinctive.	√

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 17, and L. Blocker, T. Slider, J. Ruchman, J. Mosier, L. Kok, J. Silbemagle, J. Beard, D. Wagner, G. Brogan, D. Jones, N. Laughlinn, L. Anderson, "Landscape Aesthetic (AH 701-i) - Visual Absorption Capability (Appendix C)," United States Department of Agriculture Forest Service, 1995, pp. C-1-C-8.

KOP 6 Full Evaluation Worksheets (cont'd)

Table 12 ABSORPTION	
For each question circle the applicable rating for the absorption of the landscape; High = H, Moderate = M, Low = L.	
Exposure	**Rating**
What is the level of exposure of the project in the landscape? The higher the level of exposure, the lower the absorption.	H (M) L
What is the intensity of the observation of the project? The more the project is observed from certain intensive land uses the lower its absorption (e.g., view from a densely populated residential area versus a heavy manufacturing and processing area).	H (M) L
What is the view distance to the project? The farther the viewing distance to the project from the vantage point the lower its exposure the higher its absorption. Is the project more than three miles away?	H (M) L
What is the project's distance from an urban skyline or a natural skyline (e.g., high-rise buildings or a mountain range against a backdrop of sky)? The closer the project is to an urban or natural skyline the lower its absorption.	H (M) L
What is the project's topographic position in the landscape? As the project's position increases its absorption decreases (e.g., toeslope to summit).	(H) M L
Focal Point	
Is the project near a focal point in the landscape? A focal point is a converging of lines in the landscape or progressions of aligned objects that lead the eye to a point. A focal point gives the viewer something interesting to look at in the view. The closer the project is to a focal point the greater viewer scrutiny the lower the absorption.	H (M) L
Does the edge(s) in the landscape have a diverse background but have the propensity to become a focal point? An edge is a transitional linear place where one space or landscape becomes part of another. An edge has a high absorption due to a diverse background, a low absorption due to the propensity to become a focal point (e.g., city meets country, a woodland edge, an alpine tree line, coastline).	H (M) L
Trees & Vegetation	
Are trees and vegetation in the landscape missing, deficient, or uniform? The greater the density of trees and vegetation, the greater the coverage, the greater the capacity of an area to absorb physical change.	H M (L)
What is the type(s) of tree(s) and vegetation in the landscape? Tree and vegetation types vary the absorption of the physical change. A uniformly tall, dense stand of trees has screening ability. Vegetation types such as evergreen shrubs and similar have greater absorption than dwarf shrubs, ornamental grasses, and grass-like plants. Trees and vegetation can provide high absorption in the foreground but lower absorption in the background.	H M (L)
Disturbed Surface Area	
Period of time to restore the project's disturbed surface area to its pre-construction activity condition? The longer the time to restore the disturbed area to its undisturbed original condition after the construction phase the lower the absorption; 1 year = high, 2 to 3 years = moderate, 3 years or more = low.	H M (L)
Adapted from S. Amir, E. Gidalizon, "Expert-based method for the evaluation of visual absorption capacity of the landscape*," Journal of Environmental Management, 1990, Vol. 30, pp. 251-263, and W.C. Yeomans, "A Proposed Biophysical Approach to Visual Absorption Capability (VAC),[1]" Pacific Southwest Forest and Range Experimental Station, Berkeley, California, 1979 submitted to the National Conference on Applied Techniques for Analysis and Management of Visual Resource, Incline Village, Nevada, April 23-25, 1979, pp. 172-181.	

KOP 6 Full Evaluation Worksheets (cont'd)

Table 13 MAGNITUDE OF CHANGE				
Dominant	**Prominent**	**Conspicuous**	**Apparent**	**Unobtrusive**
Project commands or controls the view in the landscape. Project causes a very large alteration to the landscape or features within the landscape such that there is a fundamental change from the existing physical condition.	**Project stands out or is striking in the view in the landscape.** Project causes a large alteration to the landscape or features within the landscape such that there is an unmistakable change from the existing physical condition.	Project is clearly visible and noticeable within the view in the landscape. Project causes a moderate alteration to the landscape or features within the landscape such that there is a distinct change from the existing physical condition.	Project visible or evident within the view in the landscape. Project causes a small alteration to the landscape or features within the landscape such that there is a perceptible change from the existing physical condition.	Project indistinct or not obvious within the view in the landscape. Project causes a very small alteration to the landscape, or features within the landscape such that there is a de minimis change from the existing physical condition.
Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 20.				

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS							
Landscape		**Project Prominence**		**Visual Absorption Capability**	**Magnitude Of Change**		**CEQA Guidelines Level of Effect On The Environment** (See Table 15)
Table	**Rating**	**Rating**		**Rating**			
Landscape Character	See Table 3	Severe		High	Dominant		**Significant Effect**
Unity	**Moderate to High**	**Strong**	√		**Prominent**	√	
Public View	**High**	Moderate		**Moderate**	Conspicuous		
Visibility	**Moderate to High**	Weak			Apparent		
		Negligible		Low	Unobtrusive		Less Than Significant Effect

KOP 6 Full Evaluation Worksheets (cont'd)

Table 15 CEQA GUIDELINES LEVEL OF EFFECT ON THE ENVIRONMENT

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 and aesthetic significance." (14 CCR § 15382) (Pub. Res. Code § 21060.5, 14 CCR § 15360) The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, noncompliance with which means the effect will normally be determined to be significant by the [lead] agency...." (14 CCR § 15064.7[a])

Less Than Significant Effect with Mitigation Incorporated. The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "... but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed [CEQA environmental document (e.g., Negative Declaration) is] released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment." (Pub. Res. Code § 21064.5, 14 CCR § 15369.5) (Pub. Res. Code § 21002)

Less Than Significant Effect. The physical change by the proposed project to the existing physical condition does not reach the threshold of significance "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, ... compliance with which means the effect normally will be determined to be less than significant." (14 CCR § 15064.7[a])

Key Observation Point Evaluation Worksheets

KOP 7 Transmission Line Access Road Looking Southeast
Summary Sheet for Worksheet Tables

LANDSCAPE			
Table 3 LANDSCAPE CHARACTER	Aesthetic Aspect		See attached Table 3.
	Perceptual Aspect		
	Basic Design Element		
	Landscape	**Rating**	Write the rating selected in the attached Table 4.
Table 4 UNITY	Rarity	**Moderate to High**	
	Diversity	**Moderate**	
	Detractors	**Low to Moderate**	
	Distinctiveness	**Moderate to High**	
	Integrity	**Moderate to High**	
	Rating	**Checkbox**	Check (**√**) the rating selected in the attached Tables 5 and 6.
Table 5 PUBLIC VIEW	High		
	Moderate	**√**	
	Low		
	None		
Table 6 VISIBILITY	Dominant		
	High	**√**	
	Moderate to High		
	Moderate		
	Low to Moderate		
	Low		

PROJECT PROMINENCE			
Table 7 Basic Design Element Contrast			
Basic Design Element	**Rating**	**Weight**	**Points**
Color	**Strong = 3**	x 3	**9**
	Moderate = 2		
	Weak = 1		
	None = 0		
Form	Strong = 3	x 2	**4**
	Moderate = 2		
	Weak = 1		
	None = 0		
Line	**Strong = 3**	x 1	**3**
	Moderate = 2		
	Weak = 1		
	None = 0		
Texture	Strong = 3	x 1	**2**
	Moderate = 2		
	Weak = 1		
	None = 0		
		Maximum 21 points	**18**

KOP 7 Transmission Line Access Road Looking Southeast
Summary Sheet for Worksheet Tables (cont'd)

Table 8 SCALE DOMINANCE		
Rating		**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.	12
Codominant	**The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.**	**8**
Subordinate	The project is of significant size but occupies a minor part of the landscape.	4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.	0
	Single highest points / Maximum 12 points	**8**

Table 9 SPATIAL DOMINANCE			
Category	**Rating**	**Single Highest Rating**	**Points**
Spatial composition of the landscape.	prominent	Dominant 2-3 categories rated prominent.	6
	significant		
	inconspicuous	Codominant 1 category rated prominent, or 2 categories rated significant.	4
Spatial position of the project.	prominent		
	significant		
	inconspicuous	**Subordinate** 1 category rated significant.	**2**
Backdrop to the project.	prominent		
	inconspicuous	Insignificant All categories rated inconspicuous.	0
		Single highest points / Maximum 6 points	**2**

Table 10 PROJECT PROMINENCE RATING*	
Total Points	**Rating**
32-39	Severe
24-31	**Strong**
16-23	Moderate
8-15	Weak
0-7	Negligible
***(Add Points from Tables 7, 8, and 9)**	**Rating = Strong**

Tables 11 and 12 VISUAL ABSORPTION CAPABILITY			
	Rating	**Checkbox**	The existing landscape's ability to absorb the physical change by the proposed project without an alteration to its visual character.
Table 11 CAPABILITY **Table 12 ABSORPTION**	High		
	Moderate		
	Low	**√**	

Table 13 MAGNITUDE OF CHANGE		
		Checkbox
Dominant	Project commands or controls the view in the landscape.	
Prominent	**Project stands out or is striking in the view in the landscape.**	**√**
Conspicuous	Project is clearly visible and noticeable within the view in the landscape.	
Apparent	Project visible or evident within the view in the landscape.	
Unobtrusive	Project indistinct or not obvious within the view in the landscape.	

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS		
CEQA Guidelines Level of Effect on the Environment	**Significant Effect**	**√**
	Less Than Significant Effect	

KOP 7 Full Evaluation Worksheets (Tables 3 through 15)

Table 3 LANDSCAPE CHARACTER

Aesthetic	**Description**								Check (√) the description that best describes the aspect of the landscape.	
Balance	harmonious		balanced	√	discordant		chaotic			
Complexity	uniform		simple		diverse	√	complex			
Dynamic	sweeping	√	spreading		disperse		channeled			
Enclosure	expansive		open	√	enclosed		constrained			
Pattern (two-dims.)	formal		organized	√	regular		random			
Perceptual										
Pleasure	beautiful		attractive	√	pleasant		unpleasant		nasty	
Security	intimate		comfortable	√	safe		unsettling		threatening	
Stimulus	inspiring		challenging		interesting	√	bland		monotonous	
Tranquility	inaccessible		remote	√	vacant		peaceful	√	busy	
Basic Design Element										
Color	monochrome		muted	√	colorful		garish		The basic design elements are the source of visual contrast in the landscape that an individual sees and responds to when viewing a space.	
Form	angular	√	curvilinear		horizontal	√	rounded	√		
Line	straight	√	curved	√	vertical		horizontal	√		
Texture	smooth	√	textured	√	rough	√	very rough	√		
Scale	intimate		small		large	√	vast			

Adapted from Carys Swanwick, "Landscape Character Assessment Guidance for England and Scotland," prepared for The Countryside Agency and Scottish Natural Heritage, 2002, pp. 30-36.

Table 4 UNITY

Landscape	**Rating**					**Guidance**
	High	**Moderate to High**	**Moderate**	**Low to Moderate**	**Low**	
Rarity	rare		√		common	Are there many examples of this type of landscape in the region?
Diversity	orderly		√		muddled	Is there a recognizable order of the landscape features in view or are there too many patterns overlapping?
Detractors	many			√	few	Are there landscape features out of place?
Distinctiveness	distinct		√		indistinct	Is it easy to remember the landscape? Patterns dramatic or take some finding?
Integrity	whole	√			remnant	What patterns in the landscape are evident? Are sections missing and to what extent?

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 36.

KOP 7 Full Evaluation Worksheets (cont'd)

Table 5 PUBLIC VIEW	
Rating	
High	
	Public view includes areas where the aesthetic value is protected by federal, state, county or city, law, ordinance, regulation, or standard. Public view includes federal, state, county, city designated areas of aesthetic, cultural, and recreational claim, such as: a park, outdoor recreation area, etc.; coastal or forest reserve, open space preserve, urban green space, etc.; scenic overlook, scenic river, scenic trail, etc.; historic building, district, or site; a site having a cultural resource. Public view includes a federal or state designated scenic byway, highway, or road; designated scenic highway or road of regional importance; a segment of travel route, such as a road, rail line, pedestrian and equestrian trail, bicycle path near a designated area of aesthetic claim and leading directly to it. View approaching an area of aesthetic, cultural, and recreational claim that may be closely related to the appreciation of the aesthetic, cultural, and recreational significance at that designation. Public view includes an urban residential use area and segment of road that serves as the primary access route to it.
Moderate	
√	Public view includes undesignated but popularly used or appreciated area of aesthetic, cultural, and recreational claim of significance in the region. Public view includes a highway or road locally designated as a scenic route and of importance only to the local population, or informally designated as such in road atlases, road maps, and tour book guides. Public view includes segments of travel routes, such as roads, pedestrian and equestrian trails, bicycle paths that are near and are the primary access to protected or popularly used undesignated areas important for their aesthetic, cultural, or recreational claim. Public view includes a segment of travel route near a designated area of aesthetic claim serving as a secondary access route to the area. Public view includes a rural residential use area and segment of road that serves as the primary access route to it within one mile. Public view includes a maintained religious facility or cemetery.
Low	
	Public view includes an agricultural, commercial, industrial, manufacturing, research, and development use area. Public view includes a small aggregation of dwellings.
None	
	No public view.
Adapted from Aspen Environmental Group, "Final Environmental Impact Report Tranquillon Ridge Oil and Gas Development Project" prepared for County of Santa Barbara Planning and Development. Santa Barbara, CA, April 2008, Vol. 1, pp. 5.13-5-6, and "Final Environmental Impact Report Southern California International Gateway Project," Appendix B Aesthetics Visual Resource Methodology, Los Angeles Harbor Department, Los Angeles, CA, March 2013.	

KOP 7 Full Evaluation Worksheets (cont'd)

Table 6 VISIBILITY	
Rating	
Dominant Dominates view because project would fill most of visual field for views in its general direction. Stark contrast in form, line, color, texture, luminance, or motion may contribute to view dominance.	An object with strong visual contrast that is of such enormous size that it occupies most of the visual field, and views of it cannot be avoided except by turning the head greater than 45 degrees from a direct view of the object. The object is the major focus of visual attention, and its large apparent size is a major factor in its view dominance. In addition to size, contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of the project detracts noticeably from views of other landscape components.
High Strongly attracts visual attention of views in general direction of project. Attention may be drawn by stark contrast in form, line, color, or texture, luminance, or motion.	An object that is not of large size, but contrasts with the surrounding landscape components so strongly that it is a major focus of visual attention, drawing viewer attention immediately, and tending to hold viewer attention. In addition to stark contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of project interferes noticeably with views of nearby landscape components.
Moderate to High Plainly visible, could not be missed by casual observer, but does not strongly attract visual attention, or dominate view because of apparent size, for views in general direction of project.	An object that is obvious and with enough size or contrast to compete with other landscape components, but with insufficient visual contrast to strongly attract visual attention and insufficient size to occupy most of the observer's visual field.
Moderate Visible after brief glance in general direction of project and unlikely to be missed by casual observer.	An object that can be easily detected after a brief look and would be visible to most casual observers, but without enough size or contrast to compete with major landscape components.
Low to Moderate Visible when scanning in general direction of project; otherwise, likely to be missed by casual observer.	An object that is very small and/or faint, but when the observer is scanning the horizon or looking more closely at an area can be detected without extended viewing. A casual observer could sometimes notice it; however, most people would not notice it without some active looking.
Low Visible only after extended, close viewing; otherwise, invisible.	An object that is near the extreme limit of visibility. A person who was not aware of it in advance and looking for it could not see it. Even under those circumstances, the object can only be seen after looking at it closely for an extended period.
Adapted from R.G. Sullivan, L.B. Kirchler, T. Lahti, S. Roche, K. Beckman, B. Cantwell, P. Richmond, "Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes," University of Chicago Argonne, LLC submitted to the National Association of Environmental Professionals 37th Annual Conference Proceedings, Portland, Oregon, May 21-24, 2012, p. 17.	

KOP 7 Full Evaluation Worksheets (cont'd)

Table 7 BASIC DESIGN ELEMENT CONTRAST

Element	Rating[1]	Weight	Points	
Color	**Strong = 3** Moderate = 2 Weak = 1 None = 0	x 3	**9**	Color is "the light-reflecting qualities of a project's surface (for example, dark or light, blue or gray) in relation to background colors."[2] "Colors that harmonize well seem to belong together and produce pleasing visual effects. Colors that do not harmonize are disturbing to the viewer."[3] Contrast in color depends on the exterior surface degree of lightness or darkness, gradation or variety of a color, the degree of saturation or brilliance of a color in the project to those that continue to exist in the landscape.
Form	Strong = 3 **Moderate = 2** Weak = 1 None = 0	x 2	**4**	Form is "the configuration and outline of the project in terms of masses, patterns, and linear elements. For example, a structure may have a bulky, vertical, geometric silhouette which contrasts with an irregular horizontal landscape of rolling hills."[4] Forms exist in three dimensions (height, length, width). For example, the shape is a square its form is a cube. Forms that are bold, regular, solid, or vertical tend to prevail in the landscape. Contrast in form depends on how alike the form(s) of the project is to those that continue to exist in the landscape.
Line	**Strong = 3** Moderate = 2 Weak = 1 None = 0	x 1	**3**	"Line is the path, real or imagined that the eye follows when perceiving abrupt differences when objects are aligned in a one-dimensional sequence."[5] "Line in the landscape is created by the edge between two materials, the outline or silhouette of a form, or a long linear feature."[6] Properties of lines: straight, diagonal, curved, vertical, horizontal. Contrast in line depends on edge types and interruption, or introduction of edges, bands, and silhouette lines in the project to those that continue to exist in the landscape.
Texture	Strong = 3 Moderate = 2 **Weak = 1** None = 0	x 1	**1**	Texture is "the aggregation of small forms or color mixtures into a continuous surface pattern; the aggregated parts are enough that they do not appear as discrete objects in the composition of the scene."[7] "Details of the surface pattern, as in smooth polished metal surfaces versus the rough, uneven textures of the foliage of trees and bushes"[8] Contrast in texture depends on the relative dimensions of the surface variations from large to small, spacing of surface variations, and the degree of uniform recurrence and symmetrical arrangement of the surface variation in the project to those that continue to exist in the landscape.
	Overall Rating[9]		**+17**	
	Maximum 21 points			

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, CA, 1979.

[1] **Strong** — the project contrast demands attention will not be overlooked and is dominant in the landscape. **Moderate** — the project contrast begins to attract attention and begins to dominate the characteristic landscape. **Weak** — the project contrast can be seen but does not attract attention. **None** — the project contrast is not visible or perceived. (U.S. Department of Interior Bureau of Land Management Manual 8431-Visual Resources Contrast Rating, January 17, 1986.)

[2] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[3] U.S. Department of Transportation Federal Highway Administration, "A Guide to Visual Quality in Noise Barrier Design," Chapter 3. Visual Design Principles, n.d.

[4] Sheppard, p. 46.

[5] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[6] Gail Hansen, "Basic Principles of Landscape Design." Florida Cooperative Extension Service Institute of Food and Agricultural Science, University of Florida, Gainesville, Florida, July 2010.

[7] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[8] Sheppard, p. 47.

[9] Overall Rating is for descriptive purpose: Strong — 1-3 ratings Strong or 3 ratings Moderate; Moderate — 1-2 ratings Moderate with no higher ratings; Weak — 1-3 ratings Weak with no higher ratings; None — all ratings None.

KOP 7 Full Evaluation Worksheets (cont'd)

Table 8 SCALE DOMINANCE			
Rating			**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.		12
Codominant	**The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.**		**8**
Subordinate	The project is of significant size but occupies a minor part of the landscape.		4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.		0
	Single highest points	Maximum 12 points	**8**
Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.			

KOP 7 Full Evaluation Worksheets (cont'd)

Table 9 SPATIAL DOMINANCE

Category				Single Highest Rating
Spatial composition of the landscape	"[T]he arrangement of objects and voids in the landscape can be categorized by their spatial composition .... Some compositions, especially those which are distinctly focal, enclosed, or feature-oriented, are more vulnerable to modifications than others, depending upon how strongly the spatial configuration draws the eye to certain locations."[1]			Dominant 2-3 categories rated prominent = 6 points Codominant 1 category rated prominent, or 2 categories rated significant = 4 points **Subordinate** 1 category rated significant **= 2 points** Insignificant All categories rated inconspicuous = 0 points
	Rating	**Description**		
	prominent	Feature[2], Focal[2], or Enclosed[2] landscape.		
	significant	Panoramic,[2] or weak focal, feature or enclosed landscape.		
	inconspicuous	Canopied,[2] indistinct or obscured landscape.		
Spatial position of the project	"Spatial position of the project in relation to the three-dimensional arrangement of objects and voids in the landscape. Important spatial aspects of the project include relationship to the skyline, location in topographic spaces such as focal valleys or broad plains, and position with regard to streetscapes and architectural arrangements."[3]			
	Rating	**Description**		
	prominent	High Level,[4] High Slope,[4] Interfluve[4]		
	significant	Low Level,[4] Lowslope,[4] Midslope[4]		
	inconspicuous	Basin Floor,[4] Footslope,[4] Toeslope[4]		
Backdrop to the project	"[T]he backdrop against which an object is seen affects its visual contrast. Modifications seen against the sky or water are usually more prominent than against a land backdrop."[5]			
	Rating	**Description**		
	prominent	All or a significant part of the project will be seen against sky or water.		
	inconspicuous	All or a significant part of the project will be seen against land.		
		Single highest points	Maximum 6 points	**2**

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.

[1] U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.

[2] **Canopied** — landscape where features overhead (above eye level) create a canopy or ceiling. **Enclosed** — a space, large or small surrounded by continuous grouping of objects creating walls and floor. It may have a large vertical dimension, but typically a restricted horizontal one. **Feature** — landscape dominated by a feature or a group of objects in the distance to which the eye is drawn. **Focal** — converging lines in the landscape or progressions of aligned objects lead the eye to a focal point in the landscape. **Panoramic** — a broad horizontal composition. Little or no sense of boundary restriction; no apparent limit to the view. Foreground or middle ground objects do not substantially block viewing of background objects. (U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.)

[3] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[4] **Basin Floor** — nearly level to gently sloping, bottom surface of an intermontane basin. **Footslope** — the gently inclined hillslope at the foot of a hill. **High Level** — level top of plateau. **High Slope** — geomorphic component that forms the uppermost inclined surface at the top of a slope (e.g., shoulder slope, upper slope). **Interfluve** — linear top of ridge, hill, or mountain. **Low Level** — valley floor, or shoreline representing the former position of an alluvial plain, lake, or shore. **Lowslope** — inner gently inclined surface at the base of a slope. Surface profile is generally concave and a transition between midslope or backslope, and toeslope. **Midslope** — intermediate slope position between high and low (e.g., middle slope). (Adapted from T. Liang [1951]; J.B. Dalrymple, R.J. Blong, and A. Conacher. [1968]) **Toeslope** — the gently inclined surface at the base of a hillslope. Toeslope in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors. (USDA Soil Survey Manual Handbook No. 18, issued March 2017 as amended February 2018).

[5] U.S. Department of Interior Bureau of Land Management Manual H-8431-1.

KOP 7 Full Evaluation Worksheets (cont'd)

Table 11 CAPABILITY							
Category	For each category check (√) the rating that best describes the existing landscape.						
		Rating					
		High		Moderate		Low	
Topography		High amount of topographic diversity and variety.		Moderate amount of topographic diversity and variety.	√	Low amount of topographic diversity and variety.	
Land Use Pattern	If project in rural landscape	Small natural or vegetated areas. Man-made structures dominant in the view.		Natural areas of local significance. Man-made structures widespread but not dominant in the view.		Remote natural areas of regional significance. Man-made structures and features limited and scattered.	√
	If project in urban landscape	Developed areas including commercial development. Large-scale infrastructure or structures may be common and more dominant.		Suburban or mostly developed areas with components of local importance. Large-scale infrastructure or structures may be visible but not dominant.		Clustered development surrounded by rural scattered development. Large-scale infrastructure or structures limited and scattered.	
Visual Variety		Landscape exhibits a high degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit high degree of variety in landforms and vegetation.		Landscape exhibits a moderate degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit moderate variety in landforms and vegetation.	√	Landscape exhibits a low degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit minimal variety in landforms and vegetation.	
Major Focal Points or Features		Focal points or features in the viewshed that are either natural or man-made, commonly found, minimal local importance/value, or contribute little to the character of the landscape or are indistinct.		Focal points or features in the viewshed that are either natural or man-made, somewhat commonly found, local importance/value, or make a minor contribution to the character of the landscape.		Focal points or features in the viewshed that are either natural or man-made and are unusual or rare, regional importance/value, or make a major contribution to the character of the landscape or are somewhat distinctive.	√
Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 17, and L. Blocker, T. Slider, J. Ruchman, J. Mosier, L. Kok, J. Silbemagle, J. Beard, D. Wagner, G. Brogan, D. Jones, N. Laughlinn, L. Anderson, "Landscape Aesthetic (AH 701-i) - Visual Absorption Capability (Appendix C)," United States Department of Agriculture Forest Service, 1995, pp. C-1-C-8.							

KOP 7 Full Evaluation Worksheets (cont'd)

Table 12 ABSORPTION	
For each question circle the applicable rating for the absorption of the landscape; High = H, Moderate = M, Low = L.	
Exposure	**Rating**
What is the level of exposure of the project in the landscape? The higher the level of exposure, the lower the absorption.	**H M (L)**
What is the intensity of the observation of the project? The more the project is observed from certain intensive land uses the lower its absorption (e.g., view from a densely populated residential area versus a heavy manufacturing and processing area).	**H (M) L**
What is the view distance to the project? The farther the viewing distance to the project from the vantage point the lower its exposure the higher its absorption. Is the project more than three miles away?	**H M (L)**
What is the project's distance from an urban skyline or a natural skyline (e.g., high-rise buildings or a mountain range against a backdrop of sky)? The closer the project is to an urban or natural skyline the lower its absorption.	**H (M) L**
What is the project's topographic position in the landscape? As the project's position increases its absorption decreases (e.g., toeslope to summit).	**(H) M L**
Focal Point	
Is the project near a focal point in the landscape? A focal point is a converging of lines in the landscape or progressions of aligned objects that lead the eye to a point. A focal point gives the viewer something interesting to look at in the view. The closer the project is to a focal point the greater viewer scrutiny the lower the absorption.	**H M (L)**
Does the edge(s) in the landscape have a diverse background but have the propensity to become a focal point? An edge is a transitional linear place where one space or landscape becomes part of another. An edge has a high absorption due to a diverse background, a low absorption due to the propensity to become a focal point (e.g., city meets country, a woodland edge, an alpine tree line, coastline).	**H (M) L**
Trees & Vegetation	
Are trees and vegetation in the landscape missing, deficient, or uniform? The greater the density of trees and vegetation, the greater the coverage, the greater the capacity of an area to absorb physical change.	**H M (L)**
What is the type(s) of tree(s) and vegetation in the landscape? Tree and vegetation types vary the absorption of the physical change. A uniformly tall, dense stand of trees has screening ability. Vegetation types such as evergreen shrubs and similar have greater absorption than dwarf shrubs, ornamental grasses, and grass-like plants. Trees and vegetation can provide high absorption in the foreground but lower absorption in the background.	**H M (L)**
Disturbed Surface Area	
Period of time to restore the project's disturbed surface area to its pre-construction activity condition? The longer the time to restore the disturbed area to its undisturbed original condition after the construction phase the lower the absorption; 1 year = high, 2 to 3 years = moderate, 3 years or more = low.	**H M (L)**
Adapted from S. Amir, E. Gidalizon, "Expert-based method for the evaluation of visual absorption capacity of the landscape*," Journal of Environmental Management, 1990, Vol. 30, pp. 251-263, and W.C. Yeomans, "A Proposed Biophysical Approach to Visual Absorption Capability (VAC),[1]" Pacific Southwest Forest and Range Experimental Station, Berkeley, California, 1979 submitted to the National Conference on Applied Techniques for Analysis and Management of Visual Resource, Incline Village, Nevada, April 23-25, 1979, pp. 172-181.	

KOP 7 Full Evaluation Worksheets (cont'd)

Table 13 MAGNITUDE OF CHANGE				
Dominant	**Prominent**	**Conspicuous**	**Apparent**	**Unobtrusive**
Project commands or controls the view in the landscape. Project causes a very large alteration to the landscape or features within the landscape such that there is a fundamental change from the existing physical condition.	**Project stands out or is striking in the view in the landscape.** Project causes a large alteration to the landscape or features within the landscape such that there is an unmistakable change from the existing physical condition.	Project is clearly visible and noticeable within the view in the landscape. Project causes a moderate alteration to the landscape or features within the landscape such that there is a distinct change from the existing physical condition.	Project visible or evident within the view in the landscape. Project causes a small alteration to the landscape or features within the landscape such that there is a perceptible change from the existing physical condition.	Project indistinct or not obvious within the view in the landscape. Project causes a very small alteration to the landscape, or features within the landscape such that there is a de minimis change from the existing physical condition.
Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 20.				

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS							
Landscape		**Project Prominence**		**Visual Absorption Capability**	**Magnitude Of Change**		**CEQA Guidelines Level of Effect On The Environment** (See Table 15)
Table	**Rating**	**Rating**		**Rating**			
Landscape Character	See Table 3	Severe		High **Moderate** Low	Dominant		**Significant Effect** Less Than Significant Effect
Unity	**Moderate to High**	**Strong**	√		**Prominent**	√	
Public View	**Moderate**	Moderate			Conspicuous		
Visibility	**High**	Weak			Apparent		
		Negligible			Unobtrusive		

KOP 7 Full Evaluation Worksheets (cont'd)

Table 15 CEQA GUIDELINES LEVEL OF EFFECT ON THE ENVIRONMENT

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 and aesthetic significance." (14 CCR § 15382) (Pub. Res. Code § 21060.5, 14 CCR § 15360) The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, noncompliance with which means the effect will normally be determined to be significant by the [lead] agency...." (14 CCR § 15064.7[a])

Less Than Significant Effect with Mitigation Incorporated. The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "... but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed [CEQA environmental document (e.g., Negative Declaration) is] released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment." (Pub. Res. Code § 21064.5, 14 CCR § 15369.5) (Pub. Res. Code § 21002)

Less Than Significant Effect. The physical change by the proposed project to the existing physical condition does not reach the threshold of significance "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, ... compliance with which means the effect normally will be determined to be less than significant." (14 CCR § 15064.7[a])

Key Observation Point Evaluation Worksheets

KOP 8 Zzyzx Road Looking South – Summary Sheet for Worksheet Tables

LANDSCAPE			
Table 3 LANDSCAPE CHARACTER	Aesthetic Aspect		See attached Table 3.
	Perceptual Aspect		
	Basic Design Element		
	Landscape	**Rating**	Write the rating selected in the attached Table 4.
Table 4 UNITY	Rarity	**Moderate**	
	Diversity	**Low to Moderate**	
	Detractors	**Moderate to High**	
	Distinctiveness	**Moderate**	
	Integrity	**Moderate**	
	Rating	**Checkbox**	Check (**√**) the rating selected in the attached Tables 5 and 6.
Table 5 PUBLIC VIEW	High		
	Moderate		
	Low	**√**	
	None		
Table 6 VISIBILITY	Dominant		
	High	**√**	
	Moderate to High		
	Moderate		
	Low to Moderate		
	Low		

PROJECT PROMINENCE			
Table 7 Basic Design Element Contrast			
Basic Design Element	**Rating**	**Weight**	**Points**
Color	**Strong = 3**	x 3	**9**
	Moderate = 2		
	Weak = 1		
	None = 0		
Form	Strong = 3	x 2	**4**
	Moderate = 2		
	Weak = 1		
	None = 0		
Line	Strong = 3	x 1	**2**
	Moderate = 2		
	Weak = 1		
	None = 0		
Texture	Strong = 3	x 1	**1**
	Moderate = 2		
	Weak = 1		
	None = 0		
		Maximum 21 points	**16**

KOP 8 Zzyzx Road Looking South – Summary Sheet for Worksheet Tables (cont'd)

Table 8 SCALE DOMINANCE		
Rating		**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.	12
Codominant	**The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.**	**8**
Subordinate	The project is of significant size but occupies a minor part of the landscape.	4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.	0
	Single highest points / Maximum 12 points	**8**

Table 9 SPATIAL DOMINANCE			
Category	**Rating**	**Single Highest Rating**	**Points**
Spatial composition of the landscape.	prominent	Dominant 2-3 categories rated prominent.	6
	significant		
	inconspicuous	Codominant 1 category rated prominent, or 2 categories rated significant.	4
Spatial position of the project.	prominent		
	significant		
	inconspicuous	**Subordinate** 1 category rated significant.	**2**
Backdrop to the project.	prominent		
	inconspicuous	Insignificant All categories rated inconspicuous.	0
		Single highest points / Maximum 6 points	**2**

Table 10 PROJECT PROMINENCE RATING*	
Total Points	**Rating**
32-39	Severe
24-31	**Strong**
16-23	Moderate
8-15	Weak
0-7	Negligible
***(Add Points from Tables 7, 8, and 9)**	**Rating = Strong**

Tables 11 and 12 VISUAL ABSORPTION CAPABILITY			
	Rating	**Checkbox**	The existing landscape's ability to absorb the physical change by the proposed project without an alteration to its visual character.
Table 11 CAPABILITY **Table 12 ABSORPTION**	High		
	Moderate	**√**	
	Low		

Table 13 MAGNITUDE OF CHANGE		
		Checkbox
Dominant	Project commands or controls the view in the landscape.	
Prominent	**Project stands out or is striking in the view in the landscape.**	**√**
Conspicuous	Project is clearly visible and noticeable within the view in the landscape.	
Apparent	Project visible or evident within the view in the landscape.	
Unobtrusive	Project indistinct or not obvious within the view in the landscape.	

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS		
CEQA Guidelines Level of Effect on the Environment	**Significant Effect**	**√**
	Less Than Significant Effect	

KOP 8 Full Evaluation Worksheets (Tables 3 through 15)

Table 3 LANDSCAPE CHARACTER

Aesthetic	**Description**								Check (√) the description that best describes the aspect of the landscape.	
Balance	harmonious		balanced		discordant	√	chaotic			
Complexity	uniform		simple		diverse	√	complex			
Dynamic	sweeping	√	spreading		disperse		channeled			
Enclosure	expansive		open	√	enclosed		constrained			
Pattern (two-dims.)	formal		organized		regular	√	random			
Perceptual										
Pleasure	beautiful		attractive		pleasant	√	unpleasant		nasty	
Security	intimate		comfortable		safe	√	unsettling		threatening	
Stimulus	inspiring		challenging		interesting	√	bland		monotonous	
Tranquility	inaccessible		remote	√	vacant		peaceful	√	busy	
Basic Design Element										
Color	monochrome		muted	√	colorful		garish		The basic design elements are the source of visual contrast in the landscape that an individual sees and responds to when viewing a space.	
Form	angular	√	curvilinear		horizontal	√	rounded	√		
Line	straight	√	curved	√	vertical	√	horizontal	√		
Texture	smooth	√	textured	√	rough	√	very rough	√		
Scale	intimate		small		large	√	vast			

Adapted from Carys Swanwick, "Landscape Character Assessment Guidance for England and Scotland," prepared for The Countryside Agency and Scottish Natural Heritage, 2002, pp. 30-36.

Table 4 UNITY

Landscape	**Rating**					**Guidance**
	High	**Moderate to High**	**Moderate**	**Low to Moderate**	**Low**	
Rarity	rare		√		common	Are there many examples of this type of landscape in the region?
Diversity	orderly			√	muddled	Is there a recognizable order of the landscape features in view or are there too many patterns overlapping?
Detractors	many	√			few	Are there landscape features out of place?
Distinctiveness	distinct		√		indistinct	Is it easy to remember the landscape? Patterns dramatic or take some finding?
Integrity	whole		√		remnant	What patterns in the landscape are evident? Are sections missing and to what extent?

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 36.

KOP 8 Full Evaluation Worksheets (cont'd)

Table 5 PUBLIC VIEW	
Rating	
High	
	Public view includes areas where the aesthetic value is protected by federal, state, county or city, law, ordinance, regulation, or standard. Public view includes federal, state, county, city designated areas of aesthetic, cultural, and recreational claim, such as: a park, outdoor recreation area, etc.; coastal or forest reserve, open space preserve, urban green space, etc.; scenic overlook, scenic river, scenic trail, etc.; historic building, district, or site; a site having a cultural resource. Public view includes a federal or state designated scenic byway, highway, or road; designated scenic highway or road of regional importance; a segment of travel route, such as a road, rail line, pedestrian and equestrian trail, bicycle path near a designated area of aesthetic claim and leading directly to it. View approaching an area of aesthetic, cultural, and recreational claim that may be closely related to the appreciation of the aesthetic, cultural, and recreational significance at that designation. Public view includes an urban residential use area and segment of road that serves as the primary access route to it.
Moderate	
	Public view includes undesignated but popularly used or appreciated area of aesthetic, cultural, and recreational claim of significance in the region. Public view includes a highway or road locally designated as a scenic route and of importance only to the local population, or informally designated as such in road atlases, road maps, and tour book guides. Public view includes segments of travel routes, such as roads, pedestrian and equestrian trails, bicycle paths that are near and are the primary access to protected or popularly used undesignated areas important for their aesthetic, cultural, or recreational claim. Public view includes a segment of travel route near a designated area of aesthetic claim serving as a secondary access route to the area. Public view includes a rural residential use area and segment of road that serves as the primary access route to it within one mile. Public view includes a maintained religious facility or cemetery.
Low	
√	Public view includes an agricultural, commercial, industrial, manufacturing, research, and development use area. Public view includes a small aggregation of dwellings.
None	
	No public view.

Adapted from Aspen Environmental Group, "Final Environmental Impact Report Tranquillon Ridge Oil and Gas Development Project" prepared for County of Santa Barbara Planning and Development. Santa Barbara, CA, April 2008, Vol. 1, pp. 5.13-5-6, and "Final Environmental Impact Report Southern California International Gateway Project," Appendix B Aesthetics Visual Resource Methodology, Los Angeles Harbor Department, Los Angeles, CA, March 2013.

KOP 8 Full Evaluation Worksheets (cont'd)

Table 6 VISIBILITY	
Rating	
Dominant Dominates view because project would fill most of visual field for views in its general direction. Stark contrast in form, line, color, texture, luminance, or motion may contribute to view dominance.	An object with strong visual contrast that is of such enormous size that it occupies most of the visual field, and views of it cannot be avoided except by turning the head greater than 45 degrees from a direct view of the object. The object is the major focus of visual attention, and its large apparent size is a major factor in its view dominance. In addition to size, contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of the project detracts noticeably from views of other landscape components.
High Strongly attracts visual attention of views in general direction of project. Attention may be drawn by stark contrast in form, line, color, or texture, luminance, or motion.	An object that is not of large size, but contrasts with the surrounding landscape components so strongly that it is a major focus of visual attention, drawing viewer attention immediately, and tending to hold viewer attention. In addition to stark contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of project interferes noticeably with views of nearby landscape components.
Moderate to High Plainly visible, could not be missed by casual observer, but does not strongly attract visual attention, or dominate view because of apparent size, for views in general direction of project.	An object that is obvious and with enough size or contrast to compete with other landscape components, but with insufficient visual contrast to strongly attract visual attention and insufficient size to occupy most of the observer's visual field.
Moderate Visible after brief glance in general direction of project and unlikely to be missed by casual observer.	An object that can be easily detected after a brief look and would be visible to most casual observers, but without enough size or contrast to compete with major landscape components.
Low to Moderate Visible when scanning in general direction of project; otherwise, likely to be missed by casual observer.	An object that is very small and/or faint, but when the observer is scanning the horizon or looking more closely at an area can be detected without extended viewing. A casual observer could sometimes notice it; however, most people would not notice it without some active looking.
Low Visible only after extended, close viewing; otherwise, invisible.	An object that is near the extreme limit of visibility. A person who was not aware of it in advance and looking for it could not see it. Even under those circumstances, the object can only be seen after looking at it closely for an extended period.
Adapted from R.G. Sullivan, L.B. Kirchler, T. Lahti, S. Roche, K. Beckman, B. Cantwell, P. Richmond, "Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes," University of Chicago Argonne, LLC submitted to the National Association of Environmental Professionals 37th Annual Conference Proceedings, Portland, Oregon, May 21-24, 2012, p. 17.	

KOP 8 Full Evaluation Worksheets (cont'd)

Table 7 BASIC DESIGN ELEMENT CONTRAST

Element	Rating[1]	Weight	Points	
Color	**Strong = 3** Moderate = 2 Weak = 1 None = 0	x 3	**9**	Color is "the light-reflecting qualities of a project's surface (for example, dark or light, blue or gray) in relation to background colors."[2] "Colors that harmonize well seem to belong together and produce pleasing visual effects. Colors that do not harmonize are disturbing to the viewer."[3] Contrast in color depends on the exterior surface degree of lightness or darkness, gradation or variety of a color, the degree of saturation or brilliance of a color in the project to those that continue to exist in the landscape.
Form	Strong = 3 **Moderate = 2** Weak = 1 None = 0	x 2	**4**	Form is "the configuration and outline of the project in terms of masses, patterns, and linear elements. For example, a structure may have a bulky, vertical, geometric silhouette which contrasts with an irregular horizontal landscape of rolling hills."[4] Forms exist in three dimensions (height, length, width). For example, the shape is a square its form is a cube. Forms that are bold, regular, solid, or vertical tend to prevail in the landscape. Contrast in form depends on how alike the form(s) of the project is to those that continue to exist in the landscape.
Line	Strong = 3 **Moderate = 2** Weak = 1 None = 0	x 1	**2**	"Line is the path, real or imagined that the eye follows when perceiving abrupt differences when objects are aligned in a one-dimensional sequence."[5] "Line in the landscape is created by the edge between two materials, the outline or silhouette of a form, or a long linear feature."[6] Properties of lines: straight, diagonal, curved, vertical, horizontal. Contrast in line depends on edge types and interruption, or introduction of edges, bands, and silhouette lines in the project to those that continue to exist in the landscape.
Texture	Strong = 3 Moderate = 2 **Weak = 1** None = 0	x 1	**1**	Texture is "the aggregation of small forms or color mixtures into a continuous surface pattern; the aggregated parts are enough that they do not appear as discrete objects in the composition of the scene."[7] "Details of the surface pattern, as in smooth polished metal surfaces versus the rough, uneven textures of the foliage of trees and bushes"[8] Contrast in texture depends on the relative dimensions of the surface variations from large to small, spacing of surface variations, and the degree of uniform recurrence and symmetrical arrangement of the surface variation in the project to those that continue to exist in the landscape.
	Overall Rating[9]		**+16**	
	Maximum 21 points			

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, CA, 1979.

[1] **Strong** — the project contrast demands attention will not be overlooked and is dominant in the landscape. **Moderate** — the project contrast begins to attract attention and begins to dominate the characteristic landscape. **Weak** — the project contrast can be seen but does not attract attention. **None** — the project contrast is not visible or perceived. (U.S. Department of Interior Bureau of Land Management Manual 8431-Visual Resources Contrast Rating, January 17, 1986.)

[2] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[3] U.S. Department of Transportation Federal Highway Administration, "A Guide to Visual Quality in Noise Barrier Design," Chapter 3. Visual Design Principles, n.d.

[4] Sheppard, p. 46.

[5] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[6] Gail Hansen, "Basic Principles of Landscape Design." Florida Cooperative Extension Service Institute of Food and Agricultural Science, University of Florida, Gainesville, Florida, July 2010.

[7] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[8] Sheppard, p. 47.

[9] Overall Rating is for descriptive purpose: Strong — 1-3 ratings Strong or 3 ratings Moderate; Moderate — 1-2 ratings Moderate with no higher ratings; Weak — 1-3 ratings Weak with no higher ratings; None — all ratings None.

KOP 8 Full Evaluation Worksheets (cont'd)

Table 8 SCALE DOMINANCE			
Rating			**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.		12
Codominant	**The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.**		**8**
Subordinate	The project is of significant size but occupies a minor part of the landscape.		4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.		0
	Single highest points	Maximum 12 points	**8**
Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.			

KOP 8 Full Evaluation Worksheets (cont'd)

Table 9 SPATIAL DOMINANCE

Category				Single Highest Rating
Spatial composition of the landscape	"[T]he arrangement of objects and voids in the landscape can be categorized by their spatial composition .... Some compositions, especially those which are distinctly focal, enclosed, or feature-oriented, are more vulnerable to modifications than others, depending upon how strongly the spatial configuration draws the eye to certain locations."[1]			Dominant 2-3 categories rated prominent = 6 points Codominant 1 category rated prominent, or 2 categories rated significant = 4 points **Subordinate** 1 category rated significant **= 2 points** Insignificant All categories rated inconspicuous = 0 points
	Rating	**Description**		
	prominent	Feature[2], Focal[2], or Enclosed[2] landscape.		
	significant	Panoramic,[2] or weak focal, feature or enclosed landscape.		
	inconspicuous	Canopied,[2] indistinct or obscured landscape.		
Spatial position of the project	"Spatial position of the project in relation to the three-dimensional arrangement of objects and voids in the landscape. Important spatial aspects of the project include relationship to the skyline, location in topographic spaces such as focal valleys or broad plains, and position with regard to streetscapes and architectural arrangements."[3]			
	Rating	**Description**		
	prominent	High Level,[4] High Slope,[4] Interfluve[4]		
	significant	Low Level,[4] Lowslope,[4] Midslope[4]		
	inconspicuous	Basin Floor,[4] Footslope,[4] Toeslope[4]		
Backdrop to the project	"[T]he backdrop against which an object is seen affects its visual contrast. Modifications seen against the sky or water are usually more prominent than against a land backdrop."[5]			
	Rating	**Description**		
	prominent	All or a significant part of the project will be seen against sky or water.		
	inconspicuous	All or a significant part of the project will be seen against land.		
		Single highest points	Maximum 6 points	**2**

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.

[1] U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.

[2] **Canopied** — landscape where features overhead (above eye level) create a canopy or ceiling. **Enclosed** — a space, large or small surrounded by continuous grouping of objects creating walls and floor. It may have a large vertical dimension, but typically a restricted horizontal one. **Feature** — landscape dominated by a feature or a group of objects in the distance to which the eye is drawn. **Focal** — converging lines in the landscape or progressions of aligned objects lead the eye to a focal point in the landscape. **Panoramic** — a broad horizontal composition. Little or no sense of boundary restriction; no apparent limit to the view. Foreground or middle ground objects do not substantially block viewing of background objects. (U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.)

[3] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[4] **Basin Floor** — nearly level to gently sloping, bottom surface of an intermontane basin. **Footslope** — the gently inclined hillslope at the foot of a hill. **High Level** — level top of plateau. **High Slope** — geomorphic component that forms the uppermost inclined surface at the top of a slope (e.g., shoulder slope, upper slope). **Interfluve** — linear top of ridge, hill, or mountain. **Low Level** — valley floor, or shoreline representing the former position of an alluvial plain, lake, or shore. **Lowslope** — inner gently inclined surface at the base of a slope. Surface profile is generally concave and a transition between midslope or backslope, and toeslope. **Midslope** — intermediate slope position between high and low (e.g., middle slope). (Adapted from T. Liang [1951]; J.B. Dalrymple, R.J. Blong, and A. Conacher. [1968]) **Toeslope** — the gently inclined surface at the base of a hillslope. Toeslope in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors. (USDA Soil Survey Manual Handbook No. 18, issued March 2017 as amended February 2018).

[5] U.S. Department of Interior Bureau of Land Management Manual H-8431-1.

KOP 8 Full Evaluation Worksheets (cont'd)

Table 11 CAPABILITY							
Category	For each category check (√) the rating that best describes the existing landscape.						
		Rating					
		High		**Moderate**		**Low**	
Topography		High amount of topographic diversity and variety.		Moderate amount of topographic diversity and variety.	√	Low amount of topographic diversity and variety.	
Land Use Pattern	If project in rural landscape	Small natural or vegetated areas. Man-made structures dominant in the view.		Natural areas of local significance. Man-made structures widespread but not dominant in the view.	√	Remote natural areas of regional significance. Man-made structures and features limited and scattered.	
	If project in urban landscape	Developed areas including commercial development. Large-scale infrastructure or structures may be common and more dominant.		Suburban or mostly developed areas with components of local importance. Large-scale infrastructure or structures may be visible but not dominant.		Clustered development surrounded by rural scattered development. Large-scale infrastructure or structures limited and scattered.	
Visual Variety		Landscape exhibits a high degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit high degree of variety in landforms and vegetation.		Landscape exhibits a moderate degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit moderate variety in landforms and vegetation.	√	Landscape exhibits a low degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit minimal variety in landforms and vegetation.	
Major Focal Points or Features		Focal points or features in the viewshed that are either natural or man-made, commonly found, minimal local importance/value, or contribute little to the character of the landscape or are indistinct.		Focal points or features in the viewshed that are either natural or man-made, somewhat commonly found, local importance/value, or make a minor contribution to the character of the landscape.		Focal points or features in the viewshed that are either natural or man-made and are unusual or rare, regional importance/value, or make a major contribution to the character of the landscape or are somewhat distinctive.	√
Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 17, and L. Blocker, T. Slider, J. Ruchman, J. Mosier, L. Kok, J. Silbemagle, J. Beard, D. Wagner, G. Brogan, D. Jones, N. Laughlinn, L. Anderson, "Landscape Aesthetic (AH 701-i) - Visual Absorption Capability (Appendix C)," United States Department of Agriculture Forest Service, 1995, pp. C-1-C-8.							

KOP 8 Full Evaluation Worksheets (cont'd)

Table 12 ABSORPTION	
For each question circle the applicable rating for the absorption of the landscape; High = H, Moderate = M, Low = L.	
Exposure	**Rating**
What is the level of exposure of the project in the landscape? The higher the level of exposure, the lower the absorption.	H M (L)
What is the intensity of the observation of the project? The more the project is observed from certain intensive land uses the lower its absorption (e.g., view from a densely populated residential area versus a heavy manufacturing and processing area).	(H) M L
What is the view distance to the project? The farther the viewing distance to the project from the vantage point the lower its exposure the higher its absorption. Is the project more than three miles away?	H (M) L
What is the project's distance from an urban skyline or a natural skyline (e.g., high-rise buildings or a mountain range against a backdrop of sky)? The closer the project is to an urban or natural skyline the lower its absorption.	H (M) L
What is the project's topographic position in the landscape? As the project's position increases its absorption decreases (e.g., toeslope to summit).	(H) M L
Focal Point	
Is the project near a focal point in the landscape? A focal point is a converging of lines in the landscape or progressions of aligned objects that lead the eye to a point. A focal point gives the viewer something interesting to look at in the view. The closer the project is to a focal point the greater viewer scrutiny the lower the absorption.	H (M) L
Does the edge(s) in the landscape have a diverse background but have the propensity to become a focal point? An edge is a transitional linear place where one space or landscape becomes part of another. An edge has a high absorption due to a diverse background, a low absorption due to the propensity to become a focal point (e.g., city meets country, a woodland edge, an alpine tree line, coastline).	H (M) L
Trees & Vegetation	
Are trees and vegetation in the landscape missing, deficient, or uniform? The greater the density of trees and vegetation, the greater the coverage, the greater the capacity of an area to absorb physical change.	H M (L)
What is the type(s) of tree(s) and vegetation in the landscape? Tree and vegetation types vary the absorption of the physical change. A uniformly tall, dense stand of trees has screening ability. Vegetation types such as evergreen shrubs and similar have greater absorption than dwarf shrubs, ornamental grasses, and grass-like plants. Trees and vegetation can provide high absorption in the foreground but lower absorption in the background.	H M (L)
Disturbed Surface Area	
Period of time to restore the project's disturbed surface area to its pre-construction activity condition? The longer the time to restore the disturbed area to its undisturbed original condition after the construction phase the lower the absorption; 1 year = high, 2 to 3 years = moderate, 3 years or more = low.	H M (L)
Adapted from S. Amir, E. Gidalizon, "Expert-based method for the evaluation of visual absorption capacity of the landscape*," Journal of Environmental Management, 1990, Vol. 30, pp. 251-263, and W.C. Yeomans, "A Proposed Biophysical Approach to Visual Absorption Capability (VAC),[1]" Pacific Southwest Forest and Range Experimental Station, Berkeley, California, 1979 submitted to the National Conference on Applied Techniques for Analysis and Management of Visual Resource, Incline Village, Nevada, April 23-25, 1979, pp. 172-181.	

KOP 8 Full Evaluation Worksheets (cont'd)

Table 13 MAGNITUDE OF CHANGE				
Dominant	**Prominent**	**Conspicuous**	**Apparent**	**Unobtrusive**
Project commands or controls the view in the landscape. Project causes a very large alteration to the landscape or features within the landscape such that there is a fundamental change from the existing physical condition.	**Project stands out or is striking in the view in the landscape.** Project causes a large alteration to the landscape or features within the landscape such that there is an unmistakable change from the existing physical condition.	Project is clearly visible and noticeable within the view in the landscape. Project causes a moderate alteration to the landscape or features within the landscape such that there is a distinct change from the existing physical condition.	Project visible or evident within the view in the landscape. Project causes a small alteration to the landscape or features within the landscape such that there is a perceptible change from the existing physical condition.	Project indistinct or not obvious within the view in the landscape. Project causes a very small alteration to the landscape, or features within the landscape such that there is a de minimis change from the existing physical condition.
Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 20.				

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS							
Landscape		**Project Prominence**		**Visual Absorption Capability**	**Magnitude Of Change**		**CEQA Guidelines Level of Effect On The Environment** (See Table 15)
Table	**Rating**	**Rating**		**Rating**			
Landscape Character	See Table 3	Severe		High	Dominant		**Significant Effect**
Unity	**Moderate**	**Strong**	√		**Prominent**	√	
Public View	**Low**	Moderate		**Moderate**	Conspicuous		
Visibility	**High**	Weak			Apparent		Less Than Significant Effect
		Negligible		Low	Unobtrusive		

KOP 8 Full Evaluation Worksheets (cont'd)

Table 15 CEQA GUIDELINES LEVEL OF EFFECT ON THE ENVIRONMENT

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 and aesthetic significance." (14 CCR § 15382) (Pub. Res. Code § 21060.5, 14 CCR § 15360) The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, noncompliance with which means the effect will normally be determined to be significant by the [lead] agency...." (14 CCR § 15064.7[a])

Less Than Significant Effect with Mitigation Incorporated. The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "... but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed [CEQA environmental document (e.g., Negative Declaration) is] released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment." (Pub. Res. Code § 21064.5, 14 CCR § 15369.5) (Pub. Res. Code § 21002)

Less Than Significant Effect. The physical change by the proposed project to the existing physical condition does not reach the threshold of significance "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, ... compliance with which means the effect normally will be determined to be less than significant." (14 CCR § 15064.7[a])

Key Observation Point Evaluation Worksheets

KOP 9 Rasor Road and OHV Trail Looking Northwest
Summary Sheet for Worksheet Tables

LANDSCAPE			
Table 3 LANDSCAPE CHARACTER	Aesthetic Aspect		See attached Table 3.
	Perceptual Aspect		
	Basic Design Element		
	Landscape	**Rating**	Write the rating selected in the attached Table 4.
Table 4 UNITY	Rarity	**Moderate**	
	Diversity	**Moderate**	
	Detractors	**Low to Moderate**	
	Distinctiveness	**Moderate**	
	Integrity	**Moderate to High**	
	Rating	**Checkbox**	Check (**√**) the rating selected in the attached Tables 5 and 6.
Table 5 PUBLIC VIEW	High		
	Moderate	**√**	
	Low		
	None		
Table 6 VISIBILITY	Dominant		
	High	**√**	
	Moderate to High		
	Moderate		
	Low to Moderate		
	Low		

PROJECT PROMINENCE			
Table 7 Basic Design Element Contrast			
Basic Design Element	**Rating**	**Weight**	**Points**
Color	**Strong = 3**	x 3	**9**
	Moderate = 2		
	Weak = 1		
	None = 0		
Form	Strong = 3	x 2	**4**
	Moderate = 2		
	Weak = 1		
	None = 0		
Line	**Strong = 3**	x 1	**3**
	Moderate = 2		
	Weak = 1		
	None = 0		
Texture	Strong = 3	x 1	**1**
	Moderate = 2		
	Weak = 1		
	None = 0		
		Maximum 21 points	**17**

KOP 9 Rasor Road and OHV Trail Looking Northwest
Summary Sheet for Worksheet Tables (cont'd)

Table 8 SCALE DOMINANCE

Rating		Points
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.	12
Codominant	**The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.**	**8**
Subordinate	The project is of significant size but occupies a minor part of the landscape.	4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.	0
	Single highest points / Maximum 12 points	**8**

Table 9 SPATIAL DOMINANCE

Category	Rating	Single Highest Rating	Points
Spatial composition of the landscape.	prominent	Dominant 2-3 categories rated prominent.	6
	significant		
	inconspicuous	Codominant 1 category rated prominent, or 2 categories rated significant.	4
Spatial position of the project.	prominent		
	significant		
	inconspicuous	**Subordinate** 1 category rated significant.	**2**
Backdrop to the project.	prominent		
	inconspicuous	Insignificant All categories rated inconspicuous.	0
		Single highest points / Maximum 6 points	**2**

Table 10 PROJECT PROMINENCE RATING*

Total Points	Rating
32-39	Severe
24-31	**Strong**
16-23	Moderate
8-15	Weak
0-7	Negligible
***(Add Points from Tables 7, 8, and 9)**	**Rating = Strong**

Tables 11 and 12 VISUAL ABSORPTION CAPABILITY

	Rating	Checkbox	
Table 11 CAPABILITY **Table 12 ABSORPTION**	High		The existing landscape's ability to absorb the physical change by the proposed project without an alteration to its visual character.
	Moderate		
	Low	**√**	

Table 13 MAGNITUDE OF CHANGE

		Checkbox
Dominant	Project commands or controls the view in the landscape.	
Prominent	**Project stands out or is striking in the view in the landscape.**	**√**
Conspicuous	Project is clearly visible and noticeable within the view in the landscape.	
Apparent	Project visible or evident within the view in the landscape.	
Unobtrusive	Project indistinct or not obvious within the view in the landscape.	

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS

CEQA Guidelines Level of Effect on the Environment	**Significant Effect**	**√**
	Less Than Significant Effect	

KOP 9 Full Evaluation Worksheets (Tables 3 through 15)

Table 3 LANDSCAPE CHARACTER

Aesthetic	**Description**								Check (√) the description that best describes the aspect of the landscape.
Balance	harmonious		balanced	√	discordant		chaotic		
Complexity	uniform		simple	√	diverse		complex		
Dynamic	sweeping		spreading	√	disperse		channeled		
Enclosure	expansive		open	√	enclosed		constrained		
Pattern (two-dims.)	formal		organized	√	regular		random		
Perceptual									
Pleasure	beautiful		attractive		pleasant	√	unpleasant		nasty
Security	intimate		comfortable	√	safe		unsettling		threatening
Stimulus	inspiring		challenging		interesting	√	bland		monotonous
Tranquility	inaccessible		remote	√	vacant		peaceful	√	busy
Basic Design Element									
Color	monochrome		muted	√	colorful		garish		The basic design elements are the source of visual contrast in the landscape that an individual sees and responds to when viewing a space.
Form	angular	√	curvilinear		horizontal	√	rounded	√	
Line	straight	√	curved	√	vertical		horizontal	√	
Texture	smooth		textured	√	rough	√	very rough		
Scale	intimate		small		large	√	vast		

Adapted from Carys Swanwick, "Landscape Character Assessment Guidance for England and Scotland," prepared for The Countryside Agency and Scottish Natural Heritage, 2002, pp. 30-36.

Table 4 UNITY

Landscape	**Rating**					**Guidance**
	High	**Moderate to High**	**Moderate**	**Low to Moderate**	**Low**	
Rarity	rare		√		common	Are there many examples of this type of landscape in the region?
Diversity	orderly		√		muddled	Is there a recognizable order of the landscape features in view or are there too many patterns overlapping?
Detractors	many			√	few	Are there landscape features out of place?
Distinctiveness	distinct		√		indistinct	Is it easy to remember the landscape? Patterns dramatic or take some finding?
Integrity	whole	√			remnant	What patterns in the landscape are evident? Are sections missing and to what extent?

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 36.

KOP 9 Full Evaluation Worksheets (cont'd)

Table 5 PUBLIC VIEW	
Rating	
High	
	Public view includes areas where the aesthetic value is protected by federal, state, county or city, law, ordinance, regulation, or standard. Public view includes federal, state, county, city designated areas of aesthetic, cultural, and recreational claim, such as: a park, outdoor recreation area, etc.; coastal or forest reserve, open space preserve, urban green space, etc.; scenic overlook, scenic river, scenic trail, etc.; historic building, district, or site; a site having a cultural resource. Public view includes a federal or state designated scenic byway, highway, or road; designated scenic highway or road of regional importance; a segment of travel route, such as a road, rail line, pedestrian and equestrian trail, bicycle path near a designated area of aesthetic claim and leading directly to it. View approaching an area of aesthetic, cultural, and recreational claim that may be closely related to the appreciation of the aesthetic, cultural, and recreational significance at that designation. Public view includes an urban residential use area and segment of road that serves as the primary access route to it.
Moderate	
√	Public view includes undesignated but popularly used or appreciated area of aesthetic, cultural, and recreational claim of significance in the region. Public view includes a highway or road locally designated as a scenic route and of importance only to the local population, or informally designated as such in road atlases, road maps, and tour book guides. Public view includes segments of travel routes, such as roads, pedestrian and equestrian trails, bicycle paths that are near and are the primary access to protected or popularly used undesignated areas important for their aesthetic, cultural, or recreational claim. Public view includes a segment of travel route near a designated area of aesthetic claim serving as a secondary access route to the area. Public view includes a rural residential use area and segment of road that serves as the primary access route to it within one mile. Public view includes a maintained religious facility or cemetery.
Low	
	Public view includes an agricultural, commercial, industrial, manufacturing, research, and development use area. Public view includes a small aggregation of dwellings.
None	
	No public view.
Adapted from Aspen Environmental Group, "Final Environmental Impact Report Tranquillon Ridge Oil and Gas Development Project" prepared for County of Santa Barbara Planning and Development. Santa Barbara, CA, April 2008, Vol. 1, pp. 5.13-5-6, and "Final Environmental Impact Report Southern California International Gateway Project," Appendix B Aesthetics Visual Resource Methodology, Los Angeles Harbor Department, Los Angeles, CA, March 2013.	

KOP 9 Full Evaluation Worksheets (cont'd)

Table 6 VISIBILITY	
Rating	
Dominant Dominates view because project would fill most of visual field for views in its general direction. Stark contrast in form, line, color, texture, luminance, or motion may contribute to view dominance.	An object with strong visual contrast that is of such enormous size that it occupies most of the visual field, and views of it cannot be avoided except by turning the head greater than 45 degrees from a direct view of the object. The object is the major focus of visual attention, and its large apparent size is a major factor in its view dominance. In addition to size, contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of the project detracts noticeably from views of other landscape components.
High Strongly attracts visual attention of views in general direction of project. Attention may be drawn by stark contrast in form, line, color, or texture, luminance, or motion.	An object that is not of large size, but contrasts with the surrounding landscape components so strongly that it is a major focus of visual attention, drawing viewer attention immediately, and tending to hold viewer attention. In addition to stark contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of project interferes noticeably with views of nearby landscape components.
Moderate to High Plainly visible, could not be missed by casual observer, but does not strongly attract visual attention, or dominate view because of apparent size, for views in general direction of project.	An object that is obvious and with enough size or contrast to compete with other landscape components, but with insufficient visual contrast to strongly attract visual attention and insufficient size to occupy most of the observer's visual field.
Moderate Visible after brief glance in general direction of project and unlikely to be missed by casual observer.	An object that can be easily detected after a brief look and would be visible to most casual observers, but without enough size or contrast to compete with major landscape components.
Low to Moderate Visible when scanning in general direction of project; otherwise, likely to be missed by casual observer.	An object that is very small and/or faint, but when the observer is scanning the horizon or looking more closely at an area can be detected without extended viewing. A casual observer could sometimes notice it; however, most people would not notice it without some active looking.
Low Visible only after extended, close viewing; otherwise, invisible.	An object that is near the extreme limit of visibility. A person who was not aware of it in advance and looking for it could not see it. Even under those circumstances, the object can only be seen after looking at it closely for an extended period.
Adapted from R.G. Sullivan, L.B. Kirchler, T. Lahti, S. Roche, K. Beckman, B. Cantwell, P. Richmond, "Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes," University of Chicago Argonne, LLC submitted to the National Association of Environmental Professionals 37th Annual Conference Proceedings, Portland, Oregon, May 21-24, 2012, p. 17.	

KOP 9 Full Evaluation Worksheets (cont'd)

Table 7 BASIC DESIGN ELEMENT CONTRAST

Element	Rating[1]	Weight	Points	
Color	**Strong = 3** Moderate = 2 Weak = 1 None = 0	x 3	**9**	Color is "the light-reflecting qualities of a project's surface (for example, dark or light, blue or gray) in relation to background colors."[2] "Colors that harmonize well seem to belong together and produce pleasing visual effects. Colors that do not harmonize are disturbing to the viewer."[3] Contrast in color depends on the exterior surface degree of lightness or darkness, gradation or variety of a color, the degree of saturation or brilliance of a color in the project to those that continue to exist in the landscape.
Form	Strong = 3 **Moderate = 2** Weak = 1 None = 0	x 2	**4**	Form is "the configuration and outline of the project in terms of masses, patterns, and linear elements. For example, a structure may have a bulky, vertical, geometric silhouette which contrasts with an irregular horizontal landscape of rolling hills."[4] Forms exist in three dimensions (height, length, width). For example, the shape is a square its form is a cube. Forms that are bold, regular, solid, or vertical tend to prevail in the landscape. Contrast in form depends on how alike the form(s) of the project is to those that continue to exist in the landscape.
Line	**Strong = 3** Moderate = 2 Weak = 1 None = 0	x 1	**3**	"Line is the path, real or imagined that the eye follows when perceiving abrupt differences when objects are aligned in a one-dimensional sequence."[5] "Line in the landscape is created by the edge between two materials, the outline or silhouette of a form, or a long linear feature."[6] Properties of lines: straight, diagonal, curved, vertical, horizontal. Contrast in line depends on edge types and interruption, or introduction of edges, bands, and silhouette lines in the project to those that continue to exist in the landscape.
Texture	Strong = 3 Moderate = 2 **Weak = 1** None = 0	x 1	**1**	Texture is "the aggregation of small forms or color mixtures into a continuous surface pattern; the aggregated parts are enough that they do not appear as discrete objects in the composition of the scene."[7] "Details of the surface pattern, as in smooth polished metal surfaces versus the rough, uneven textures of the foliage of trees and bushes"[8] Contrast in texture depends on the relative dimensions of the surface variations from large to small, spacing of surface variations, and the degree of uniform recurrence and symmetrical arrangement of the surface variation in the project to those that continue to exist in the landscape.
	Overall Rating[9]		**+17**	
	Maximum 21 points			

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, CA, 1979.

[1] **Strong** — the project contrast demands attention will not be overlooked and is dominant in the landscape. **Moderate** — the project contrast begins to attract attention and begins to dominate the characteristic landscape. **Weak** — the project contrast can be seen but does not attract attention. **None** — the project contrast is not visible or perceived. (U.S. Department of Interior Bureau of Land Management Manual 8431-Visual Resources Contrast Rating, January 17, 1986.)

[2] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[3] U.S. Department of Transportation Federal Highway Administration, "A Guide to Visual Quality in Noise Barrier Design," Chapter 3. Visual Design Principles, n.d.

[4] Sheppard, p. 46.

[5] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[6] Gail Hansen, "Basic Principles of Landscape Design." Florida Cooperative Extension Service Institute of Food and Agricultural Science, University of Florida, Gainesville, Florida, July 2010.

[7] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[8] Sheppard, p. 47.

[9] Overall Rating is for descriptive purpose: Strong — 1-3 ratings Strong or 3 ratings Moderate; Moderate — 1-2 ratings Moderate with no higher ratings; Weak — 1-3 ratings Weak with no higher ratings; None — all ratings None.

KOP 9 Full Evaluation Worksheets (cont'd)

Table 8 SCALE DOMINANCE			
Rating			**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.		12
Codominant	**The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.**		**8**
Subordinate	The project is of significant size but occupies a minor part of the landscape.		4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.		0
	Single highest points	Maximum 12 points	**8**
Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.			

KOP 9 Full Evaluation Worksheets (cont'd)

Table 9 SPATIAL DOMINANCE

Category				Single Highest Rating
Spatial composition of the landscape	"[T]he arrangement of objects and voids in the landscape can be categorized by their spatial composition .... Some compositions, especially those which are distinctly focal, enclosed, or feature-oriented, are more vulnerable to modifications than others, depending upon how strongly the spatial configuration draws the eye to certain locations."[1]			Dominant 2-3 categories rated prominent = 6 points Codominant 1 category rated prominent, or 2 categories rated significant = 4 points **Subordinate** 1 category rated significant **= 2 points** Insignificant All categories rated inconspicuous = 0 points
	Rating	**Description**		
	prominent	Feature[2], Focal[2], or Enclosed[2] landscape.		
	significant	Panoramic,[2] or weak focal, feature or enclosed landscape.		
	inconspicuous	Canopied,[2] indistinct or obscured landscape.		
Spatial position of the project	"Spatial position of the project in relation to the three-dimensional arrangement of objects and voids in the landscape. Important spatial aspects of the project include relationship to the skyline, location in topographic spaces such as focal valleys or broad plains, and position with regard to streetscapes and architectural arrangements."[3]			
	Rating	**Description**		
	prominent	High Level,[4] High Slope,[4] Interfluve[4]		
	significant	Low Level,[4] Lowslope,[4] Midslope[4]		
	inconspicuous	Basin Floor,[4] Footslope,[4] Toeslope[4]		
Backdrop to the project	"[T]he backdrop against which an object is seen affects its visual contrast. Modifications seen against the sky or water are usually more prominent than against a land backdrop."[5]			
	Rating	**Description**		
	prominent	All or a significant part of the project will be seen against sky or water.		
	inconspicuous	All or a significant part of the project will be seen against land.		
		Single highest points	Maximum 6 points	**2**

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.

[1] U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.

[2] **Canopied** — landscape where features overhead (above eye level) create a canopy or ceiling. **Enclosed** — a space, large or small surrounded by continuous grouping of objects creating walls and floor. It may have a large vertical dimension, but typically a restricted horizontal one. **Feature** — landscape dominated by a feature or a group of objects in the distance to which the eye is drawn. **Focal** — converging lines in the landscape or progressions of aligned objects lead the eye to a focal point in the landscape. **Panoramic** — a broad horizontal composition. Little or no sense of boundary restriction; no apparent limit to the view. Foreground or middle ground objects do not substantially block viewing of background objects. (U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.)

[3] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[4] **Basin Floor** — nearly level to gently sloping, bottom surface of an intermontane basin. **Footslope** — the gently inclined hillslope at the foot of a hill. **High Level** — level top of plateau. **High Slope** — geomorphic component that forms the uppermost inclined surface at the top of a slope (e.g., shoulder slope, upper slope). **Interfluve** — linear top of ridge, hill, or mountain. **Low Level** — valley floor, or shoreline representing the former position of an alluvial plain, lake, or shore. **Lowslope** — inner gently inclined surface at the base of a slope. Surface profile is generally concave and a transition between midslope or backslope, and toeslope. **Midslope** — intermediate slope position between high and low (e.g., middle slope). (Adapted from T. Liang [1951]; J.B. Dalrymple, R.J. Blong, and A. Conacher. [1968]) **Toeslope** — the gently inclined surface at the base of a hillslope. Toeslope in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors. (USDA Soil Survey Manual Handbook No. 18, issued March 2017 as amended February 2018).

[5] U.S. Department of Interior Bureau of Land Management Manual H-8431-1.

KOP 9 Full Evaluation Worksheets (cont'd)

Table 11 CAPABILITY

Category		For each category check (√) the rating that best describes the existing landscape.					
		Rating					
		High		Moderate		Low	
Topography		High amount of topographic diversity and variety.		Moderate amount of topographic diversity and variety.	√	Low amount of topographic diversity and variety.	
Land Use Pattern	If project in rural landscape	Small natural or vegetated areas. Man-made structures dominant in the view.		Natural areas of local significance. Man-made structures widespread but not dominant in the view.		Remote natural areas of regional significance. Man-made structures and features limited and scattered.	√
	If project in urban landscape	Developed areas including commercial development. Large-scale infrastructure or structures may be common and more dominant.		Suburban or mostly developed areas with components of local importance. Large-scale infrastructure or structures may be visible but not dominant.		Clustered development surrounded by rural scattered development. Large-scale infrastructure or structures limited and scattered.	
Visual Variety		Landscape exhibits a high degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit high degree of variety in landforms and vegetation.		Landscape exhibits a moderate degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit moderate variety in landforms and vegetation.	√	Landscape exhibits a low degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit minimal variety in landforms and vegetation.	
Major Focal Points or Features		Focal points or features in the viewshed that are either natural or man-made, commonly found, minimal local importance/value, or contribute little to the character of the landscape or are indistinct.		Focal points or features in the viewshed that are either natural or man-made, somewhat commonly found, local importance/value, or make a minor contribution to the character of the landscape.		Focal points or features in the viewshed that are either natural or man-made and are unusual or rare, regional importance/value, or make a major contribution to the character of the landscape or are somewhat distinctive.	√

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 17, and L. Blocker, T. Slider, J. Ruchman, J. Mosier, L. Kok, J. Silbemagle, J. Beard, D. Wagner, G. Brogan, D. Jones, N. Laughlinn, L. Anderson, "Landscape Aesthetic (AH 701-i) - Visual Absorption Capability (Appendix C)," United States Department of Agriculture Forest Service, 1995, pp. C-1-C-8.

KOP 9 Full Evaluation Worksheets (cont'd)

Table 12 ABSORPTION	
For each question circle the applicable rating for the absorption of the landscape; High = H, Moderate = M, Low = L.	
Exposure	**Rating**
What is the level of exposure of the project in the landscape? The higher the level of exposure, the lower the absorption.	H M (L)
What is the intensity of the observation of the project? The more the project is observed from certain intensive land uses the lower its absorption (e.g., view from a densely populated residential area versus a heavy manufacturing and processing area).	H (M) L
What is the view distance to the project? The farther the viewing distance to the project from the vantage point the lower its exposure the higher its absorption. Is the project more than three miles away?	H M (L)
What is the project's distance from an urban skyline or a natural skyline (e.g., high-rise buildings or a mountain range against a backdrop of sky)? The closer the project is to an urban or natural skyline the lower its absorption.	H (M) L
What is the project's topographic position in the landscape? As the project's position increases its absorption decreases (e.g., toeslope to summit).	(H) M L
Focal Point	
Is the project near a focal point in the landscape? A focal point is a converging of lines in the landscape or progressions of aligned objects that lead the eye to a point. A focal point gives the viewer something interesting to look at in the view. The closer the project is to a focal point the greater viewer scrutiny the lower the absorption.	H (M) L
Does the edge(s) in the landscape have a diverse background but have the propensity to become a focal point? An edge is a transitional linear place where one space or landscape becomes part of another. An edge has a high absorption due to a diverse background, a low absorption due to the propensity to become a focal point (e.g., city meets country, a woodland edge, an alpine tree line, coastline).	H (M) L
Trees & Vegetation	
Are trees and vegetation in the landscape missing, deficient, or uniform? The greater the density of trees and vegetation, the greater the coverage, the greater the capacity of an area to absorb physical change.	H M (L)
What is the type(s) of tree(s) and vegetation in the landscape? Tree and vegetation types vary the absorption of the physical change. A uniformly tall, dense stand of trees has screening ability. Vegetation types such as evergreen shrubs and similar have greater absorption than dwarf shrubs, ornamental grasses, and grass-like plants. Trees and vegetation can provide high absorption in the foreground but lower absorption in the background.	H M (L)
Disturbed Surface Area	
Period of time to restore the project's disturbed surface area to its pre-construction activity condition? The longer the time to restore the disturbed area to its undisturbed original condition after the construction phase the lower the absorption; 1 year = high, 2 to 3 years = moderate, 3 years or more = low.	H M (L)
Adapted from S. Amir, E. Gidalizon, "Expert-based method for the evaluation of visual absorption capacity of the landscape*," Journal of Environmental Management, 1990, Vol. 30, pp. 251-263, and W.C. Yeomans, "A Proposed Biophysical Approach to Visual Absorption Capability (VAC),[1]" Pacific Southwest Forest and Range Experimental Station, Berkeley, California, 1979 submitted to the National Conference on Applied Techniques for Analysis and Management of Visual Resource, Incline Village, Nevada, April 23-25, 1979, pp. 172-181.	

KOP 9 Full Evaluation Worksheets (cont'd)

Table 13 MAGNITUDE OF CHANGE				
Dominant	**Prominent**	**Conspicuous**	**Apparent**	**Unobtrusive**
Project commands or controls the view in the landscape. Project causes a very large alteration to the landscape or features within the landscape such that there is a fundamental change from the existing physical condition.	**Project stands out or is striking in the view in the landscape.** Project causes a large alteration to the landscape or features within the landscape such that there is an unmistakable change from the existing physical condition.	Project is clearly visible and noticeable within the view in the landscape. Project causes a moderate alteration to the landscape or features within the landscape such that there is a distinct change from the existing physical condition.	Project visible or evident within the view in the landscape. Project causes a small alteration to the landscape or features within the landscape such that there is a perceptible change from the existing physical condition.	Project indistinct or not obvious within the view in the landscape. Project causes a very small alteration to the landscape, or features within the landscape such that there is a de minimis change from the existing physical condition.
Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 20.				

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS							
Landscape		**Project Prominence**		**Visual Absorption Capability**	**Magnitude Of Change**		**CEQA Guidelines Level of Effect On The Environment** (See Table 15)
Table	**Rating**	**Rating**		**Rating**			
Landscape Character	See Table 3	Severe		High	Dominant		**Significant Effect**
Unity	**Moderate to High**	**Strong**	√		**Prominent**	√	
Public View	**Moderate**	Moderate		Moderate	Conspicuous		
Visibility	**High**	Weak		**Low**	Apparent		Less Than Significant Effect
		Negligible			Unobtrusive		

KOP 9 Full Evaluation Worksheets (cont'd)

Table 15 CEQA GUIDELINES LEVEL OF EFFECT ON THE ENVIRONMENT

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 and aesthetic significance." (14 CCR § 15382) (Pub. Res. Code § 21060.5, 14 CCR § 15360) The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, noncompliance with which means the effect will normally be determined to be significant by the [lead] agency...." (14 CCR § 15064.7[a])

Less Than Significant Effect with Mitigation Incorporated. The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "... but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed [CEQA environmental document (e.g., Negative Declaration) is] released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment." (Pub. Res. Code § 21064.5, 14 CCR § 15369.5) (Pub. Res. Code § 21002)

Less Than Significant Effect. The physical change by the proposed project to the existing physical condition does not reach the threshold of significance "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, ... compliance with which means the effect normally will be determined to be less than significant." (14 CCR § 15064.7[a])

Key Observation Point Evaluation Worksheets

KOP 10 Interstate 15 Looking Southwest – Summary Sheet for Worksheet Tables

LANDSCAPE			
Table 3 LANDSCAPE CHARACTER	Aesthetic Aspect		See attached Table 3.
	Perceptual Aspect		
	Basic Design Element		
	Landscape	**Rating**	Write the rating selected in the attached Table 4.
Table 4 UNITY	Rarity	**Low to Moderate**	
	Diversity	**Moderate**	
	Detractors	**Moderate**	
	Distinctiveness	**Low**	
	Integrity	**Moderate**	
	Rating	**Checkbox**	Check (**√**) the rating selected in the attached Tables 5 and 6.
Table 5 PUBLIC VIEW	High		
	Moderate	**√**	
	Low		
	None		
Table 6 VISIBILITY	Dominant		
	High	**√**	
	Moderate to High		
	Moderate		
	Low to Moderate		
	Low		

PROJECT PROMINENCE			
Table 7 Basic Design Element Contrast			
Basic Design Element	**Rating**	**Weight**	**Points**
Color	Strong = 3	x 3	**6**
	Moderate = 2		
	Weak = 1		
	None = 0		
Form	Strong = 3	x 2	**4**
	Moderate = 2		
	Weak = 1		
	None = 0		
Line	**Strong = 3**	x 1	**3**
	Moderate = 2		
	Weak = 1		
	None = 0		
Texture	Strong = 3	x 1	**1**
	Moderate = 2		
	Weak = 1		
	None = 0		
		Maximum 21 points	**+14**

KOP 10 Interstate 15 Looking Southwest – Summary Sheet for Worksheet Tables (cont'd)

Table 8 SCALE DOMINANCE				
Rating				**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.			12
Codominant	**The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.**			**8**
Subordinate	The project is of significant size but occupies a minor part of the landscape.			4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.			0
		Single highest points	Maximum 12 points	**8**

Table 9 SPATIAL DOMINANCE				
Category	**Rating**	**Single Highest Rating**		**Points**
Spatial composition of the landscape.	**prominent**	**Dominant** 2-3 categories rated prominent.		**6**
	significant			
	inconspicuous	Codominant 1 category rated prominent, or 2 categories rated significant.		4
Spatial position of the project.	**prominent**			
	significant			
	inconspicuous	Subordinate 1 category rated significant.		2
Backdrop to the project.	prominent			
	inconspicuous	Insignificant All categories rated inconspicuous.		0
		Single highest points	Maximum 6 points	**6**

Table 10 PROJECT PROMINENCE RATING*	
Total Points	**Rating**
32-39	Severe
24-31	**Strong**
16-23	Moderate
8-15	Weak
0-7	Negligible
***(Add Points from Tables 7, 8, and 9)**	**Rating = Strong**

Tables 11 and 12 VISUAL ABSORPTION CAPABILITY			
Table 11 CAPABILITY **Table 12 ABSORPTION**	**Rating**	**Checkbox**	The existing landscape's ability to absorb the physical change by the proposed project without an alteration to its visual character.
	High		
	Moderate		
	Low	**√**	

Table 13 MAGNITUDE OF CHANGE		
		Checkbox
Dominant	Project commands or controls the view in the landscape.	
Prominent	**Project stands out or is striking in the view in the landscape.**	**√**
Conspicuous	Project is clearly visible and noticeable within the view in the landscape.	
Apparent	Project visible or evident within the view in the landscape.	
Unobtrusive	Project indistinct or not obvious within the view in the landscape.	

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS		
CEQA Guidelines Level of Effect on the Environment	**Significant Effect**	**√**
	Less Than Significant Effect	

KOP 10 Full Evaluation Worksheets (Tables 3 through 15)

Table 3 LANDSCAPE CHARACTER

Aesthetic	**Description**								Check (√) the description that best describes the aspect of the landscape.
Balance	harmonious		balanced		discordant	√	chaotic		
Complexity	uniform		simple		diverse	√	complex		
Dynamic	sweeping		spreading		disperse	√	channeled		
Enclosure	expansive		open	√	enclosed		constrained		
Pattern (two-dims.)	formal		organized		regular	√	random		
Perceptual									
Pleasure	beautiful		attractive		pleasant		unpleasant	√	nasty
Security	intimate		comfortable		safe		unsettling	√	threatening
Stimulus	inspiring		challenging		interesting	√	bland		monotonous
Tranquility	inaccessible		remote		vacant		peaceful		busy √
Basic Design Element									
Color	monochrome		muted	√	colorful		garish		The basic design elements are the source of visual contrast in the landscape that an individual sees and responds to when viewing a space.
Form	angular	√	curvilinear	√	horizontal	√	rounded	√	
Line	straight	√	curved	√	vertical		horizontal	√	
Texture	smooth		textured	√	rough	√	very rough		
Scale	intimate		small		large		vast		

Adapted from Carys Swanwick, "Landscape Character Assessment Guidance for England and Scotland," prepared for The Countryside Agency and Scottish Natural Heritage, 2002, pp. 30-36.

Table 4 UNITY

Landscape	**Rating**					**Guidance**
	High	**Moderate to High**	**Moderate**	**Low to Moderate**	**Low**	
Rarity	rare			√	common	Are there many examples of this type of landscape in the region?
Diversity	orderly		√		muddled	Is there a recognizable order of the landscape features in view or are there too many patterns overlapping?
Detractors	many		√		few	Are there landscape features out of place?
Distinctiveness	distinct			√	indistinct	Is it easy to remember the landscape? Patterns dramatic or take some finding?
Integrity	whole		√		remnant	What patterns in the landscape are evident? Are sections missing and to what extent?

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 36.

KOP 10 Full Evaluation Worksheets (cont'd)

Table 5 PUBLIC VIEW	
Rating	
High	
	Public view includes areas where the aesthetic value is protected by federal, state, county or city, law, ordinance, regulation, or standard. Public view includes federal, state, county, city designated areas of aesthetic, cultural, and recreational claim, such as: a park, outdoor recreation area, etc.; coastal or forest reserve, open space preserve, urban green space, etc.; scenic overlook, scenic river, scenic trail, etc.; historic building, district, or site; a site having a cultural resource. Public view includes a federal or state designated scenic byway, highway, or road; designated scenic highway or road of regional importance; a segment of travel route, such as a road, rail line, pedestrian and equestrian trail, bicycle path near a designated area of aesthetic claim and leading directly to it. View approaching an area of aesthetic, cultural, and recreational claim that may be closely related to the appreciation of the aesthetic, cultural, and recreational significance at that designation. Public view includes an urban residential use area and segment of road that serves as the primary access route to it.
Moderate	
√	Public view includes undesignated but popularly used or appreciated area of aesthetic, cultural, and recreational claim of significance in the region. Public view includes a highway or road locally designated as a scenic route and of importance only to the local population, or informally designated as such in road atlases, road maps, and tour book guides. Public view includes segments of travel routes, such as roads, pedestrian and equestrian trails, bicycle paths that are near and are the primary access to protected or popularly used undesignated areas important for their aesthetic, cultural, or recreational claim. Public view includes a segment of travel route near a designated area of aesthetic claim serving as a secondary access route to the area. Public view includes a rural residential use area and segment of road that serves as the primary access route to it within one mile. Public view includes a maintained religious facility or cemetery.
Low	
	Public view includes an agricultural, commercial, industrial, manufacturing, research, and development use area. Public view includes a small aggregation of dwellings.
None	
	No public view.
Adapted from Aspen Environmental Group, "Final Environmental Impact Report Tranquillon Ridge Oil and Gas Development Project" prepared for County of Santa Barbara Planning and Development. Santa Barbara, CA, April 2008, Vol. 1, pp. 5.13-5-6, and "Final Environmental Impact Report Southern California International Gateway Project," Appendix B Aesthetics Visual Resource Methodology, Los Angeles Harbor Department, Los Angeles, CA, March 2013.	

KOP 10 Full Evaluation Worksheets (cont'd)

Table 6 VISIBILITY	
Rating	
Dominant Dominates view because project would fill most of visual field for views in its general direction. Stark contrast in form, line, color, texture, luminance, or motion may contribute to view dominance.	An object with strong visual contrast that is of such enormous size that it occupies most of the visual field, and views of it cannot be avoided except by turning the head greater than 45 degrees from a direct view of the object. The object is the major focus of visual attention, and its large apparent size is a major factor in its view dominance. In addition to size, contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of the project detracts noticeably from views of other landscape components.
High Strongly attracts visual attention of views in general direction of project. Attention may be drawn by stark contrast in form, line, color, or texture, luminance, or motion.	An object that is not of large size, but contrasts with the surrounding landscape components so strongly that it is a major focus of visual attention, drawing viewer attention immediately, and tending to hold viewer attention. In addition to stark contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of project interferes noticeably with views of nearby landscape components.
Moderate to High Plainly visible, could not be missed by casual observer, but does not strongly attract visual attention, or dominate view because of apparent size, for views in general direction of project.	An object that is obvious and with enough size or contrast to compete with other landscape components, but with insufficient visual contrast to strongly attract visual attention and insufficient size to occupy most of the observer's visual field.
Moderate Visible after brief glance in general direction of project and unlikely to be missed by casual observer.	An object that can be easily detected after a brief look and would be visible to most casual observers, but without enough size or contrast to compete with major landscape components.
Low to Moderate Visible when scanning in general direction of project; otherwise, likely to be missed by casual observer.	An object that is very small and/or faint, but when the observer is scanning the horizon or looking more closely at an area can be detected without extended viewing. A casual observer could sometimes notice it; however, most people would not notice it without some active looking.
Low Visible only after extended, close viewing; otherwise, invisible.	An object that is near the extreme limit of visibility. A person who was not aware of it in advance and looking for it could not see it. Even under those circumstances, the object can only be seen after looking at it closely for an extended period.
Adapted from R.G. Sullivan, L.B. Kirchler, T. Lahti, S. Roche, K. Beckman, B. Cantwell, P. Richmond, "Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes," University of Chicago Argonne, LLC submitted to the National Association of Environmental Professionals 37th Annual Conference Proceedings, Portland, Oregon, May 21-24, 2012, p. 17.	

KOP 10 Full Evaluation Worksheets (cont'd)

Table 7 BASIC DESIGN ELEMENT CONTRAST

Element	Rating[1]	Weight	Points	
Color	Strong = 3 **Moderate = 2** Weak = 1 None = 0	x 3	**6**	Color is "the light-reflecting qualities of a project's surface (for example, dark or light, blue or gray) in relation to background colors."[2] "Colors that harmonize well seem to belong together and produce pleasing visual effects. Colors that do not harmonize are disturbing to the viewer."[3] Contrast in color depends on the exterior surface degree of lightness or darkness, gradation or variety of a color, the degree of saturation or brilliance of a color in the project to those that continue to exist in the landscape.
Form	Strong = 3 **Moderate = 2** Weak = 1 None = 0	x 2	**4**	Form is "the configuration and outline of the project in terms of masses, patterns, and linear elements. For example, a structure may have a bulky, vertical, geometric silhouette which contrasts with an irregular horizontal landscape of rolling hills."[4] Forms exist in three dimensions (height, length, width). For example, the shape is a square its form is a cube. Forms that are bold, regular, solid, or vertical tend to prevail in the landscape. Contrast in form depends on how alike the form(s) of the project is to those that continue to exist in the landscape.
Line	**Strong = 3** Moderate = 2 Weak = 1 None = 0	x 1	**3**	"Line is the path, real or imagined that the eye follows when perceiving abrupt differences when objects are aligned in a one-dimensional sequence."[5] "Line in the landscape is created by the edge between two materials, the outline or silhouette of a form, or a long linear feature."[6] Properties of lines: straight, diagonal, curved, vertical, horizontal. Contrast in line depends on edge types and interruption, or introduction of edges, bands, and silhouette lines in the project to those that continue to exist in the landscape.
Texture	Strong = 3 Moderate = 2 **Weak = 1** None = 0	x 1	**1**	Texture is "the aggregation of small forms or color mixtures into a continuous surface pattern; the aggregated parts are enough that they do not appear as discrete objects in the composition of the scene."[7] "Details of the surface pattern, as in smooth polished metal surfaces versus the rough, uneven textures of the foliage of trees and bushes"[8] Contrast in texture depends on the relative dimensions of the surface variations from large to small, spacing of surface variations, and the degree of uniform recurrence and symmetrical arrangement of the surface variation in the project to those that continue to exist in the landscape.
	Overall Rating[9]		**+14**	
	Maximum 21 points			

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, CA, 1979.

[1] **Strong** — the project contrast demands attention will not be overlooked and is dominant in the landscape. **Moderate** — the project contrast begins to attract attention and begins to dominate the characteristic landscape. **Weak** — the project contrast can be seen but does not attract attention. **None** — the project contrast is not visible or perceived. (U.S. Department of Interior Bureau of Land Management Manual 8431-Visual Resources Contrast Rating, January 17, 1986.)

[2] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[3] U.S. Department of Transportation Federal Highway Administration, "A Guide to Visual Quality in Noise Barrier Design," Chapter 3. Visual Design Principles, n.d.

[4] Sheppard, p. 46.

[5] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[6] Gail Hansen, "Basic Principles of Landscape Design." Florida Cooperative Extension Service Institute of Food and Agricultural Science, University of Florida, Gainesville, Florida, July 2010.

[7] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[8] Sheppard, p. 47.

[9] Overall Rating is for descriptive purpose: Strong — 1-3 ratings Strong or 3 ratings Moderate; Moderate — 1-2 ratings Moderate with no higher ratings; Weak — 1-3 ratings Weak with no higher ratings; None — all ratings None.

KOP 10 Full Evaluation Worksheets (cont'd)

Table 8 SCALE DOMINANCE			
Rating			**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.		12
Codominant	**The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.**		**8**
Subordinate	The project is of significant size but occupies a minor part of the landscape.		4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.		0
	Single highest points	Maximum 12 points	**8**
Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.			

KOP 10 Full Evaluation Worksheets (cont'd)

Table 9 SPATIAL DOMINANCE

Category				Single Highest Rating
Spatial composition of the landscape	"[T]he arrangement of objects and voids in the landscape can be categorized by their spatial composition .... Some compositions, especially those which are distinctly focal, enclosed, or feature-oriented, are more vulnerable to modifications than others, depending upon how strongly the spatial configuration draws the eye to certain locations."[1]			**Dominant** 2-3 categories rated prominent **= 6 points** Codominant 1 category rated prominent, or 2 categories rated significant = 4 points Subordinate 1 category rated significant = 2 points Insignificant All categories rated inconspicuous = 0 points
	Rating	**Description**		
	prominent	Feature[2], Focal[2], or Enclosed[2] landscape.		
	significant	Panoramic,[2] or weak focal, feature or enclosed landscape.		
	inconspicuous	Canopied,[2] indistinct or obscured landscape.		
Spatial position of the project	"Spatial position of the project in relation to the three-dimensional arrangement of objects and voids in the landscape. Important spatial aspects of the project include relationship to the skyline, location in topographic spaces such as focal valleys or broad plains, and position with regard to streetscapes and architectural arrangements."[3]			
	Rating	**Description**		
	prominent	High Level,[4] High Slope,[4] Interfluve[4]		
	significant	Low Level,[4] Lowslope,[4] Midslope[4]		
	inconspicuous	Basin Floor,[4] Footslope,[4] Toeslope[4]		
Backdrop to the project	"[T]he backdrop against which an object is seen affects its visual contrast. Modifications seen against the sky or water are usually more prominent than against a land backdrop."[5]			
	Rating	**Description**		
	prominent	All or a significant part of the project will be seen against sky or water.		
	inconspicuous	All or a significant part of the project will be seen against land.		
		Single highest points	Maximum 6 points	**6**

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.

[1] U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.

[2] **Canopied** — landscape where features overhead (above eye level) create a canopy or ceiling. **Enclosed** — a space, large or small surrounded by continuous grouping of objects creating walls and floor. It may have a large vertical dimension, but typically a restricted horizontal one. **Feature** — landscape dominated by a feature or a group of objects in the distance to which the eye is drawn. **Focal** — converging lines in the landscape or progressions of aligned objects lead the eye to a focal point in the landscape. **Panoramic** — a broad horizontal composition. Little or no sense of boundary restriction; no apparent limit to the view. Foreground or middle ground objects do not substantially block viewing of background objects. (U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.)

[3] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[4] **Basin Floor** — nearly level to gently sloping, bottom surface of an intermontane basin. **Footslope** — the gently inclined hillslope at the foot of a hill. **High Level** — level top of plateau. **High Slope** — geomorphic component that forms the uppermost inclined surface at the top of a slope (e.g., shoulder slope, upper slope). **Interfluve** — linear top of ridge, hill, or mountain. **Low Level** — valley floor, or shoreline representing the former position of an alluvial plain, lake, or shore. **Lowslope** — inner gently inclined surface at the base of a slope. Surface profile is generally concave and a transition between midslope or backslope, and toeslope. **Midslope** — intermediate slope position between high and low (e.g., middle slope). (Adapted from T. Liang [1951]; J.B. Dalrymple, R.J. Blong, and A. Conacher. [1968]) **Toeslope** — the gently inclined surface at the base of a hillslope. Toeslope in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors. (USDA Soil Survey Manual Handbook No. 18, issued March 2017 as amended February 2018).

[5] U.S. Department of Interior Bureau of Land Management Manual H-8431-1.

KOP 10 Full Evaluation Worksheets (cont'd)

Table 11 CAPABILITY							
Category	For each category check (√) the rating that best describes the existing landscape.						
		Rating					
		High		Moderate		Low	
Topography		High amount of topographic diversity and variety.		Moderate amount of topographic diversity and variety.	√	Low amount of topographic diversity and variety.	
Land Use Pattern	If project in rural landscape	Small natural or vegetated areas. Man-made structures dominant in the view.		Natural areas of local significance. Man-made structures widespread but not dominant in the view.	√	Remote natural areas of regional significance. Man-made structures and features limited and scattered.	
	If project in urban landscape	Developed areas including commercial development. Large-scale infrastructure or structures may be common and more dominant.		Suburban or mostly developed areas with components of local importance. Large-scale infrastructure or structures may be visible but not dominant.		Clustered development surrounded by rural scattered development. Large-scale infrastructure or structures limited and scattered.	
Visual Variety		Landscape exhibits a high degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit high degree of variety in landforms and vegetation.		Landscape exhibits a moderate degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit moderate variety in landforms and vegetation.		Landscape exhibits a low degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit minimal variety in landforms and vegetation.	√
Major Focal Points or Features		Focal points or features in the viewshed that are either natural or man-made, commonly found, minimal local importance/value, or contribute little to the character of the landscape or are indistinct.		Focal points or features in the viewshed that are either natural or man-made, somewhat commonly found, local importance/value, or make a minor contribution to the character of the landscape.	√	Focal points or features in the viewshed that are either natural or man-made and are unusual or rare, regional importance/value, or make a major contribution to the character of the landscape or are somewhat distinctive.	

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 17, and L. Blocker, T. Slider, J. Ruchman, J. Mosier, L. Kok, J. Silbemagle, J. Beard, D. Wagner, G. Brogan, D. Jones, N. Laughlinn, L. Anderson, "Landscape Aesthetic (AH 701-i) - Visual Absorption Capability (Appendix C)," United States Department of Agriculture Forest Service, 1995, pp. C-1-C-8.

KOP 10 Full Evaluation Worksheets (cont'd)

Table 12 ABSORPTION	
For each question circle the applicable rating for the absorption of the landscape; High = H, Moderate = M, Low = L.	
Exposure	**Rating**
What is the level of exposure of the project in the landscape? The higher the level of exposure, the lower the absorption.	**H M (L)**
What is the intensity of the observation of the project? The more the project is observed from certain intensive land uses the lower its absorption (e.g., view from a densely populated residential area versus a heavy manufacturing and processing area).	**H M (L)**
What is the view distance to the project? The farther the viewing distance to the project from the vantage point the lower its exposure the higher its absorption. Is the project more than three miles away?	**H M (L)**
What is the project's distance from an urban skyline or a natural skyline (e.g., high-rise buildings or a mountain range against a backdrop of sky)? The closer the project is to an urban or natural skyline the lower its absorption.	**H M (L)**
What is the project's topographic position in the landscape? As the project's position increases its absorption decreases (e.g., toeslope to summit).	**H M (L)**
Focal Point	
Is the project near a focal point in the landscape? A focal point is a converging of lines in the landscape or progressions of aligned objects that lead the eye to a point. A focal point gives the viewer something interesting to look at in the view. The closer the project is to a focal point the greater viewer scrutiny the lower the absorption.	**H (M) L**
Does the edge(s) in the landscape have a diverse background but have the propensity to become a focal point? An edge is a transitional linear place where one space or landscape becomes part of another. An edge has a high absorption due to a diverse background, a low absorption due to the propensity to become a focal point (e.g., city meets country, a woodland edge, an alpine tree line, coastline).	**H (M) L**
Trees & Vegetation	
Are trees and vegetation in the landscape missing, deficient, or uniform? The greater the density of trees and vegetation, the greater the coverage, the greater the capacity of an area to absorb physical change.	**H M (L)**
What is the type(s) of tree(s) and vegetation in the landscape? Tree and vegetation types vary the absorption of the physical change. A uniformly tall, dense stand of trees has screening ability. Vegetation types such as evergreen shrubs and similar have greater absorption than dwarf shrubs, ornamental grasses, and grass-like plants. Trees and vegetation can provide high absorption in the foreground but lower absorption in the background.	**H M (L)**
Disturbed Surface Area	
Period of time to restore the project's disturbed surface area to its pre-construction activity condition? The longer the time to restore the disturbed area to its undisturbed original condition after the construction phase the lower the absorption; 1 year = high, 2 to 3 years = moderate, 3 years or more = low.	**H M (L)**
Adapted from S. Amir, E. Gidalizon, "Expert-based method for the evaluation of visual absorption capacity of the landscape*," Journal of Environmental Management, 1990, Vol. 30, pp. 251-263, and W.C. Yeomans, "A Proposed Biophysical Approach to Visual Absorption Capability (VAC),[1]" Pacific Southwest Forest and Range Experimental Station, Berkeley, California, 1979 submitted to the National Conference on Applied Techniques for Analysis and Management of Visual Resource, Incline Village, Nevada, April 23-25, 1979, pp. 172-181.	

KOP 10 Full Evaluation Worksheets (cont'd)

Table 13 MAGNITUDE OF CHANGE				
Dominant	**Prominent**	**Conspicuous**	**Apparent**	**Unobtrusive**
Project commands or controls the view in the landscape. Project causes a very large alteration to the landscape or features within the landscape such that there is a fundamental change from the existing physical condition.	**Project stands out or is striking in the view in the landscape.** Project causes a large alteration to the landscape or features within the landscape such that there is an unmistakable change from the existing physical condition.	Project is clearly visible and noticeable within the view in the landscape. Project causes a moderate alteration to the landscape or features within the landscape such that there is a distinct change from the existing physical condition.	Project visible or evident within the view in the landscape. Project causes a small alteration to the landscape or features within the landscape such that there is a perceptible change from the existing physical condition.	Project indistinct or not obvious within the view in the landscape. Project causes a very small alteration to the landscape, or features within the landscape such that there is a de minimis change from the existing physical condition.
Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 20.				

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS							
Landscape		**Project Prominence**		**Visual Absorption Capability**	**Magnitude Of Change**		**CEQA Guidelines Level of Effect On The Environment** (See Table 15)
Table	**Rating**	**Rating**		**Rating**			
Landscape Character	See Table 3	Severe		High Moderate **Low**	Dominant		**Significant Effect** Less Than Significant Effect
Unity	**Moderate**	**Strong**	√		**Prominent**	√	
Public View	**Moderate**	Moderate			Conspicuous		
Visibility	**High**	Weak			Apparent		
		Negligible			Unobtrusive		

KOP 10 Full Evaluation Worksheets (cont'd)

Table 15 CEQA GUIDELINES LEVEL OF EFFECT ON THE ENVIRONMENT

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 and aesthetic significance." (14 CCR § 15382) (Pub. Res. Code § 21060.5, 14 CCR § 15360) The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, noncompliance with which means the effect will normally be determined to be significant by the [lead] agency...." (14 CCR § 15064.7[a])

Less Than Significant Effect with Mitigation Incorporated. The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "... but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed [CEQA environmental document (e.g., Negative Declaration) is] released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment." (Pub. Res. Code § 21064.5, 14 CCR § 15369.5) (Pub. Res. Code § 21002)

Less Than Significant Effect. The physical change by the proposed project to the existing physical condition does not reach the threshold of significance "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, ... compliance with which means the effect normally will be determined to be less than significant." (14 CCR § 15064.7[a])

Appendix 5.15A

Outdoor Lighting Impact Assessment Report



Soda Mountain Solar Project
Outdoor Lighting Impact Assessment Report

Submitted to:

Michael Baker INTERNATIONAL

Prepared by:

AKELA | A Michael Baker INTERNATIONAL Company

Tony Rai, Sr. Associate - Survey Geomatics
5 Hutton Centre Drive, Suite 500
Santa Ana, CA 92707
949-472-3491
TRai@mbakerintl.com

Harneet Randhawa, PE
801 S Grand Ave, Suite 250
Los Angeles, CA 90014
619-278-1372
Harneet.Randhawa@akelaeng.com

Date: 06/13/2024
REV 1 Date: 10/01/2024

I. Table of Contents

II. Executive Summary 3

Background 3

Relevant Codes & Documents 3

Anticipated Outdoor Lighting Scope of Work 4

III. Outdoor Lighting Impact Assessment 4

Glossary of Lighting Terminology 4

Project Description 6

Review of Outdoor Lighting Regulations & Reference Standards 7

2022 Administrative Regulations, Title 24, Part 1 8

2022 Building Energy Efficiency Standards, Title 24, Part 6 8

Joint IDA-IES Model Lighting Ordinance (IDA/IES MLO-11) 9

BLM Technical Note 457 10

Review of Proposed Outdoor Luminaires 11

Permanent Outdoor Lighting 11

Temporary Outdoor Lighting 12

Significance Threshold 13

IV. Conclusion 13

V. Appendices 14

Exhibit 1 – Soda Mountain Solar Project Conceptual Outdoor Lighting Plan 15

Exhibit 2 – Lighting Calculations and Building Exterior Reflectance Summary 16

Exhibit 3 – Luminaire Schedule and Specifications 20

II. Executive Summary

This assessment has been prepared for Michael Baker International (MBI) to evaluate the impact of outdoor lighting installations for the Soda Mountain Solar Project in San Bernardino County, Baker, CA. Evaluation of these conceptual outdoor lighting methodologies has been completed by Akela Engineering and Consulting (Akela). The following summary contains a background of project information, applicable codes and requirements, and a description of recommended design solutions. In summary, proposed outdoor lighting installations for this project will have negligible impact on the surrounding areas with almost no observable lighting issues such as glare, skyglow and light trespass.

Background

The 2,670-acre project site is located approximately 7 miles southwest of the community of Baker in unincorporated San Bernadino County, California, approximately 50 miles northeast of Barstow. The project is bounded directly to the east by the Mojave National Preserve (administered by the National Park Service) and BLM lands, including the Rasor Off-Highway Vehicle (OHV) recreation area at the southeast corner. Interstate 15 (I-15), the former Arrowhead Trail Highway, runs along the western boundary of the project site, with Rasor Road Services Shell Oil gas station located off I-15 southwest of the project site, along the access road to the project site. Primary access to the project site is from a north-bound exit off I-15. The purpose of this project is to generate up to 300 megawatts (MW) of renewable energy through solar power inputs and include up to 300 MW of battery storage.

A preliminary submission of this project to the California Energy Commission (CEC) for review purposes resulted in further information being requested in relation to proposed outdoor lighting design elements of this project.

The purpose of this study is to evaluate the extent of impacts from any proposed outdoor lighting installations resulting from the successful activation of this project.

Relevant Codes & Documents

An assessment was performed in accordance with the 2022 California Electrical codes, as well as authorities having jurisdiction (AHJ) including California Bureau of Land Management. Applicable regulations set forth by the 2022 California Green Building Standards Code, Title 24 Energy Efficiency Standards have been cited in the full analysis.

The following documents were used in the preparation of this report:

- Soda Mountain Solar Project Environmental Impact Report, September 2023
- Soda Mountain Solar Project Preliminary Civil Design Plans, August 2023
- 2022 California Electrical Code
- 2022 Administrative Regulations, Title 24, Part 1
- 2022 Building Energy Efficiency Standards, Title 24, Part 6
- Joint IDA-IESNA Model Outdoor Lighting Ordinance (MLO), June 2011
- Best Management Practices for Artificial Light at Night on BLM-Managed Lands, Technical Note 457, April 2023
- 2023 FHWA Lighting Handbook, US Department of Transportation, Federal Highway Administration
- 2024 Code of Federal Regulations (CFR), Title 29, Subtitle B, Chapter XVII, Part 1926, Subpart D - Occupational Health and Environmental Controls, Section 1926.56 – Illumination
- 2024 CEQA Statute & Guidelines Handbook, Appendix G

Anticipated Outdoor Lighting Scope of Work

The project area appears to be quite extensive at first glance, but the very nature of this project severely limits the need for wide-ranging outdoor lighting installations. The outdoor lighting can be best described as Lighting Zone LZ1 or Low ambient illumination per Section 140.7 of Title 24, California Code of Regulations, Part 6. All outdoor lighting provided on this project will be for site and building access, and security purposes only. There will be no sign lighting on this project. A conceptual plan with a list of proposed luminaires for this project is demonstrated in Exhibit 1 of the Appendices. Per this assessment, it is anticipated that outdoor lighting will be provided in the below areas only:

1) Outdoor areas:
   a) Parking areas – ~13,000 sq. ft.
   b) Switchyard entrance
   c) BESS yard entrance
   d) HV Substation entrance
   e) Equipment storage areas entrances
2) Access roads:
   a) Rasor Rd North connector to HV Substation (I-15 on/off ramp only)
   b) Rasor Rd South connector to Solar Array area (I-15 on/off ramp only)
3) Buildings:
   a) Substation - ~6,000 sq. ft.
   b) Switchyard - ~6,000 sq. ft.
   c) Operations and Maintenance - ~5,000 sq. ft.
   d) Maintenance Facility - ~2,400 sq. ft.
   e) Warehouse Facility – 6,000 sq. ft.

III. Outdoor Lighting Impact Assessment

Glossary of Lighting Terminology

Discussions of lighting issues include precise definitions, descriptions, or terminology of the specific lighting technical parameters. The following glossary summarizes explanations of the technical lighting terms utilized in this Study and the related practice standards to facilitate discussion of these issues. The following technical terms are used in this Study.

Brightness: The magnitude of sensation that results from viewing surfaces from which light comes to the eye. This sensation is determined partly by the measurable luminance of the source and partly by the conditions of observation (Context), such as the state of adaptation of the eye. For example, very bright lamps at night appear dim during the day, because the eye adapts to the higher brightness of daylight.

BUG Rating: A luminaire classification system established in IES TM15-11, BUG Ratings Addendum that provides for uniform assessment of the directional characteristics of illumination for exterior area lighting. BUG is an acronym composed of Backlight, Uplight, and Glare. BUG ratings are based on a zonal lumen calculations for secondary solid angles defined in IES TM15-11.

Candela: Measure of light energy from a source at a specific standard angle and distance. Candela (cd) is a convenient measure to evaluate output of light from a lamp or light fixture in terms of both the intensity of light and the direction of travel of the light energy away from the source.

Contrast: Calculated evaluation of high, medium and low contrast of visible light sources or surfaces within the Property by a ratio of luminance. Contrast is the ratio of one surface luminance to a second surface luminance or to the field of view. Contrast exceeding 30 to 1 are usually deemed uncomfortable; 10 to 1 are clearly visible; and less than 3 to 1 appear to be equal.

Fully Shielded: A lighting fixture constructed in such a manner that all light emitted by the fixture, either directly from the lamp or a diffusing element, or indirectly by reflection or refraction from any part of the Luminaire, is projected below the horizontal as determined by photometric test or certified by the manufacturer. Any structural part of the light fixture providing this shielding must be permanently affixed. In other words, no light shines above the horizontal from any part of the fixture.

Glare: Glare is visual discomfort experienced from high luminance or high range of luminance. For exterior environments at night, glare occurs when the range of luminance in a visual field is too large. The light energy incident at a point is measured by a scale of footcandles or lux, and is described in the technical term Illuminance. This incident light is not visible to the eye until it is reflected from a surface, such as pavement, wall, dust in the atmosphere or the surface of a light bulb. The visible brightness of a surface is measured in footlamberts (or metric equivalent candelas per square meter) and is described by the term Luminance.

The human eye processes brightness variations across a very broad spectrum of intensities. The range of brightness generated by direct noon sun versus a moonlight evening is over 5000 to 1. Human eyes are capable of accommodating to this range of intensities given adequate time to adjust. However, the eye cannot process brightness ratios of more than 30 to 1 within a view without discomfort. See IESNA 10th Edition Handbook, Section 4.10.1, Discomfort Glare and Section 10.9.2 Calculating Glare.

For the purpose of this analysis, brightness of light sources may be described subjectively by the following criteria:

High Contrast Conditions: View of light fixture emitting surface, such as a lens, reflector, or lamp, where brightness contrast ratio exceeds 30 to 1 (source Luminance to background Luminance ratio in footlamberts).

Medium Contrast Conditions: Brightly lighted surfaces where contrast ratio exceeds 10 to 1 but is less than 30 to 1 (lighted surface Luminance to background Luminance ratio in footlamberts).

Low Contrast Conditions: Illuminated surfaces where contrast ratio exceeds 3 to 1, but less than 10 to 1 (source Luminance to background Luminance ratio in footlamberts).

Illuminance: Illuminance is the means of evaluating the density of Luminous Flux. Illuminance indicates the amount of Luminous Flux from a light source falling on a given area. Illuminance is measured in footcandles (fc) which is the lumens per square foot, or Lux (lumens per square meter). Illuminance need not necessarily be related to a real surface since it may be measured at any point within a space. Illuminance is determined from the Luminous intensity of the light source. Illuminance of a

point source decreases with the square of the distance from the light source (see Inverse Square Law definition).

Horizontal Illuminance: Illuminance incident upon a horizontal plane. The orientation of the illuminance meter or calculation point will be 180deg from Nadir.

Vertical Illuminance: Illuminance incident upon a vertical plane. The orientation of the illuminance meter or calculation point will be 90deg from Nadir.

Light Source: Device which emits light energy from an electric power source.

Light Trespass: Electric light from subject property incident onto adjacent properties, measured in footcandles or lux, usually analyzed by measurement at or near the adjacent property line.

Luminaire: A complete lighting unit consisting of a light source together with parts designed to distribute the light, to position and protect the light source, and to connect the light source to the power supply. Also referred to as a Light Fixture.

Luminance: Luminance is a measure of emissive or reflected light from a specific surface in a specific direction over a standard area. Luminance is measured in footlamberts (fL) (1/π Candela per square foot) or cd/m2 (Candela per square meter). 1fL = 3.43 cd/m2.

Whereas Illuminance indicates the amount of Luminous Flux falling on a given surface, Luminance describes the brightness of an illuminated or luminous surface. Luminance is defined as the ratio of luminous intensity of a surface (Candela) to the projected area of this surface (m2 or ft2).

Luminous Flux: Mean value of total Candelas produced by a light source. Luminous Flux describes the total amount of light emitted by a light source. The unit for measuring Luminous Flux is Lumen (lm).

This radiation could basically be measured or expressed in watts. This does not, however, describe the optical effect of a light source adequately since the varying spectral sensitivity of the eye is not taken into account. To include the spectral sensitivity of the eye the Luminous Flux is measured in lumen. Radiant Flux or 1 W emitted at the peak of the spectral sensitivity (in the photopic range at 555 nanometers produces a Luminous Flux of 683 lumen). The unit of lumen does not define direction.

Skyglow: Skyglow is the description of luminous atmospheric background and results from both natural and human made conditions. Natural causes of skyglow include sunlight reflected from the surface of the earth and moon, sunlight illuminating the upper atmosphere, and visible illumination from other interplanetary sources. Human made causes of skyglow include electric light that is emitted directly upward into the sky (Uplight) or reflected off of the ground.

Project Description

The project (Soda Mountain Solar Power Generating Station) is located entirely on federally owned land managed by the BLM. The 2,670-acre project site is located approximately 7 miles southwest of the community of Baker in unincorporated San Bernadino County, California, approximately 50 miles northeast of Barstow. The project site is in

portions of Sections 1 and 11–14, Township 12 North, Range 7 East; Sections 25 and 36, Township 13 North, Range 7 East; Sections 6, 7, 8, and 18, Township 13 North, Range 8 East, San Bernardino Meridian, California.

The project is bounded directly to the east by the Mojave National Preserve (administered by the National Park Service) and BLM lands, including the Rasor Off-Highway Vehicle (OHV) recreation area at the southeast corner. Interstate 15 (I-15), the former Arrowhead Trail Highway, runs along the western boundary of the project site, with Rasor Road Services Shell Oil gas station located off I-15 southwest of the project site, along the access road to the project site. Primary access to the project site is from a north-bound exit off I-15. Infrastructure surrounding the site includes the four-lane I-15, two high-voltage electric transmission lines, an electrical distribution line, wireless cellular telephone towers, two fiber-optic cables, and two fuel pipelines. The two high-voltage electrical transmission lines to the west of I-15 are a 115-kV sub-transmission line owned by Southern California Edison (SCE) and the Marketplace-Adelanto 500-kV transmission line operated by the Los Angeles Department of Public Works (LADWP), as shown on Exhibit 1 in the Appendices. There is no existing nighttime lighting on this project site and the closest permanent outdoor lighting is located at the Rasor Rd off ramp where this is light commercial activity with a gas station. Since this is a rural area of the I-15 freeway corridor, there are no existing streetlights in the vicinity either.

This project is a solar power generating station and as such almost all the visible building materials utilized onsite will be metallic in nature. For instance, all buildings will be typical industrial steel metal sheds. All exposed surfaces will have ridges or grooves and are not expected to be flat and polished. Typical building exterior surface reflectances has been modelled in Exhibit 2 of the Appendices. At these low reflectance values, the exterior surfaces are mostly diffuse in nature and will not exhibit any specular distribution, irrespective of the viewing angle. This project will also consider using the darker colors to absorb as much direct sunlight as possible. All glass for windows and doors can be made available with anti-reflective options. As such, no portion of these buildings can be considered as specular reflective surfaces.

The remaining installations will be solar power panels and no outdoor luminaires will be installed in the solar array areas. This is because there is no operational need for any nighttime access to these arrays and if needed portable mobile lighting solutions can be utilized. Several studies have also demonstrated that modern solar panels do not contribute to any daytime glare effects as well; National Renewable Energy Laboratory (NREL) has compiled a list of these studies on their website. Click here for access: *Research and Analysis Demonstrate the Lack of Impacts of Glare from Photovoltaic Modules | State, Local, and Tribal Governments | NREL*

Review of Outdoor Lighting Regulations & Reference Standards

Outdoor lighting is regulated throughout California by the state energy and building codes, and other AHJ codes. Reference standards include model lighting ordinances provided by the Illuminating Engineering Society of North America (IESNA) and the International Dark Sky Association (IDA), and the U.S. Green Building Council. Various aspects of these reference standards are included in state and AHJ regulations to improve the outcomes of any approved project and avoid future disputes or legal challenges to proposed outdoor lighting installations. The lighting standards summarized below balance the requirements of property owners for sufficient brightness and flexibility for the use of a particular property, while minimizing the off-site negative effects of Skyglow, Light Trespass and Glare. In a case where there are conflicting and overlapping requirements from several sources, the most stringent requirement or direction given by the AHJ will be enforced. All luminaires that are intended to light the right of way on publicly maintained roads, sidewalks, or bikeways, such as the public portion of the I-15 freeway on/off ramp, will be exempted from these requirements.

2022 Administrative Regulations, Title 24, Part 1

This article applies to all residential and nonresidential buildings and contains administrative regulations relating to the energy building regulations in Title 24, Part 6. The specific section of this code utilized in our assessment is *Section 10-114 Determination of Outdoor Lighting Zones and Administrative Rules For Use* which contains the table of lighting zones as demonstrated in Exhibit 3 below.

Zone	Ambient Illumination	State wide Default Location	Moving Up to Higher Zones	Moving Down to Lower Zones
LZ0	Very Low	Undeveloped areas of government design at ed parks, recreation areas, and wildlife preserves.	Undeveloped areas of government design at ed parks, recreation areas, and wildlife preserves can be designated as LZ1 or LZ2 if they are contained within such a zone.	Not applicable
LZ1	Low	Rural areas, as defined by the 2010 U.S. Census . These areas include: single or dual family residential areas, parks, and agricultural zone districts, developed portion of government designated parks, recreation areas, and wildlife preserves. Those that are wholly contained within a higher lighting zone may be considered by the local government as part of that lighting zone.	Developed portion of a government designated park, recreation area, or wildlife preserve, can be designated as LZ2 or LZ3 if they are contained within such a zone. Retail stores, located in a residential neighborhood, and rural town centers, as defined by the 2010 U.S. Census, can be designated as LZ2 if the business operate s during hours of darkness.	Not applicable.
LZ2	Moderate	Urban clusters, as defined by the 2010 U.S. Census. The following building types may occur here: multifamily housing, mixed use residential neighborhoods, religious facilities, schools, and light commercial business districts or industrial zoning districts.	Special districts within a default LZ2 zone may be designated as LZ3 or LZ4 by a local jurisdiction. Examples include special commercial districts or areas with special security considerations located within a mixed-use residential area or city center .	Special districts may be designated as LZ1 by the local jurisdiction, without any size limits.
LZ3	Moderately High	Urban areas, as defined by the 2010 U.S. Census. The following building types may occur here: high intensity commercial corridors, entertainment centers, and heavy industrial or manufacturing zone districts.	Special districts within a default LZ3 may be designated as a LZ4 by local jurisdiction for high intensity nighttime use, such as entertainment or commercial districts or areas with special security considerations requiring very high light levels.	Special districts may be designated as LZ1 or LZ2 by the local jurisdiction, without any size limits.
LZ4	High	None.	Not applicable.	Not applicable.

Exhibit 3: Table 10-114-A Lighting Zone Characteristics and Rules For Amendments By Local Jurisdictions

Based on the above criteria, the project site can be designated with a Lighting Zone LZ1 category and this parameter will be utilized to understand the impact of proposed ambient illumination levels for this project.

2022 Building Energy Efficiency Standards, Title 24, Part 6

The Building Energy Efficiency Standards serve to reduce wasteful, uneconomical, and unnecessary uses of energy for the state. They include requirements in the Energy Code (Title 24, Part 6) and voluntary energy efficiency provisions in CALGreen (Title 24, Part 11). Outdoor lighting installations of this project will follow prescriptive requirements set forth in Title 24, Part 6; specifically, *Section 130.2 – Outdoor Lighting Controls and Equipment* and *Section 140.7 – Prescriptive Requirements for Outdoor Lighting.* These requirements are summarized below for ease of reference:

- Per Section 130.2 (b), all outdoor luminaires of 6,200 initial luminaire lumens or greater, shall comply with applicable Backlight, Uplight, and Glare (BUG) rating

- Per Section 130.2 (c) 1-3, all outdoor luminaires shall be controlled by a photocell for daylight harvesting and provided with automatic scheduling controls. Some of these lights intended to be used for security purposes will also have motion sensing controls.
- Per Section 140.7 (a) – (d), all outdoor luminaires shall have a maximum lighting power density calculated per the allowed lighting power method.

Joint IDA-IES Model Lighting Ordinance (IDA/IES MLO-11)

As more impacts to the environment by lighting have been identified, an international "dark sky" movement is advocating for the precautionary approach to outdoor lighting design. Many communities have passed anti-light-pollution laws and ordinances. However, there is little or no agreement among these laws, and they vary considerably in language, technical quality, and stringency. This is confusing for designers, engineers, and code officials. The lack of a common basis prevents the development of standards, educational programs, and other means of achieving the goal of effective lighting control. This MLO will allow communities to drastically reduce light pollution and glare and lower excessive light levels. These recommended practices of the IES can be met using readily available, reasonably priced lighting equipment.

We propose utilizing the prescriptive method as defined in Section IV. Non-Residential Lighting with the below criteria:

1) *Total Site Lumen Limit*
   a) Proposed outdoor lighting solutions shall not exceed this limit calculated per the Hardscape Area method
2) *Limits to Off Site Impacts*
   a) All luminaires shall be rated and installed according to Table C from this ordinance as shown in Exhibit 4 below
3) *Light Shielding for Parking Lot Illumination*
   a) All parking lot lighting shall have no light emitted above 90 degrees

Table C - Maximum Allowable Backlight, Uplight and Glare (BUG) Ratings

May be used for any project. A luminaire may be used if it is rated for the lighting zone of the site or lower in number for all ratings B, U and G. Luminaires equipped with adjustable mounting devices permitting alteration of luminaire aiming in the field shall not be permitted.

TABLE C-1	Lighting Zone 0	Lighting Zone 1	Lighting Zone 2	Lighting Zone 3	Lighting Zone 4
Allowed Backlight Rating*					
Greater than 2 mounting heights from property line	B1	B3	B4	B5	B5
1 to less than 2 mounting heights from property line and ideally oriented**	B1	B2	B3	B4	B4
0.5 to 1 mounting heights from property line and ideally oriented**	B0	B1	B2	B3	B3
Less than 0.5 mounting height to property line and properly oriented**	B0	B0	B0	B1	B2

Table C - 2 Maximum Allowable Uplight (BUG) Ratings - Continued

TABLE C-2	Lighting Zone 0	Lighting Zone 1	Lighting Zone 2	Lighting Zone 3	Lighting Zone 4
Allowed Uplight Rating	U0	U1	U2	U3	U4
Allowed % light emission above 90° for street or Area lighting	0%	0%	0%	0%	0%

Table C - 3 Maximum Allowable Glare (BUG) Ratings - Continued

TABLE C-3	Lighting Zone 0	Lighting Zone 1	Lighting Zone 2	Lighting Zone 3	Lighting Zone 4
Allowed Glare Rating	G0	G1	G2	G3	G4
Any luminaire not ideally oriented*** with 1 to less than 2 mounting heights to any property line of concern	G0	G0	G1	G1	G2
Any luminaire not ideally oriented*** with 0.5 to 1 mounting heights to any property line of concern	G0	G0	G0	G1	G1
Any luminaire not ideally oriented*** with less than 0.5 mounting heights to any property line of concern	G0	G0	G0	G0	G1

Exhibit 4: Table C – Maximum Allowable Backlight, Uplight and Glare (BUG) ratings

BLM Technical Note 457

The mission of the Bureau of Land Management (BLM) is to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations. BLM-managed lands provide differing types of activities, developments, and visitor services that include outdoor lighting where appropriate to provide for worker and visitor safety, security, and enjoyment. Due to growing public concern and research available about light pollution, this technical note provides a set of best practices for outdoor lighting.

Per *Section 3.1.2 – Types of Light Pollution*, there are different types of light pollution and associated effects:

- Glare
  - Possible exposure because this project utilizes pole top luminaires
- Skyglow
  - Possible exposure because this project utilizes pole top luminaires
- Light trespass
  - Not applicable to this project because lighting installations are far away from the property line
- Light clutter
  - Not applicable to this project because lighting is sparse
- Over-illumination
  - Not applicable to this project because lighting is low intensity and task driven only

Per *Section 4 – Principles of Artificial Light at Night to Avoid Light Pollution*, below best practices have been identified:

- Warmer color temperatures lighting 2200K - 3000K shall be utilized
- Automatic scheduling via lighting controls shall be used to provide lighting when needed
- When operational, this facility has no nighttime lighting requirements and as such all outdoor lighting will be task driven only such as building access or security lighting
- Only LED luminaires shall be utilized on this project

Per *Section 5 - BMPs for Artificial Light at Night on BLM-Managed Lands,* consideration has been given to nearby Astronomical Observatories and there is no such facility within 100 miles radius of this project site. The closest observatory is Mt. Potosi observatory which is in Mountain Springs, Nevada - more than 100 miles away from this project site.

Review of Proposed Outdoor Luminaires

Outdoor lighting requirements can arise from several use cases throughout the life cycle of this project. However, they can be differentiated into two broad categories: Permanent and Temporary. All permanent lighting installations are provided for access and security purposes for the entire post-construction lifecycle of this project. Temporary lighting will be mainly needed for construction activities and any unplanned maintenance operations during non-personnel hours after occupancy.

Permanent Outdoor Lighting

Exhibit 1 in the Appendices illustrates a conceptual lighting plan with proposed outdoor luminaires in the below project site areas:

1) Outdoor areas:
    i) *Suggested 25ft pole top luminaires to illuminate access/security pathways to all the below areas*
    ii) *These luminaires will be controlled by a photocell for daylight harvesting, automatic shut-off past operating hours and auto dim to 50% when unoccupied during operating hours*
    iii) *All luminaires will be 2200K-3000K CCT, fully shielded and have the appropriate BUG rating to be dark-sky compliant*
    b) Parking areas – ~13,000 sq. ft.
    c) Switchyard entrance
    d) BESS yard entrance
    e) HV Substation entrance
    f) Equipment storage areas entrances
2) Access roads:
    i) *Noted for record only. On/Off ramp to Rasor Rd North & South from I-15 is under Department of Transportation jurisdiction and current review of outdoor lighting requirements from 2023 FHWA Lighting Handbook suggests that no additional lighting is needed on this public right-of-way*
    ii) *Should outdoor lighting be required, then all 25ft pole top luminaires can be fully shielded and have the appropriate BUG rating to be dark-sky compliant*
    b) Rasor Rd North connector to HV Substation (I-15 on/off ramp only)
    c) Rasor Rd South connector to Solar Array area (I-15 on/off ramp only)
3) Buildings:
    i) *Suggested 10ft wallpack luminaires to illuminate access/security pathways to all the below buildings*

ii) *These luminaires will be controlled by a photocell, automatic shut-off past operating hours and auto dim to 50% when unoccupied during operating hours*
iii) *All luminaires will be 2200K-3000K, fully shielded and have the appropriate BUG rating to be dark-sky compliant*

b) Substation - ~6,000 sq. ft.
c) Switchyard - ~6,000 sq. ft.
d) Operations and Maintenance - ~5,000 sq. ft.
e) Maintenance Facility - ~2,400 sq. ft.
f) Warehouse Facility – 6,000 sq. ft.

To summarize, all luminaires will have the necessary accessories and options to be dark sky compliant. Exhibit 3 provides a complete luminaire schedule and product specification sheets for consideration.

Temporary Outdoor Lighting

As noted in *Section 3 – Project Description* of this report, much of the project site use is comprised of solar panel arrays and these areas have no requirements for permanent outdoor lighting installations. It is anticipated that any task driven lighting can be provided by use of portable vehicle-mounted lights or mobile light towers as needed for any unplanned activities outside of personnel hours.

Outdoor lighting provided for construction purposes will be temporary in nature and will be governed by Occupational Health and Safety (OSHA) standards. An excerpt of these lighting requirements from CFR / 1926.56 is demonstrated below in Exhibit 5.

Table D-3—Minimum Illumination Intensities in Foot-Candles

Foot-candles	Area or operation
5	General construction area lighting.
3	General construction areas, concrete placement, excavation and waste areas, accessways, active storage areas, loading platforms, refueling, and field maintenance areas.
5	Indoors: warehouses, corridors, hallways, and exitways.
5	Tunnels, shafts, and general underground work areas: (Exception: minimum of 10 foot-candles is required at tunnel and shaft heading during drilling, mucking, and scaling. Bureau of Mines approved cap lights shall be acceptable for use in the tunnel heading.)
10	General construction plant and shops (e.g., batch plants, screening plants, mechanical and electrical equipment rooms, carpenter shops, rigging lofts and active storerooms, barracks or living quarters, locker or dressing rooms, mess halls, and indoor toilets and workrooms).
30	First aid stations, infirmaries, and offices.

Exhibit 5: Table D-3 – Minimum Illumination Intensities in Foot-Candles

This project will utilize standard 4000K LED luminaires for all temporary outdoor lighting to support construction activities to provide the best illuminance for construction worker safety.

Significance Threshold

Appendix G of the California Environmental Quality Act (CEQA) Guidelines (14 California Code of Regulations, Sections 15000–15387) provides a set of sample questions to evaluate impacts regarding aesthetics, including light and glare. The question that pertains to Light Trespass and Glare is as follows:

Would the project:

- Create a new source of substantial light and glare which would adversely affect day or nighttime views in the area?

In the context of this question from Appendix G of the CEQA Guidelines, the determination of significance in this Study considers the following factors:

- The change in ambient nighttime levels because of project light sources; and
- The extent to which project lighting would spill off the Property and affect adjacent properties

Specifically, the Permanent Outdoor Lighting would create a Less Than Significant Impact regarding artificial light or glare because:

- Outdoor lighting installations are deep seated on the site and far away from the property line demarcations
- Outdoor luminaires will be fully shielded and utilize the applicable BUG ratings to be dark-sky compliant
- No outdoor sign lighting will be utilized on this project

In addition, the Temporary Outdoor Lighting would create momentary Potentially Significant Impact regarding artificial light or glare if:

- Unshielded and floodlights are utilized for maximum site coverage close to the property line demarcations
- Glare is produced with new high contrast conditions, with luminance greater than 600 cd/m2 or contrast ratio greater than 30:1, visible from a field of view during construction activities near the Rasor Rd Rest Area

IV. Conclusion

Following the required codes and the proposed outdoor lighting system design criteria, it is feasible to conclude that this project poses almost no impact to surrounding areas. This report identifies and summarizes the regulatory requirements and best design practices to achieve dark sky compliance from permanent outdoor lighting installations. This report acknowledges that there may be periods of potential significant impacts from temporary lighting from construction activities taking place near the property line demarcations. The project stakeholders are aware of these limitations and will provide a detailed lighting management plan prior to construction start to mitigate as much construction related impact as feasible; while keeping in mind to strike the balance of adhering to labor safety laws.

The outdoor lighting impact issues focused around three key subjects: Light Trespass, Glare and Skyglow. This study establishes that:

- Light Trespass is not applicable to this project as no permanent outdoor lighting will be installed close to any of the property line demarcations

- Glare will be significantly reduced by employing mitigation measures such as fully shielded luminaries and applicable BUG ratings to be dark-sky compliant
- Skyglow will be mostly eliminated because almost all permanent outdoor lighting will normally be automatically turned off during non-personnel hours during nighttime. Select luminaires may be left ON 24/7 for security purposes but they will not produce light spill as they will also auto-dim to 50% on vacancy

V. Appendices

ACCESS LIGHTING AREA#A USING:

- 25FT POLE TOP LUMINAIRES

ACCESS LIGHTING AREA#B USING:

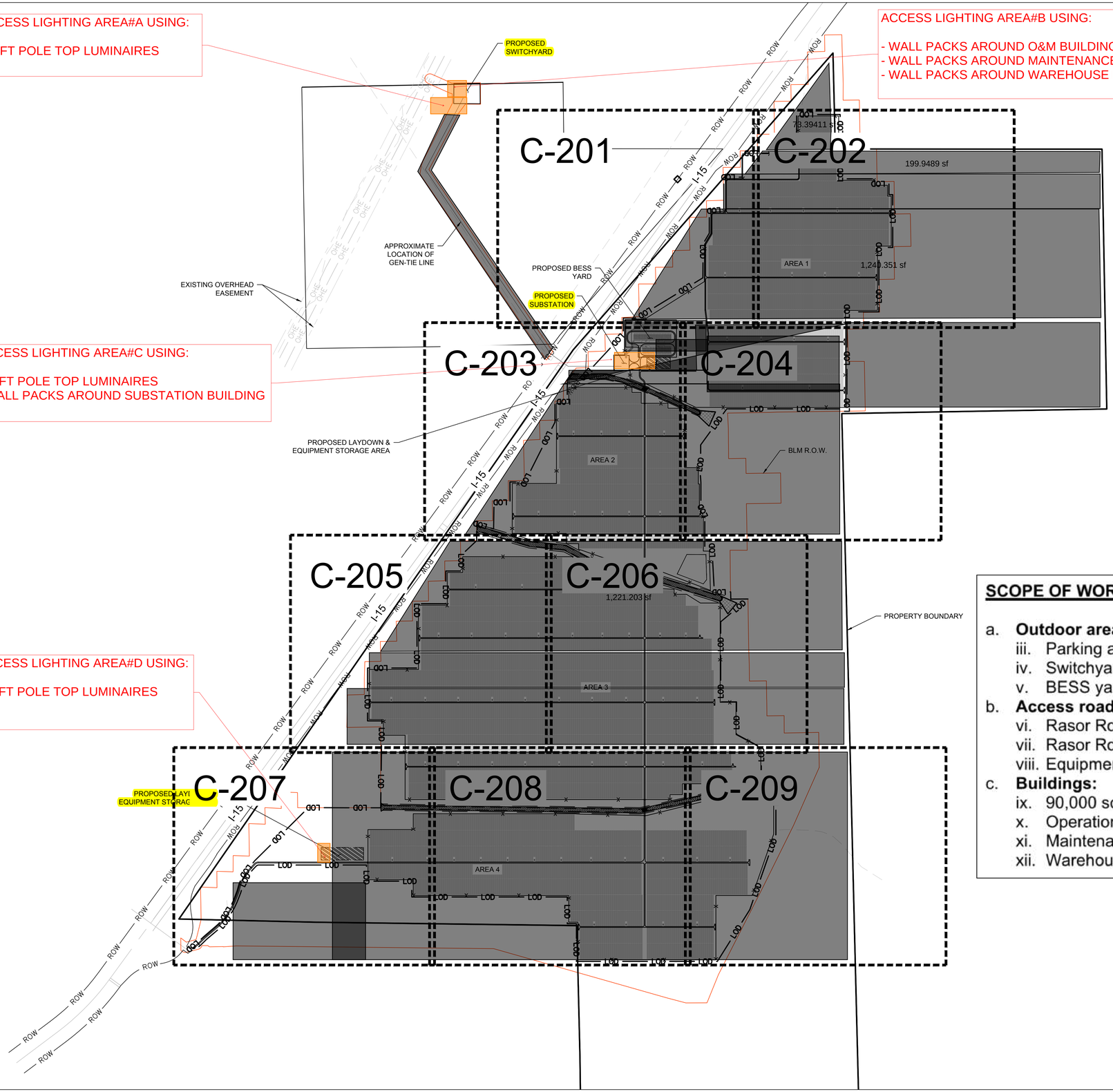
- WALL PACKS AROUND O&M BUILDING
- WALL PACKS AROUND MAINTENANCE BUILDING
- WALL PACKS AROUND WAREHOUSE BUILDING

ACCESS LIGHTING AREA#C USING:

- 25FT POLE TOP LUMINAIRES
- WALL PACKS AROUND SUBSTATION BUILDING

ACCESS LIGHTING AREA#D USING:

- 25FT POLE TOP LUMINAIRES



LEGEND

LIGHTING ZONE

DARK ZONE

EXHIBIT 1 - SODA MOUNTAIN SOLAR PROJECT - CONCEPTUAL OUTDOOR LIGHTING PLAN

SCALE: 1" = 1000'

SCOPE OF WORK AREA

a. **Outdoor areas:**
   iii. Parking areas - 13,200 sq. ft.
   iv. Switchyard - 5 acres.
   v. BESS yard - 18 acres.
b. **Access roads:**
   vi. Rasor Rd North connector to HV substation.
   vii. Rasor Rd South connector to Sollar Array area.
   viii. Equipment maintenance roads in east west direction throughout solar array.
c. **Buildings:**
   ix. 90,000 sq. ft. HV substation.
   x. Operations and Maintenance building – 5,000 sq. ft.
   xi. Maintenance facility – 2,400 sq. ft.
   xii. Warehouse facility – 6,000 sq. ft.

AKELA

2550 FIFTH AVE, SUITE 800, SAN DIEGO 92103 | (858) 638 0600

WWW.AKELAENG.COM

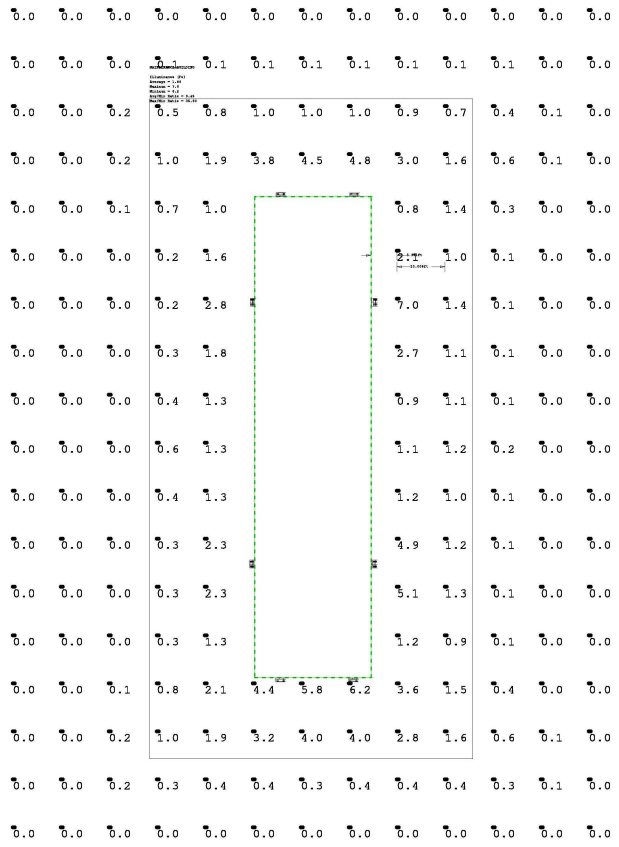
Soda Mountain Solar Project Conceptual Lighting Study - Exhibit 2

LIGHTING CALCULATIONS: MAINTENANCE BUILDING

Date:10/1/2024
Filename: Soda Mountain Solar Project Conceptual Lighting Study - Maintenance Building.AGI
CALCULATION BY: WCD

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
MAINTENANCE BUILDING SURROUNDING	Illuminance	Fc	0.67	7.0	0.0	N.A.	N.A.
MAINTENANCE BUILDING	Illuminance	Fc	1.89	7.0	0.2	9.45	35.00

Building Exterior Surface Summary			
Maintenance Building	Label	Color	Reflectance
	South Wall		0.08
	East Wall		0.08
	North Wall		0.08
	East Wall		0.08



CALC POINTS AT 10FT INTERVALS

Building Summary	
Label	*Wall Ht.*
OPERATIONS	*12*

Scale: 1 inch= 20 Ft.

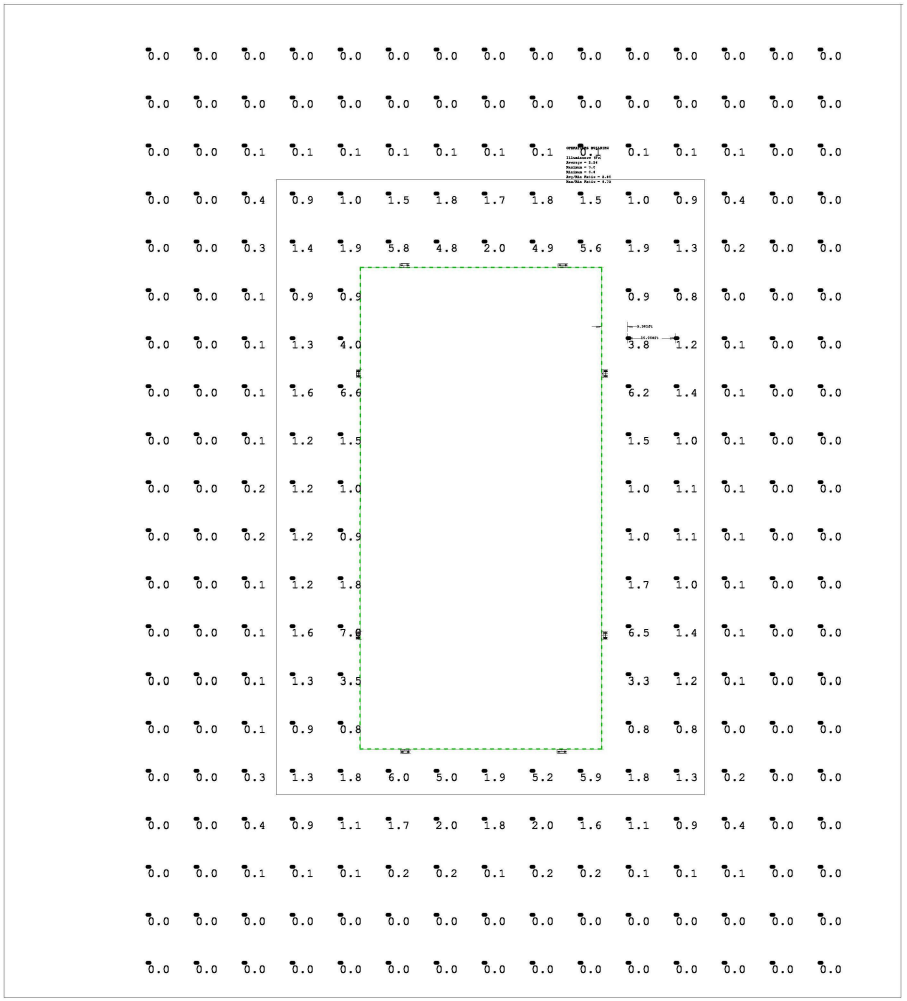
Soda Mountain Solar Project Conceptual Lighting Study - Exhibit 2

LIGHTING CALCULATIONS: OPERATIONS BUILDING

Date:10/1/2024
Filename: Soda Mountain Solar Project Conceptual Lighting Study - Operations Building.AGI
CALCULATION BY: WCD

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
OPERATIONS BUILDING SURROUNDING	Illuminance	Fc	0.68	7.0	0.0	N.A.	N.A.
OPERATIONS BUILDING	Illuminance	Fc	2.24	7.0	0.8	2.80	8.75

Building Exterior Surface Summary			
Operations Building	Label	Color	Reflectance
	South Wall		0.08
	East Wall		0.08
	North Wall		0.08
	East Wall		0.08



CALC POINTS AT 10FT INTERVALS

Building Summary	
Label	Wall Ht.
OPERATIONS	12

Scale: 1 inch= 20 Ft.

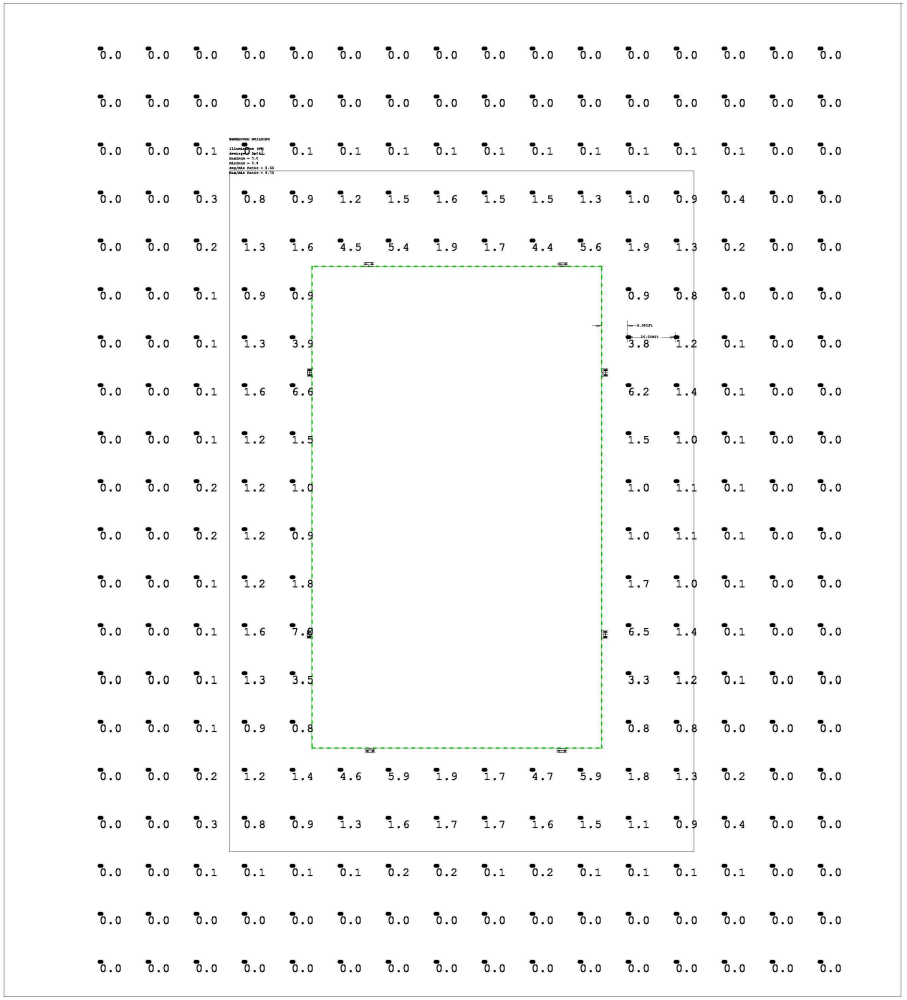
Soda Mountain Solar Project Conceptual Lighting Study - Exhibit 2

LIGHTING CALCULATIONS: WAREHOUSE BUILDING

Date:10/1/2024
Filename: Soda Mountain Solar Project Conceptual Lighting Study - Warehouse Building.AGI
CALCULATION BY: WCD

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
WAREHOUSE BUILDING SURROUNDING	Illuminance	Fc	0.65	7.0	0.0	N.A.	N.A.
WAREHOUSE BUILDING	Illuminance	Fc	2.04	7.0	0.8	2.55	8.75

Building Exterior Surface Summary			
Warehouse Building	Label	Color	Reflectance
	South Wall		0.08
	East Wall		0.08
	North Wall		0.08
	East Wall		0.08



CALC POINTS AT 10FT INTERVALS

Building Summary	
Label	Wall Ht.
WAREHOUSE	12

Scale: 1 inch= 20 Ft.

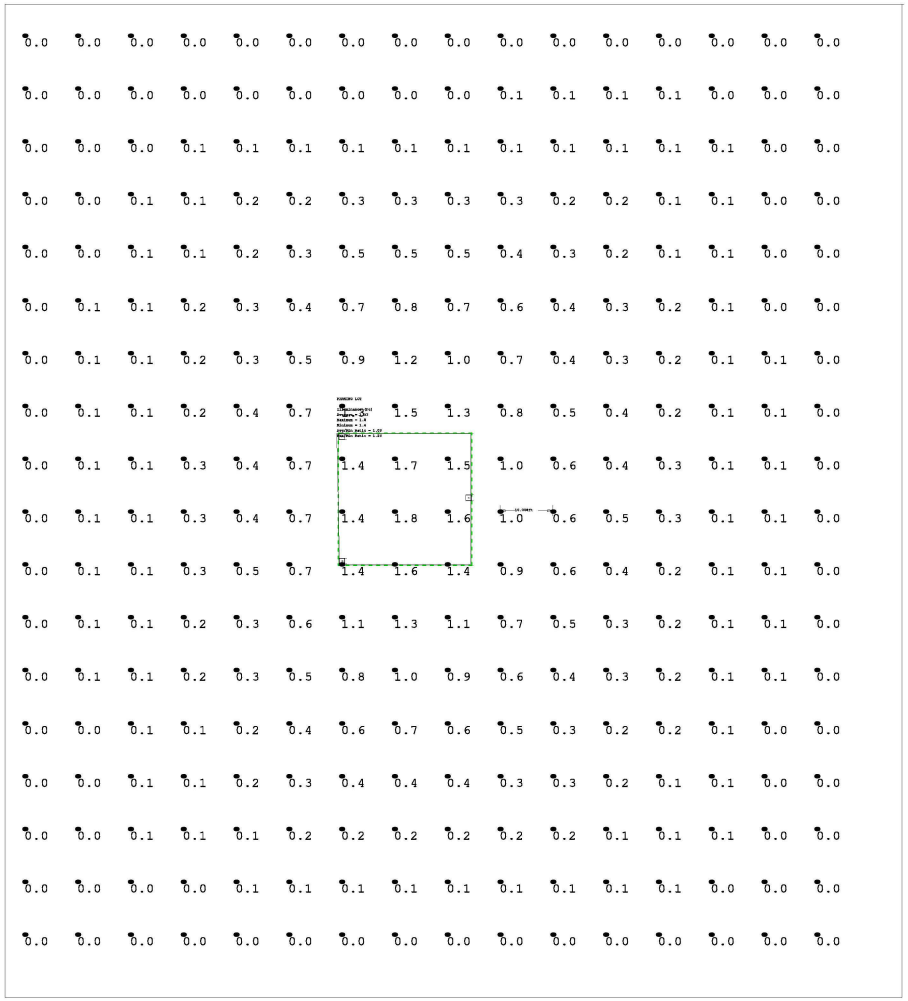
Soda Mountain Solar Project Conceptual Lighting Study - Exhibit 2

LIGHTING CALCULATIONS: SITE PARKING LOT AND SURROUNDING AREA

AKELA | A Michael Baker INTERNATIONAL Company

Date:10/1/2024
Filename: Soda Mountain Solar Project Conceptual Lighting Study - Parking lot.AGI
CALCULATION BY: WCD

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
PARKING LOT SURROUNDING AREA	Illuminance	Fc	0.26	1.8	0.0	N.A.	N.A.
PARKING LOT	Illuminance	Fc	1.53	1.8	1.4	1.09	1.29



CALC POINTS AT 10FT INTERVALS

Scale: 1 inch= 18.18 Ft.

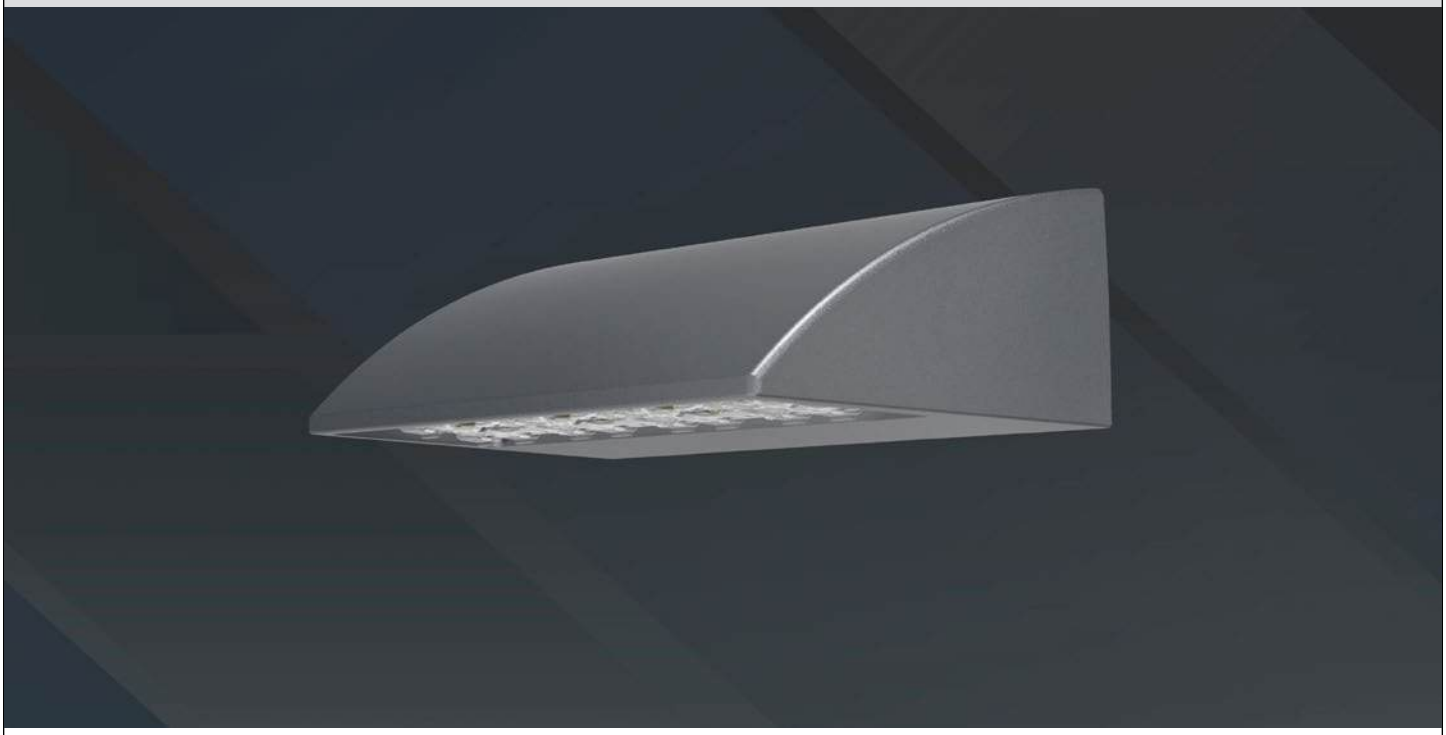
Exhibit 3 - Luminaire Schedule and Specifications

LUMINAIRE SCHEDULE													
TYPE	DESCRIPTION	MANUFACTURER		LAMP				POWER				MOUNTING	NOTES
		NAME	CATALOG NO.	TYPE	LUMENS	CCT	CRI (MIN)	VOLTAGE	INPUT WATTAGE	DIMMING TYPE	DIMMING DIM TYPE	TYPE	
S01	DARK SKY COMPLIANT AREA LED ON A 25' POLE WITH TYPE 4 DISTRIBUITION AND INTEGRAL PHOTOCELL.	NLS LIGHTING NLS LIGHTING	VSS-1-T4-48L-7-AMBER-UNV-DP6-BLK-PC RSSP-25-4R-11G	LED	11,232	AMB	70	UNV	108	INTEGRAL DRIVER	0-10V	POLE	VERIFY FINISH, MOUNTING, AND LOCATION WITH ARCHITECT PRIOR TO ROUGH-IN.
S02	DARK SKY COMPLIANT WALL PACK WITH TYPE 3 DISTRIBUITION AND INTEGRAL PHOTOCELL.	NLS LIGHTING	NV-W2-T3-64L-53-AMBER-UNV-WM-BLK-PC	LED	9,712	AMB	70	UNV	99	INTEGRAL DRIVER	0-10V	SURFACE	VERIFY FINISH, MOUNTING, AND LOCATION WITH ARCHITECT PRIOR TO ROUGH-IN.

NLS LIGHTING

NV-W2

ARCHITECTURAL HIGH PERFORMANCE FULL CUTOFF WALL PACK



LED WATTAGE CHART	
	64L
530 milliamps	99w
700 milliamps	136w
1050 milliamps	205w

KEY FEATURES

- Ideal for Exterior Walls, Entryways, Pathways, New Construction and Renovation, Warehouse and Receiving Docks, Court Yards, and School Playgrounds
- Sleek Minimalistic Design of the NV-W2 (up to 24,000 Lumens, 18”W x 9.38”D x 5”H) Compliments the NV-W (up to 11,000 Lumens, 12”W x 9”D x 5.5”H)
- 2700K, 3000K, 3500K, 4000K, 5000K CCT Multichip High Power 70 & 80 CRI LEDs
- IP66 Rated Against Dust & Water Ingress, IK10 Rated for Tamper/Vandalism/Impact Protection
- 20KA Surge Protection (120V - 480V) Cold Weather Integrated Battery Back-Up Safety Options
- Silicone Optics providing 96% Clarity and Heat Resistant up to 150°C
- 9 Standard Finishes, Custom Finish and Marine Grade Finish Available
- Controls Agnostic, Compatible with Most Control Systems and Sensors Linstings
- Environmentally Friendly Product Which Reduces Energy Consumption, L70 > 100,000 hours
- IDA qualified for 3000K CCT and Lower for Down-light Application, Reducing Light Pollution and Trespass
- Buy America(n) Option Available, Quick Mount for Easy Installation
- Cost Competitive and Short Shipping Lead Times in Days & Weeks

BUY AMERICAN

To ensure the latest BAA/TAA/BABA Standards are being met, please select BAA, TAA, or BABA in the options section. Please contact the factory before placing an order for any NLS products requesting BAA (Buy American Act), TAA (Trade American Act), or BABA (Build America, Buy America).

Project Name:	Type:

NV-W2 ORDERING GUIDE

Cat#	Light Dist.	# of LEDs	Miliamps	Kelvin	Volts
NV-W **(NV-W2)**	Type 2 **(T2)** Type 3 **(T3)** Type 4 **(T4)**	64 **(64L)**	530 **(53)** 700 **(7)** 1050 **(1)**	Amber 585-600nM **(AMBER)** [9, 11, 12] 2700K, 70 CRI **(27K7)** [4] 2700K, 80 CRI **(27K8)** [1, 4] 3000K, 70 CRI **(30K7)** [4] 3000K, 80 CRI **(30K8)** [1, 4] 3500K, 80 CRI **(35K8)** 4000K, 70 CRI **(40K7)** 4000K, 80 CRI **(40K8)** [1] 5000K, 70 CRI **(50K7)** 5000K, 80 CRI **(50K8)** [1]	120-277 **(UNV)** 347-480 **(HV)**

Mounting	Color	Controls Options	Options	Lens Options
Wall Mount **(WM)**	Bronze Textured **(BRZ)** White Textured **(WHT)** Smooth White Gloss **(SWT)** Silver Metallic **(SVR)** Black Textured **(BLK)** Smooth Black Gloss **(SBK)** Graphite Textured **(GPH)** Grey Textured **(GRY)** Green Textured **(GRN)** Hunter Green Textured **(HGN)** Custom **(CS)**	Nema 7-Pin Receptacle **(PE7)** Nema 7-Pin Receptacle +Shorting Cap **(PER)** Photocell + Receptacle **(PCR)** Button Photocell **(PC)** [2] FSP-211 with Motion Sensor (UNV Voltage) *8' and Below **(FSP-8)** [2] *9'-20' Heights **(FSP-20)** [2] *21'-40' Heights **(FSP-40)**	Marine Grade Finish **(MGF)** Aluminum Vanity Plate 22"x16" **(VP22)** Housing Extension **(HE)** Surge Protector **(20KA)** Up Light **(UP)** Emergency Battery 4W **(EM4)** [2, 3] Emergency Battery 8W **(EM8)** [2, 3] Emergency Cold Pk Battery 14W **(EMCP)** [2, 3] Black Hardware **(BH)** [5] Black Optic Frame **(BOF)** [5] Buy American Act **(BAA)** [10] Trade Agreement Act **(TAA)** [10] Build America Buy American **(BABA)** [10] Custom Controls Integration **(CCI)** [8]	Glass Lens **(GL)** [6, 13] HAL Lens **(HAL)** [7, 13]

NOTES:

1. Consult Factory for Lead Time. Consult Factory for 90 CRI Requests
2. Universal Voltage 120-27
3. All Emergency Battery Options Certified CA Title 20
4. 3000K or lower, with fixed mounting options only, must be selected to meet International Dark Sky Association certification
5. Consult Factory for Lead Time
6. Glass Lens: Low iron glass, fully tempered per ANSI C1047 (QCH-2201-37)
7. HAL Lens: Yellow Polycarbonate Lens – less than 2% Blue Light Content
8. Please contact Factory for Custom Control Integration requests (nLight, NX, WaveLinx, Crestron, DMX/RDM, Synapse, Casambi, Dali II, Avi-On, or other control systems)
9. Turtle Safe
10. Consult factory for all BAA/TAA/BABA requests
11. Consult factory for Lead Time
12. Not Available above 1000mA
13. Contact Factory

PRODUCT SPECIFICATIONS

ELECTRICAL
• 120-277 Volts (UNV) or 347-480 Volts (HV)
• 0-10V dimming driver
• Driver power factor at maximum load is ≥ .95, THD maximum load is 15%
• LED Drivers Ambient Temp. Min is -40°C and Ambient Temp. Max ranges from 50°C to 55°C and, in some cases, even higher. Consult the factory for revalidation by providing the fixture catalog string before quoting and specifying it.
• All internal wiring UL certified for 600 VAC and 105°C • All drivers, controls, and sensors housed in enclosed IP66 compartment
• CRI 70, 80, 90
• Color temperatures: 2700K, 3000K, 3500K, 4000K, 5000K

CONSTRUCTION
• Die Cast Aluminum
• Internal cooling fins
• Corrosion resistant external hardware
• One-piece silicone gasket ensures IP66 seal for electronics compartment
• Two-piece silicone Micro Optic system ensures IP67 level seal around each PCB
• Silicone Micro Optics: Recessed, full cutoff, vandal resistant and non-yellowing • Dark Sky Approved

OPTIONS
MARINE GRADE FINISH (MGF) - A multi-step process creating protective finishing coat against harsh environments. Chemically washed in a 5 stage cleaning system. Prebaked, Powder coated 3-5 mils of Zinc Rich Super Durable Polyester Primer. Oven Baked. Finished Powder Coating of Super Durable Polyester Powder Coat 3-5 mil thickness.

VANITY PLATE (VP) - Optional Vanity Plate was designed to cover the unsightly remains on a wall where a larger HID wallpack was removed. The aluminum Vanity Plate will be painted to match the finish of the NV- W2, custom finishes are available, please consult factory. The standard Vanity Plate is 22"W x 16"H.

20KA SURGE PROTECTOR (20KA) - protects the complete system against nominal surges of up to 20KA. Protection against power surges, storms and lightning strikes.

EMERGENCY BATTERY BACKUP (EM4) (EM8)

EMERGENCY COLD PACK BATTERY (EMPC) - Emergency cold pack (-20ºC minimum) battery system available in 14W output.

UP LIGHT (UP) - Inverted luminaire for up lighting.

BLACK HARDWARE (BH) - Black stainless steel hardware.

BLACK OPTIC FRAME (BOF) - Black optic frame. Standard is white.

CONDUIT BOX (JBOX) - Conduit J-Box.

GLASS LENS (GL) - Low Iron Glass, fully tempered.

HIGH PERFORMANCE AMBER LENS (HAL)

CONTROL OPTIONS
• FSP-211 (FSP-X) - Passive infrared (PIR) sensor providing multi-level control based on motion/daylight contribution.
• All control parameters adjustable via wireless configuration remote storing and transmitting sensor profiles.
• FSP-8 Mounting heights 8 feet and below
• FSP-20 mounting heights 9-20 feet
• FSP-40 mounting heights 21-40 feet.
• Includes 5 dimming event cycles, 0-10V dimming with motion sensing, re-programmable in the field. Programmable remote must be purchased separately.
• FSIR-100 commissioning remote is required to change sensor settings. Please contact factory for ordering.

• Controls Agnostic: Please contact factory for your preferred controls option. (nLight, NX, WaveLinx, Crestron, DMX/RDM, Synapse, Casambi, DALI II, Avi-On, or other control systems)

NEMA 7-PIN RECEPTACLE (PE7) - An ANSI C136.41-2013 receptacle provides electrical and mechanical interconnection between photo control cell and luminaire. Dimming receptacle available two or four dimming contacts supports 0-10 VDC dimming methods or Digital Addressable Lighting Interface (DALI), providing reliable power interconnect.

BUTTON PHOTOCELL–Dusk to dawn optional Button Photocell.

FINISH
3-5 mils electrostatic powder coat.
NLS Lighting's standard high-quality finishes prevent corrosion, and protects against extreme environmental conditions.

WARRANTY
Five-year limited warranty for drivers and LEDs.

OPTICS
Silicone optics high thermal stability and light output provide higher powered LEDs with minimized lumen depreciation. UV stability with scratch resistance increases exterior application durability. Silicone optics do not yellow, crack or brittle over time.

LISTINGS
• Certified to UL 1598
• UL 8750
• CSA C22.2 No. 250.0
• DesignLights Consortium® (DLC) Pending
• DesignLights Consortium Premium® (DLCP) Pending
• IP66 Rated Fixture / IP67 Rated Optics
• IK10 Rated
• IDA Dark Sky Approved

BUY AMERICAN OPTION
While all of the NLS Lighting products listed in this document qualify for the Buy America(n) Act of 1933, we reserve the right to change our listings without notice.

The information provided above is for general informational purposes only. We encourage you to consult legal professionals for advice particular to your projects concerning BAA, TAA, BABA or Buy America.

Additional NLS Products that meet BAA, TAA standards can be found at the following link:

https://nlslighting.com/buy-american/

The information and specifications on this document are subject to change without any notification. All values are design, nominal, typical or prorated values when measured under internal and external laboratory conditions.

PRODUCT SPECIFICATIONS

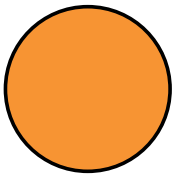
LUMENS							
PART NUMBER	**T2**	**LM/W**	**T3**	**LM/W**	**T4**	**LM/W**	**WATTS**
NV-W2-64L-53-27K8	9345	94	9712	B2-U0-G2	9285	94	99
NV-W2-64L-53-27K7	9980	101	10372	B2-U0-G2	9915	100	99
NV-W2-64L-53-30K8	10020	101	10413	B2-U0-G2	9955	101	99
NV-W2-64L-53-30K7	10791	109	11215	B2-U0-G2	10722	108	99
NV-W2-64L-53-35K8	10020	101	10413	B2-U0-G2	9955	101	99
NV-W2-64L-53-40K8	10791	109	11215	B2-U0-G2	10722	108	99
NV-W2-64L-53-40K7	11660	118	12118	B2-U0-G2	11585	117	99
NV-W2-64L-53-50K8	10791	109	11215	B2-U0-G2	10722	108	99
NV-W2-64L-53-50K7	11660	118	12118	B2-U0-G2	11585	117	99
NV-W2-64L-7-27K8	12343	91	12828	B2-U0-G2	12263	90	136
NV-W2-64L-7-27K7	13181	97	13698	B3-U0-G3	13096	96	136
NV-W2-64L-7-30K8	13234	97	13753	B3-U0-G3	13148	97	136
NV-W2-64L-7-30K7	14253	105	14812	B3-U0-G3	14161	104	136
NV-W2-64L-7-35K8	13234	97	13753	B3-U0-G3	13148	97	136
NV-W2-64L-7-40K8	14253	105	14812	B3-U0-G3	14161	104	136
NV-W2-64L-7-40K7	15400	113	16005	B3-U0-G3	15301	113	136
NV-W2-64L-7-50K8	14253	105	14812	B3-U0-G3	14161	104	136
NV-W2-64L-7-50K7	15400	113	16005	B3-U0-G3	15301	113	136
NV-W2-64L-1-27K8	18515	90	19241	B3-U0-G3	18395	90	205
NV-W2-64L-1-30K7	19771	96	20547	B3-U0-G3	19644	96	205
NV-W2-64L-1-30K8	19850	97	20630	B3-U0-G3	19722	96	205
NV-W2-64L-1-30K7	21379	104	22218	B3-U0-G3	21241	104	205
NV-W2-64L-1-35K8	19850	97	20630	B3-U0-G3	19722	96	205
NV-W2-64L-1-40K8	21379	104	22218	B3-U0-G3	21241	104	205
NV-W2-64L-1-40K7	23100	113	24007	B3-U0-G3	22951	112	205
NV-W2-64L-1-50K8	21379	104	22218	B3-U0-G3	21241	104	205
NV-W2-64L-1-50K7	23100	113	24007	B3-U0-G3	22951	112	205
3000K or lower must be selected to meet International Dark Sky Association certification.							

BUG RATINGS				
PART NUMBER	**T2**	**T3**	**T4**	**WATTS**
NV-W2-64L-53-27K8	B1-U0-G2	B2-U0-G2	B2-U0-G2	99
NV-W2-64L-53-27K7	B2-U0-G2	B2-U0-G2	B2-U0-G2	99
NV-W2-64L-53-30K8	B2-U0-G2	B2-U0-G2	B2-U0-G2	99
NV-W2-64L-53-30K7	B2-U0-G2	B2-U0-G2	B2-U0-G2	99
NV-W2-64L-53-35K8	B2-U0-G2	B2-U0-G2	B2-U0-G2	99
NV-W2-64L-53-40K8	B2-U0-G2	B2-U0-G2	B2-U0-G2	99
NV-W2-64L-53-40K7	B2-U0-G2	B2-U0-G2	B2-U0-G2	99
NV-W2-64L-53-50K8	B2-U0-G2	B2-U0-G2	B2-U0-G2	99
NV-W2-64L-53-50K7	B2-U0-G2	B2-U0-G2	B2-U0-G2	99
NV-W2-64L-7-27K8	B2-U0-G2	B2-U0-G2	B2-U0-G2	136
NV-W2-64L-7-27K7	B2-U0-G2	B3-U0-G3	B2-U0-G2	136
NV-W2-64L-7-30K8	B2-U0-G2	B3-U0-G3	B2-U0-G2	136
NV-W2-64L-7-30K7	B2-U0-G2	B3-U0-G3	B2-U0-G2	136
NV-W2-64L-7-35K8	B2-U0-G2	B3-U0-G3	B2-U0-G2	136
NV-W2-64L-7-40K8	B2-U0-G2	B3-U0-G3	B2-U0-G2	136
NV-W2-64L-7-40K7	B3-U0-G3	B3-U0-G3	B3-U0-G3	136
NV-W2-64L-7-50K8	B2-U0-G2	B3-U0-G3	B2-U0-G2	136
NV-W2-64L-7-50K7	B2-U0-G2	B3-U0-G3	B3-U0-G3	136
NV-W2-64L-1-27K8	B2-U0-G2	B3-U0-G3	B2-U0-G2	205
NV-W2-64L-1-30K7	B3-U0-G3	B3-U0-G3	B3-U0-G3	205
NV-W2-64L-1-30K8	B3-U0-G3	B3-U0-G3	B3-U0-G3	205
NV-W2-64L-1-30K7	B3-U0-G3	B3-U0-G3	B3-U0-G3	205
NV-W2-64L-1-35K8	B3-U0-G3	B3-U0-G3	B3-U0-G3	205
NV-W2-64L-1-40K8	B3-U0-G3	B3-U0-G3	B3-U0-G3	205
NV-W2-64L-1-40K7	B3-U0-G3	B3-U0-G3	B3-U0-G4	205
NV-W2-64L-1-50K8	B3-U0-G3	B3-U0-G3	B3-U0-G3	205
NV-W2-64L-1-50K7	B3-U0-G3	B3-U0-G3	B3-U0-G4	205

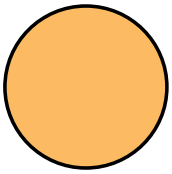
EMERGENCY BATTERY BACK-UP LUMENS				
PART NUMBER	**T2**	**T3**	**T4**	**WATTS**
EM14-27K7	1,287	1,299	1,287	13
EM14-30K7	1,396	1,409	1,396	13
EM14-35K8	1,208	1,221	1,208	13
EM14-40K7	1,467	1,482	1,467	13
EM14-50K7	1,467	1,482	1,467	13
EMCP-27K7	1,287	1,299	1,287	13
EMCP-30K7	1,396	1,409	1,396	13
EMCP-35K8	1,208	1,221	1,208	13
EMCP-40K7	1,467	1,482	1,467	13
EMCP-50K7	1,467	1,482	1,467	13

Lumen Maintenance Data							
Ambient Temperature	**Drive Current**	**L90 Hours***	**L70 Hours****	**30,000 Hours***	**50,000 Hours***	**60,00 Hours***	**100,000 Hours****
25°C	Up to 700mA	58,000	173,000	95.7%	91.6%	89.6%	82.1%
	1050mA	48,000	143,000	94.3%	89.5%	87.2%	78.5%
*Reported extrapolations per IESNA TM-21			**Projected extrapolations per IESNA TM-21				

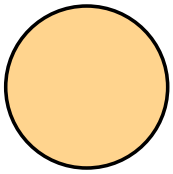
LED KELVIN RANGE



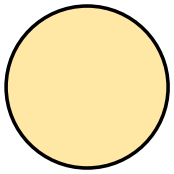
AMBER
585-600 nm



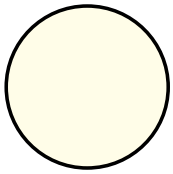
2700K 70 CRI



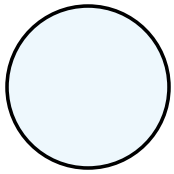
3000K 70 CRI



3500K 80 CRI



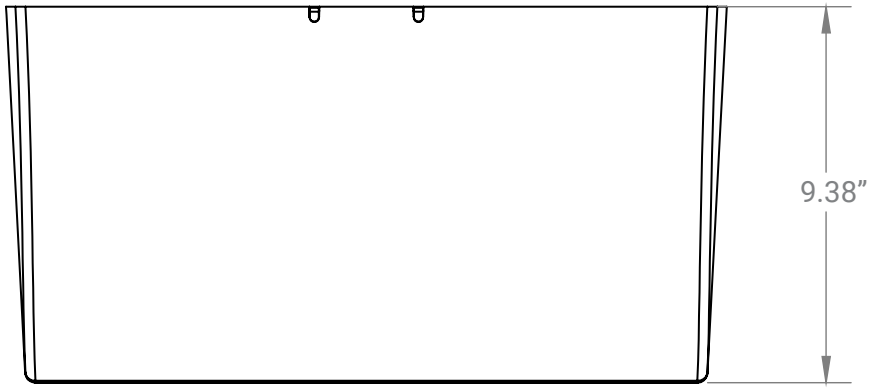
4000K 70 CRI

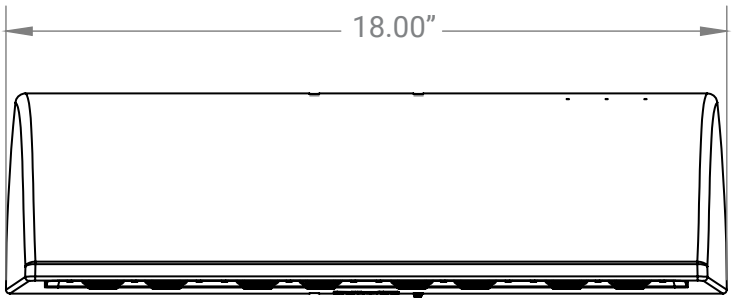


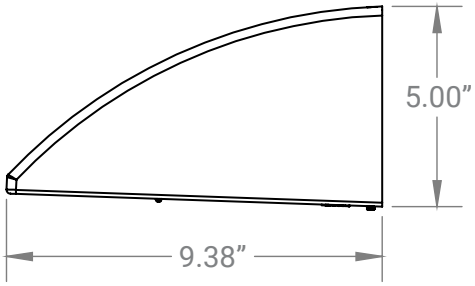
5000K 70 CRI

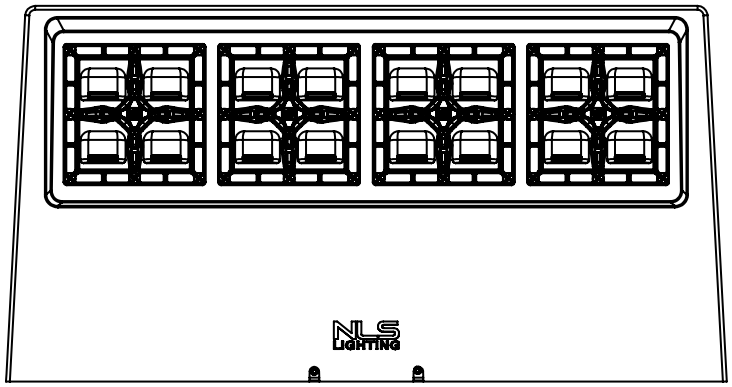
Color	Dominant or Peak Wavelength Range (nm)	
	Minimum	Maximum
Amber	585	600

DIMENSIONS





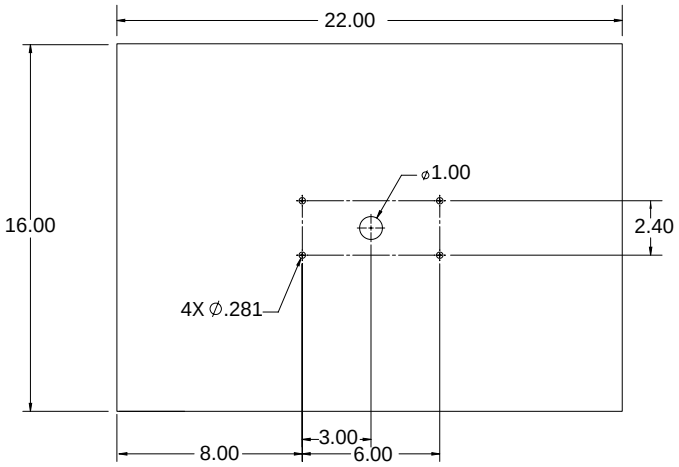




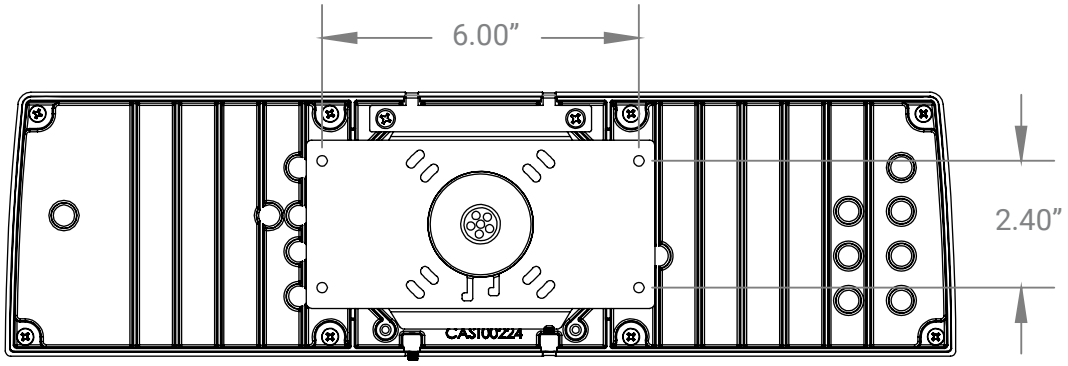
Weight: 16 lbs

VANITY PLATE (VP)





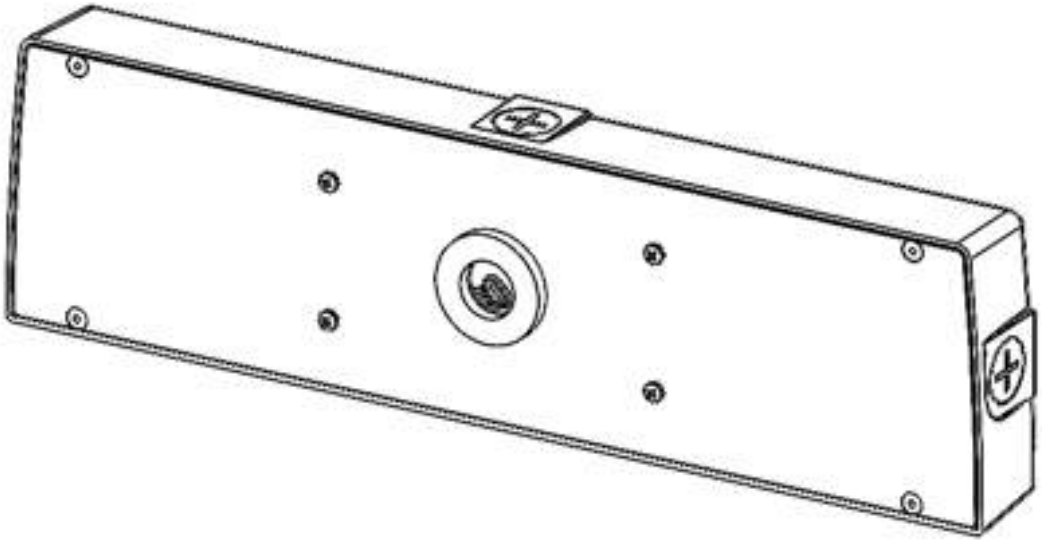
MOUNTING HOLE



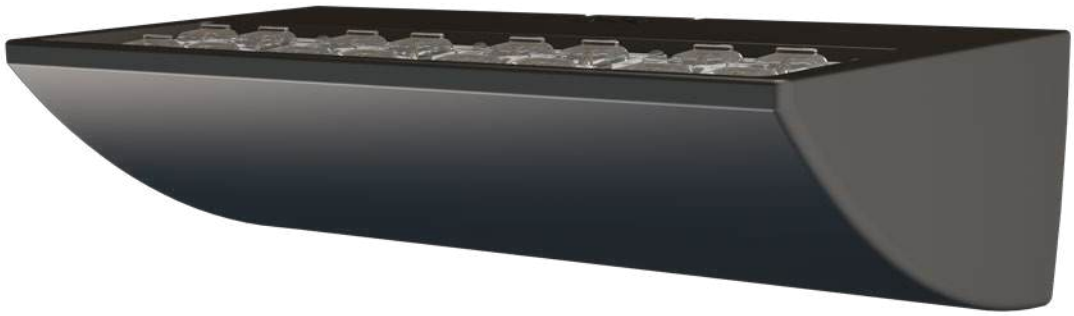
** 3 Conduit access points on either side or center back.*

** Option to mount the bracket slots onto the J-box tabs*

CONDUIT BOX
3/4" NPT



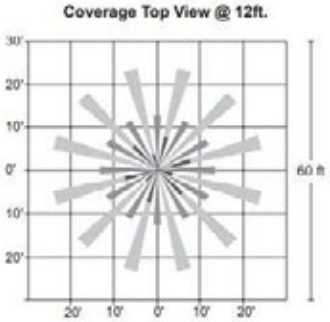
UP LIGHT



MOTION SENSOR PLACEMENT

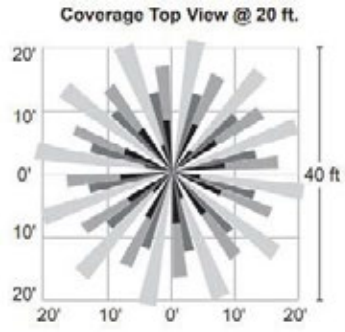


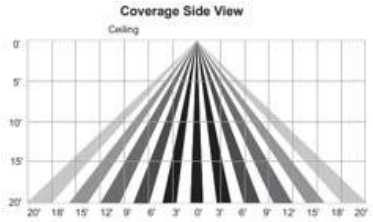
FSP-8



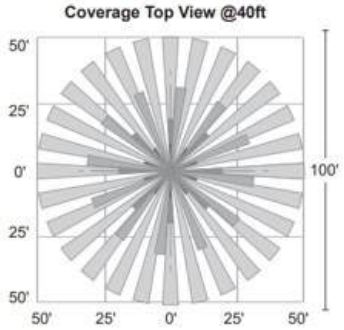


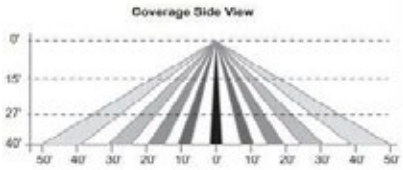
FSP-20





FSP-40

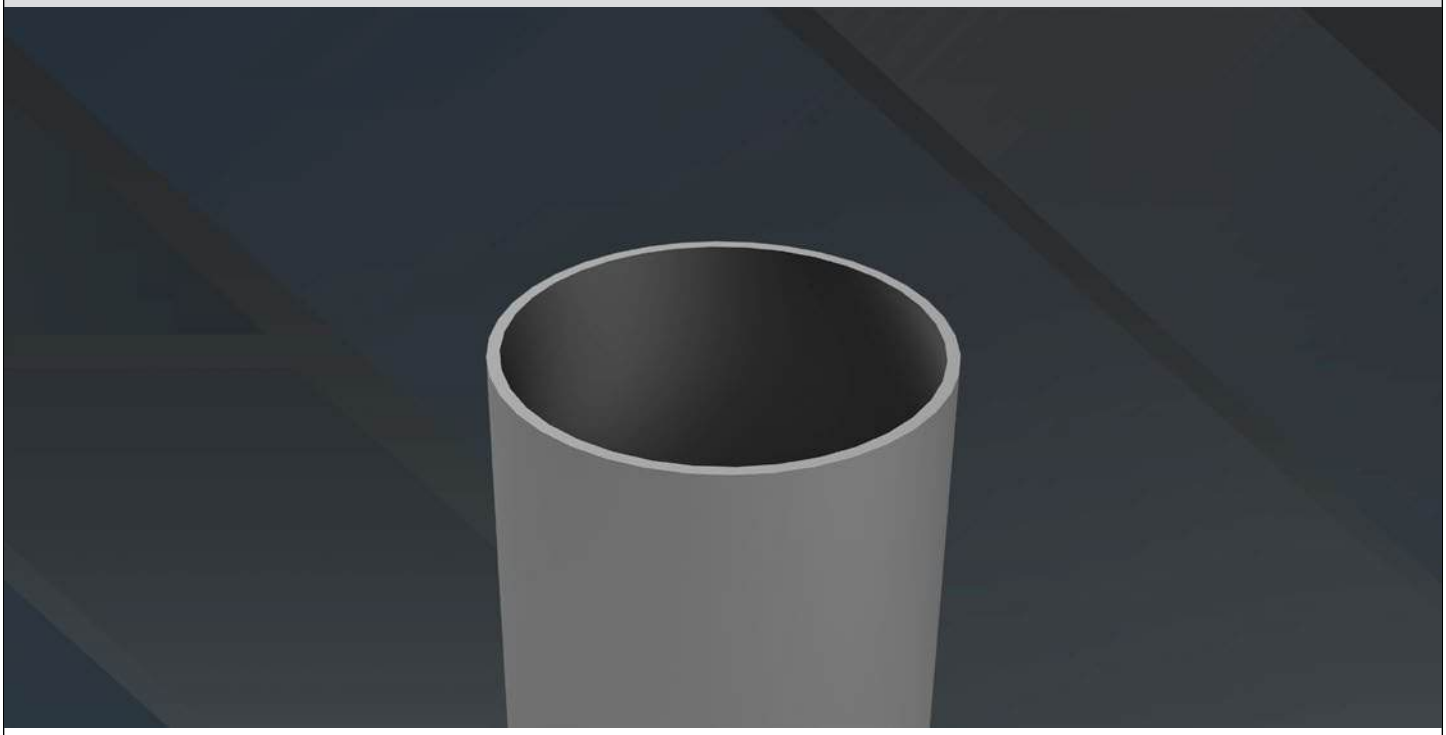




NLS LIGHTING

RSSP

ROUND STRAIGHT STEEL POLE



HEIGHT
10' - 30'

POLE SHAFT
The pole shaft material is a weldable grade hot rolled commercial quality steel tubing with a minimum yield of 46,000 psi. Conforms to ASTM A500 Grade B Standards. Poles have ground lug welded inside hand-hole opposite side of the hand-hole. Pole shaft is welded to base plate on top and bottom of base plate.

BASE PLATE
The Base Plate is manufactured from structural hot rolled steel that meets or exceeds a minimum yield strength of 36,000 psi, conforms the ASTM–A36 standards. Base Plate vary in size from 1" thick for poles 21 feet and over, 3/4" thick for poles 10 to 20 feet.

ANCHOR BOLTS
All anchor bolts are hot dipped galvanized steel and come with two galvanized nuts and washers per bolt. Minimum yield strength 50,000 psi. Anchor bolts are not included for Custom Bolt Circle.

BASE COVER
All base covers are fabricated two-piece 6063 aluminum and powder coated to match the pole. Square base cover comes standard, Round base cover optional.

HAND-HOLE
A reinforced hand-hole is 12" on center from the base plate and is constructed of 3"x 5" rectangular steel tubing which is welded to pole shaft for added strength. The hand-hole covers are provided with internal bridge support and powder coated to match pole finish.

POLE CAP
All poles come with a removable polymer pole cap installed. All pole caps are black finish. Aluminum Pole Cap option is painted to match pole.

FINISH
All poles are treated with shot blast media for a near white finish, power blasted with 100 psi prior to powder coat application. Electrostatically applied AAMA 2604 polyester powder coat with a 3 to 5 mil thickness for maximum adherence.

MARINE GRADE FINISH
All poles are washed through a 5-stage cleaning system with a deionized rinse, a 3 to 5 mils zinc rich durable polyester primer powder coat, followed by a 3 to 5 mils super durable AAMA 2604 polyester powder coat finish.
Recommended for applications near the coastline or in demanding environments.

GALVANIZED FINISH
All poles are Hot Dipped Galvanized in a multi stage process. Galvanizing Specification, Zinc (Hot Dipped Galvanized) per ASTM A 123/A 123M – 02

Zinc coatings on threaded materials shall conform to specification A 153 /A 153M. The coating shall be continuous and reasonably smooth and uniform in thickness and in weight.

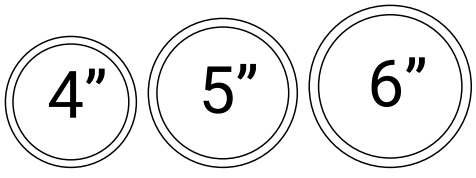
Galvanizing Adherence - The Zinc coating shall withstand handling consistent with the nature and thickness of the coating and normal use of the article without peeling or flaking.

Provides the most protection against the elements in coastal and harsh environments.

GALVANIZED UNDER POWDER
Galvanized Under Powder (GUP) adheres to above galvanized specification, and the second stage is a light sand blast on the outside of the pole, third stage is a 3-5 mils AAMA 2604 polyester powder coat finish for maximum adherence.

VIBRATION DAMPENER
The Vibration Dampener is factory installed and consists of a rugged galvanized chain coated with heavy duty polyester tubing that is factory secured at the bottom 2-3rds of the pole and can optionally be secured in the field by a contractor at the base during installation.

BUY AMERICAN
To ensure the latest BAA/TAA/BABA Standards are being met, please select BAA, TAA, or BABA in the options section. Please contact the factory before placing an order for any NLS products requesting BAA (Buy American Act), TAA (Trade American Act), or BABA (Build America, Buy America).



Project Name:	Type:

RSSP ORDERING GUIDE

Cat#

Round
Straight
Steel Pole
(RSSP)

Height

10′ **(10)**
12′ **(12)**
14′ **(14)**
16′ **(16)**
18′ **(18)**
20′ **(20)**
22′ **(22)**
24′ **(24)**
25′ **(25)**
26′ **(26)**
28′ **(28)**
30′ **(30)**

Pole Dimension

4″ Round
(4R)

5″ Round
(5R)

6″ Round
(6R)

Gauge

.120
Wall Thickness
(11G)

.180
Wall Thickness
(7G)

Base Pattern

(10′-20′)
9″- 10 3/8″
Bolt Circle
(9BC)

(22′-30′)
11 1/2″- 14″
Bolt Circle
(12BC)

Custom
Bolt Circle
(CBC)
** Consult Factory*

Mounting

Single
(SGL)

Double
(D-90)
(D-180)

Triple
(T-90)
(T-120)

Quad
(QD)

No Drill
(ND)
**Tenon Option*

Tenon

2 3/8″ Round **(T2R)**

3″ Round **(T3R)**

3 1/2″ Round **(T312R)**

4″ Round **(T4R)**

4 1/2″ Round **(T412R)**

Color

Bronze Textured
(BRZ)

White Textured
(WHT)

Smooth White Gloss
(SWT)

Silver
(SVR)

Green Textured
(GRN)

Hunter Green Textured
(HGN)

Black Textured
(BLK)

Smooth Black
Gloss
(SBK)

Graphite Textured
(GPH)

Grey Textured
(GRY)

Custom
(CS)

Bolts

3/4″ x 30″
(3430)

1″ x 36″
(136)

Less Anchor
Bolts
(LAB)

Options

GFI Kit
(GFI20A)❸❹
20 Amp
Weather Proof Receptacle

GFI
Provision Only
(PROV)❹

Galvanized
(GLV)

Round Base Cover
(RBC)
**Consult Factory for Pricing*

Galvanized
Under Powder
(GUP)

1/2″ Coupling
(COUP)❹
**Specify Location*

Vibration Dampener
(VD)

Extra Hand Hole
(XHH)❹
** Specify Location*

Marine Grade Finish
(MGF)

UL Certified with label
(UL)❶

Aluminum Pole Cap
(APC)❷

Buy American Act
(BAA)❷

Trade Agreement Act
(TAA)❷

Build America Buy American
(BABA)❷

Notes:
❶ Aluminum Pole Cap must be selected for UL Certified Pole Option
❷ Consult Factory
❸ Standard weatherproof cover comes standard with option.
For lockable cover requests, please contact factory
❹ Specify the Height from base and degree orientation from hand hole.

NLS LIGHTING
701 Kingshill Place, Carson, CA 90746
Call Us Today (310) 341-2037
nlslighting.com

PRODUCT SPECIFICATIONS

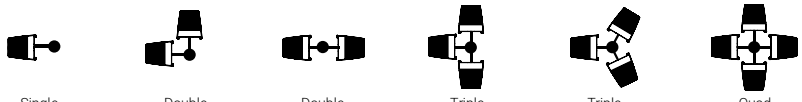
Max. allowable EPA - RSSP poles (per AASHTO LRFDLTS-1)																																
Catalog Number	Shaft Length, ft	Wall thick-ness, in.	Shaft dia., in.	Base Plate, in.	Bolt Circle, in.	Bolts	80 mph	Max. wt. (lb)	90 mph	Max. wt. (lb)	100 mph	Max. wt. (l b)	110 mph	Max. wt. (lb)	115 mph	Max. wt., lb	120 mph	Max. wt., lb	130 mph	Max. wt., lb	140 mph	Max. wt., lb	150 mph	Max. wt., lb	160 mph	Max. wt., lb	170 mph	Max. wt., lb	180 mph	Max. wt., lb
RSSP-10-4R-11G-9BC-3430	10	0.120	4	9" sq.	9	3/4"x30"	20.0	500	20.0	500	20.0	500	20.0	500	18.3	458	16.6	416	13.9	347	11.7	292	10.0	250	8.7	217	7.6	190	6.8	169
RSSP-12-4R-11G-9BC-3430	12	0.120	4	9" sq.	9	3/4"x30"	20.0	500	20.0	500	20.0	500	16.1	402	14.5	363	13.1	329	10.8	270	9.0	225	7.6	190	6.6	165	5.7	143	5.0	126
RSSP-14-4R-11G-9BC-3430	14	0.120	4	9" sq.	9	3/4"x30"	20.0	500	20.0	500	16.4	409	13.0	326	11.7	292	10.5	262	8.5	213	7.0	174	5.8	145	4.9	124	4.3	108	3.7	93
RSSP-16-4R-11G-9BC-3430	16	0.120	4	9" sq.	9	3/4"x30"	20.0	500	16.3	408	12.6	316	9.9	247	8.8	220	7.8	196	6.2	156	4.9	124	4.0	100	3.4	85	2.9	73	2.5	63
RSSP-18-4R-11G-9BC-3430	18	0.120	4	9" sq.	9	3/4"x30"	18.3	458	13.7	344	10.4	261	8.0	201	7.1	177	6.2	154	4.8	119	3.6	91	2.8	70	2.3	60	2.0	60	1.6	60
RSSP-20-4R-11G-9BC-3430	20	0.120	4	9" sq.	9	3/4"x30"	15.7	393	11.6	289	8.6	216	6.5	162	5.5	139	4.8	120	3.5	88	2.5	62	1.8	60	1.4	60	1.1	60	0.9	60
RSSP-20-4R-7G-9BC-3430	20	0.188	4	9" sq.	9	3/4"x30"	20.0	500	19.6	489	15.1	378	11.8	294	10.5	262	9.3	232	7.3	183	5.7	144	4.6	116	3.9	98	3.3	84	2.9	72
RSSP-20-5R-11G-9BC-3430	20	0.120	5	9" sq.	9	3/4"x30"	20.0	500	19.7	491	14.9	374	11.5	288	10.1	253	9.0	226	7.4	186	6.2	156	5.2	131	4.5	112	3.8	96	3.3	83
RSSP-20-5R-7G-9BC-3430	20	0.188	5	9" sq.	9	3/4"x30"	20.0	500	20.0	500	20.0	500	16.2	406	14.4	361	13.0	325	10.8	271	9.1	228	7.8	195	6.7	167	5.8	146	5.1	127
RSSP-22-4R-11G-12BC-136	22	0.120	4	12" sq.	12	1"x36"	12.3	308	8.9	222	6.4	161	4.6	115	3.9	97	3.2	80	2.1	60	1.3	60	0.7	60	0.5	60	0.3	60	0.1	60
RSSP-22-4R-7G-12BC-136	22	0.188	4	12" sq.	12	1"x36"	20.0	500	15.6	389	11.8	295	9.0	226	8.0	199	7.0	174	5.3	133	4.0	100	3.1	77	2.6	64	2.2	60	1.8	60
RSSP-22-5R-11G-12BC-136	22	0.120	5	12" sq.	12	1"x36"	20.0	500	15.4	385	11.5	287	8.6	215	7.5	187	6.6	164	5.4	134	4.4	110	3.7	92	3.1	77	2.6	65	2.2	60
RSSP-22-5R-7G-12BC-136	22	0.188	5	12" sq.	12	1"x36"	20.0	500	20.0	500	20.0	500	15.8	396	14.1	351	12.7	316	10.5	263	8.9	221	7.5	188	6.5	162	5.6	140	4.9	122
RSSP-25-4R-11G-12BC-136	25	0.120	4	12" sq.	12	1"x36"	9.7	242	6.7	167	4.5	112	2.9	72	2.3	60	1.7	60	0.7	60	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-
RSSP-25-4R-7G-12BC-136	25	0.188	4	12" sq.	12	1"x36"	17.1	428	12.5	313	9.3	231	6.8	170	5.8	145	5.0	124	3.5	88	2.4	60	1.6	60	1.2	60	0.9	60	0.7	60
RSSP-25-5R-11G-12BC-136	25	0.120	5	12" sq.	12	1"x36"	16.9	423	12.1	302	8.7	217	6.2	154	5.1	128	4.4	110	3.5	87	2.7	68	2.2	60	1.7	60	1.4	60	1.1	60
RSSP-25-5R-7G-12BC-136	25	0.188	5	12" sq.	12	1"x36"	20.0	500	20.0	500	16.4	409	12.5	312	10.9	272	9.7	243	8.0	200	6.7	167	5.6	140	4.8	119	4.0	101	3.5	87
RSSP-26-4R-11G-12BC-136	26	0.120	4	12" sq.	12	1"x36"	8.9	222	6.0	150	3.9	98	2.4	60	1.7	60	1.2	60	0.3	60	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-
RSSP-26-4R-7G-12BC-136	26	0.188	4	12" sq.	12	1"x36"	16.1	401	11.6	290	8.5	212	6.2	154	5.2	130	4.4	109	3.0	74	1.9	60	1.2	60	0.8	60	0.6	60	0.3	60
RSSP-26-5R-11G-12BC-136	26	0.120	5	12" sq.	12	1"x36"	13.3	333	11.1	278	7.9	196	5.4	135	4.4	111	3.7	93	2.9	72	2.3	60	1.8	60	1.4	60	1.1	60	0.8	60
RSSP-26-5R-7G-12BC-136	26	0.188	5	12" sq.	12	1"x36"	12.1	302	16.1	403	13.9	347	11.5	287	10.0	249	8.9	222	7.3	182	6.0	150	5.0	125	4.2	106	3.6	89	3.1	77
RSSP-28-4R-7G-12BC-136	28	0.188	4	12" sq.	12	1"x36"	14.1	353	10.0	250	7.1	177	4.9	122	4.0	100	3.3	82	2.0	60	1.0	60	0.3	60	0.1	60	0.0	-	0.0	-
RSSP-28-5R-11G-12BC-136	28	0.120	5	12" sq.	12	1"x36"	13.6	341	9.4	234	6.3	158	4.0	101	3.1	78	2.5	63	1.8	60	1.3	60	0.9	60	0.6	60	0.4	60	0.2	60
RSSP-28-5R-7G-12BC-136	28	0.188	5	12" sq.	12	1"x36"	20.0	500	17.8	445	13.1	329	9.7	242	8.3	207	7.2	181	5.9	147	4.8	120	3.9	98	3.2	81	2.7	68	2.3	60
RSSP-28-6R-7G-12BC-136	28	0.188	6	12" sq.	12	1"x36"	20.0	500	20.0	500	20.0	500	17.0	425	15.4	385	14.0	349	11.6	290	9.7	243	8.2	206	7.1	177	6.1	152	5.3	132
RSSP-30-5R-11G-12BC-136	30	0.120	5	12" sq.	12	1"x36"	11.7	293	7.8	194	4.9	122	2.8	69	1.9	60	1.4	60	0.8	60	0.4	60	0.1	60	0.0	-	0.0	-	0.0	-
RSSP-30-6R-11G-12BC-136	30	0.120	6	12" sq.	12	1"x36"	18.6	466	12.9	321	9.0	225	7.0	175	6.2	154	5.5	136	4.3	108	3.5	87	2.8	69	2.2	60	1.8	60	1.4	60
RSSP-30-5R-7G-12BC-136	30	0.188	5	12" sq.	12	1"x36"	20.0	500	15.6	391	11.3	282	8.1	201	6.8	169	5.8	146	4.6	115	3.7	92	3.0	74	2.4	60	1.9	60	1.5	60
RSSP-30-6R-7G-12BC-136	30	0.188	6	12" sq.	12	1"x36"	20.0	500	20.0	500	18.6	465	14.9	371	13.4	334	12.1	303	10.0	250	8.3	208	7.0	176	6.0	149	5.1	127	4.4	110
*Pole Assemblies With EPA>9.0 Require Specific Review																														

CAUTION: Installation of poles without luminaire(s) will compromise pole strength. Any accessories attached to the pole, or other modifications done in the field, will compromise the pole strength and may result in pole failure. Wind load evaluations and provisions for appendages such as banner arms, signage, cameras, etc., must be evaluated and approved by the factory prior to placing an order. Additional evaluation and approval should be performed by the customer's local structural engineer on the project.

Anchor Bolts are NOT included with Custom Bolt Circle.
Do NOT pour concrete referencing this drawing. Consult Factory.

All wind loading calculations are based on sustained wind force plus an additional 1.3 gust.

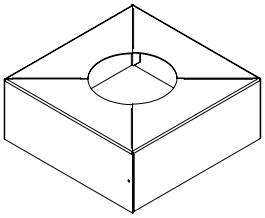
MOUNTING CONFIGURATION



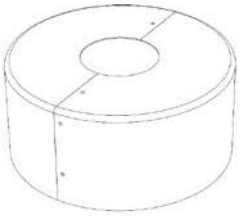
Single **(SGL)** | Double **(D-90)** | Double **(D-180)** | Triple **(T-90)** | Triple **(T-120)** | Quad **(QD)**

NLS LIGHTING
701 Kingshill Place, Carson, CA 90746
Call Us Today (310) 341-2037
nlslighting.com

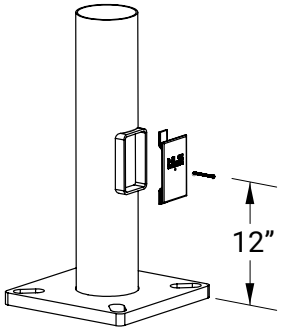
PRODUCT SPECIFICATIONS



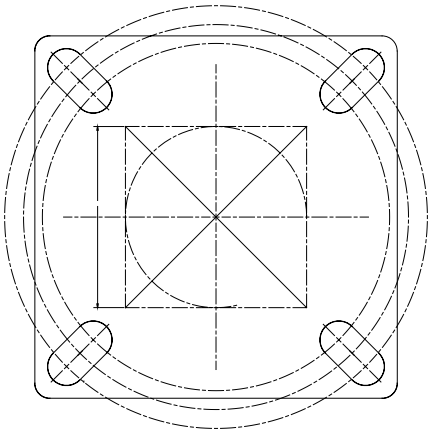
Base Cover



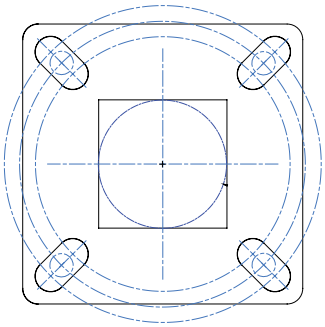
Optional Round Base Cover



Base Detail



12” Base Detail



9” Base Detail

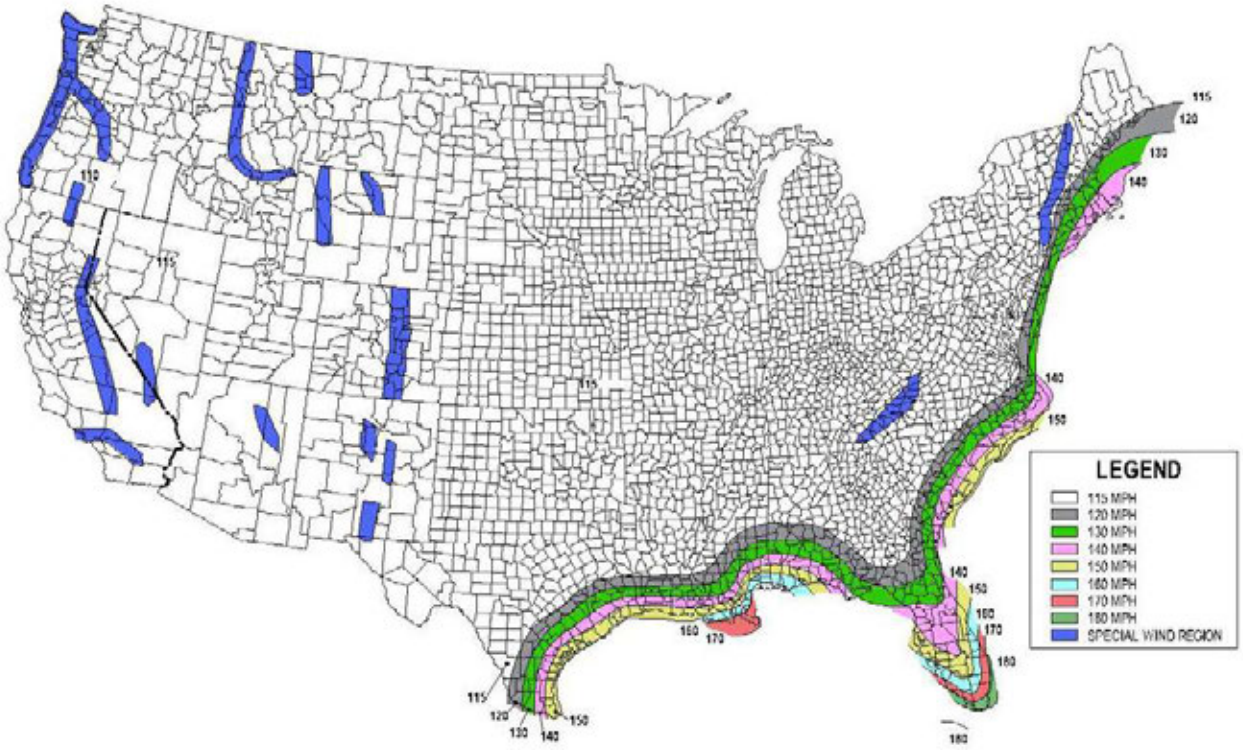


FIG. 3.8-1b - 700-Year MRI Basic Wind Speed, mph (AASHTO LRFDLTS-1)

1) All wind load calculations are based on sustained wind force plus and additional 1.3 gust
2) Wind Map is to be used as a reference only. Please coordinate with local agencies for further review.
3) Wind Map values are based on a 50 year mean recurrence. These values do not account for severe conditions, such as hurricanes, tornadoes, etc…
4) For review of poles with additional configurations (arms, banners, shorter/longer pole lengths, etc…), please contact factory.

BUY AMERICAN OPTION
While all of the NLS Lighting products listed in this document qualify for the Buy America(n) Act of 1933, we reserve the right to change our listings without notice.

The information provided above is for general informational purposes only. We encourage you to consult legal professionals for advice particular to your projects concerning BAA, TAA, BABA or Buy America.

Additional NLS Products that meet BAA, TAA standards can be found at the following link:

https://nlslighting.com/wp-content/uploads/cs/NLS_BuyAmerica(n).pdf

NLS LIGHTING

VSS-1

AREA, SITE & ROADWAY



LED WATTAGE CHART

	32L	48L	64L
700 milliamps	71w	104w	136w
1050 milliamps	106w	156w	205w

FORM AND FUNCTION

- Sleek, low profile housing
- Engineered for optimum thermal management
- Low depreciation rate
- Optical system designed for:
  - Parking Lots
  - Commercial Applications

CONSTRUCTION

- Die Formed heavy duty Aluminum
- Corrosion resistant external hardware
- One-piece silicone gasket ensures IP-65 seal for electronics compartment
- Two-piece silicone Micro Optic system ensures IP-67 level seal around each PCB

BUY AMERICAN

To ensure the latest BAA/TAA/BABA Standards are being met, please select BAA, TAA, or BABA in the options section. Please contact the factory before placing an order for any NLS products requesting BAA (Buy American Act), TAA (Trade American Act), or BABA (Build America, Buy America).

Project Name:	Type:

VSS-1 ORDERING GUIDE

Cat#

Value Series Round Small
(VSS-1)

Light Dist.

Type 2
(T2)

Type 3
(T3)

Type 4
(T4)

Type 5
(T5)

No. of LEDs

32
(32L)

48
(48L)

64
(64L)

Milliamps

700
(7)

1050
(1)

Kelvin

Amber 585-600nM
(AMBER) ❺❼

2700K, 70 CRI
(27K7) ❺

2700K, 80 CRI
(27K8) ❶❺

3000K, 70 CRI
(30K7) ❺

3000K, 80 CRI
(30K8) ❶❺

3500K, 80 CRI
(35K8)

4000K, 70 CRI
(40K7)

4000K, 80 CRI
(40K8) ❶

5000K, 70 CRI
(50K7)

5000K, 80 CRI
(50K8) ❶

Volts

120-277
(UNV)

347-480
(HV)

Mounting

Direct Pole 6" Arm Single, D180
(DP6) ❷

Direct Pole 10" Arm D90, T90, T120, Quad
(DP10) ❷

Knuckle Mount
(KM)

Wall Mount
(WM) ❸

Tennis Arm
(TA)

Color

Bronze Textured
(BRZ)

White Textured
(WHT)

Smooth White Gloss
(SWT)

Silver Metallic
(SVR)

Black Textured
(BLK)

Smooth Black Gloss
(SBK)

Graphite Textured
(GPH)

Grey Textured
(GRY)

Green Textured
(GRN)

Hunter Green Textured
(HGN)

Custom
(CS)

Control Options

Nema 7-Pin Receptacle
(PE7)

Photocell + Receptacle
(PCR)

Receptacle + Shorting Cap
(PER)

Button Photocell
(PC) ❹

FSP-211 with Motion Sensor (UNV Voltage)
(FSP-8) ❹
*8' and Below
(FSP-20) ❹
*9'-20" Heights
(FSP-40) ❹
*21'-40' Heights

Options

Bird Spikes
(BS)

Marine Grade Finish
(MGF)

Quick Mount Bracket
(QMB)

Retrofit Mount Bracket
(RQMB)

Round Pole Adapter 3"- 4" Pole
(RPA4)

Round Pole Adapter 5"- 6" Pole
(RPA5)

Rotated Optic Left
(ROL)

Rotated Optic Right
(ROR)

Automotive House Side Shield
(AHS)

House Side Shield
(HSS)

Buy American
(BAA) ❽

Trade American
(TAA) ❽

Build America Buy American
(BABA) ❽

Custom Controls Integration
(CCI) ❻

Notes:
❶ Consult Factory for Lead Time. Consult Factory for 90 CRI Requests
❷ For Round Pole Specify RPA4 or RPA5
❸ Includes 6" Bolt on Arm
❹ Universal Voltage 120-27
❺ 3000K or lower must be selected to meet International
❻ Please contact Factory for Custom Control Integration requests (nLight, NX, WaveLinx, Crestron, DMX/RDM, Synapse, Casambi, Dali II, Avi-On, or other control systems)
❼ Turtle Safe
❽ Consult factory for all BAA/TAA/BABA requests

PRODUCT SPECIFICATIONS

ELECTRICAL

- 120-277 Volts (UNV) or 347-480 Volts (HV)
- 0-10V dimming driver
- Driver power factor at maximum load is ≥ .95, THD maximum load is 15%
- LED Drivers Ambient Temp. Min is -40°C and Ambient Temp. Max ranges from 50°C to 55°C and, in some cases, even higher. Consult the factory for revalidation by providing the fixture catalog string before quoting and specifying it.
- All internal wiring UL certified for 600 VAC and 105°C
- All drivers, controls, and sensors housed in enclosed IP-65 compartment
- CRI 70, 80 or 90
- Color temperatures: Amber, 2700K, 3000K, 3500K, 4000K, 5000K
- Surge Protection: 20KA supplies as standard.

OPTIONS

- **BIRD SPIKES (BS)**—Offers effective and humane deterrent for larger bird species and provides cost-effective long-term solution to nuisance bird infestations and protect your property.
- **MARINE GRADE FINISH (MGF)**—A multi-step process creating protective finishing coat against harsh environments.
  - Chemically washed in a 5 stage cleaning system.
  - Pre-baked
  - Powder coated 3-5 mils of Zinc Rich Super Durable Polyester Primer.
  - 1-2 feet inside pole coverage top and bottom.
  - Oven Baked.
  - Finished Powder Coating of Super Durable Polyester Powder Coat 3-5 mil thickness.
- **SHIELDS (HSS, AHS)**—House Side Shield (HSS) is designed for full property line cut-off. Automotive House Side Shield (AHS) is a single-sided shield allowing partial cut-off on either side or front of luminaire.
- **ROUND POLE ADAPTER (RPA)–** When using round poles, specify Round Pole Adapter (RPA). Specify RPA4 when installing on 3"-4" round poles, and RPA5 when installing on 5"-6" round poles.

CONTROLS

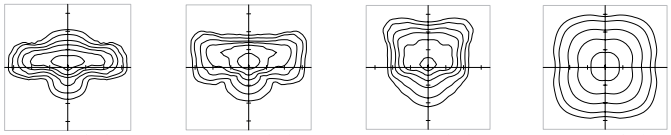
- **FSP-211 (FSP-X)**—Passive infrared (PIR) sensor providing multi-level control based on motion/daylight contribution.
  - All control parameters adjustable via wireless configuration remote storing and transmitting sensor profiles.
  - FSP-20 mounting heights 9-20 feet
  - FSP-40 mounting heights 21-40 feet.
  - Includes 5 dimming event cycles, 0-10V dimming with motion sensing, re-programmable in the field.
  - FSIR-100 commissioning remote is required to change sensor settings. Please contact factory for ordering.
- **NEMA 7-PIN RECEPTACLE (PE7)**—An ANSI C136.41-2013 receptacle provides electrical and mechanical interconnection between photo control cell and luminaire. Dimming receptacle available two or four dimming contacts supports 0-10 VDC dimming methods or Digital Addressable Lighting Interface (DALI), providing reliable power interconnect.

• Controls Agnostic: Please contact factory for your preferred controls option. (nLight, NX, WaveLinx, Crestron, DMX/RDM, Synapse, Casambi, DALI II, Avi-On, or other control systems)

OPTICS

Silicone optics high photothermal stability and light output provides higher powered LEDs with minimized lumen depreciation LED life. UV and thermal stability with scratch resistance increases exterior application durability.

- IES Types



TYPE II (T2) TYPE III (T3) TYPE IV (T4) TYPE V (T5)

FINISH

- 5 mils electrostatic powder coat.
- NLS' standard high-quality finishes prevent corrosion protects against extreme environmental conditions

WARRANTY

Five-year limited warranty for drivers and LEDs.

LISTINGS

- Certified to UL 1598
- CSA C22.2 No. 250.0
- IP65/ IP67 Rated
- Dark Sky Approved
- IK10 Rated

BUY AMERICAN OPTION

While all of the NLS Lighting products listed in this document qualify for the Buy America(n) Act of 1933, we reserve the right to change our listings without notice.

The information provided above is for general informational purposes only. We encourage you to consult legal professionals for advice particular to your projects concerning BAA, TAA, BABA or Buy America.

Additional NLS Products that meet BAA, TAA standards can be found at the following link:

https://nlslighting.com/buy-american/

The information and specifications on this document are subject to change without any notification. All values are design, nominal, typical or prorated values when measured under internal and external laboratory conditions.

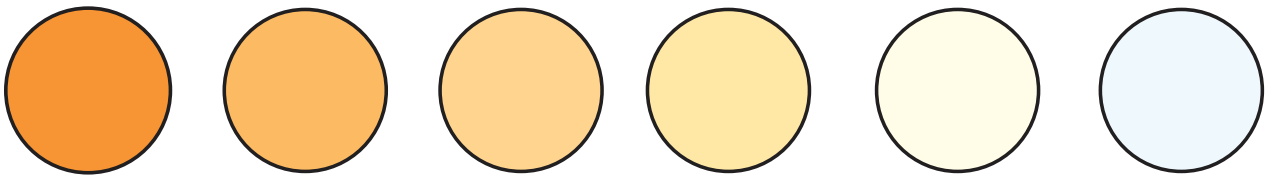
PRODUCT SPECIFICATIONS

LUMENS

PART NUMBER	T2	LM/W	BUG	T3 HSS	LM/W	BUG	T3	LM/W	BUG	T4 AHS	LM/W	T4 HSS	LM/W	BUG	T4	LM/W	BUG	T5	LM/W	BUG	Watts
VSS-1-32L-7-30K7	7384	104	B1-U0-G1	4118	58	B0-U0-G1	7242	102	B2-U0-G2	5112	72	4047	57	B0-U0-G1	7668	108	B2-U0-G2	8179	115	B3-U0-G2	71
VSS-1-32L-7-40K7	8023	113	B2-U0-G2	4402	62	B0-U0-G1	7952	112	B2-U0-G2	5396	76	4331	61	B0-U0-G1	8307	117	B2-U0-G2	8946	126	B3-U0-G2	71
VSS-1-32L-7-50K7	8662	122	B2-U0-G2	4686	66	B0-U0-G1	8520	120	B2-U0-G2	5680	80	4615	65	B0-U0-G2	8946	126	B2-U0-G2	9585	135	B3-U0-G2	71
VSS-1-32L-1-30K7	10706	101	B2-U0-G2	6148	58	B0-U0-G2	10600	100	B2-U0-G2	7632	72	6042	57	B0-U0-G2	10812	102	B2-U0-G2	11125	105	B4-U0-G2	106
VSS-1-32L-1-40K7	11660	110	B2-U0-G2	6572	62	B0-U0-G2	11554	109	B2-U0-G2	8056	76	6466	61	B0-U0-G2	11766	111	B2-U0-G2	12190	115	B4-U0-G2	106
VSS-1-32L-1-50K7	12508	118	B2-U0-G2	6996	66	B0-U0-G2	12402	117	B2-U0-G2	8480	80	6890	65	B0-U0-G2	12508	118	B2-U0-G2	13144	124	B4-U0-G2	106
VSS-1-48L-7-30K7	10816	104	B2-U0-G2	6032	58	B0-U0-G2	10712	103	B2-U0-G2	7488	72	5928	57	B0-U0-G2	11232	108	B2-U0-G2	12272	118	B4-U0-G2	104
VSS-1-48L-7-40K7	11752	113	B2-U0-G2	6448	62	B0-U0-G2	11648	112	B2-U0-G2	7904	76	6344	61	B0-U0-G2	12168	117	B2-U0-G2	13312	128	B4-U0-G2	104
VSS-1-48L-7-50K7	12688	122	B2-U0-G2	6864	66	B0-U0-G2	12480	120	B2-U0-G2	8320	80	6760	65	B0-U0-G2	13104	126	B3-U0-G3	14248	137	B4-U0-G2	104
VSS-1-48L-1-30K7	16559	106	B3-U0-G3	9048	58	B0-U0-G2	15756	101	B3-U0-G3	11232	72	8892	57	B1-U0-G2	15912	102	B3-U0-G3	16536	106	B4-U0-G2	156
VSS-1-48L-1-40K7	17160	110	B3-U0-G3	9672	62	B1-U0-G2	17004	109	B3-U0-G3	11856	76	9516	61	B1-U0-G2	17316	111	B3-U0-G3	17940	115	B4-U0-G2	156
VSS-1-48L-1-50K7	18408	118	B3-U0-G3	10296	66	B1-U0-G2	18252	117	B3-U0-G3	12480	80	10140	65	B1-U0-G2	18408	118	B3-U0-G3	19188	123	B4-U0-G2	156
VSS-1-64L-7-30K7	14144	104	B2-U0-G2	7888	58	B0-U0-G2	13736	101	B3-U0-G3	9792	72	7752	57	B0-U0-G2	14688	108	B3-U0-G3	16048	118	B4-U0-G2	136
VSS-1-64L-7-40K7	15368	113	B3-U0-G3	8432	62	B0-U0-G2	14824	109	B3-U0-G3	10336	76	8296	61	B1-U0-G2	15912	117	B3-U0-G3	17408	128	B4-U0-G2	136
VSS-1-64L-7-50K7	16592	122	B3-U0-G3	8976	66	B0-U0-G2	16048	118	B3-U0-G3	10880	80	8840	65	B1-U0-G2	17136	126	B3-U0-G3	18632	137	B4-U0-G2	136
VSS-1-64L-1-30K7	21730	106	B3-U0-G3	11890	58	B1-U0-G2	20705	101	B3-U0-G3	14760	72	11685	57	B1-U0-G2	20910	102	B3-U0-G3	21730	106	B5-U0-G3	205
VSS-1-64L-1-40K7	22550	110	B3-U0-G3	12710	62	B1-U0-G2	22345	109	B3-U0-G3	15580	76	12505	61	B1-U0-G3	22755	111	B3-U0-G3	23575	115	B5-U0-G3	205
VSS-1-64L-1-50K7	24190	118	B3-U0-G3	13530	66	B1-U0-G2	23780	116	B3-U0-G3	16400	80	13325	65	B1-U0-G3	24190	118	B3-U0-G4	25215	123	B5-U0-G3	205

Lumen Maintenance Data							
Ambient Temperature	Drive Current	L90 Hours*	L70 Hours**	30,000 Hours*	50,000 Hours*	60,00 Hours*	100,000 Hours**
25°C	Up to 700mA	58,000	173,000	95.7%	91.6%	89.6%	82.1%
	1050mA	38,000	96,000	93.0%	85.4%	81.8%	68.8%
*Reported extrapolations per IESNA TM-21 **Projected extrapolations per IESNA TM-21							

LED KELVIN RANGE



AMBER 585-600 nm | 2700K 70 CRI | 3000K 70 CRI | 3500K 80 CRI | 4000K 70 CRI | 5000K 70 CRI

Color	Dominant or Peak Wavelength Range (nm)	
	Minimum	Maximum
Amber	585	600

PRODUCT SPECIFICATIONS

DIMENSION	VSS-1
A	17 in. SQ
B	5 in.
Weight	20 lbs

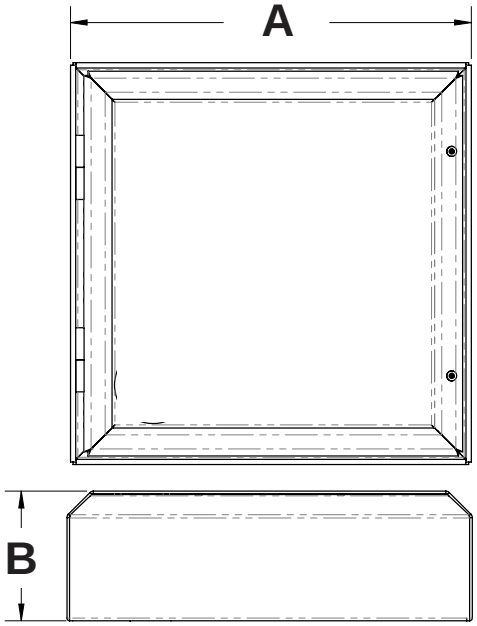
EPA

EPA	SGL	D90	D180	T90	T120	QD
VSS-1	0.68	1.37	1.37	2.05	1.38	2.74

DPX ARM LENGTH

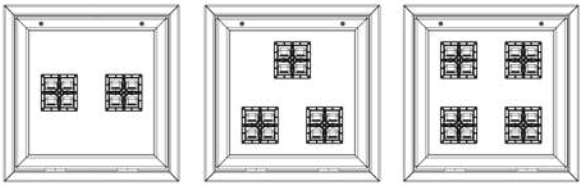
DPX ARM LENGTH	SGL	D90	D180	T90	T120	QD
VSS-1	6"	10"	6"	10"	10"	10"

*6" - **DPX6** | 10" - **DPX10***



OPTICAL CONFIGURATIONS

Rotatable Optics (ROR) Rotated Right, (ROL) Rotated Left options available. Optics field and factory rotatable.

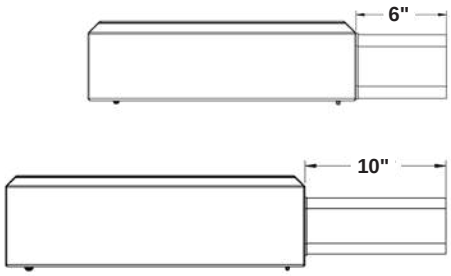


VSS-1 / 32L **VSS-1 / 48L** **VSS-1 / 64L**

PRODUCT SPECIFICATIONS

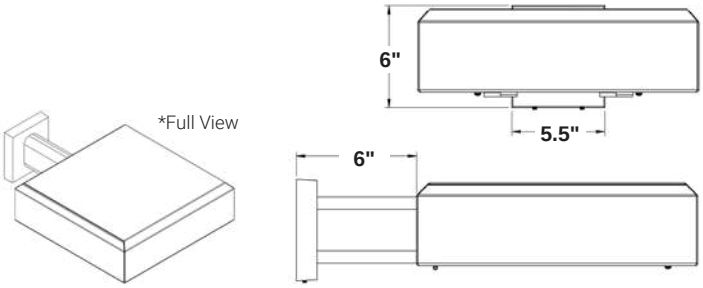
DIRECT POLE (DP)

Standard mounting arm is extruded aluminum in lengths of 6", And 10"
*Arm lengths may vary depending on configuration



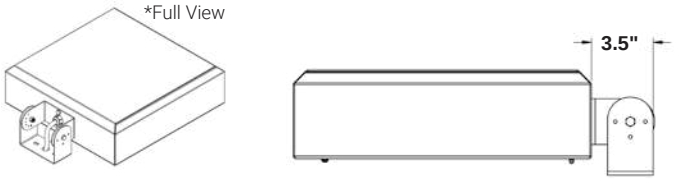
WALL MOUNT (WM)

Cast Aluminum Plate for direct wall mount.
6" extruded aluminum arm mounts directly to a cast wall mount box.



TRUNNION MOUNT (TM)

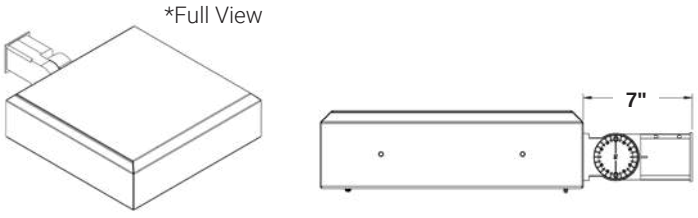
Steel bolt-on-mounting for adjustable installation with a maximum uplift of 90°.



KNUCKLE MOUNT (KM)

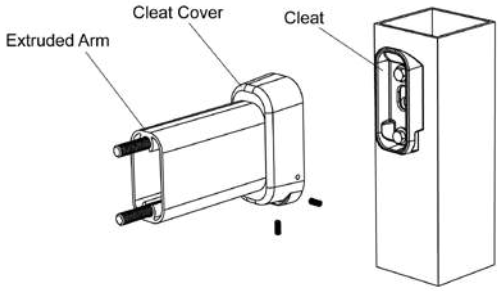
Die Cast Knuckle great for adjustable installation on 2-3/8" OD vertical or horizontal tenon.

- Max Uptilt of 110 degrees
- Adjustable in 5 degree increments

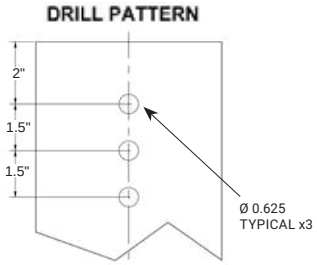


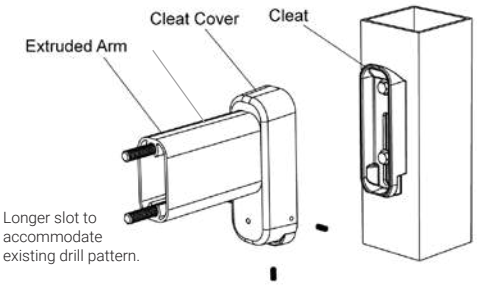
PRODUCT SPECIFICATIONS

Optional Cast Aluminum Bracket designed for quick mounting on Direct Square or Round Poles. Cleat mounts directly to pole for easily hung fixtures.

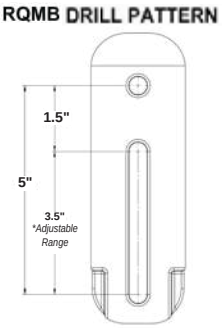


QUICK MOUNT BRACKET (QMB) DIRECT POLE (DP6/DP10)

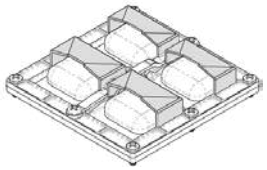




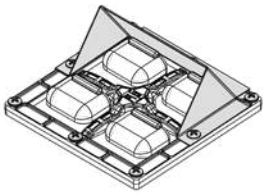
RETROFIT QUICK MOUNT BRACKET (RQMB)



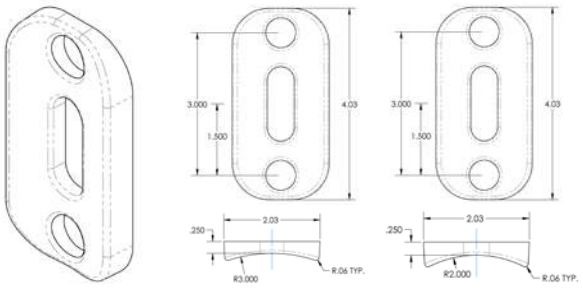
HOUSE SIDE SHIELD



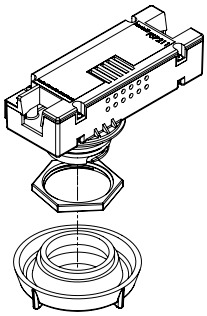
AUTOMOTIVE HOUSE SIDE SHIELD



RPA4 / RPA5



FSP-211



Appendix 5.15B

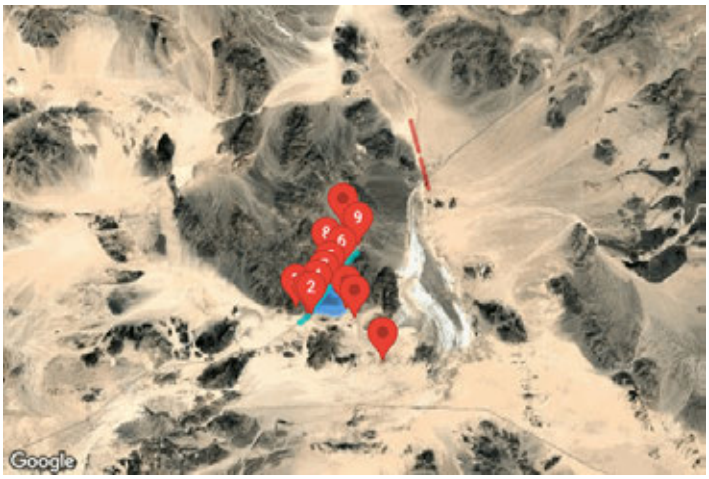
ForgeSolar Glare Analysis Report

FORGESOLAR GLARE ANALYSIS

Project: **68347_Soda Mountain**
Site configuration: **68347_Soda Mountain**

Created 07 Jun, 2023
Updated 13 Jun, 2023
Time-step 1 minute
Timezone offset UTC-8
Minimum sun altitude 0.0 deg
DNI peaks at 1,000.0 W/m^2
Category 500 kW to 1 MW
Site ID 92389.16260

Ocular transmission coefficient 0.5
Pupil diameter 0.002 m
Eye focal length 0.017 m
Sun subtended angle 9.3 mrad
PV analysis methodology V2



Summary of Results

Glare with low potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV array 1	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 2	SA tracking	SA tracking	198	3.3	0	0.0	-
PV array 3	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 4	SA tracking	SA tracking	329	5.5	0	0.0	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

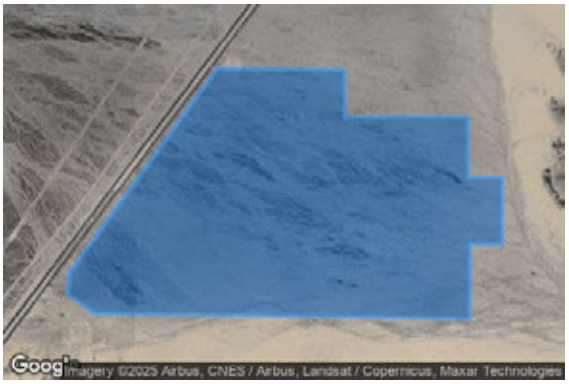
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Interstate 15 - Northbound	0	0.0	0	0.0
Interstate 15 - Southbound	0	0.0	0	0.0
Baker Airport - Northwest Runway	0	0.0	0	0.0
Baker Airport - Southeast Runway	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 3	0	0.0	0	0.0
OP 4	329	5.5	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	198	3.3	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0

Component Data

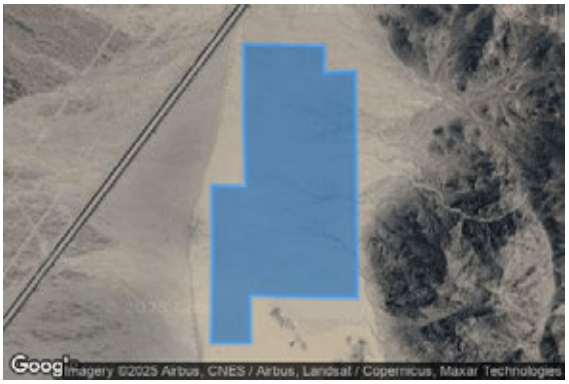
PV Arrays

Name: PV array 1
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



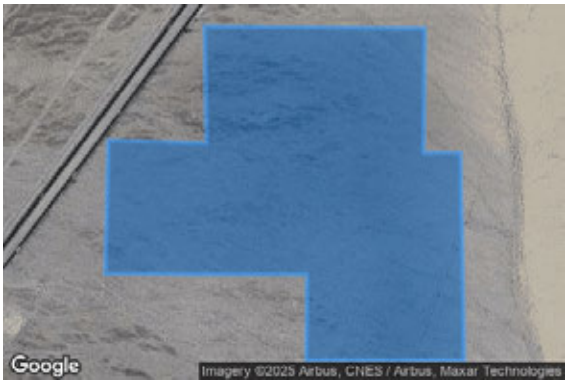
Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	35.143359	-116.201592	1478.78	7.00	1485.78
2	35.146201	-116.199070	1483.97	7.00	1490.97
3	35.149044	-116.196530	1480.12	7.00	1487.12
4	35.151887	-116.194019	1478.11	7.00	1485.11
5	35.154746	-116.191487	1463.07	7.00	1470.07
6	35.154711	-116.187046	1425.75	7.00	1432.75
7	35.154659	-116.182754	1392.39	7.00	1399.39
8	35.152027	-116.182690	1384.92	7.00	1391.92
9	35.152060	-116.178582	1357.11	7.00	1364.11
10	35.152042	-116.174247	1332.84	7.00	1339.84
11	35.148656	-116.174247	1324.08	7.00	1331.08
12	35.148639	-116.171887	1311.04	7.00	1318.04
13	35.144902	-116.171909	1301.90	7.00	1308.90
14	35.144937	-116.174097	1314.84	7.00	1321.84
15	35.140761	-116.174140	1309.46	7.00	1316.46
16	35.140848	-116.180513	1345.60	7.00	1352.60
17	35.140918	-116.187079	1381.82	7.00	1388.82
18	35.141006	-116.193602	1419.11	7.00	1426.11
19	35.141041	-116.199954	1454.96	7.00	1461.96
20	35.142112	-116.201799	1467.72	7.00	1474.72

Name: PV array 2
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



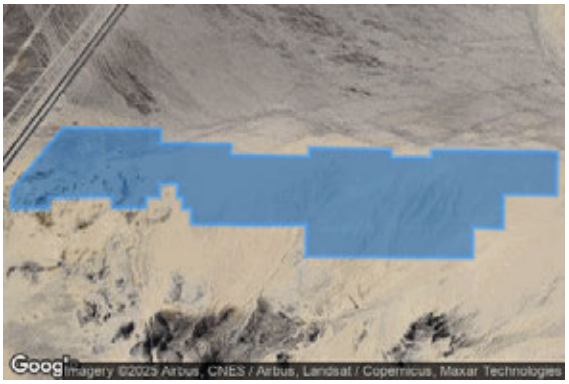
Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	35.160085	-116.169369	1371.76	7.00	1378.76
2	35.160085	-116.172073	1352.39	7.00	1359.39
3	35.164506	-116.171987	1364.48	7.00	1371.48
4	35.168926	-116.172030	1360.97	7.00	1367.97
5	35.168856	-116.169712	1375.54	7.00	1382.54
6	35.172750	-116.169841	1361.06	7.00	1368.06
7	35.176819	-116.169841	1341.23	7.00	1348.23
8	35.176714	-116.164305	1392.58	7.00	1399.58
9	35.175205	-116.164305	1398.98	7.00	1405.98
10	35.175311	-116.162159	1423.25	7.00	1430.25
11	35.168926	-116.162095	1438.34	7.00	1445.34
12	35.162611	-116.162031	1456.78	7.00	1463.78
13	35.162751	-116.169412	1388.80	7.00	1395.80

Name: PV array 3
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	35.163182	-116.183517	1402.57	7.00	1409.57
2	35.163130	-116.175942	1367.11	7.00	1374.11
3	35.159639	-116.175985	1359.05	7.00	1366.05
4	35.159639	-116.174719	1352.60	7.00	1359.60
5	35.156779	-116.174655	1346.91	7.00	1353.91
6	35.153832	-116.174590	1338.51	7.00	1345.51
7	35.153832	-116.180019	1371.61	7.00	1378.61
8	35.156235	-116.179998	1377.78	7.00	1384.78
9	35.156235	-116.183452	1401.20	7.00	1408.20
10	35.156253	-116.186929	1427.20	7.00	1434.20
11	35.159990	-116.186821	1429.48	7.00	1436.48
12	35.159919	-116.183452	1402.58	7.00	1409.58

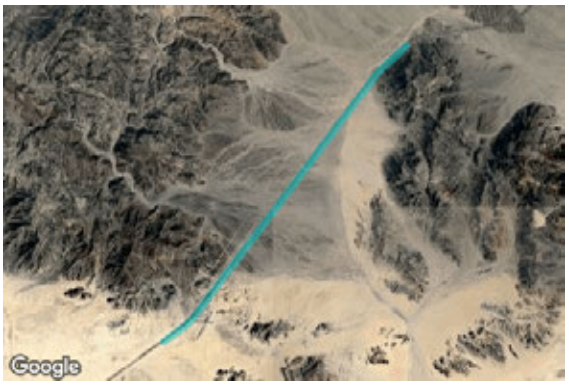
Name: PV array 4
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Ground Coverage Ratio: 0.5
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	35.140686	-116.203005	1472.58	7.00	1479.58
2	35.140616	-116.196310	1433.52	7.00	1440.52
3	35.139818	-116.196332	1431.57	7.00	1438.57
4	35.139774	-116.191482	1405.86	7.00	1412.86
5	35.139177	-116.191482	1407.08	7.00	1414.08
6	35.139096	-116.186104	1379.77	7.00	1386.77
7	35.139570	-116.186104	1377.21	7.00	1384.21
8	35.139465	-116.180482	1344.65	7.00	1351.65
9	35.139044	-116.180461	1346.25	7.00	1353.25
10	35.139044	-116.177692	1332.83	7.00	1339.83
11	35.139430	-116.177671	1330.30	7.00	1337.30
12	35.139342	-116.169067	1281.41	7.00	1288.41
13	35.136921	-116.169109	1291.30	7.00	1298.30
14	35.136956	-116.172757	1321.46	7.00	1328.46
15	35.135055	-116.172789	1327.48	7.00	1334.48
16	35.135125	-116.174860	1341.24	7.00	1348.24
17	35.133432	-116.174882	1354.32	7.00	1361.32
18	35.133467	-116.180568	1407.52	7.00	1414.52
19	35.133502	-116.186340	1457.88	7.00	1464.88
20	35.135257	-116.186297	1428.97	7.00	1435.97
21	35.135239	-116.190138	1452.90	7.00	1459.90
22	35.135310	-116.194215	1469.44	7.00	1476.44
23	35.136187	-116.194236	1455.35	7.00	1462.35
24	35.136169	-116.194794	1456.67	7.00	1463.67
25	35.136819	-116.194816	1448.08	7.00	1455.08
26	35.136801	-116.195181	1451.21	7.00	1458.21
27	35.137573	-116.195138	1437.80	7.00	1444.80
28	35.137591	-116.196404	1446.37	7.00	1453.37
29	35.136819	-116.196382	1456.42	7.00	1463.42
30	35.136819	-116.197348	1461.45	7.00	1468.45
31	35.136240	-116.197326	1469.38	7.00	1476.38
32	35.136225	-116.199638	1494.35	7.00	1501.35
33	35.136857	-116.199680	1468.42	7.00	1475.42
34	35.136769	-116.204015	1488.02	7.00	1495.02
35	35.136190	-116.203993	1506.59	7.00	1513.59
36	35.136190	-116.206568	1514.19	7.00	1521.19
37	35.137243	-116.206547	1512.41	7.00	1519.41

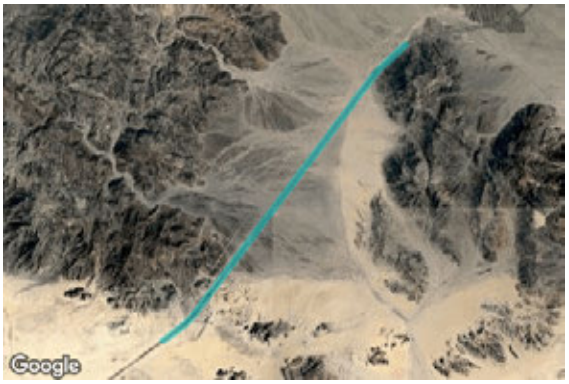
Route Receptors

Name: Interstate 15 - Northbound
Path type: One-way (toward increasing index)
Observer view angle: 50.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	35.126134	-116.221601	1390.94	4.00	1394.94
2	35.127924	-116.218587	1417.72	4.00	1421.72
3	35.129749	-116.215508	1447.24	4.00	1451.24
4	35.131609	-116.213276	1476.80	4.00	1480.80
5	35.134838	-116.210293	1502.55	4.00	1506.55
6	35.138019	-116.207408	1506.43	4.00	1510.43
7	35.141200	-116.204480	1487.55	4.00	1491.55
8	35.144275	-116.201595	1482.43	4.00	1486.43
9	35.147561	-116.198581	1492.05	4.00	1496.05
10	35.150662	-116.195675	1485.43	4.00	1489.43
11	35.153904	-116.192683	1473.66	4.00	1477.66
12	35.157040	-116.189776	1455.32	4.00	1459.32
13	35.160317	-116.186784	1431.76	4.00	1435.76
14	35.163439	-116.183904	1404.98	4.00	1408.98
15	35.166632	-116.180938	1395.14	4.00	1399.14
16	35.169702	-116.178102	1383.03	4.00	1387.03
17	35.172983	-116.175093	1366.00	4.00	1370.00
18	35.176096	-116.172224	1345.43	4.00	1349.43
19	35.179280	-116.169269	1334.95	4.00	1338.95
20	35.182428	-116.166315	1341.76	4.00	1345.76
21	35.185717	-116.163360	1313.51	4.00	1317.51
22	35.187321	-116.161535	1301.53	4.00	1305.53
23	35.188943	-116.159432	1290.16	4.00	1294.16
24	35.190605	-116.157130	1278.01	4.00	1282.01
25	35.192406	-116.154743	1271.27	4.00	1275.27

Name: Interstate 15 - Southbound
Path type: One-way (toward increasing index)
Observer view angle: 50.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	35.126423	-116.221798	1392.49	4.00	1396.49
2	35.128197	-116.218826	1421.79	4.00	1425.79
3	35.130007	-116.215832	1449.61	4.00	1453.61
4	35.131722	-116.213783	1479.57	4.00	1483.57
5	35.134951	-116.210758	1506.22	4.00	1510.22
6	35.138180	-116.207732	1508.24	4.00	1512.24
7	35.141444	-116.204728	1487.39	4.00	1491.39
8	35.144357	-116.202046	1485.94	4.00	1489.94
9	35.147655	-116.198977	1495.44	4.00	1499.44
10	35.150778	-116.196166	1491.14	4.00	1495.14
11	35.154006	-116.193205	1477.44	4.00	1481.44
12	35.157271	-116.190165	1461.58	4.00	1465.58
13	35.160481	-116.187183	1434.59	4.00	1438.59
14	35.163621	-116.184307	1408.69	4.00	1412.69
15	35.166761	-116.181432	1396.21	4.00	1400.21
16	35.169813	-116.178535	1384.05	4.00	1388.05
17	35.173163	-116.175488	1366.05	4.00	1370.05
18	35.176306	-116.172568	1343.82	4.00	1347.82
19	35.179445	-116.169714	1333.07	4.00	1337.07
20	35.182690	-116.166732	1338.05	4.00	1342.05
21	35.185882	-116.163685	1307.49	4.00	1311.49
22	35.187513	-116.161925	1294.22	4.00	1298.22
23	35.189144	-116.159801	1283.01	4.00	1287.01
24	35.190836	-116.157494	1270.77	4.00	1274.77
25	35.192668	-116.155102	1264.27	4.00	1268.27

Flight Path Receptors

Name: Baker Airport - Northwest Runway
Description:
Threshold height: 50 ft
Direction: 165.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°



Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	35.290354	-116.082661	917.61	50.00	967.61
Two-mile	35.318284	-116.091827	911.38	609.66	1521.04

Name: Baker Airport - Southeast Runway
Description:
Threshold height: 50 ft
Direction: 345.1°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°



Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	35.282249	-116.080126	923.46	50.00	973.46
Two-mile	35.254311	-116.070996	940.19	586.70	1526.89

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
OP 1	1	35.134569	-116.211419	1510.06	6.00
OP 2	2	35.133113	-116.208211	1473.28	6.00
OP 3	3	35.139645	-116.225798	1839.21	6.00
OP 4	4	35.145083	-116.200806	1484.63	6.00
OP 5	5	35.162622	-116.185326	1417.62	6.00
OP 6	6	35.177142	-116.171925	1340.62	6.00
OP 7	7	35.154005	-116.193242	1477.55	6.00
OP 8	8	35.184560	-116.189820	1539.59	6.00
OP 9	9	35.199460	-116.153580	1263.14	6.00
OP 10	10	35.217852	-116.171369	1662.34	6.00
OP 11	11	35.129605	-116.156520	1268.32	6.00
OP 12	12	35.138882	-116.166318	1266.12	6.00
OP 13	13	35.089468	-116.124564	978.08	6.00

Glare Analysis Results

Summary of Results

Glare with low potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV array 1	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 2	SA tracking	SA tracking	198	3.3	0	0.0	-
PV array 3	SA tracking	SA tracking	0	0.0	0	0.0	-
PV array 4	SA tracking	SA tracking	329	5.5	0	0.0	-

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Interstate 15 - Northbound	0	0.0	0	0.0
Interstate 15 - Southbound	0	0.0	0	0.0
Baker Airport - Northwest Runway	0	0.0	0	0.0
Baker Airport - Southeast Runway	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	329	5.5	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	198	3.3	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0

PV: PV array 1 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Interstate 15 - Northbound	0	0.0	0	0.0
Interstate 15 - Southbound	0	0.0	0	0.0
Baker Airport - Northwest Runway	0	0.0	0	0.0
Baker Airport - Southeast Runway	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0

PV array 1 and Route: Interstate 15 - Northbound

No glare found

PV array 1 and Route: Interstate 15 - Southbound

No glare found

PV array 1 and FP: Baker Airport - Northwest Runway

No glare found

PV array 1 and FP: Baker Airport - Southeast Runway

No glare found

PV array 1 and OP 1

No glare found

PV array 1 and OP 2

No glare found

PV array 1 and OP 3

No glare found

PV array 1 and OP 4

No glare found

PV array 1 and OP 5

No glare found

PV array 1 and OP 6

No glare found

PV array 1 and OP 7

No glare found

PV array 1 and OP 8

No glare found

PV array 1 and OP 9

No glare found

PV array 1 and OP 10

No glare found

PV array 1 and OP 11

No glare found

PV array 1 and OP 12

No glare found

PV array 1 and OP 13

No glare found

PV: PV array 2 low potential for temporary after-image

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Interstate 15 - Northbound	0	0.0	0	0.0
Interstate 15 - Southbound	0	0.0	0	0.0
Baker Airport - Northwest Runway	0	0.0	0	0.0
Baker Airport - Southeast Runway	0	0.0	0	0.0
OP 8	198	3.3	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0

PV array 2 and Route: Interstate 15 - Northbound

No glare found

PV array 2 and Route: Interstate 15 - Southbound

No glare found

PV array 2 and FP: Baker Airport - Northwest Runway

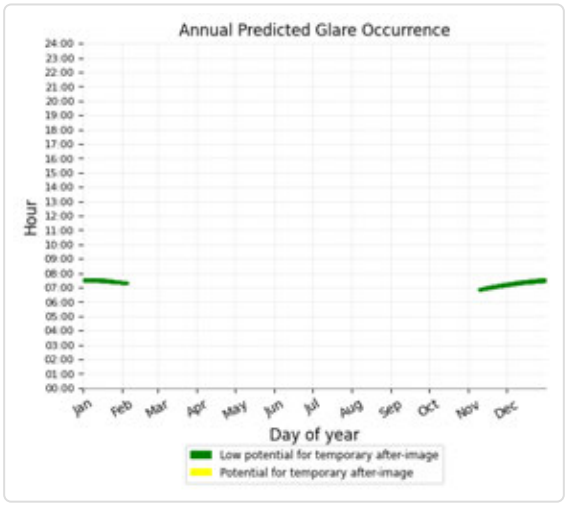
No glare found

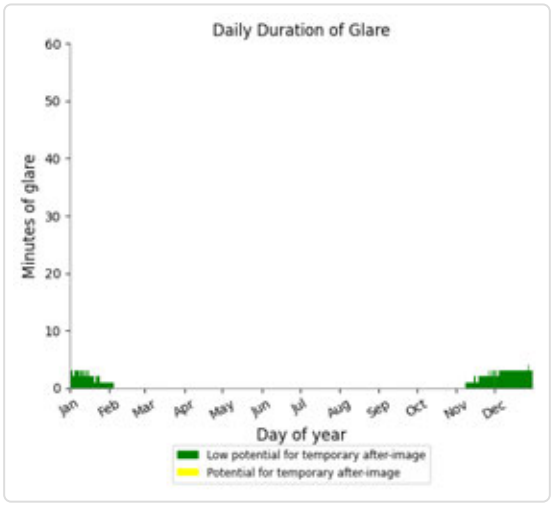
PV array 2 and FP: Baker Airport - Southeast Runway

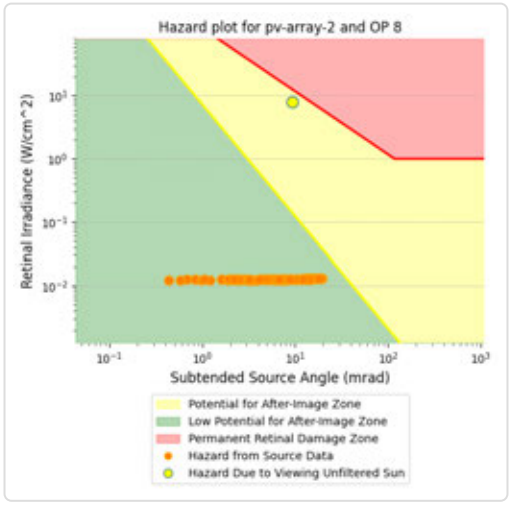
No glare found

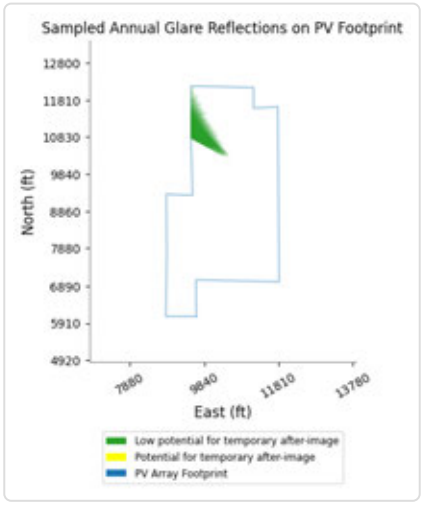
PV array 2 and OP 8

Yellow glare: none
Green glare: 198 min.









PV array 2 and OP 1

No glare found

PV array 2 and OP 2

No glare found

PV array 2 and OP 3

No glare found

PV array 2 and OP 4

No glare found

PV array 2 and OP 5

No glare found

PV array 2 and OP 6

No glare found

PV array 2 and OP 7

No glare found

PV array 2 and OP 9

No glare found

PV array 2 and OP 10

No glare found

PV array 2 and OP 11

No glare found

PV array 2 and OP 12

No glare found

PV array 2 and OP 13

No glare found

PV: PV array 3 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Interstate 15 - Northbound	0	0.0	0	0.0
Interstate 15 - Southbound	0	0.0	0	0.0
Baker Airport - Northwest Runway	0	0.0	0	0.0
Baker Airport - Southeast Runway	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0

PV array 3 and Route: Interstate 15 - Northbound

No glare found

PV array 3 and Route: Interstate 15 - Southbound

No glare found

PV array 3 and FP: Baker Airport - Northwest Runway

No glare found

PV array 3 and FP: Baker Airport - Southeast Runway

No glare found

PV array 3 and OP 1

No glare found

PV array 3 and OP 2

No glare found

PV array 3 and OP 3

No glare found

PV array 3 and OP 4

No glare found

PV array 3 and OP 5

No glare found

PV array 3 and OP 6

No glare found

PV array 3 and OP 7

No glare found

PV array 3 and OP 8

No glare found

PV array 3 and OP 9

No glare found

PV array 3 and OP 10

No glare found

PV array 3 and OP 11

No glare found

PV array 3 and OP 12

No glare found

PV array 3 and OP 13

No glare found

PV: PV array 4 low potential for temporary after-image

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Interstate 15 - Northbound	0	0.0	0	0.0
Interstate 15 - Southbound	0	0.0	0	0.0
Baker Airport - Northwest Runway	0	0.0	0	0.0
Baker Airport - Southeast Runway	0	0.0	0	0.0
OP 4	329	5.5	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 10	0	0.0	0	0.0
OP 11	0	0.0	0	0.0
OP 12	0	0.0	0	0.0
OP 13	0	0.0	0	0.0

PV array 4 and Route: Interstate 15 - Northbound

No glare found

PV array 4 and Route: Interstate 15 - Southbound

No glare found

PV array 4 and FP: Baker Airport - Northwest Runway

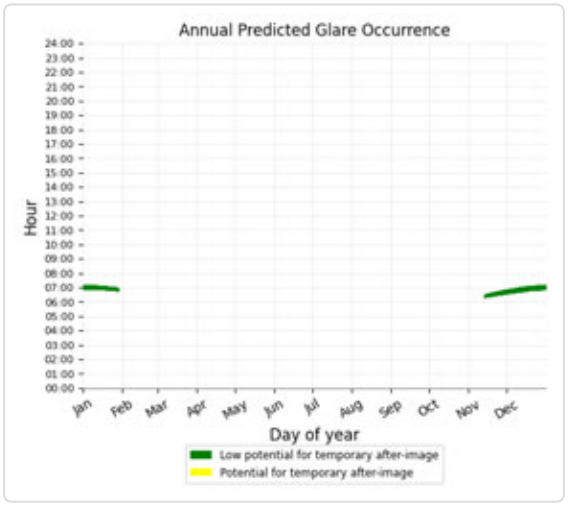
No glare found

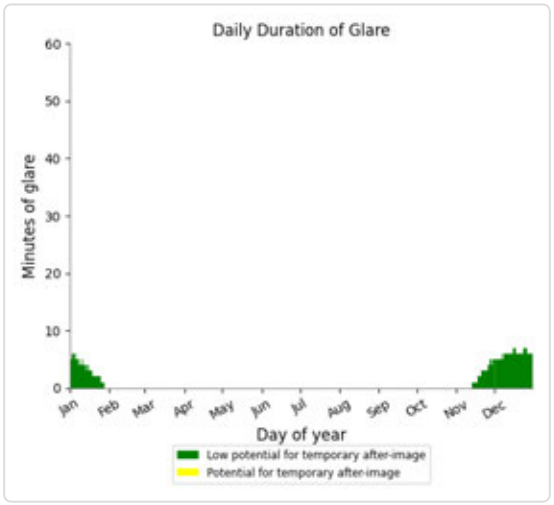
PV array 4 and FP: Baker Airport - Southeast Runway

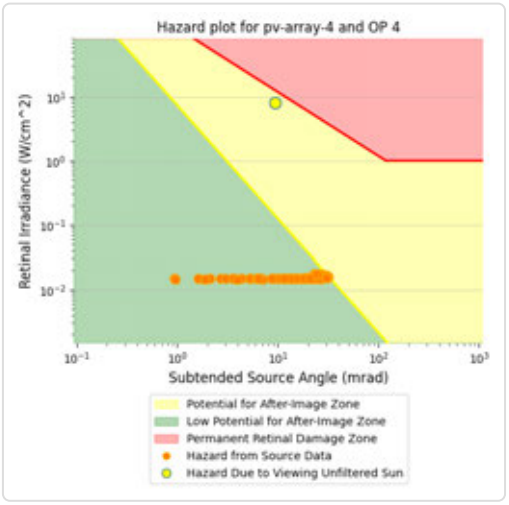
No glare found

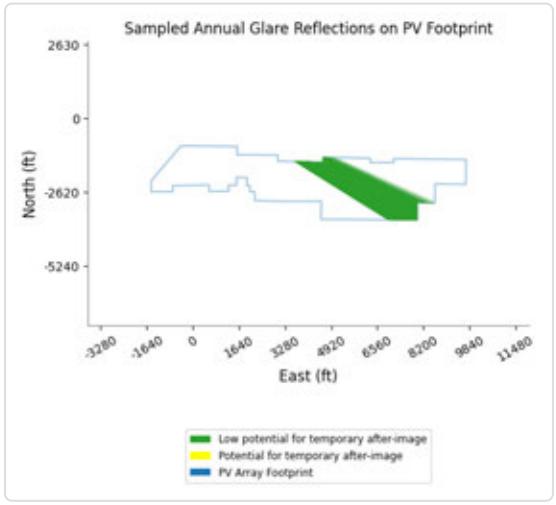
PV array 4 and OP 4

Yellow glare: none
Green glare: 329 min.









PV array 4 and OP 1

No glare found

PV array 4 and OP 2

No glare found

PV array 4 and OP 3

No glare found

PV array 4 and OP 5

No glare found

PV array 4 and OP 6

No glare found

PV array 4 and OP 7

No glare found

PV array 4 and OP 8

No glare found

PV array 4 and OP 9

No glare found

PV array 4 and OP 10

No glare found

PV array 4 and OP 11

No glare found

PV array 4 and OP 12

No glare found

PV array 4 and OP 13

No glare found

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.
Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare. This primarily affects V1 analyses of path receptors.
Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.
The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.
The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.
The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

© Sims Industries d/b/a ForgeSolar, All Rights Reserved.

Appendix 5.15C

Conceptual Landscape Design Plan

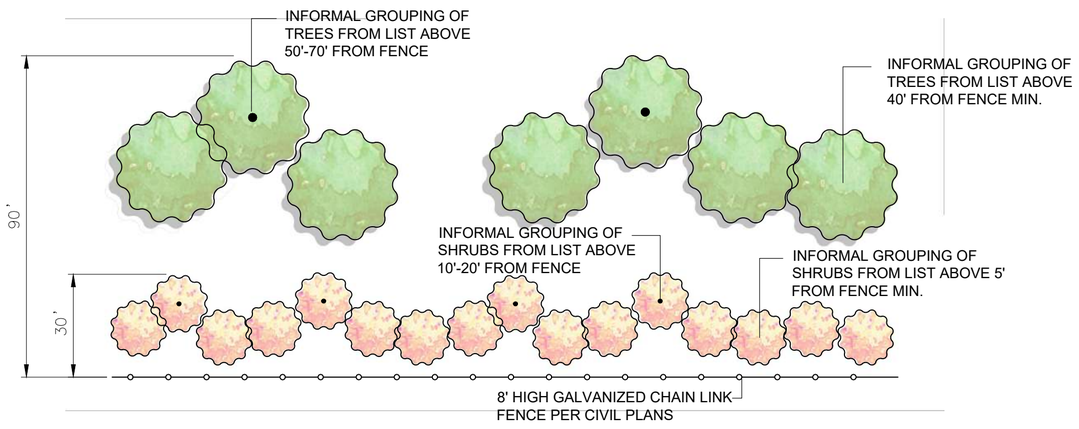
PLANTING LEGEND

SYMBOL	QTY	TREES, SUCH AS:
	6,680 LF	
	335 TREE	

BOTANICAL NAME/ COMMON NAME	WATER USE	SIZE	SPACING	CONTAINER HT.X SP.	EXPECTED HT AT (APPROXIMATE): ONE YEAR	5 YEARS	MATURITY
ACACIA GREGGII - CATCLAW	LOW	24" BOX	15'	6' X 4'	±7'	±9'	±12'
CHILOPSIS LINEARIS - DESERT WILLOW	MOD	24" BOX	25'	6' X 4'	±10'	±15'	±25'
PINUS EDULIS - PINYON PINE	LOW	24" BOX	25'	6' X 4'	±7'	±10'	±15'
PROSOPIS GLANDULOSA - HONEY MESQUITE	LOW	24" BOX	15'	6' X 4'	±7'	±10'	±20'
QUERCUS SPECIES - OAK	LOW	24" BOX	30'	6' X 4'	±7'	±15'	±30'

SYMBOL	QTY	SHRUBS, SUCH AS:
	30,710 LF	
	3,850 SHRUB	

BOTANICAL NAME/ COMMON NAME	WATER USE	SIZE	SPACING	CONTAINER HT.X SP.	EXPECTED HT AT (APPROXIMATE): ONE YEAR	5 YEARS	MATURITY
AMBROSIA SALSOLA - CHEESEBUSH	LOW	5 GAL/ 15 GAL	6'	2' X 2'	±3'	±4'	±6'
ARTEMISIA TRIDENTATA - BIG SAGEBRUSH	LOW	5 GAL/ 15 GAL	10'	2' X 2'	±3'	±5'	±8'
ATRIPLEX CANESCENS - FOURWING SALTBUSH	LOW	5 GAL/ 15 GAL	5'	2' X 2'	±3'	±4'	±5'
ATRIPLEX POLYCARPA - CATTLE SALTBUSH	LOW	5 GAL/ 15 GAL	5'	2' X 2'	±3'	±4'	±6'
BACCHARIS SAROTHROIDES - BROOM BACCHARIS	LOW	5 GAL/ 15 GAL	5'	2' X 2'	±3'	±6'	±8'
CERCOCARPUS BETULOIDES - WESTERN MOUNTAIN MAHOGANY	LOW	5 GAL/ 15 GAL	8'	2' X 2'	±3'	±6'	±10'
CONDEA EMORYI - DESERT LAVENDER	LOW	5 GAL/ 15 GAL	8'	2' X 2'	±3'	±5'	±8'
ERICAMERIA NAUSEOSA - RUBBER RABBITBRUSH	LOW	5 GAL/ 15 GAL	8'	2' X 2'	±3'	±5'	±7'
FORESTIERA PUBESCENS - DESERT OLIVE	LOW	5 GAL/ 15 GAL	6'	2' X 2'	±3'	±5'	±8'
HETEROMELES ARBUTIFOLIA - TOYON	LOW	5 GAL/ 15 GAL	8'	2' X 2'	±3'	±5'	±7'
JUNIPERUS CALIFORNICA - CALIFORNIA JUNIPER	LOW	5 GAL/ 15 GAL	10'	2' X 2'	±3'	±8'	±12'
LARREA TRIDENTATA - CREOSOTE BUSH	LOW	5 GAL/ 15 GAL	6'	2' X 2'	±3'	±5'	±8'
QUERCUS DUMOSA - SCRUB OAK	LOW	5 GAL/ 15 GAL	8'	2' X 2'	±3'	±5'	±7'
RHUS OVATA - SUGAR BUSH	LOW	5 GAL/ 15 GAL	10'	2' X 2'	±3'	±5'	±8'



TYPICAL TREE & SHRUB PLANTING PLAN DETAIL

NOT TO SCALE

PRELIMINARY WATER USE CALCULATIONS

TREE PLANTING AREA*: 6,680' LENGTH X 60' WIDTH = 400,800 SF (9.20 AC)
SHRUB PLANTING AREA*: 30,710' LENGTH X 30' WIDTH = 921,300 SF (21.15 AC)
TOTAL LANDSCAPE AREA*: 400,800 SF (9.20 AC)+921,300 SF (21.15 AC)=1,322,100 SF (30.35 AC)
* INCLUDING IRRIGATED LANDSCAPE AREA SHOWN BELOW.

POINT SOURCE DRIP IRRIGATION AREA:
335 TREES WITH ±15' Ø WET ZONE: 335 X 175 SF = 58,625 SF (1.35 AC)
3,850 SHRUB WITH ±8' Ø WET ZONE: 3,850 X 50 SF = 192,500 SF (4.42 AC)
TOTAL IRRIGATED LANDSCAPE AREA: 58,625 SF (1.35 AC)+192,500 SF (4.42 AC)=251,125 SF (5.77 AC)

MAXIMUM APPLIED WATER ALLOWANCE (MAWA)
MAWA = (ETo)(0.62)[(ETAF x LA) + ((1- ETAF) x SLA)] = GALLONS PER YEAR
MAWA = (86.6)(0.62)[(0.45 x 251,125) + ((0.55) x 0)] = 6,067,532 GALLONS PER YEAR

ESTIMATED TOTAL WATER USE (ETWU) - POINT SOURCE DRIP IRRIGATION
ETWU = Eto x 0.62 x (PF/IE) x Area = GALLONS PER YEAR
ETWU = 86.6 x 0.62 x (0.3/0.81) x 251,125 = 4,993,853 GALLONS PER YEAR

GENERAL DESCRIPTIONS/ DESIGN INTENT

1. ALL LANDSCAPE IMPROVEMENTS SHALL BE DESIGNED IN ACCORDANCE WITH COUNTY OF BERNARDINO LANDSCAPE STANDARDS, CHAPTER 83.10 - LANDSCAPING STANDARDS, CHAPTER 88.01 - PLANT PROTECTION AND MANAGEMENT AND IN ACCORDANCE WITH AB 1881 - STATE WATER CONSERVATION REQUIREMENTS AND THE CALIFORNIA ENERGY COMMISSION REQUIREMENTS.
2. NATIVE AND DROUGHT TOLERANT PLANTS THAT MINIMIZE WATER USE AND MAINTENANCE WILL BE UTILIZED TO SCREEN THE SECURITY FENCE FROM THE I-15 FREEWAY. PLANT MATERIALS WILL BE APPROPRIATE FOR THE DESERT CLIMATE AND FIT IN WITH THE ADJACENT NEIGHBORHOOD.
3. ALL LANDSCAPED AREAS SHALL BE IRRIGATED WITH AN AUTOMATIC DRIP IRRIGATION SYSTEM AS NEEDED.
4. APPLICANT/ PERMITTEE SHALL BE RESPONSIBLE FOR MAINTAINING THE VEGETATION DURING THE LIFE OF THE PERMIT. ALL DEAD, DYING, OR DISEASED PLANTS WILL BE REPLACED IN KIND.

SITE DATA

TOTAL PERVIOUS SURFACE AMOUNT FOR THE PROJECT SITE (LIMITS OF DISTURBANCE AREA)	2,040 AC
NEW SURFACE INCLUDING SOLAR ARRAY MODULE LAYOUT AREAS, BESS YARD, LAYDOWN & EQUIPMENT STORAGE AREAS, SUBSTATION, DRAINAGE CHANNEL & OUTLET PROTECTION FEATURE, BERMS, TEMPORARY SEDIMENT BASINS, LOW WATER CROSSINGS, BOX CULVERTS, TEMPORARY DIVERSION DITCHS, AND CONSTRUCTION ENTRANCES/ EXITS WITH CONCRETE WASHOUT**	1,969.65 AC
SURFACE TO BE REPLACED WITH INTERNAL ACCESS GRAVEL ROADS	40 AC
TOTAL AREA TO BE LANDSCAPED	30.35 AC

** REFER TO "30% CIVIL DESIGN PLANS FOR SODA MOUNTAIN SOLAR PROJECT" PREPARED BY KLEINFELDER, DATED 8/8/2023, FOR ADDITIONAL INFORMATION.

REGISTERED LANDSCAPE ARCHITECT
ALAA CHAABANI LIC. NO. 4732
SIGNATURE
DEC. 31, 2024
RENEWAL DATE
DATE
STATE OF CALIFORNIA



TYPICAL SECTION
TREE PLANTING
NOT TO SCALE

1 YEAR GROWTH | 5 YEAR GROWTH | 15 YEAR GROWTH



TYPICAL SECTION
SHRUB PLANTING
NOT TO SCALE

1 YEAR GROWTH | 5 YEAR GROWTH | 15 YEAR GROWTH

Michael Baker INTERNATIONAL

SODA MOUNTAIN SOLAR PROJECT
PRELIMINARY LANDSCAPE CONCEPT PLAN

SAN BERNARDINO COUNTY, BAKER, CA 92309
JUNE 14, 2024

5.16 Water Resources

This section analyzes the jurisdictional and non-jurisdictional project components. The jurisdictional project components include the construction and operation of the solar photovoltaic (PV) facility, battery energy storage system (BESS), project substation and generation intertie line (gen-tie) and construction of the utility switchyard and section of transmission loop in lines that would connect to the existing Mead-Adelanto Transmission Line. The non-jurisdictional project components include the construction and operation of the protection setting upgrades to the Marketplace and Adelanto substations and operation of the utility switchyard and section of transmission loop in lines.

5.16.1 Environmental Setting

The project would be located in unincorporated eastern San Bernardino County, approximately 7 miles southwest of Baker, California. The project would be a 300-megawatt (MW) solar PV facility occupying approximately 2,670 acres of land administered by the U.S. Department of Interior, Bureau of Land Management (BLM). The project would include four solar panel arrays (Area 1 thru Area 4), an 18-acre 300(MW, 1,200-MW-hour (MWh), BESS, an operation and maintenance (O&M) facility, substation, and switchyard. The project would be connected to the nearby Los Angeles Department of Water and Power (LADWP) Mead-Adelanto 500-kilovolt (kV) transmission line, paralleling Interstate 15 (I-15) to the northwest. A one-mile-long gen-tie line would link the substation to the 5-acre switchyard located adjacent the transmission line right-of-way (ROW) (RE 2025k). According to San Bernardino County online zoning maps, the project site is zoned as resource conservation (RC) (San Bernardino County 2025a).

Stormwater Drainage and Water Quality

The proposed project area is located within two level 12 Hydrologic Unit Code (HUC) watersheds (DWR 2024):

- 92309, Baker, California (180902082502)
- 92309, Baker, California (180902082504)

The 180902082502 drainage flows into the Mojave River terminating in the Soda Lake basin. The 180902082504 drainage flows directly into the Soda Lake basin. During exceptional wet winters, the Mojave River is reported to have flowed to Silver Lake north of the town of Baker. Given enough runoff, and based on topography, stormwater would flow north of Silver Lake, join with Salt Creek, then the Amargosa River, and terminate in the Badwater basin of Death Valley.

According to the United States Environmental Protection Agency (EPA) *How's My Waterway* website, neither of these watersheds is identified as impaired (USEPA 2025).

During construction, the applicant proposes to minimize project grading in accordance with a Fluvial Geomorphic Stormwater Design Plan (FGSDP). Stormwater runoff within the four solar panel array areas would be controlled using best management practices that would also satisfy requirements of the National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit, or CGP). During project operation, at-grade crossings of the three existing arroyos between the four solar panel array areas, as well as building pads for the BESS and substation that would be located adjacent to one of the arroyos, would be protected by rip-rap (RE 2025jjjj).

The project area is within the Soda Mountain subbasin of the Soda Lake Valley groundwater basin (6-033), which has been identified as a very low priority basin (DWR 2020). The subbasin is non-adjudicated and is outside the jurisdiction of the Mojave Water Agency and other water districts. In 2002, the San Bernardino County Board of Supervisors adopted the Desert Groundwater Management Ordinance (San Bernardino County Ordiances, Chapter 6, Article 5, commencing with Section 33.06551) (DGMO) to protect groundwater resources within unincorporated and unadjudicated desert regions of the county (San Bernardino County 2025d). The Soda Mountain subbasin occupies a small northwest portion of the greater Soda Lake Valley groundwater basin and is connected to the main groundwater basin on the east where I-15 exits the basin on the way to Baker, California, and to the southeast in the vicinity of the Razor Dunes (RE 2025ddd). The subbasin contains several alluvial fans and is surrounded by mountains and upland areas consisting of Carboniferous metasedimentary rocks, Jurassic/Triassic metavolcanic rocks, Cretaceous granitic rocks, and tertiary nonmarine and volcanic rocks (CDMG 1962).

Based on the results of a geophysical investigation performed in 2010 by Terra Physics for a previous version of the project, fine to coarse alluvium occurs from the surface to depths of 332 to 436 feet and is underlain by bedrock. A zone of saturated alluvium 50 to 150 feet thick lies above bedrock (RE 2025yyy).

Two test wells (PW-1 & OW-1) installed to conduct a 72-hour constant rate pumping test in 2014 to support the previous BLM environmental impact report (EIR) indicated the following site specific hydrogeologic conditions:

- Alluvium consisting of interbedded sands and gravel to depths of 200 to 230 feet below ground surface (bgs).
- Clay and clayey sand between depths of 200 and 390 feet bgs.
- Fine to coarse sand between depths of 390 and 500 feet bgs.
- Decomposed granitic bedrock between depths of 500 and total depth at 555 feet bgs.
- Depth to groundwater detected between 426 and 435 feet bgs based on sonic geophysical logs, suggesting an unconfined aquifer.

During the pumping test, maximum drawdown for test well PW-1 was 41 feet using a pump rate of 26 gallons per minute (GPM). Specific yields of 0.30 and 0.25 were calculated for test wells PW-1 & OW-1, respectively. The aquifer storage was estimated at 375,000 acre-feet (AF) assuming an aquifer thickness of 125 feet and a specific yield of 0.25 (RE 2025zzz).

Groundwater gradients indicate flow out of the subbasin through the connections with the Soda Lake Valley groundwater basin to the east and southeast of the subbasin (BLM 2013b, RE 2025yy).

Compounds detected in water quality samples collected from test wells PW-1 and OW-1 included total dissolved solids (TDS) ranging from 1,140 to 1,260 milligrams per liter (mg/L or parts per million [ppm]), calcium ranging from 34.7 to 46.5 mg/L, chloride ranging from 236 to 292 mg/L, magnesium ranging from undetected to 6.69 mg/L, total nitrate ranging from1.9 to 2.6 mg/L, sodium ranging from 346 to 359 mg/L, and sulfate ranging from 369 to 446 mg/L. The lower recommended secondary maximum contaminant levels (SMCLs) for drinking water were exceeded for TDS (500 mg/L), chloride and sulfate (both 250 mg/L). In addition, test well groundwater samples were slightly basic with a pH ranging from 8.14 to 8.61 (RE 2025zzz).

According to the Geotracker website sponsored by the State Water Resources Control Board (SWRCB), there are no current or previous contaminated groundwater sites within the project area. The nearest noted contaminated site was a release from the Kinder-Morgan petroleum pipeline in November 2004, three miles southwest of the project site in Cronise Valley. Contaminated soil from the release was either excavated and disposed off-site or treated using soil vapor extraction (SVE). A no further action letter was issued by the Lahontan Regional Water Quality Control Board (LRWQCB) on December 10, 2012 (SWRCB 2025).

Flooding

The proposed project area is located within an unpublished Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM) panel 06071C2875H of the unincorporated areas of San Bernardino County. The entire project area lies within Zone D, which is defined as areas where flood risk has not been determined and no flood hazard analysis has been conducted (FEMA 2025a, FEMA 2025b). However, according to the San Bernardino County Flood Control District online Web map, the nearest flood control facilities are 7.3-mile northeast where the Mojave River passes through the town of Baker (San Bernardino County 2025e).

As the project area is not near the coast, it is not within an area mapped as vulnerable to sea level rise (NOAA 2025a), nor is there a danger of a tsunami or seiche.

According to the *Dam Breach Inundation Map Web Publisher* sponsored by the California Department of Water Resources (DWR), there are no dams within the region that could inundate the project (DWR 2025b).

Water Supply

Water demand for the project is anticipated at 319 AF for construction over an 18-month period, and 5.6-acre feet per year (AFY) for project operations (RE 2025ddd). Water supply during both the construction and the operation phases of the project would be provided by up to five groundwater extraction wells (RE 2025eeee). If needed, water may be obtained from an existing water supply well (WCR No. 2020-016662) within the Silver Lake Valley groundwater basin (DWR 2025a) and trucked to the project site as an alternative (RE 2025ddd).

Based on investigations performed for the BLM EIR, and a review of Department of Water Resources (DWR) well completion reports, the groundwater resource of the Soda Mountain subbasin is undeveloped (RE 2025ddd, DWR 2025a). To satisfy the San Bernardino County DGMO, the applicant would be required to establish a groundwater safe yield that would not result in aquifer overdraft, or adverse effects to aquifer health, surface water bodies, and associated biological resources. The revised water supply report submitted in the application (RE 2025ddd) as well as the water supply report prepared for the BLM EIR (RE 2025ddd) did not use subbasin specific data to determine a groundwater safe yield; they used performance data from a water supply well WCR No. 2011-008802 (DWR 2025a) which is outside of the Soda Mountain groundwater subbasin.

Wastewater

During project construction, sanitary wastewater needs would be addressed by portable toilets maintained by a local contractor. During project operation, the facility would be operated and monitored remotely. Project staff would only visit the site periodically for maintenance, equipment operation, or PV panel washing (RE 2025k, RE 2025y). No permanent sanitary facilities are planned for the project.

Regulatory

Federal

Clean Water Act and California's Porter-Cologne Water Quality Control Act. The SWRCB and its nine Regional Water Quality Control Boards (RWQCBs) are responsible for the regulation and enforcement of the water quality protection requirements of the federal Clean Water Act (CWA) and the state's Porter-Cologne Water Quality Control Act (Porter-Cologne). The National Pollutant Discharge Elimination System (NPDES) is the permitting program that allows point source dischargers to comply with the CWA Section 402 and Porter-Cologne laws. This regulatory framework protects the beneficial uses of the state's surface and groundwater resources for public benefit and environmental protection. Protection of water quality could be achieved by ensuring the proposed project complies with applicable NPDES permits from the SWRCB or the Lahontan RWQCB. Because the project does not discharge into waters of the U.S., no federally delegated permit issued

by the SWRCB or Lahontan RWQCB is required. However, the Lahontan RWQCB strongly encourages enrollment for the Construction General Permit regardless.

Section 404(a) of the CWA identifies the U.S. Army Corp of Engineers (USACE) as the authority to issue permits for the discharge of fill and dredging material into navigable waters, defined as waters of the United States (CWA Section 502 [7]). Under Section 401(a) of the CWA, any applicant of a permit under the CWA must provide a State certification to the Federal permitting agency. In California, the local RWQCB is the Section 401 certifying agency. According to the aquatic resource delineation, no waters of the United States were identified at the project site (RE 2025t).

Under Section 303(d) of the CWA, states are required to identify impaired surface water bodies and develop total maximum daily loads (TMDLs) for contaminants of concern. The TMDL is the quantity of pollutants that can be assimilated by a water body without violating water quality standards.

Federal Emergency Management Agency Flood Insurance Program. The flood magnitude standard used nationwide for floodplain management is a one percent probability of a flood occurring in any given year, also known as the 100-year flood or base flood. FIRM, the official map created and distributed by FEMA for the National Flood Insurance Program shows areas subject to inundation by the base flood for participating communities. FIRMs contain flood risk information based on historic, meteorologic, hydrologic, and hydraulic data, as well as open-space conditions, flood control works, and development. As stated above in the environmental setting section, the project area lies within Zone D, which is defined as areas where flood risk has not been determined and no flood hazard analysis has been conducted (FEMA 2025a, FEMA 2025b).

State

Sustainable Groundwater Management Act (AB 1739, SB 1168 & SB 1319). The 2014 Sustainable Groundwater Management Act (SGMA) requires local public agencies and Groundwater Sustainability Agencies (GSAs) in high and medium priority basins to develop and implement Groundwater Sustainability Plans (GSPs) or Alternatives to GSPs. GSPs are detailed road maps for managing groundwater basins to reach long-term sustainability. The Soda Lake groundwater basin, as well as the Soda Mountain groundwater subbasin, are very low priority with respect to critical overdraft and the Soda Mountain groundwater subbasin is non-adjudicated. Therefore, the groundwater subbasin is not subject to the provisions of SGMA. However, the project site would be subject to the San Bernardino County Desert Groundwater Management Ordinance (See below).

Recordation of Water Extraction and Diversions (California Water Code [CWC] § 4999). This statute requires that each person extracting groundwater in excess of 25 AF during any year, shall file a "Notice of Extraction and Diversion of

Water" with the SWRCB. This would apply to the construction water demand of 319 AF over 18 months but would not apply to operation water use of 5.6 AFY.

Local

San Bernardino County General Plan. The following goals and policies apply to water supply and quality issues related to the project (San Bernardino County 2022):

- **Goal IU-1 Water Supply**
  - **Policy IU-1.1:** Any new development shall be connected to a public water system or a County approved well.
  - **Policy IU-1.3:** The County promotes the use of recycled water.
  - **Policy IU-1.9:** The County encourages water conserving site design and the use of water conserving fixtures.
- **Goal IU-3 Stormwater Drainage**
  - **Policy IU-3.2:** The County requires new development to install and maintain stormwater management facilities to preserve predevelopment hydrology and hydraulic conditions.
  - **Policy IU-3.4:** On floodways not controlled by the County, the retention of natural floodways and watercourses is encouraged. The priority is to reduce flood risk, but also to improve the amount and quality of surface water and groundwater resources.
- **Goal NR-2 Water Quality**
  - The County ensures compliance with the County's Municipal Stormwater NPDES (National Pollutant Discharge Elimination System) Permit by requiring new development and significant redevelopment to protect the quality of water and drainage systems through site design, source controls, stormwater treatment, runoff reduction measures, best management practices, low impact development strategies, and technological advances.
- **Goal RE-2 Renewable Energy Systems**
  - **Policy RE-2.1:** Supports solar energy generation, solar water heating, wind energy, and bioenergy systems that are consistent with the orientation, siting and environmental compatibility policies of the General Plan.
- **Goal RE-4 Environmental Compatibility**
  - **Policy RE-4.2:** Ensures that renewable energy facilities do not disrupt, degrade, or alter the local hydrology and hydrogeology.
    - **Policy RE-4.2.1:** Requires a groundwater impact assessment that evaluates the short and long-term impacts to groundwater usage.

- **Policy RE-4.3:** Requires construction and operation of all renewable energy facilities to minimize negative effects and optimize benefits to unincorporated communities.

San Bernardino County Code of Ordinances:

- **§§ 33.06551-33.06662 Desert Groundwater Management –** This ordinance protects groundwater resources within the unincorporated and unadjudicated desert region of San Bernardino County. The proposed groundwater wells are subject to the ordinance and must either adopt a groundwater management plan or fall under one of the exclusions. The ordinance requires the permitee of a groundwater extraction well to estimate the "*groundwater safe yield*". The groundwater safe yield is defined in the ordinance as the **"***maximum quantity of water that can be annually withdrawn from a groundwater aquifer (i) without resulting in overdraft (ii) without adversely affecting aquifer health and (iii) without adversely affecting the health of water bodies or their biological resources".* Although Section 33.06552 (c) (8) of the ordinance excludes *Groundwater wells located on Federal lands unless otherwise specified by inter-agency agreement,* San Bernardino County and the BLM entered into Memorandum of Understanding (MOU) to jointly enact the DGMO on Federal lands within San Bernardino County under BLM control (San Bernardino County 2003).
- **§ 33.0860 Disposal of Sanitary Wastes –** No sanitary wastes, including wash or rinse water used to clean the interior of the liquid waste hauler's vehicle tank or any portable toilet, shall be disposed of at any location which is not approved by the San Bernardino County Department of Environmental Health Services (SBCEHS) and which does not meet either or both, as applicable, of the following conditions:
  (a) The current unrevoked waste discharge requirements for the treatment and/or disposal of liquid wastes from the appropriate California Regional Water Quality Control Board.
  (b) A current, unrevoked solid waste disposal site permit sanctioning the disposal of septic or other liquid wastes from the California Integrated Waste Management Board.
- **§ 35.0101 Pollutant Discharge Elimination System Regulations:** This ordinance protects and enhances the quality of receiving waters of the County by reducing pollutants in storm water discharges in a manner pursuant to and consistent with applicable federal, state, and local laws, regulations, and permits.

Cumulative

Staff reviewed the master cumulative list in **Table A-1, Appendix A**, that provides information on cumulative projects that could combine with the effects of the proposed project. Cumulative projects include land development or public works projects that are planned or approved and, given their physical proximity to the project area or an overlap in the transportation routes used during construction, could potentially

contribute to the same environmental effects as the proposed project. The following projects were considered for the cumulative setting for water resources:

- Transportation/Shipping
  - Barstow International Gateway Intermodal Facility
  - Brightline West High-Speed Railway, California Civil North section
- Road Construction – I-15 Mojave Wildlife Crossings
  - Cady Mountain (Milepost R116.70)
  - Soda Mountain (Milepost R129.75)
  - Clark Mountain (Milepost 168.05)
- Solar Energy
  - Dagget Solar Power Facility
  - Dagget Solar 33
  - Dagget Solar 66
  - Reido Farms LLC

5.16.2 Environmental Impacts

WATER RESOURCES Would the project:	**Significant and Unavoidable Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a. Violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☒	☐	☐
b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c. 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:				
i. result in substantial erosion or siltation, on- or offsite;	☐	☒	☐	☐
ii. substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	☐	☒	☐	☐
iii. create or contribute runoff water which would exceed the capacity of	☐	☒	☐	☐

WATER RESOURCES Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff; or				
iv. impede or redirect flood flows?	☐	☒	☐	☐
d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒
e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☒	☐	☐
f. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☒	☐	☐
g. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☒	☐	☐

Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix G, hydrology and water quality and utilities and service systems.

5.16.2.1 Methodology and Thresholds of Significance

In addition to the above environmental checklist, staff used the following methodology and thresholds of significance to evaluate the project.

Methodology

The California Environmental Quality Act (CEQA) guidelines, Appendix G, provide a checklist of questions that lead agencies typically address when assessing impacts related to water resources (or hydrology and water quality in CEQA). To assess potential impacts concerning water resources, staff has reviewed online sources of maps, literature and information of the surrounding area, as well as site-specific information provided by the project applicant. Specific quantitative thresholds of significance are not applicable to this evaluation.

5.16.2.2 Direct and Indirect Impacts

a. Would the project violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Construction

Less Than Significant with Mitigation Incorporated. Based on the analysis below, with the implementation of COCs **WATER-1** and **WATER-9**, the project's construction would not violate water quality standards or otherwise degrade surface or ground water quality. The potential impact is less than significant with mitigation incorporated.

Jurisdictional Project Components

Less Than Significant with Mitigation Incorporated. The proposed project would disturb approximately 2,059 acres and one mile of linear facilities during construction (RE 2025k). Since stormwater runoff from the project would not flow into waters of the United States, enrollment for coverage under the State Water Resources Control Board's NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit [CGP]) is not required. However, the LRWQCB strongly encourages enrollment for the Construction General Permit. Prior to any ground-disturbing construction activity, the applicant would prepare a construction Stormwater Pollution Prevention Plan (SWPPP) to comply with the Construction General Permit per condition of certification (COC) **WATER-1**. With implementation of the SWPPP, development of the site would not cause substantial degradation in the quality, or an increase in the rate or volume, of stormwater runoff during construction.

The applicant has proposed HYD-1 (RE 2025jjjj) that requires preparation of a FGSDP prior to project construction. The FGSDP would incorporate fluvial geomorphic design principles to preserve or create stable stream channels and floodplains that maintain or mimic existing hydrologic conditions (RE 2025jjjj). With some minor modification, staff recommends adopting applicant's proposed mitigation measure as COC **WATER-9**. Compliance with COC **WATER-9** would reduce these impacts to less than significant.

As described in Section 5.16.1, the applicant proposes to minimize grading during construction and control stormwater runoff within the four solar panel array areas using BMPs in accordance with the FGSDP per COC WATER-9. BMPs implemented during project construction would also satisfy requirements of the General Construction NPDES Permit. According to the revised project description (RE 2025k) , the maximum excavation depth would be 4 to 8 feet for medium-voltage collection cable trenching. Minimum grading would occur in the solar array areas. As discussed in Section 5.16.1, first encountered groundwater is below 400 bgs based on results of the aquifer testing (RE 2025zzz). Therefore, the need for dewatering is doubtful. However, in the unlikely event dewatering is necessary, the project owner would be allowed to discharge uncontaminated water under the Construction General Permit. If the discharge is found to be contaminated, a special permit through the LRWQCB would be necessary depending on the nature of the contamination, either requiring the applicant to treat the water before discharging or hauling away the untreated water by a permitted service provider.

As previously stated in Section 5.16.1, during project construction, temporary toilet and sanitary facilities would be provided and serviced by a third-party contractor.

Thus, the project would not be expected to violate water quality standards or waste discharge requirements during construction, and impacts would be less than significant with mitigation.

Non-Jurisdictional Project Components

No Impact. Only the network upgrades at the existing Marketplace and Adelanto substations necessary to accommodate project power generation would be under the jurisdiction of the LADWP. These network upgrades would not require soil disturbance to install and therefore would not result in the use of water for dust suppression.

Operation

Less Than Significant with Mitigation Incorporated. Based on the analysis below, with the implementation of COCs **WATER-1** through **WATER-4,** and **WATER-9** the project's operation would not violate water quality standards or otherwise degrade surface or ground water quality. The potential impact is less than significant with mitigation incorporated.

Jurisdictional Project Components

Less Than Significant with Mitigation Incorporated. As stated in Section 5.16.1, during operations the applicant proposes to develop stormwater design measures that would allow runoff to flow through the four solar panel array areas according to the FGSDP. At-grade crossings of the three existing arroyos, as well as building pads for the BESS and substation that would be located adjacent one of the arroyos, would be protected by rip-rap.

Stormwater runoff controls within the solar array areas, would be included in the project operations Drainage, Erosion, and Sedimentation Control Plan (DESCP) that should be prepared to monitor stormwater events and deploy associated BMPs per COC **WATER-2**.

In addition, given the large stormwater volumes that may flow through the existing arroyos between the solar array areas during peak rain events, scheduling frequent monitoring and maintenance would be necessary. Therefore, a channel maintenance program should be implemented during project operation per COC **WATER-3**.

As part of the measures that would be implemented to manage flows in the ephemeral streambeds, the project would construct three at-grade road crossings. During the previous BLM EIR process for the Soda Mountain Solar Project, the U.S. Army Corp of Engineers determined that the ephemeral streams in a study area that included the footprint of the proposed project were not waters of the United States (BLM 2013a, USACE 2013). However, the updated jurisdictional delineation report determined that 213.55 acres and 1,799,965 linear feet of the project are non-wetland waters of the

State under the jurisdiction of the LRWQCB (RE 2025aaaa, RE 2025bbbb, RE 2025cccc). Therefore, the applicant would be required to apply for dredge and fill waste discharge requirements (WDRs) per COC **WATER-4**.

During project operations, the project would be monitored remotely with periodic visits for maintenance. Therefore, no sanitary facilities are planned for the project.

With implementation of COCs **WATER-1** through **WATER-4**, and **WATER-9**, the project would not be expected to violate water quality standards or waste discharge requirements during project operation, and impacts would be less than significant with mitigation.

Non-Jurisdictional Project Components

Less Than Significant Impact with Mitigation. The utility switchyard and loop-in transmission lines would be under LADWP jurisdiction only during project operation. Stormwater control to minimize impact to runoff water quality during operation of the utility switchyard and loop-in transmission lines would still be required. It is recommended that a DESCP be prepared to control the effects of stormwater runoff during operation of the utility switchyard/loop-in transmission lines per staff's recommended **MM WATER-1.**

b. Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

Construction and Operation

Less Than Significant with Mitigation Incorporated. Based on the analysis below, with the implementation of COCs **WATER-5** and **WATER-6**, the project's construction and operation would not decrease groundwater supply, interfere with recharge, or impede management of the groundwater basing. The potential impact is less than significant with mitigation incorporated.

Jurisdictional Project Components

Less Than Significant with Mitigation Incorporated. Water supply during both construction and operation phases of the project would be provided by five on-site groundwater production wells (RE 2025eeee). As described in Section 5.16.1, the Soda Mountain groundwater subbasin is non-adjudicated and is outside the jurisdiction of the Mojave Water Agency and other water districts. San Bernardino County adopted the Desert Groundwater Management Ordinance (DGMO, Section §33.06551) to protect groundwater resources within unincorporated and unadjudicated desert regions of the county. According to the ordinance, anyone obtaining a permit to drill a groundwater well in these areas must determine the "groundwater safe yield" and limit the well extraction to the basin's safe yield in order to minimize the impact to the groundwater resource where the well is located. The groundwater safe yield is defined as the

maximum water that can be withdrawn from an aquifer annually without causing an overdraft condition, adversely affecting aquifer health, or adversely affecting the health of surface water bodies or their biological resources (Section 33.06552 [c] [8]).

The most recent Water Supply Report that was prepared for the project used groundwater supply well (DWR WCR No. 2011-008802) for a local gas station southwest of the project along I-15 as a basis for estimating the groundwater safe yield (RE 2025ddd). However, results of that analysis cannot be used for estimating the safe yield for the basin in which the project wells would be located as the well used for the analysis is in a different groundwater basin (Cronise Valley 6-036) than the Soda Lake groundwater basin and Soda Mountain groundwater subbasin (DWR 2024). As described in Section 15.6.1, test wells PW-1 and OW-1 were installed to conduct a 72-hour constant rate pumping test in 2014 in support of the previous BLM EIR. Aquifer test results from these wells are more representative of the Soda Mountain groundwater subbasin.

Based on the results of the aquifer pump tests, specific yields of 0.30 and 0.25 were calculated for test wells PW-1 & OW-1, respectively. Aquifer storage was estimated at 375,000 AF assuming an aquifer thickness of 125 feet and a specific yield of 0.25 (RE 2025zzz). Annual recharge for the Soda Mountain groundwater subbasin can be calculated by using the combined area (32,946 acres) of both Soda Mountain basin watersheds (BLM 2013b), multiplied by the average annual rainfall of 4.54 inches for the last ten years (NOAA 2025c). Assuming a recharge rate of 3 percent of average annual rainfall (0.136 inches or 0.011 feet) (RE 2025yy), the resulting recharge for the basin would be approximately 374 AFY. The maximum annual construction water demand of 213 AFY is well below the estimated annual recharge for the subbasin. Likewise, the operational water demand of 5.6 AFY is much less than the estimated annual subbasin recharge.

It should also be noted that aquifer storage capacity estimated for the Soda Mountain groundwater subbasin of 375,000 AF is substantially greater than both the construction and operational project water demand. Moreover, this level of impact to the aquifer, coupled with the aquifer depth of 426 and 435 feet bgs, would not be expected to affect aquifer health, or surface water bodies and associated biological resources.

Groundwater production wells would be installed in accordance with DWR California Well Standards, as well as the San Bernardino County Desert Groundwater Management Ordinance, as described in COC **WATER-5**.

Since there is no evidence that the groundwater resource of the Soda Mountain subbasin has been previously developed, a groundwater monitoring and reporting plan shall be required as described in COC **WATER-6**.

Based on the existing hydrogeologic conditions and the results of aquifer testing, combined with implementation of COCs **WATER-5** and **WATER-6**, impacts from

groundwater extraction for project water supply would be less than significant with mitigation.

Non-Jurisdictional Project Components

No Impact. Construction and operation of the network upgrades at the existing Marketplace and Adelanto substations necessary to accommodate project power generation would be under the jurisdiction of the LADWP. These network upgrades would not require groundwater extraction.

c. Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces in a manner which would:

i. Result in substantial erosion or siltation, on- or offsite;

Construction

Less Than Significant with Mitigation Incorporated. Based on the analysis below, with the implementation of COCs **WATER-1** and **WATER-9** the project's construction would not substantially alter drainage patterns and result in erosion or siltation. The potential impact is less than significant with mitigation incorporated.

Jurisdictional Project Components

Less Than Significant Impact with Mitigation Incorporated. As discussed in criterion "a", soil erosion during project construction would be addressed by the SWPPP prepared as part of the Construction General Permit requirement described in COC **WATER-1.** During construction, a minimalistic approach to storm water control design would be adopted through the FGSCP per COC **WATER-9**.

The project would not be expected to cause substantial erosion during construction or operation; therefore, impacts would be less than significant with mitigation.

Non-Jurisdictional Project Components

No Impact. Construction of the network upgrades at the existing Marketplace and Adelanto substations would be under the jurisdiction of the LADWP. Network upgrades would not require soil disturbance to install and therefore would not result substantial erosion or siltation.

Operation

Less Than Significant with Mitigation Incorporated. Based on the analysis below, with the implementation of COCs **WATER-2** and **WATER-9** the project's construction would not substantially alter drainage patterns and result in erosion or siltation. The potential impact is less than significant with mitigation incorporated.

Jurisdictional Project Components

Less Than Significant Impact with Mitigation Incorporated. During operations stormwater runoff from the project facilities would be addressed by implementing the soil erosion control measures of the project operations DESCP prepared per COC **WATER-2**. During operation, a minimalistic approach to storm water control design would be adopted through the FGSCP per COC **WATER-9**.

The project would not be expected to cause substantial erosion during construction or operation; therefore, impacts would be less than significant with mitigation.

Non-Jurisdictional Project Components

Less Than Significant Impact with Mitigation Incorporated. The utility switchyard and loop-in transmission lines would be under LADWP jurisdiction only during project operation. Stormwater control to minimize impact to runoff water quantity and quality during operation of the utility switchyard and loop-in transmission lines would still be required. It is recommended that a DESCP be prepared to control erosion and siltation during operation of the utility switchyard/loop-in transmission lines per staff's recommended **MM WATER-1.**

ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;

Construction

Less Than Significant with Mitigation Incorporated. Based on the analysis below, with the implementation of COCs **WATER-1** and **WATER-9** the project's construction would not substantially alter drainage patterns and result in flooding. The potential impact is less than significant with mitigation incorporated.

Jurisdictional Project Components

Less Than Significant with Mitigation Incorporated. As discussed in criterion "a", the impact of offsite flooding due to surface water runoff from construction activities would be addressed by the SWPPP prepared by requirement of the Construction General Permit (per COC **WATER-1**). During construction, a minimalistic approach to storm water control design would be adopted through the FGSCP per COC **WATER-9**.

With implementation of COCs **WATER-1** and **WATER-9,** the project would not be expected to cause off-site flooding due to surface water runoff during construction or operation, and impacts would be less than significant with mitigation incorporated.

Non-Jurisdictional Project Components

No Impact. Construction and operation of the network upgrades at the existing Marketplace and Adelanto substations would be under the jurisdiction of the LADWP. These network upgrades would not require soil disturbance to install and therefore would not result in flooding due to an increase to the rate or amount of surface runoff.

Operation

Less Than Significant with Mitigation Incorporated. Based on the analysis below, with the implementation of COCs **WATER-2** and **WATER-9** the project's operation would not substantially alter drainage patterns and result in flooding. The potential impact is less than significant with mitigation incorporated.

Jurisdictional Project Components

Less Than Significant with Mitigation Incorporated. Stormwater runoff concerns during project operation would be addressed by the project operations DESCP prepared per **WATER-2**. During construction, a minimalistic approach to storm water control design would be adopted through the FGSCP per COC **WATER-9**.

With implementation of COCs **WATER-2**, and **WATER-9**, the project would not be expected to cause off-site flooding due to surface water runoff during construction or operation, and impacts would be less than significant with mitigation incorporated.

Non-Jurisdictional Project Components

Less Than Significant with Mitigation Incorporated. Operation of the utility switchyard and loop-in transmission lines would be under LADWP jurisdiction during project operation. Stormwater control to minimize impact to runoff rates or quality during operation of the utility switchyard and loop-in transmission lines would still be required. It is recommended that a DESCP be prepared to control flooding due to the rate or amount of surface runoff during operation of the utility switchyard/loop-in transmission lines per staff's recommended **MM WATER-1**.

iii. 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

Construction

Less Than Significant with Mitigation Incorporated. Based on the analysis below, with the implementation of COCs **WATER-1** and **WATER-9** the project's construction would not substantially increase surface water runoff and thus would not exceed stormwater drainage capacity. The potential impact is less than significant with mitigation incorporated.

Jurisdictional Project Components

Less Than Significant with Mitigation Incorporated. As discussed in criterion "a" above, stormwater runoff during construction would be minimized by the BMPs employed per the Construction General Permit SWPPP (per COC **WATER-1**). During construction, a minimalistic approach to storm water control design would be adopted through the FGSCP per COC **WATER-9**.

Therefore, the project would not increase surface water runoff and thus would not exceed stormwater drainage capacity either during construction or operation, and potential impacts would be less than significant with mitigation incorporated.

Non-Jurisdictional Project Component

No Impact. Construction of network upgrades at the existing Marketplace and Adelanto substations would be under the jurisdiction of the LADWP. These network upgrades would not require soil disturbance to install, nor would they increase impervious areas. Therefore, they would not increase surface water runoff, nor would they create additional polluted runoff.

Operation

Less Than Significant with Mitigation Incorporated. Based on the analysis below, with the implementation of COCs **WATER-2** and **WATER-9** the project's construction would not substantially increase surface water runoff and thus would not exceed stormwater drainage capacity. The potential impact is less than significant with mitigation incorporated.

Jurisdictional Project Components

Less Than Significant with Mitigation Incorporated. As discussed in criterion "a" above, during operation, stormwater runoff within the project area would be addressed by the project operations DESCP prepared per COC **WATER-2**. During operation, a minimalistic approach to storm water control design would be adopted through the FGSCP per COC **WATER-9**.

Non-Jurisdictional Project Components

Less Than Significant with Mitigation Incorporated. Operation of the utility switchyard and loop-in transmission lines would be under LADWP jurisdiction during project operation. Stormwater control and to minimize impact to runoff water quality during operation of the utility switchyard and loop-in transmission lines would still be required. It is recommended that a DESCP be prepared to ensure stormwater runoff would not exceed the capacity of planned stormwater drainage systems during project operation per staff's recommended **MM WATER-1**. With implementation of the DESCP, operation of the network upgrades would not increase surface water runoff, nor would it create additional polluted runoff.

iv. Impede or redirect flood flows?

Construction

Less Than Significant with Mitigation Incorporated. Based on the analysis below, with the implementation of COCs **WATER-1** and **WATER-9** the project's construction would not impede or redirect flood flows. The potential impact is less than significant with mitigation incorporated.

Jurisdictional Project Components

Less Than Significant with Mitigation Incorporated. According to FEMA FIRM panel 06071C2875H the proposed project is located within the unincorporated areas of San Bernardino County, where no flood hazard analysis has been conducted (FEMA 2025a, FEMA 2025b).

However, according to the San Bernardino County Flood Control District online Web map, the nearest flood control facilities are 7.3-mile northeast where the Mojave River passes through the town of Baker, implying that substantial flooding does not impact I-15 adjacent the project site (San Bernardino County 2025e).

Therefore, with implementation of COCs **WATER-1** and **WATER-9**, the project would not be expected to impede or redirect flood flows during construction or operation, and impacts would be less than significant with mitigation incorporated.

Non-Jurisdictional Project Components

No Impact. Construction and operation of network upgrades at the existing Marketplace and Adelanto substations would be under the jurisdiction of the LADWP. These network upgrades would not require soil disturbance to install and therefore would not alter drainage courses, nor impede or redirect flood flows.

Operation

Less Than Significant with Mitigation Incorporated. Based on the analysis below, with the implementation of COCs **WATER-2** and **WATER-9** the project's construction would not impede or redirect flood flows. The potential impact is less than significant with mitigation incorporated.

Jurisdictional Project Components

Less Than Significant with Mitigation Incorporated. According to FEMA FIRM panel 06071C2875H, the proposed project is located within the unincorporated areas of San Bernardino County, where no flood hazard analysis has been conducted (FEMA 2025a, FEMA 2025b).

However, according to the San Bernardino County Flood Control District online Web map, the nearest flood control facilities are 7.3-mile northeast where the Mojave River passes through the town of Baker, implying that substantial flooding does not impact I15 adjacent the project site (San Bernardino County 2025e).

Therefore, with implementation of COCs **WATER-2** and **WATER-9**, the project would not be expected to impede or redirect flood flows during operation, and impacts would be less than significant with mitigation incorporated.

Non-Jurisdictional Project Components

Operation of the utility switchyard and loop-in transmission lines would be under LADWP jurisdiction during project operation. Stormwater control to minimize impact to runoff water quality during operation of the utility switchyard and loop-in transmission lines would still be required. It is recommended that a DESCP be prepared to control the effects of stormwater runoff during operation of the utility switchyard/loop-in transmission lines per staff's recommended **MM WATER-1**. With implementation of the DESCP, operation of the network upgrades would not result in alteration of drainage courses, and therefore, would not impede or alter flood flows.

d. Would the project in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

Construction and Operation

No Impact. Based on the analysis below, the project would not be located within a flood hazard, tsunami, or seiche zone. There is no impact to the project.

Jurisdictional Project Components

No Impact. As discussed in criteria Section 15.6.1, the proposed project area is not located near the coast or a large body of water, therefore there is no danger of a tsunami, seiche, or vulnerability to sea level rise. Likewise, there are no dams within the region that would inundate the project (DWR 2025b). Therefore, the project is not likely to release pollutants due to tsunami, seiche, or project inundation.

Non-Jurisdictional Project Components

No Impact. As with the jurisdictional components, project components under LADWP jurisdiction including the network upgrades, utility switchyard, and loop-in transmission lines, are not located near the coast or a large water body and, therefore, would not risk release of pollutants due to tsunami, seiche, or project inundation.

e. Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Construction

Less Than Significant with Mitigation Incorporated. Based on the analysis below, with the implementation of COCs **WATER-1, WATER-2, WATER-5, WATER-6** and **WATER-9** the project's construction would not conflict with a water quality control plan or sustainable management of groundwater. The potential impact is less than significant with mitigation incorporated.

Jurisdictional Project Components

Less Than Significant with Mitigation Incorporated. During project operation, the impact of the project on water quality due to erosion during construction would be mitigated by the Construction General Permit SWPPP (**WATER-1**), and by the project operations DESCP prepared per **WATER-2** during project operation. As discussed in Item (b), the Soda Mountain groundwater subbasin is non-adjudicated, outside the jurisdiction of the Mojave Water Agency and other water districts, and therefore not currently under a sustainable groundwater management plan. As the project would utilize the local groundwater resources, the project would be subject to the requirements of the San Bernardino County DGMO, which would be implemented by COCs **WATER-5** and **WATER-6**

Therefore, the overall impacts of the project on groundwater management and water quality control plans during construction and operation would be less than significant with mitigation incorporated.

Non-Jurisdictional Project Components

No Impact. Marketplace and Adelanto substation network upgrades under LADWP jurisdiction during construction would not require soil disturbance to install and therefore would not result in the use of water for dust suppression. Operation of the Marketplace and Adelanto substation network upgrades, utility switchyard, and loop-in transmission lines under LADWP jurisdiction would not require water use. Therefore, the LADWP jurisdictional components would not impact conflict with, or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

Operation

Less Than Significant with Mitigation Incorporated. Based on the analysis below, with the implementation of COCs **WATER-1, WATER-2, WATER-5, WATER-6** and **WATER-9** the project's construction would not conflict with a water quality control plan or sustainable management of groundwater. The potential impact is less than significant with mitigation incorporated.

Jurisdictional Project Components

Less Than Significant with Mitigation Incorporated. During project operation the impact of the project on water quality due to erosion during construction would be mitigated by the Construction General Permit SWPPP (**WATER-1**), and by the project operations DESCP prepared per **WATER-2** during project operation. As discussed in Item (b), the Soda Mountain groundwater subbasin is non-adjudicated, outside the jurisdiction of the Mojave Water Agency and other water districts, and therefore not currently under a sustainable groundwater management plan. As the project would utilize the local groundwater resources, the project would be subject to the requirements of the San Bernardino County DGMO, which would be implemented by COCs **WATER-5** and **WATER-6**.

Therefore, the overall impacts of the project on groundwater management and water quality control plans during construction and operation would be less than significant with mitigation incorporated.

Non-Jurisdictional Project Components

No Impact. Marketplace and Adelanto substation network upgrades under LADWP jurisdiction during construction would not require soil disturbance to install and therefore would not result in the use of water for dust suppression. Operation of the Marketplace and Adelanto substation network upgrades, utility switchyard, and loop-in transmission lines under LADWP jurisdiction would not require water use. Therefore, the LADWP jurisdictional components would not impact conflict with, or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

f. Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

Construction

Less Than Significant with Mitigation Incorporated. Based on the analysis below, with the implementation of COCs **WATER-5** and **WATER-6** the project would have sufficient water supply during construction. The potential impact is less than significant with mitigation incorporated.

Jurisdictional Project Components

Less Than Significant with Mitigation Incorporated. As discussed in criterion (b), water supply during both construction and operation phases of the project would be provided by five on-site groundwater production wells. Based on the aquifer storge of the Soda Mountain groundwater subbasin estimated from results of the 72-hour constant rate pumping test in 2014 and annual recharge estimated for the subbasin being greater than both the construction and operational project water demand, project extraction of groundwater is expected to remain below the safe yield as defined by the San Bernardino County DGMO.

Groundwater production wells would be installed in accordance with DWR California Well Standards, as a well as the San Bernardino County Desert Groundwater Management Ordinance, as described in COC **WATER-5**.

Since there is no evidence that the groundwater resource of the Soda Mountain subbasin has not been previously developed, a groundwater quality monitoring and reporting plan shall be required as described in COC **WATER-6**.

Therefore, the project would have sufficient water supply for both construction and operations and the impact to local groundwater resources would be less than significant with mitigation incorporated.

Non-Jurisdictional Project Components

No Impact. Marketplace and Adelanto substation network upgrades under LADWP jurisdiction during construction would not require soil disturbance to install and therefore would not result in the use of water for dust suppression. Operation of the Marketplace and Adelanto substation network upgrades, utility switchyard, and loop-in transmission lines under LADWP jurisdiction would not require water use. Therefore, the LADWP jurisdictional components would not impact local water supplies.

Operation

Less Than Significant with Mitigation Incorporated. Based on the analysis below, with the implementation of COCs **WATER-5** and **WATER-6** the project would have sufficient water supply during operation. The potential impact is less than significant with mitigation incorporated.

Jurisdictional Project Components

Less Than Significant with Mitigation Incorporated. As discussed in criterion (b), water supply during both construction and operation phases of the project would be provided by five on-site groundwater production wells. Based on the aquifer storge of the Soda Mountain groundwater subbasin estimated from results of the 72-hour constant rate pumping test in 2014 and annual recharge estimated for the subbasin being greater than both the construction and operational project water demand, project extraction of groundwater is expected to remain below the safe yield as defined by the San Bernardino County DGMO.

Groundwater production wells would be installed in accordance with DWR California Well Standards, as a well as the San Bernardino County Desert Groundwater Management Ordinance, as described in COC **WATER-5**.

Since there is no evidence that the groundwater resource of the Soda Mountain subbasin has not been previously developed, a groundwater quality monitoring and reporting plan shall be required as described in COC **WATER-6**.

Therefore, the project would have sufficient water supply for both construction and operations and the impact to local groundwater resources would be less than significant with mitigation incorporated.

Non-Jurisdictional Project Components

No Impact. Marketplace and Adelanto substation network upgrades under LADWP jurisdiction during construction would not require soil disturbance to install and therefore would not result in the use of water for dust suppression. Operation of the

Marketplace and Adelanto substation network upgrades, utility switchyard, and loop-in transmission lines under LADWP jurisdiction would not require water use. Therefore, the LADWP jurisdictional components would not impact local water supplies.

g. Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Construction

Less Than Significant with Mitigation Incorporated. Based on the analysis below, with the implementation of COC **WATER-8**, the project would adequately address sanitary wastewater concerns. The potential impact is less than significant with mitigation incorporated.

Jurisdictional Project Components

Less Than Significant with Mitigation Incorporated. Due to the rural location, no wastewater treatment provider is available to serve the project. During construction, temporary sanitary facilities would be used. During project operation, the facility would be operated and monitored remotely, and no permanent sanitary facilities are planned for the project. Therefore, during construction and operation the project would not impact the capacity of a wastewater treatment provider. Compliance with San Bernardino County ordinance § 33.06551 would be verified by requirements in COC **WATER-8**.

Non-Jurisdictional Project Components

No Impact. As with the jurisdictional components, project components under LADWP jurisdiction including the network upgrades, utility switchyard, and loop-in transmission lines would not add to the wastewater volume sent to treatment facilities, therefore, there would be no impact on the capacity of a wastewater treatment provider.

Operation

Less Than Significant with Mitigation Incorporated. Based on the analysis below, with the implementation of COC **WATER-8**, the project would adequately address sanitary wastewater concerns. The potential impact is less than significant with mitigation incorporated.

Jurisdictional Project Components

Less Than Significant with Mitigation Incorporated. Due to the rural location, no wastewater treatment provider is available to serve the project. During construction, temporary sanitary facilities would be used. During project operation, the facility would be operated and monitored remotely, and no permanent sanitary facilities are planned for the project. Therefore, during construction and operation the project would not impact the capacity of a wastewater treatment provider. Compliance with San

Bernardino County ordinance § 33.06551 would be verified by requirements in COC **WATER-8**.

Non-Jurisdictional Project Components

No Impact. As with the jurisdictional components, project components under LADWP jurisdiction including the network upgrades, utility switchyard, and loop-in transmission lines would not add to the wastewater volume sent to treatment facilities, therefore, there would be no impact on the capacity of a wastewater treatment provider.

5.12.2.3 Cumulative Impacts

Construction and Operation

*No Impac*t. Based on the analysis below, there would be no cumulative impact of local projects on water supply for the Soda Mountain Solar Project.

Jurisdictional Project Components

The Barstow International Gateway project would be a 4,500-acre state-of-the-art intermodal facility where shipping containers arriving by rail from the ports of Los Angeles and Long Beach can be transferred to domestic containers and distributed to the rest of the country by truck or rail. Incoming freight from the east would be transferred to international containers and loaded unto trains for transport to the ports. The purpose of the project is to alleviate shipping congestion and truck traffic in Southern California (BNSF 2025). Unfortunately, according to the City of Barstow Planning Division, the draft environmental impact report (DEIR) for the City of Barstow General Plan 2048, which includes the Barstow International Gateway Specific Plan, will not be available until late 2025 (Barstow 2025).

The Brightline West high-speed passenger train project would extend 218 miles and link Rancho Cucamonga, California with Las Vegas, Nevada. The planned rail line would pass through the project area along the I-15 corridor. There would be no stations between Victorville, California and Las Vegas, Nevada. During operation of the high-speed train, no local water would be needed between the Victorville and Las Vegas stations (Brightline 2025, USDOT 2011).

Contrary to Figure 3.4-1 of the application, the three wildlife crossings over I-15 are a single project. Essentially these structures would be overpasses with vegetated cover enabling large mammals (Especially desert big-horn sheep) safe passage over the interstate and the future Brightline West high-speed railway. The footprint of the three wildlife crossings would range from 5.8 to 6.3 acres (Caltrans 2023). Since these are small projects planned to be completed in less than a year, the amount of water used for dust suppression is expected to be minimal.

The eight solar power projects would be the most comparable to the subject project. A version of the San Bernardino County Renewable Energy Projects spreadsheet (updated as of February 1, 2025) identifies the Pristine Sun LLC - Sites 1, 2 & 3 projects as

abandoned (San Bernardino County 2025b). No online information could be found on the Glacier Power & Gas, LLC solar project identified on the San Bernardino County Renewable Energy Projects spreadsheet (San Bernardino County 2025b).

Documents associated with the four remaining solar projects (Dagget Solar Power Facility, Reido Farms LLC, Dagget [National Trails] Solar 33, and Dagget Solar 66) are available online through the San Bernardino County Planning Division, Land Use Services Department (San Bernardino County 2021a, San Bernardino County 2021b, San Bernardino County 2025b, San Bernardino County 2025c).

According to the San Bernardino County environmental documents, the Dagget Solar Power Facility project would use on-site groundwater wells. The Dagget Solar Power Facility project is located within the Lower Mojave River groundwater basin (6-040), approximately 25 miles west-southwest of the Soda Mountain groundwater subbasin (DWR 2024); thus, the subject project water supply would not be impacted. Likewise, the remaining three solar projects (Reido Farms LLC, Dagget [National Trails] Solar 33, and Dagget Solar 66), would source local domestic water supply. Water supply for these projects would be provided by the Dagget Community Service District, which is generated from a single well extracting from the Lower Mojave River groundwater basin (Daggett CSD 2022).

Therefore, local projects would not have an impact on the groundwater resource proposed as the water supply for the Soda Mountain Solar Project.

Non-Jurisdictional Project Components

The network upgrades would be under the jurisdiction of the LADWP during both construction and operational phases of the project. These network upgrades would not require soil disturbance to install and therefore would not result in the use of water for dust suppression. The utility switchyard and loop-in transmission lines would be under LADWP jurisdiction only during project operation. Water used on the LADWP jurisdictional project components would also be included for the CEC-jurisdictional components.

5.16.3 Project Consistency with Applicable Plans, Policies, and Regulations

Table 5.16-1 below details staff's determination of consistency with applicable local, state and federal plans, policies, and regulations, including any proposed Conditions of Certification (COCs), where applicable, to ensure the jurisdictional components of the project would be consistent with plans, policies, and regulations. As shown in this table, staff concludes that with implementation of specific COCs, the proposed jurisdictional components of the project would be consistent with all applicable plans, policies, and regulations. The subsection below, "Proposed Conditions of Certification (COCs)," contains the full text of the referenced COCs.

TABLE 5.16-1 PROJECT CONSISTENCY WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS

Applicable Plans, Policies, and Regulations	Consistency and Basis For Determination
Federal	
Clean Water Act, U.S. Code § 1342 (b) allows states to establish programs to issue NPDES permits.	**Yes.** During construction of the project, a storm water permit would be obtained under the General Construction NPDES program administered by the SWRCB and Lahontan RWQCB as described in **WATER-1** per authority granted under U.S. Code § 1342 (b).
State	
California Well Standards, DWR Bulletins 74-81 and 74-90, 2020 Statewide Grout Sealing Advisory.	**Yes.** Groundwater production wells would be installed in accordance with California well standards per COC **WATER-5.**
California Water Code §4999 requires notification for groundwater extraction in excess of 25 AFY per year	**Yes.** During project construction, groundwater extraction would exceed 25 AFY and the project would notify the SWRCB per COC **WATER-7**.
Local	
San Bernardino County Ordinance: § 35.0101 Pollutant Discharge Elimination System Regulations.	**Yes.** During construction of the project, a storm water permit would be obtained under the General Construction NPDES program administered by the SWRCB and Lahontan RWQCB as described in **WATER-1** per authority granted under U.S. Code § 1342 (b).
§ 33.06551 Desert Groundwater Management Ordinance (DGMO)	**Yes.** Groundwater production wells would be installed in according to DGMO requirements per COC **WATER-5**. The Soda Mountain groundwater subbasin resource would be monitored per COC **WATER-6.**

5.16.4 Conclusions and Recommendations

As discussed above, with implementation of COCs, the project would have a less than significant impact related to water resources and would be consistent with applicable plans, policies, and regulations. Staff recommends adopting the COC as detailed in subsection "5.16.5 Proposed COCs" below. The conditions below are enforceable as part of the CEC's certificate for the portions of the project constituting the site and related facilities.

Impacts associated with project components outside of the CEC's jurisdiction, such as the construction and operation of protection setting upgrades to the Marketplace and Adelanto substations and operation of the utility switchyard, considered for permitting by the LADWP, require mitigation to be less than significant.

5.16.5 Proposed Conditions of Certification

NPDES CONSTRUCTION PERMIT REQUIREMENTS

WATER-1 The project owner shall manage stormwater discharges from project construction activities by fulfilling the requirements contained in State Water

Resources Control Board's NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit, or CGP) (Order No. 2022-0057-DWQ, NPDES No. CAS000002) and all subsequent revisions and amendments. Among the requirements of the General Permit, the project owner shall file permit registration documents electronically using the Stormwater Multiple Applications and Report Tracking Systems (SMARTS), submit a Notice of Intent (NOI), and develop and implement a construction Stormwater Pollution Prevention Plan (SWPPP) for project construction (Construction SWPPP). The SWPPP shall include all best management practices (BMPs) applicable for the project construction activities conducted in the local environment. The SWPPP must be prepared by a State-Qualified SWPPP Developer (QSD).

Verification: At least thirty (30) days prior to site mobilization, the project owner shall submit to the Compliance Project Manager (CPM) proof that an NOI was filed for the construction general permit and that a waste discharge identification number (WDID) was issued by the 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 Lahontan Regional Water Quality Control Board (LRWQCB) concerning the CGP. This information shall include the NOI, any updates to the construction SWPPP, and the notice of termination. The project owner shall notify the CPM in writing of any reported non-compliance and include these in the annual compliance report. Any monitoring documentation associated with the SWPPP shall be included in the annual compliance report.

OPERATIONS DRAINAGE, EROSION AND SEDIMENTATION CONTROL PLAN

WATER-2 Prior to commencing project operations, the project owner shall obtain CPM approval of a site-specific operations Drainage, Erosion and Sedimentation Control Plan (DESCP) that addresses all project elements of stormwater management during project operations. The DESCP shall include the following:

- Discussion, site maps, plans and applicable BMPs demonstrating how stormwater and sediment erosion shall be managed during project operation. This includes the solar array areas without temporary drainage ditches or sedimentation basins used during project construction.
- Discussion explaining how all proposed BMPs are properly sized to accommodate a credible peak storm event.
- Discussion of BMPs deployment and materials management practices at the project site.
- Discussion and schedule of BMP inspections, storm event monitoring, and stormwater management structure maintenance.

The DESCP shall be prepared by a State-Qualified QSD. The DESCP shall be prepared in consultation with the CEC, BLM, LRWQCB.

Verification: At least thirty (30) days prior to project operation, the project owner shall submit a copy of the Operations DESCP to the CPM, BLM, and the LRWQCB for review and approval. The project owner shall notify the CPM in writing of any reported non-compliance and include these in the annual compliance report. Any monitoring documentation associated with the DESCP shall be included in the annual compliance report.

CHANNEL MAINTENANCE PROGRAM

WATER-3 The project owner shall develop and implement a Channel Maintenance Program for routine maintenance of the Soda Mountain Solar (SMS) Project stormwater channels. The program shall include all channel maintenance as needed to protect the integrity of the channels from erosion and sedimentation.

A. **Purpose and Objectives.** The program goals shall be to maintain storm water channels over the life of the project to meet their original design capacity for flood protection and conveyance and maintain groundwater recharge. Channels must have adequate capacity to convey the maximum designed flood stage flow and still maintain two feet of freeboard.

B. **Channel Maintenance Area.** The channel maintenance area shall be defined as the SMS project engineered channels, which would extend to the top of the channel bank.

C. **Channel Maintenance Activities.**

i. Sediment Removal. Sediment shall be removed if:

1. the effective channel flood capacity has been reduced to less than the design discharge;
2. appurtenant hydraulic structures are prevented from functioning as intended; or
3. a permanent, non-erodible barrier to instream flows has developed.

ii. Vegetation Management. Vegetation shall be managed in and adjacent to the channels to maintain hydraulic capacity. Vegetation management shall include control of invasive and nonnative vegetation.

iii. Bank Protection and Grade Control Repairs. Bank protection and grade control structure repairs shall be conducted by the project owner to repair eroding banks, incising toes, scoured channel beds, and as preventative erosion protection. The project owner shall implement instream repairs when channel damage:

1. causes or could cause significant damage to the project, adjacent property, or the structural elements of the channels;
2. is a public safety concern; or
3. negatively affects groundwater recharge.

iv. Routine Channel Maintenance. Routine channel maintenance shall include: trash and debris removal to maintain channel design capacity; repair and installation of fences, gates and signs; and grading and other repairs to restore the original contour of access roads and levees (if applicable).

D. **Channel Maintenance Plan and Reporting.**

i. Channel Maintenance Plan. The Channel Maintenance Plan shall include:

1. the maintenance standards for each project channel;
2. policies to guide decision-making to ensure the maintenance standards are enforced;
3. procedures and BMPs to implement to ensure implementation of the policies; and
4. procedures and BMPs for sediment management, vegetation management, trash and debris removal, fence repairs, and access road maintenance.

ii. Channel Maintenance Reporting. The following plans and reports shall be submitted to the CPM each year as part of the Annual Compliance Report:

a. Channel Maintenance Workplans. These workplans shall describe the planned "major" maintenance activities and extent of work to be accomplished.

b. Annual Channel Maintenance Report. This report shall specify which maintenance activities were completed during the year including type of work, location, and measure of the activity (e.g. cubic yards of sediment removed). This report shall also include an evaluation of the effectiveness of both resource protection and maintenance methods used throughout the year.

Verification: At least sixty (60) days before the start of project operation, the project owner shall submit to the CPM a Channel Maintenance Plan for review and approval. The project owner shall provide written notification to the CPM at least sixty (60) days in advance of any planned changes to the Channel Maintenance Plan.

In addition, the project owner shall:

1. Implement the Channel Maintenance Plan in Item D (Channel Maintenance Plan and Reporting);
2. Ensure that the SMS project Construction and Operations Managers receive training on the Channel Maintenance Plan; and

3. As part of the Annual Compliance Report, submit an Annual Channel Maintenance Report that specifies which maintenance activities were completed during the year including type of work, location, and measure of the activity (e.g. cubic yards of sediment removed).

COMPLIANCE WITH CLEAN WATER ACT SECTION 401

WATER-4 The project shall require construction of (3) engineered channels, (13) low grade road crossings, and (3) culvert road crossings associated with ephemeral streambeds that have been determined to be Water of the State in the updated jurisdictional delineation report prepared for the application (RE 2025aaaa). The United States Army Corp of Engineers (USACE) previously determined that no ephemeral streambeds on the project were Water of the United States. Therefore, the applicant shall apply for dredge and fill waste discharge requirements (WDRs) with the LRWQCB, following the *State Policy for Water Quality Control: State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* in accordance with the applicable requirements of division 7 of the Water Code and California Code of Regulations, title 23, Section 3855.

Verification: At least sixty (60) days prior to construction, the project owner shall apply to the LRWQCB for coverage under dredge and fill WDRs, include all necessary information and applicable fees, submitting copies of all application submittals to the CPM. Within ten (10) days of its mailing or receipt, the project owner shall submit to the CPM any correspondence with the SWRCB or the LRWQCB about the SWRCB Order for discharge of stormwater associated with this activity. The project owner shall notify the CPM in writing of any violations and include these in the annual compliance report. Any monitoring documentation associated with the SWRCB Order shall be included in the annual compliance report.

GROUNDWATER PRODUCTION & MONITORING WELL INSTALLATION

WATER-5 Water used for project construction and operation shall be groundwater produced from up to (5) well(s) to be installed along the eastern edge of the project site (RE 2025eeee). In addition, up to (9) wells shall be installed to monitor groundwater levels and quality to assess any possible negative impacts to the local groundwater resource. Groundwater monitoring well locations shall be selected per consultation between the CPM, project owner, LRWQCB and the San Bernardino County Department of Environmental Health Services (SBCEHS).

A Groundwater Well Installation Workplan (GWIW) shall be submitted to the CPM, LRWQCB, and SBCEHS, for review and approval. The GWIW shall include the following:

1. A scaled map showing the site and vicinity, and production and monitoring wells proposed for construction;

2. Description of proposed drilling and well installation methods;
3. Proposed monitoring well design; and,
4. schedule for completion of the work.

Groundwater production and monitoring wells shall be installed and constructed per applicable California Water Code section, California well standards (DWR bulletins 74-81 and 74-90, 2020 Statewide Advisory: Dealing Materials for Water Wells, Monitoring Wells, Cathodic Protection Wells, and Geothermal Heat Exchange Wells), and the San Bernardino County Desert Groundwater Management Ordinance (§ 33.06551).

Verification: At a frequency determined by the CPM, the project owner shall keep the CPM apprised of all aspects of production and monitoring well installation. At least (18) month prior to construction, the project owner shall submit the Groundwater Well Installation Workplan (GWIW) to the CPM, LRWQCB, and SBCEHS for review and approval. At least (15) months prior to construction, the project owner shall initiate groundwater well installation. At least (3) months prior to construction, the project owner shall submit a Groundwater Well Installation Report (GWIR), along with the Groundwater Monitoring and Reporting Plan as required by COC **WATER-6**.

GROUNDWATER MONITORING AND REPORTING

WATER-6 The Project owner shall submit a Groundwater Monitoring and Reporting Plan (GMRP) to the CPM and the LRWQCB for review and approval. The Project owner shall also provide a copy of the GMRP to the SBCEHS for review to ensure compliance with the DGMO.

In concert with the goals of the LRWQCB Basin Plan and the San Bernardino County DGMO, the groundwater monitoring program shall accomplish the following objectives:

- Establish ambient pre-construction Project related groundwater elevation and quality conditions.
- Monitor groundwater elevation and quality data trends and identify any potential changes that could be attributed to Project pumping.
- Identify if Project groundwater pumping is causing an overdraft condition or adversely affecting the Soda Mountain groundwater subbasin aquifer.
- Identify if Project groundwater pumping is adversely affecting groundwater migration to the adjacent Soda Lake Groundwater Basin (6-033) from the east and southeast outlet of the Soda Mountain subbasin.
- Avoid, minimize, or mitigate significant impacts to sensitive receptors (springs and possible groundwater-dependent vegetation).

Prior to project construction, monitoring shall commence to establish pre-construction groundwater conditions in the well proposed for the program. Monitoring shall continue during construction and project operation. Water quality sampling shall be implemented during groundwater level monitoring events using the monitoring well network established as a result of COC **WATER-5**. The GMRP shall include the Groundwater Well Installation Report (GWIR) as a requirement of COC **WATER-5**.

Also prior to project construction, a well reconnaissance shall be conducted to investigate and document the condition of any existing water supply wells located within 2 miles of the project site. This may include a search of online resources, such as the California Department of Water Resources (DWR) Well Completion Report map interface, followed up by physical verification. If applicable, the reconnaissance shall include sending notices by registered mail to property owners.

The GMRP shall provide a description of the methodology for monitoring background and site groundwater levels and quality and shall consist of the following:

1. Scaled map showing the site and vicinity, newly installed production and monitoring well locations, relevant natural and man-made features (existing and proposed as part of this project).
2. Well reconnaissance results;
3. Drilling methods employed, well construction as-builts, borehole lithology for each of the newly installed production and monitoring wells, and results of well development;
4. Description of the methodology for monitoring background and site groundwater elevation and quality; and,
5. Description of analytes and analytical methods proposed to analyze groundwater samples such as TDS, major cations and anions, metals, oxygen-18 and deuterium isotopes, and any other constituents the CPM deem necessary to monitor water quality trends.

Prior to project construction, all network production and monitoring wells shall be sampled, and all groundwater quality and groundwater level monitoring data shall be reported to the CPM in a Groundwater Monitoring Report (GMR) that shall include the following:

1. An assessment of pre-project groundwater levels, a summary of available climatic information (monthly average temperature and rainfall records from the nearest weather station).
2. As assessment of pre-project groundwater quality based on groundwater sample analytical results.

3. The data shall be tabulated, summarized, and submitted to the CPM. The data summary shall include the estimated range (minimum and maximum values), average, and median for each constituent analyzed. If a sufficient number of data points are available, the data shall also be analyzed using the Mann-Kendall test for trend at 90 percent confidence to assess whether pre-project water quality trends, if any, are statistically significant.

Verification: The Project owner shall complete the following:

At least six (6) weeks prior to the start of construction activities, the GRMP shall be submitted to the CPM, LRWQCB and SBCEHS for review and approval.

At least four (4) weeks prior to use of any groundwater for construction, all groundwater quality and groundwater level monitoring data shall be reported to the CPM.

During project construction and during the first two years of project operations, the Project owner shall monitor groundwater elevation and quality on a quarterly basis. Between two and years of project operation, groundwater elevation and quality shall be reported semi-annually. All groundwater quality and elevation and data shall be submitted to the CPM.

After the first five year operational and monitoring period, the Project owner shall submit a 5-year monitoring report to the CPM that submits all monitoring data collected and provides a summary of the findings. The CPM, with consultation with the LRWQCB and SBCEHS shall determine if groundwater sampling frequencies should be revised or any analyzes eliminated.

Any testing results or correspondence exchanged between the project owner and the LRWQCB or the SBCEHS during operations shall be provided to the CPM in the annual compliance report. All results and diagrams associated with groundwater production/monitoring well installation shall be included in the annual compliance report.

WATER USE AND REPORTING

Water Use and Reporting

WATER-7 Water supply for project construction and operation shall be groundwater extracted from the project site via (5) production wells. Since the project site in within an unincorporated and unadjudicated desert region of San Bernardino County, groundwater extraction shall comply with the DGMO. Water use during construction shall not exceed 325 AF and operational water use shall be limited to a maximum of 6 AFY. During project construction, the Project Owner shall file an annual notice with the SWRCB per the requirement of Water Code Sections §4999 for reporting of groundwater production in excess of 25-acre feet per

year. The project owner shall record daily water use for the project construction and operation.

Verification: The Project owner shall file an annual "Notice of Extraction and Diversion of Water" with the SWRCB in accordance with Water Code Sections §4999. The Project Owner shall include a copy of the filling in the annual compliance report. During project construction, the monthly compliance report shall include a summary of monthly water use. The project's annual compliance report shall include a monthly and annual summary of water use identifying construction or operations and water source.

WATER USE AND REPORTING

WATER-8 The project proposes to use portable sanitary facilities during project construction maintained by a local contractor. During project operations, no permanent sanitary facilities are planned for the project operation since the facility would be operated and monitored remotely. Any wastes from portable sanitary facilities shall be disposed at a location approved by the SBCEHS per San Bernardino County ordinance § 33.06551.

Verification: (30) days prior to commencing project construction, the project owner will identify the local sanitary facility vendor and supply evidence to the CPM that sanitary facility waste will be disposed at a SBCEHS approved disposal facility. If the use of portable sanitary facilities becomes necessary for project operations the project owner shall notify the CPM and supply evidence to the CPM that sanitary facility waste will be disposed at a SBCEHS approved disposal facility. Any invoices for sanitary facility services, as well as any applicable correspondence, shall be submitted in monthly and annual compliance reports.

FLUVIAL GEOMORPHIC STORMWATER DESIGN PLAN

WATER-9 Prior to project construction and concurrent with final engineering, the project owner shall prepare and submit a Final Fluvial Geomorphic Stormwater Design Plan (FGSDP) to the Compliance Project Manager for review and approval.

The FGSDP shall incorporate fluvial geomorphic design principles to both preserve and create stable, self-sustaining stream channels and floodplains that maintain and/or mimic natural hydrologic and sediment transport processes. At a minimum, the FGSDP shall include:

1. Hydrologic and Hydraulic Modeling: Quantitative modeling demonstrating that the existing and proposed channel dimensions, slope, roughness, and floodplain geometry maintain or restore the natural balance between flow regime, sediment transport, and channel form under design storm conditions. Modeling shall also demonstrate that stormwater management measures shall be implemented to ensure that maximum velocities at any location would not

exceed velocities corresponding to existing conditions by more than 10 percent for any of the design storms. Modeling shall comply with all applicable local, state, and federal hydrology requirements, including peak flow attenuation and water quality treatment standards.

2. Sediment Transport Analysis: A detailed sediment transport evaluation demonstrating that the design will achieve long-term geomorphic stability, minimize erosion and deposition hazards, and avoid the need for routine structural maintenance. The analysis shall document sediment supply assumptions, boundary conditions, and modeled performance.
3. Design Features: Specific engineered elements that implement the fluvial geomorphic principles identified in Attachment 1, including, but not limited to, bankfull channel geometry, floodplain benches, energy dissipation features, riparian roughness treatments, and grade-control structures where necessary to ensure long-term stability.
4. Performance Standards: The design shall result in a channel and floodplain system that:
    - Maintains lateral and vertical stability under the 2-, 10-, and 100-year storm events;
    - Prevents excessive scour, headcutting, or over-widening;
    - Supports natural sediment transport continuity; and
    - Does not increase downstream erosion or flooding risk compared to existing conditions.
5. Implementation Requirements: All grading, construction, and restoration activities shall be completed in accordance with the approved FGSDP. Any field modifications required due to site conditions shall be reviewed and approved by the California Energy Commission prior to implementation to ensure consistency with the performance standards above.

The FGSDP shall be prepared and stamped by a licensed civil engineer or qualified fluvial geomorphologist with demonstrated experience in natural channel design.

Verification:

At least thirty (30) days prior to site mobilization, the project owner shall submit a copy of the FCSDP to the CPM, BLM, and the LRWQCB for review and approval. 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 LRWQCB or BLM concerning the FCSDP. The project owner shall notify the CPM in writing of any reported non-compliance with the FCSDP and include these in the annual compliance report. Any monitoring documentation associated with the FCDSP shall be included in the annual compliance report.

5.16.6 Recommended Mitigation Measures

For the non-jurisdictional components of the project, the following mitigation measure can and should be adopted by the agency with permitting authority over those components consistent with California Code of Regulations title 14, section 15091(a)(2).

MM WATER-1 Prior to commencing project operations of the utility switchyard, LADWP shall prepare a site-specific operations Drainage, Erosion and Sedimentation Control Plan (DESCP) that addresses all project elements of stormwater management during project operations. The DESCP shall include the following:

- Discussion, site maps, plans and applicable best management practices (BMPs) demonstrating how stormwater and sediment erosion shall be managed during project operation.
- Discussion of BMPs deployment and materials management practices at the project site.
- Discussion and schedule of BMP inspections, storm event monitoring, and stormwater management structure maintenance.

5.16.7 References

Barstow 2025 – City of Barstow, Community Development Department, Planning Division (Barstow). City of Barstow General Plan 2048 website. Undated daily. Available online at: https://www.barstowca.org/departments/community-development-department/planning/general-plan-update

BLM 2013a – United States Department of Interior, Bureau of Land Management (BLM). Soda Mountain Solar Project, Draft Plan Amendment, Environmental Impact Statement, Environmental Impact Report, CACA #049584, Appendix E-1 Biological Resources Technical Report. Prepared by Panorama Environmental, Inc. March 2013. Available online at: https://eplanning.blm.gov/public_projects/nepa/66043/80126/93146/Vol_2_Soda_Mtn_EIS-EIR_App_E-I_508.pdf

BLM 2013b – United States Department of Interior, Bureau of Land Management (BLM). Soda Mountain Solar Project, Draft Plan Amendment, Environmental Impact Statement, Environmental Impact Report, CACA #049584, Appendix H-2 Hydrogeologic Conditions and Groundwater Modeling Report. Prepared by RMT, Inc. March 1, 2011. Available online at: https://eplanning.blm.gov/public_projects/nepa/66043/80126/93146/Vol_2_Soda_Mtn_EIS-EIR_App_E-I_508.pdf

BNSF 2025 – Burlington Northern and Santa Fe Railway (BNSF). Barstow Internation Gateway Project website. Undated daily. Available online at: https://bnsfbig.com/

Brightline 2025 – Brightline West informational website. Updated daily. Available online at: https://www.brightlinewest.com/

CDMG 1962 – California Division of Mines and Geology (CDMG). Geologic Map of California, Trona Sheet. Olaf P. Jenkins edition. Compiled by Jennings, C.W., Burnett, J.L., and Troxel, BW. Available online at: https://www.conservation.ca.gov/cgs/Documents/Publications/Geologic-Atlas-Maps/GAM_23-Trona-1962-Map.pdf

Caltrans 2023 – California Department of Transportation (Caltrans). CEQA Exemption/NEPA Categorical Exclusion Determination, I-15 Mojave Wildlife Crossings (08-SBD-15). November 11, 2023. Available online at: https://files.ceqanet.lci.ca.gov/292080-1/attachment/sHbUoZdy6MA6R-y5sD6X3oX_o5CLsBldRgjhJnMSe_2-HWjwgB-cMoSb_eBkhAc3XZHN7GnzkQBddluP0

Daggett CSD 2022 – Daggett Community Services District (Daggett CSD). 2022 Consumer Confidence Report, Water System Information. Revised January 2022. Available online at: https://www.daggettcsd.org/files/47e50cd00/2022+Daggett+CCR+%281%29.pdf

DWR 2020 – Department of Water Resources (DWR). SGMA Basin Prioritization Dashboard. Last updated March 13, 2020. Available online at: https://gis.water.ca.gov/app/bp-dashboard/final/

DWR 2024 – Department of Water Resources (DWR). Water Management Boundary Tool. Last updated April 11, 2024. Available online at: https://gis.water.ca.gov/app/boundaries/

DWR 2025a – Department of Water Resources (DWR). Well Completion Report Map Application. Last updated on June 27, 2025. Available online at: https://www.arcgis.com/apps/webappviewer/index.html?id=181078580a214c0986e2da28f8623b37

DWR 2025b – Department of Water Resources (DWR). Dam Breach Inundation Map Web Publisher. Updated daily. Available online at: https://fmds.water.ca.gov/webgis/?appid=dam_prototype_v2

FEMA 2025a – Federal Emergency Management Agency (FEMA). FEMA's National Flood Hazard Layer (NFHL) Viewer. Last updated June 27, 2025. Available online at: https://hazards-fema.maps.arcgis.com/apps/webappviewer/index.html?id=8b0adb51996444d4879338b5529aa9cd&extent=-115.70776478488663,33.1293292575238,-115.54159657199627,33.201177794023735

FEMA 2025b – Federal Emergency Management Agency (FEMA). What are Flood Zones and Maps website. Updated daily. Available online at: https://www.floodsmart.gov/flood-zones-and-maps/what-is-my-flood-zone#zoneD

NOAA 2024 – National Oceanic and Atmospheric Administration, National Hurricane Center (NOAA). National Hurricane Center Tropical Cyclone Report, Hurricane

Hiliary (EP092023). February 12, 2024. Available online at: https://www.nhc.noaa.gov/data/tcr/EP092023_Hilary.pdf

NOAA 2025a – National Oceanic and Atmospheric Administration (NOAA). Digital Coast, Sea Level Rise Viewer. Updated on April 11, 2025. Available online at: https://coast.noaa.gov/slr/

NOAA 2025b – National Oceanic and Atmospheric Administration (NOAA). NOAA's National Weather Service, Hydrometeorological Design Studies Center, Precipitation Frequency Data Server (PFDS). Last updated October 21, 2025. Available online at: https://hdsc.nws.noaa.gov/pfds/pfds_map_cont.html?bkmrk=ca

NOAA 2025c – National Oceanic and Atmospheric Administration (NOAA). California Nevada River Forecast Center. Updated daily. Available online at: https://www.cnrfc.noaa.gov/monthly_precip_2024.php

RE 2024p – Resolution Environmental (TN 257915). Appendix A3 Engineering Generation Facility Description, Design and Operation, dated July 23, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2024yyy – Resolution Environmental (TN 259712). Appendix R Waste Management Plan - October 2024 - Revision 1, dated October 25, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025k – Resolution Environmental (TN 261595). Chapter 2_Project Description, dated February 7, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025q – Resolution Environmental (TN 261601). Section 310 Hydrology and Water Quality, dated February 7, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025t – Resolution Environmental (TN 261604). Appendix E-1 Aquatic Resources Delineation, dated February 7, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025y – Resolution Environmental (TN 261668). CEC Data Request Response Set #2, dated February 10, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025xx – Resolution Environmental (TN 265147). Onsite Water Supply - Reference Document 2, dated July 30, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025yy – Resolution Environmental (TN 265148). Hydrogeological Conditions and Groundwater Modeling Report Addendum - Reference Document 3, dated July 30, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025ddd – Resolution Environmental (TN 265183). Onsite Water Supply - Revised July 31, 2025, dated July 31, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025yyy – Resolution Environmental (TN 266599). Geophysical Characterization of Subsurface Physical Properties, dated October 15, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025zzz – Resolution Environmental (TN 266600). 2014 Groundwater Well Test Report, dated October 15, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025aaaa – Resolution Environmental (TN 266855). Updated JD Report Volume 1, dated October 27, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025bbbb – Resolution Environmental (TN 266856). Updated JD Report Volume 2, dated October 27, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025cccc – Resolution Environmental (TN 266857). Updated JD Report Volume 3, dated October 27, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025eeee – Resolution Environmental (TN 266918). Updated Figures 2.7 and 2.8, dated October 29, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025jjjj – Resolution Environmental (TN 267972). MM HYD-1, dated December 18, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

San Bernardino County 2003 – San Bernardino County, Board of Supervisors (San Bernardino County). Memorandum of Understanding, Between San Bernardino County, And Bureau of Land management, Regarding County Ordinance No. 3872, Relating To Groundwater Management Unincorporated, Unadjudicated Desert Region Of San Bernardino County. Approved December 2, 2003. Provided by David Alaniz, Program manager, Division of Environmental Health.

San Bernardino County 2021a – San Bernardino County Planning Division, Land Use Services (San Bernardino County). San Bernardino County Initial Study/Mitigated Negative Declaration Environmental Checklist Form, Solar 66, PROJ-2020-00144/ P201800521, Ralph Laks, APN: 0516-011-04 & 0516-012-02, March 2021. Available online at: https://lus.sbcounty.gov/wp-content/uploads/sites/48/Environmental/Solar66/Solar-66-PROJ-2020-00144-IS-revised.pdf

San Bernardino County 2021b – San Bernardino County Planning Division, Land Use Services (San Bernardino County). Land Use Services Department Planning Commission Staff Report, National Trails Solar 33, P201800520/PROJ-2020-00145, APN: 0416-041-52, Planning Commission Hearing: November 18, 2021.

Available online at: https://lus.sbcounty.gov/wp-content/uploads/sites/48/PC/Solar-33-Staff-Report-FINAL.pdf

San Bernardino County 2022 – San Bernardino County. San Bernardino County, Countywide Plan, County Policy Plan. September 2022. Available online at: https://countywideplan.sbcounty.gov/wp-content/uploads/sites/125/2021/01/CWP_PolicyPlan_HardCopy_MainText_Tables_2022_Sept_Adopted.pdf

San Bernardino County 2025a – San Bernardino County Planning Division (San Bernardino County). San Bernardino County land Use Plan, General Plan, Land Use Zoning Districts. Last modified March 20, 2025. Available online at: https://lus.sbcounty.gov/wp-content/uploads/sites/48/GeneralPlan/CIDIA.pdf

San Bernardino County 2025b – San Bernardino County Planning Division, Land Use Services (San Bernardino County). County of San Bernardino, Land Use Services/Planning Division, Renewable Energy Projects as of February 2025. Last modified April 22, 2025. Available online at: https://lus.sbcounty.gov/wp-content/uploads/sites/48/SolarProjectListFEB2025.pdf

San Bernardino County 2025c – San Bernardino County Planning Division, Land Use Services (San Bernardino County). San Bernardino County Environmental Documents, Desert Region website. Updated daily. Available online at: https://lus.sbcounty.gov/planning-home/environmental/desert-region/

San Bernardino County 2025d – San Bernardino County Department of Environmental Health Services (San Bernardino County). What is the Desert Groundwater Management Ordinance (DGMO)? website. Updated daily. Available online at: https://ehs.sbcounty.gov/faqs/what-is-the-desert-groundwater-management-ordinance-dgmo/

San Bernardino County 2025e – San Bernardino County Flood Control District (San Bernardino County). Flood Control Facilities Web map. Updated daily. Available online at: https://www.arcgis.com/apps/mapviewer/index.html?webmap=6ed1bcba6d7c4e14b76cf07593c9875c

USDOT 2011- United States Department of Transportation, Federal Railroad Administration (USDOT). Final Environmental Impact Statement and Final Section 4(f) Evaluation for the Proposed DersertXpress High-Speed Passenger Train, Victorville, California to Las Vegas, Nevada, Volume I: Report. March 2011. Available online at: https://railroads.dot.gov/rail-network-development/environment/environmental-reviews/brightline-west-las-vegas-victor-valley

SWRCB 2025 – State Water Resources Control Board (SWRCB). GeoTracker website. Updated daily. Available online at: https://geotracker.waterboards.ca.gov/

USACE 2013 – United States Army Corp of Engineers (USACE). Approved Jurisdictional Determination Form, U.S. Army Corp of Engineers, Los Angeles District, Soda

Mountain Solar Project, SPL-2010-01042-SLP.June 5, 2013. Available online at: https://www.spl.usace.army.mil/Missions/Regulatory/Final-Regulatory-Actions/

USEPA 2025 – United States Environmental Protection Agency (USEPA). How's My Waterway? EPA website. Last updated on June 23, 2025. Available online at: https://mywaterway.epa.gov/state/CA/water-quality-overview

Section 6

Environmental Justice

6 Environmental Justice

6.1 Policy Drivers

California law defines environmental justice (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(e)). In keeping with its commitment to environmental sustainability and access to all, California was one of the first states to codify the concept of EJ in its statutes. The California Natural Resources Agency (CNRA) and the CEC have adopted this definition in respective Environmental Justice Policies.[1] The CNRA policy directs all departments, boards, commissions, conservancies and special programs of the CNRA to 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.

The California Natural Resources Agency (which oversees the CEC) 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. EJ efforts attempt to address the inequities of environmental protection in these communities.

Beyond the fair treatment principles described in statute, CEC considers EJ during its staff assessment process. CEC has included EJ analyses in its environmental review of power plant siting cases for over two decades. CEC's goal is to ensure, through equal access to the decision-making process, everyone has equal protection from environmental and health hazards and can live, learn, play, and work in a healthy environment.

Environmental Justice in the Energy Commission Siting Process

As described above, EJ analysis is part of the CEC's site certification process. CEC uses U.S. Census (Census) data to identify minority and/or low-income populations (i.e., an

1 https://www.conservation.ca.gov/Documents/Environmental%20Justice%20Policy%20-%20CNRA.pdf and https://www.energy.ca.gov/sites/default/files/2023-11/CEC-JAEDI-Framework_ada.pdf

EJ population). Consideration is also given to the California Environmental Protection Agency's (CalEPA) California Communities Environmental Health Screening Tool (CalEnviroScreen 4.0) to identify communities most affected by many sources of pollution, and where people are often especially vulnerable to pollution's effects (referred to as a disadvantaged community by CalEnviroScreen). The "Environmental Justice Project Screening" subsection below, presents the demographic data for those people living within a six-mile radius of the proposed project site and a determination of presence or absence of an EJ population. When an EJ population is identified, the analyses in nine technical areas[2] consider the project's impacts on this population and if those impacts would disproportionately affect the EJ population. The "Project Outreach" subsection below discusses the CEC's outreach program specifically as it relates to the proposed project.

Disadvantaged Communities Advisory Group (DACAG). California Senate Bill (SB) 350, the Clean Energy and Pollution Reduction Act of 2015, called for the formation of a statewide DACAG, consisting of members either from or representing disadvantaged communities, to advise the CEC and the California Public Utilities Commission (CPUC) regarding the development, implementation, and impacts of proposed programs related to SB 350 and other relevant clean energy programs and policies. Its purpose is to ensure that disadvantaged communities, including Tribal and rural communities, benefit from proposed clean energy and pollution reduction programs (CEC 2024).

Consistent with the CEC's Energy Equity Indicators tool, the DACAG uses the following factors to define "disadvantaged" (including community residents, workers, and businesses) in its work: (1) CalEnviroScreen disadvantaged community, as defined by CalEPA, (2) tribal lands, (3) Census tracts where area median income is less than 80 percent of state median income, and (4) households with median income less than 80 percent of Area Median Income (AMI).

Justice Access Equity Diversity Inclusion (JAEDI). The CEC's JAEDI Initiative started in 2019 as part of CEC's commitment to embedding energy equity and EJ in its energy future. The JAEDI Framework is a mechanism to help establish a common understanding and approach for the CEC to address climate change and ensure all Californians have dignity, health, and prosperity (CEC 2023).

Under the JAEDI criteria, "Justice Communities" is a broad umbrella term that encompasses the following designations: (1) disadvantaged communities, pursuant to

2 The technical areas typically analyzed as part of the CEC Environmental Justice analysis are Air Quality; Cultural and Tribal Cultural Resources; Hazards, Hazardous Materials/Waste and Wildfire; Noise and Vibration; Public Health; Solid Waste Management; Transportation; Visual Resources, and Water Resources.

SB 535,[3] (2) low-income communities, pursuant to Assembly Bill (AB) 1550 (Gomez, Chapter 369, Statutes of 2016),[4] (3) underserved community, pursuant to AB 841 (Ting, Chapter 362, 2020),[5] and (4) people living with disabilities as defined by the Americans with Disabilities Act (ADA).[6]

CEC staff typically conduct the EJ analysis by taking the following steps:

- Identification of a population of minority persons and/or persons with low income (i.e., justice community), living in an area potentially affected by the proposed project;
- Providing notice in appropriate languages (when possible) of the proposed project and opportunities for participation in public workshops for disadvantaged communities;
- Identification of areas potentially affected by various project-related emissions (e.g., air quality, hazardous materials, etc.) or other project-related nuisance effects (e.g., noise, traffic, etc.); and
- A determination of the potential for a significant adverse disproportionate impact on an identified justice population resulting from the proposed project alone, or in combination with other existing and/or planned projects in the area (i.e., from cumulative impacts).

CalEnviroScreen

In 2012, CalEPA developed CalEnviroScreen as a science-based mapping tool that provides an objective method for evaluating multiple pollutants and stressors in local communities, and ultimately for identifying disadvantaged communities pursuant to Health and Safety Code section 39711 as enacted by SB 535 (De León, Stats. 2012, Ch. 830). CalEPA released an updated designation for disadvantaged communities in May 2022 for the purposes of SB 535. As required by state law, disadvantaged communities are identified based on geographic, socioeconomic, public health, and

3 The California Environmental Protection Agency, for purposes of its Cap-and-Trade Program, defines communities in terms of Census tracts and identifies four types of geographic areas as disadvantaged: (1) Census tracts receiving the highest 25 percent of overall scores in CalEnviroScreen 4.0; (2) Census tracts lacking overall scores in CalEnviroScreen due to data gaps, but receiving the highest 5 percent of CalEnviroScreen 4.0 cumulative pollution burden scores; (3) Census tracts identified in the 2017 DAC (disadvantaged community) designation as disadvantaged, regardless of their scores in CalEnviroScreen 4.0; (4) and areas under the control of federally recognized Tribes (CalEPA 2022).
4 (1) Census tracts with median household incomes at or below 80 percent of the statewide median income or at or below the Department of Housing and Community Development designation of low-income, and (2) Households with incomes at or below 80 percent of the statewide median income or at or below the Department of Housing and Community Development designation of low-income.
5 A community in which at least 75 percent of public-school students in the project area are eligible to receive free or reduced-price meals under the National School Lunch Program.
6 An individual with a disability is defined by the ADA as a person who has a physical or mental impairment that substantially limits one or more major life activities, a person who has a history or record of such an impairment, or a person who is perceived by others as having such an impairment.

environmental hazard criteria. CalEnviroScreen identifies impacted communities by taking into consideration pollution exposure and its effects, as well as health and socioeconomic status, at the Census-tract level (OEHHA 2021, pg. 8).

The CalEnviroScreen model incorporates 21 indicators that measure a community's exposure, environmental effects, sensitive population, and socioeconomic factors. Indicators for exposure and environmental effects comprise a Pollution Burden group, and indicators for sensitive populations and socioeconomic factors comprise a Population Characteristics group.

Table 6-1 lists the indicators that go into the Pollution Burden score and the Population Characteristics score to form the final CalEnviroScreen score. These indicators are used to measure factors that affect the potential for pollution impacts in communities.

TABLE 6-1 COMPONENTS THAT FORM THE CALENVIROSCREEN 4.0 SCORE

Pollution Burden	
Exposure Indicators	**Environmental Effects Indicators**
Children's lead risk from housing	Cleanup sites
Diesel particulate matter (PM) emissions	Groundwater threats
Drinking water contaminants	Hazardous waste
Ozone concentrations	Impaired water bodies
PM 2.5 concentrations	Solid waste sites and facilities
Pesticide use	
Toxic releases from facilities	
Traffic density	
Population Characteristics	
Sensitive Populations Indicators	**Socioeconomic Factors Indicators**
Asthma emergency department visits	Educational attainment
Cardiovascular disease (emergency department visits for heart attacks)	Housing burdened low-income households
Low birth-weight infants	Linguistic isolation
	Poverty
	Unemployment

Notes: PM= particulate matter. PM 2.5= fine particulate matter 2.5 microns or smaller.
Source: OEHHA 2021

The CalEnviroScreen model uses U.S. Census tract data as a geographic scale for identifying disadvantaged communities within California. For each Census tract, CalEnviroScreen calculates an overall score by combining the individual indicator scores within each of the two groups (i.e., Pollution Burden and Population Characteristics), then multiplying the Pollution Burden and Population Characteristics scores to produce a final score:

[Pollution Burden] x [Population Characteristics] = CalEnviroScreen Score

- Pollution Burden Score. Pollution Burden scores for each U.S. Census tract are derived from the average percentiles of the eight exposure indicators (ozone and PM2.5 concentrations, diesel PM emissions, drinking water contaminants, children's lead risk from housing, pesticide use, toxic releases from facilities, and traffic

impacts) and the five environmental effects indicators (cleanup sites, impaired water bodies, groundwater threats, hazardous waste facilities and generators, and solid waste sites and facilities). Indicators from the environmental effects component are given half the weight of the indicators from the exposure component. The calculated average Pollution Burden score (average of the indicators) is divided by 10 and rounded to one decimal place for a Pollution Burden score ranging from 0.1 to 10.

- Population Characteristics Score. Population Characteristics scores for each U.S. Census tract are derived from the average percentiles for the three sensitive populations indicators (cardiovascular disease, low birth weight infants, and asthma) and the five socioeconomic factors indicators (educational attainment, linguistic isolation, housing burden, unemployment, and poverty). The calculated average percentile is divided by 10 for a Population Characteristic score ranging from 0.1 to 10.

Since each of the two groups (i.e., Pollution Burden and Populations Characteristics) has a maximum score of 10, the maximum CalEnviroScreen Score is 100. Based on these scores, Census tracts across California are ranked relative to one another. The indicator values for the Census tracts for the entire state are ordered from highest to lowest. A percentile is calculated from the ordered values for all areas that have a score. A higher percentile indicates a higher potential relative burden. A percentile does not describe the magnitude of the difference between two tracts, but rather it simply tells the percentage of tracts with lower values for that indicator (OEHHA 2021, pg. 20).

CalEPA, for purposes of the Cap-and-Trade Program, designated four categories of geographic areas as disadvantaged: (1) Census tracts receiving the highest 25 percent of overall scores in CalEnviroScreen; (2) Census tracts lacking overall scores in CalEnviroScreen due to data gaps, but receiving the highest 5 percent of CalEnviro-Screen cumulative pollution burden scores; (3) Census tracts identified in the 2017 disadvantaged community (DAC) designation as disadvantaged, regardless of their scores in CalEnviroScreen; (4) and areas under the control of federally recognized Tribes (CalEPA 2022).

Staff may use CalEnviroScreen to identify additional disadvantaged communities after screening the study area by race/ethnicity and low income. Staff may use CalEnviro-Screen to assess project effects on communities identified as disadvantaged (i.e., low-income and/or high-minority populations, SB 535-designated disadvantaged commun-ities) by reviewing indicators (see **Table 6-1**) as they relate to specific technical issues being analyzed. The project-specific Census tracts identified as justice communities or disadvantaged are reviewed by CEC technical analysts (Air Quality; Cultural and Tribal Cultural Resources; Hazards, Hazardous Materials and Wildfire; Noise and Vibration; Public Health; Solid Waste Management; Transportation; Visual Resources; and Water Resources) to determine if any disproportionate burdens would be borne by justice populations. For the technical areas of Air Quality and Water Resources, CEC staff review the CalEnviroScreen data for the project area as follows:

- For Air Quality, these indicators are asthma, cardiovascular disease, diesel particulate matter (PM) emissions, low birth-weight infants, ozone concentrations, pesticide use, PM with diameters of 2.5 micrometers or smaller (PM2.5) concentrations, toxic releases from facilities, and traffic impacts.
- For Water Resources, these indicators are drinking water contaminants, groundwater threats, and impaired water bodies.

When these technical areas have identified a potential project impact where an EJ population is present, CalEnviroScreen is used to better understand the baseline 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 alone.

Project Outreach

In 2016, SB 1000 (Leyva, Chapter 587, Statutes of 2016) was enacted to require local governments with disadvantaged communities, as defined in statute, to incorporate EJ into their general plans when two or more general plan elements (sections) are updated. The Governor's Office of Land Use and Climate Innovation (the state's comprehensive planning agency) worked with state agencies, local governments, and many partners to update the General Plan Guidelines in 2020 to include guidance for communities on EJ (LCI 2020). This law has several purposes, including facilitating transparency and public engagement in local governments' planning and decision-making processes, reduce harmful pollutants and the associated health risks in EJ communities, and promote equitable access to health-inducing benefits, such as healthy food options, housing, public facilities, and recreation.

Meaningful involvement is an important part of the siting process and occurs when:

- Those whose environment 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; and
- The concerns of all participants involved are considered in the decision-making process.

CEC staff and the Office of the Public Advisor, Energy Equity, and Tribal Affairs (PAO+) coordinated closely on public outreach early in the review process. The PAO+ outreach consisted of emails to state and local elected officials, EJ organizations, local chambers of commerce, schools and school districts, labor unions and trade associations, community centers, daycare centers, park departments, and religious organizations within a six-mile radius of the proposed project.

On August 1, 2025, CEC staff filed and mailed to the project mailing list, including EJ organizations and similar interest groups, a Notice of Preparation to prepare an Environmental Impact Report. The CEC developed appropriate translations of public

notices based on current U.S. Census English fluency data for the population residing in the cities and communities within a six-mile radius of the project site.

In accordance with the Governor's Executive Order B-10-11, the CEC's Tribal Consultation Policy, the CEC's Siting Regulations, and amendments to CEQA (i.e., AB 52), staff conducted outreach and consultation with regional tribal governments. Additional information regarding the outreach efforts and specific groups contacted can be found in **Section 5.4, Cultural and Tribal Cultural Resources**.

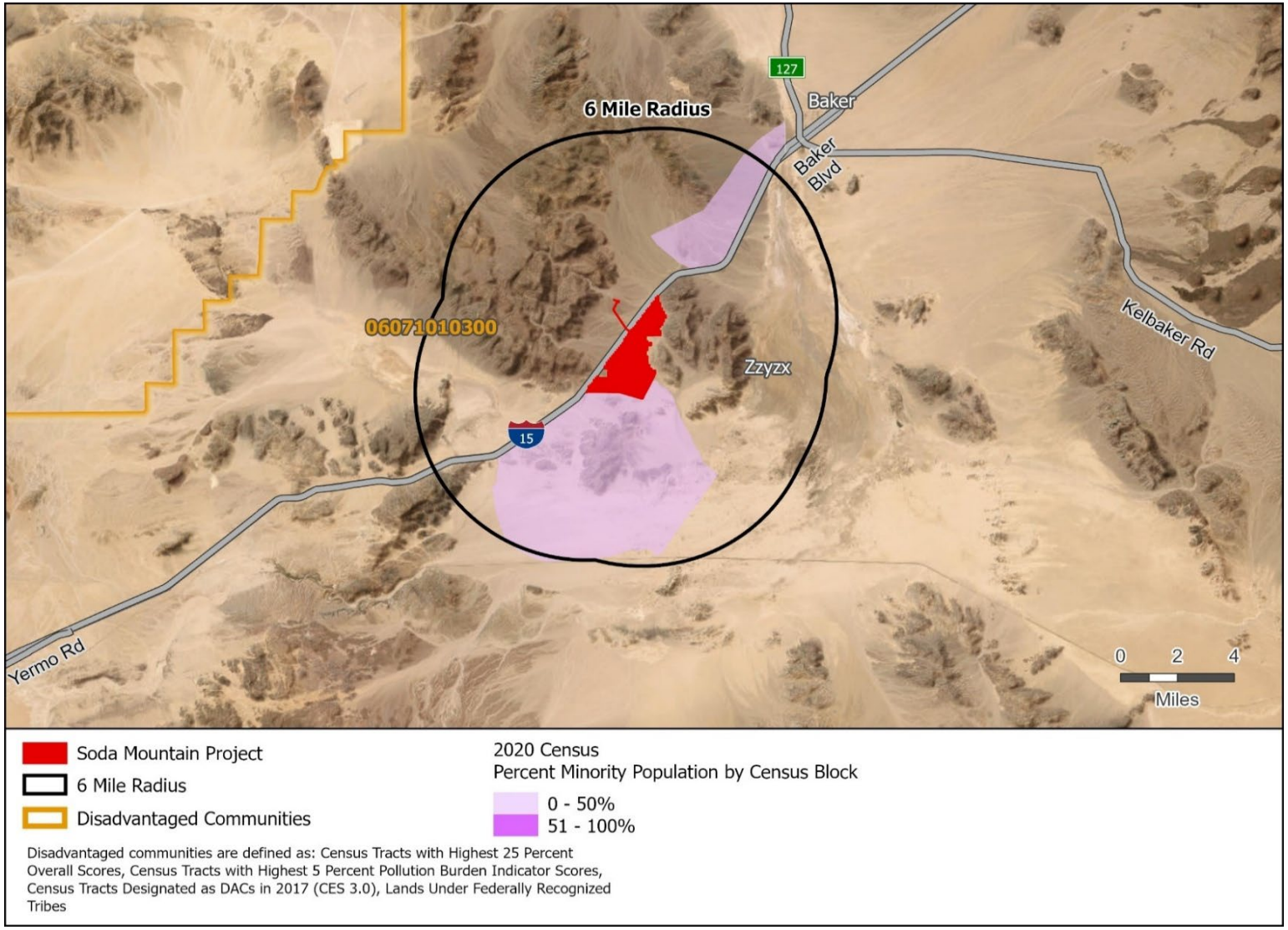
As described in **Section 2, Introduction**, staff exceeded the noticing requirements under CEQA Guidelines Section 15087 by mailing the Notice of Availability of the Draft EIR to all owners and occupants not just contiguous to the project site, but also to property owners within 1,000 feet of project site and 500 feet of project linear facilities.

6.2 Environmental Setting

Environmental Justice Project Screening. For EJ concerns, the CEC staff has historically used a six-mile radius surrounding the project site based on the potential distance that air pollution emissions from a natural gas powerplant can travel. While the proposed project does not include a thermal powerplant, staff retained the six-mile distance due to the rural nature of the area with few residences close by, and the expansive size of the project site.

Figure 6-1 presents the location of the project site, and the 2020 U.S. Census tract boundaries contained within a six-mile radius.

Figure 6-1 Environmental Justice Population and Disadvantaged Communities within Six-Mile Radius of Project Site



Source: U.S. Census, 2020

Table 6-2 presents income data of the six-mile radius area surrounding the project site. The socioeconomic data source is U.S. Census Bureau's American Community Survey (ACS) 2019-2023 5-Year Estimates (ACS 2023). Because ACS estimates come from a sample population, a scertain level of variability is associated with the estimates.[7] For purposes of this analysis, U.S. Census ACS data was used to provide current data, consistency between the data used to identify minority and low-income populations, and consistency between the different geographies presented. Use of published U.S. Census ACS data estimates is commonly used by CEQA Lead Agencies.

TABLE 6-2 INCOME STATISTICS FOR PROJECT SIX-MILE RADIUS

Geography	Total Population (whose poverty status is known)	People with Ratio of Income to Poverty Under 2.00	Percent Low-Income
Six-Mile Radius			
Census Tract 6071010300	**3,341**	**1,665**	**49.8**
Comparison Geography			
San Bernardino County	2,145,516	739,096	34.5

Notes: Low-income population is defined as persons residing in households with incomes at or below twice the federal poverty level (200 percent or a factor of 2.00), consistent with CEQA and Title VI practice. Using ACS Table C17002 ("Ratio of Income to Poverty Level in the Past 12 Months"), the low-income population is approximated by aggregating all income-to-poverty ratio categories 1.99 or lower and excluding the "2.00 and over" category. Because the ACS reports all values at 2.00 and above as a single category, the exact number of individuals at precisely twice the federal poverty level cannot be isolated, and the resulting low-income estimate is therefore a conservative underrepresentation of the true, less than or equal to, 200 percent population. Bolded rows show population where low-income population percentage is greater than the larger comparative geography of San Bernardino County.
Source: ACS 2023

Consistent with CalEnviroScreen (discussed below), for the purpose of this analysis, low-income people are defined as those with an income of less than 2.0 times the federal poverty threshold (U.S. EPA 2015, OEHHA 2021). Within this analysis, an EJ population of concern is identified when the percentage of low-income population of the potentially affected area (i.e., block group or Census tract) is equal to or greater than the low-income population of the greater geography (i.e., the County).

As shown in **Table 6-2**, Census Tract 6071010300, containing Block Group 1 – the only census tract and block group within the project area – contains a low-income population percentage (49.8) that is greater than the larger comparative geography of San Bernardino County (34.5). Therefore, there is an EJ population based on low-income status within a six-mile radius of the project site.

7 Supporting documentation on ACS data accuracy and statistical testing can be found on the ACS website in the Data and Documentation section available here: https://www.census.gov/programs-surveys/acs.html

In this EJ analysis, "minorities" are defined as individuals who are members of the following population groups: American Indian or Alaskan Native, Asian or Pacific Islander, Black not of Hispanic origin, or Hispanic. The minority population was calculated by subtracting the "white alone, not Hispanic or Latino," (as defined by the U.S. Census) population from the total population. Within this analysis, an EJ population of concern is identified when the minority population of the potentially affected area (i.e., Census tract) is greater than 50 percent. Guidance from U.S. EPA suggests using regional low-income definitions as appropriate (U.S. EPA 2015). Due to the higher cost of living in California as compared to the nation as a whole, a higher threshold is appropriate for the identification of low-income populations.

Figure 6-1 indicates that no Census blocks within a six-mile radius meet the Council on Environmental Quality minority-population criteria, defined as areas where the minority either (1) exceeds 50 percent or (2) is meaningfully greater than the minority of the comparative geography (CEQ 1997).

CalEnviroScreen Results. CalEnviroScreen 4.0 was used to gather additional information about the population potentially impacted by the proposed project. The CalEnviroScreen indicators (see **Table 6-1**) are used to measure factors that affect the potential[8] for pollution impacts in disadvantaged communities, as defined by CalEnviroScreen. Staff used CalEnviroScreen to identify if additional disadvantaged communities[9] were in the vicinity of the proposed project and better understand the characteristics of the areas where impacts would occur.

Table 6-3 presents the CalEnviroScreen overall scores for the disadvantaged communities within a six-mile radius of the project site. The location of the census tract is shown in **Figure 6-1**. **Table 6-4** presents the CalEnviroScreen 4.0 percentiles for the indicators that make up the pollution burden percentile. **Table 6-5** presents the percentiles for the indicators that make up the population characteristics.

8 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 projects. 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

9 The CalEPA, for purposes of its Cap-and-Trade Program, defines communities in terms of Census tracts and identifies four types of geographic areas as disadvantaged: (1) Census tracts receiving the highest 25 percent of overall scores in CalEnviroScreen 4.0; (2) Census tracts lacking overall scores in CalEnviroScreen 4.0 due to data gaps, but receiving the highest 5 percent of CalEnviroScreen 4.0 cumulative pollution burden scores; (3) Census tracts identified in the 2017 DAC designation as disadvantaged, regardless of their scores in CalEnviroScreen 4.0; (4) and areas under the control of federally recognized Tribes (CalEPA 2022).

TABLE 6-3 CALENVIROSCREEN SCORES FOR DISADVANTAGED COMMUNITIES

Census Tract No.	Total Population	CalEnviroScreen Percentile	Pollution Burden Percentile	Population Characteristics Percentile	Disadvantaged Community Category
6071010300	3,547	75	62	77	CalEnviroScreen 4.0 Top 25 percent

Note: Disadvantaged community by Census tract in the project's six-mile radius. CalEnviroScreen uses 2010 Census tracts, which are different from the updated Census tracts used in **Table 6-3** through **Table 6-5.**
Source: CalEnviroScreen 4.0

TABLE 6-4 CALENVIROSCREEN INDICATOR PERCENTILES FOR POLLUTION BURDEN FOR DISADVANTAGED CENSUS TRACTS

Census Tract No.	Percentiles													
	Pollution Burden	Ozone	PM2.5	Diesel PM	Drinking Water	Lead	Pesticides	Toxic Release	Traffic	Cleanup Sites	Groundwater Threats	Hazardous Waste	Impaired Water Bodies	Solid Waste
6071010300	62	77	7	4	87	39	39	3	14	94	93	79	0	100

Source: CalEnviroScreen 4.0

TABLE 6-5 CALENVIROSCREEN INDICATOR PERCENTILES FOR POPULATION CHARACTERISTICS FOR DISADVANTAGED TRACTS

Census Tract No.	Percentiles								
	Population Characteristics	Asthma	Low Birth Weight	Cardiovascular Disease	Education	Linguistic Isolation	Poverty	Unemployment	Housing Burden
6071010300	77	55	99	74	54	38	76	95	34

Source: CalEnviroScreen 4.0

Summary of Justice Communities

The project site is located within a single block group that occupies the largest census tract in California. This census tract is included in CalEnviroScreen 4.0 and is designated as a disadvantaged community for the purpose of SB 535 because its overall CalEnviroScreen score falls within the highest 25 percent statewide. CalEnviroScreen relies on 2020 Census tract boundaries, which encompass much of the surrounding region. Within a six-mile radius of the project site, the CalEnviroScreen tract is classified as disadvantaged under the low-income criterion, reflecting a higher proportion of residents below the poverty level compared to San Bernardino County overall.

It is important to note that although the census tract receives a CalEnviroScreen disadvantaged designation, the six-mile study area contains no residential communities. The area surrounding the project site is sparsely populated and does not include any concentrated or identifiable community of residents. Minority individuals or low-income households are present as isolated residences rather than forming a community with shared demographic characteristics. The nearest potentially disadvantaged community under SB 535 is the community of Baker, located approximately 7.2 miles northeast of the project site. In addition, CalEPA's designation criterion relating to lands under the control of federally recognized tribes does not apply, because no tribal lands are present within the study area (**Figure 6-1**).

Based on these demographic and environmental indicators, the study area contains one census tract with elevated CalEnviroScreen scores and a higher share of low-income individuals, but no defined residential justice communities within 6 miles of the site. Therefore, the resource-specific analyses that follow consider whether project activities could result in disproportionately high and adverse effects, including noise, air quality, or hazards, on nearby minority or low-income individuals who reside within the six-mile boundary, but not within a community setting.

6.3 Environmental Impacts

Section 6.2 provides an EJ population-level screening to identify low-income and minority justice populations of concern, as well as Census tract-level screening through CalEnviroScreen. Upon identification of justice communities, the EJ analysis evaluates if those tracts would receive disproportionate impacts. The analysis considers all unavoidable significant impacts of nuisance effects for any disproportionate project burdens to justice communities identified in **Section 6.2**. In cases where adversely affected populations could be estimated, the composition of the significantly affected population was compared to data for the "general population," which is a term used in CEQ guidance (CEQ 1997). For this analysis, San Bernardino County is used as comparison population to determine whether effects are disproportionate. For impacts found to be less than significant, less than cumulatively considerable, or classified as "No Impact" (and therefore also not cumulatively considerable), further evaluation of the potential for disproportionately high and adverse effects on minority and/or low-

income populations would not be needed because impacts that would not be significant would not have the potential to result in negative disproportionate effects.

The following technical areas discuss impacts to justice populations: Air Quality; Cultural and Tribal Cultural Resources; Hazards, Hazardous Materials/Waste and Wildfire; Noise and Vibration; Public Health; Solid Waste Management; Transportation; Visual Resources; and Water Resources.

Air Quality

As described in **Section 5.1, Air Quality**, the project's region in the Mojave Desert Air Quality Management District (MDAQMD) is designated as a nonattainment area for the federal and state ozone and PM10, and nonattainment for state PM2.5 standards. Staff evaluated potential air quality impacts that could affect the identified EJ populations by reviewing the air quality-related indicators in CalEnviroScreen shown in **Table 6-4**, including ozone concentrations and PM2.5 levels. The local cumulative concentrations of air pollutants are dominated by the combined effects of existing, background stationary, and mobile sources. Staff concluded that the project would not result in a cumulatively considerable net increase of any criteria pollutant, and the project's potential to contribute to the cumulative impact of criteria pollutant concentrations would be less than significant with mitigation incorporated.

Ozone Concentrations. The exposure indicator in CalEnviroScreen for ozone concentrations represents the potential adverse health effects, including respiratory irritation and exacerbation of lung disease, resulting from ground level ozone. This indicator is defined by the mean of summer months (May to October) of the daily maximum 8-hour ozone concentration. Those in the project area are exposed to higher ozone concentrations when compared to the rest of the state. The project would not be expected to contribute significantly to regional ozone concentrations because the project, incorporating staff Conditions of Certifications (COCs) discussed in **Section 5.1, Air Quality**, would not exceed the emission rate significance thresholds for NOx and VOCs, which are the precursor pollutants that lead to ozone formation. Therefore, the project would not contribute significantly to regional ozone concentrations, relative to baseline conditions.

Particulate Matter (PM10 and PM2.5) Concentrations. PM10 and PM2.5 in the project area is influenced primarily by regional transport, mobile-source emissions, and fugitive dust from existing land uses. Construction activities would introduce temporary emissions of fine particulate matter through equipment exhaust and earth-moving operations. As detailed in **Section 5.1, Air Quality**, these temporary emissions are minor when compared to the background sources that drive PM10 and PM2.5 levels in the region. The composition of PM depends on the local and regional sources, time of year, location, and weather. PM10 and PM2.5 concentrations during construction and operation would not exceed federal or state thresholds. Air quality COCs would further

reduce PM10 and PM2.5 emissions. No disproportionate impacts to an EJ population would occur.

Cultural and Tribal Cultural Resource

As discussed in **Section 5.4, Cultural and Tribal Cultural Resources**, the project has the potential to cause significant impacts on buried or inadvertently discovered cultural or tribal cultural resources. The archaeological project area of analysis has a moderate probability of containing buried archaeological resources, which could meet CEQA's criteria for historical resources. If such resources were damaged during construction, it would be considered significant because of the cultural loss to affiliated California Native American tribes or other local communities and the cultural and scientific data loss to all. Ground disturbance associated with project construction could result in the inadvertent discovery of human remains and associated funerary items that meet CEQA's criteria for historical, unique archaeological, or tribal cultural resources. Damage to human remains would be a significant impact under CEQA. Therefore, COCs have been included to minimize impacts from inadvertent discoveries. Hence, with mitigation incorporated, inadvertently discovered cultural or tribal cultural resources would be considered less than significant.

Hazards, Hazardous Materials/Waste and Wildfire

The CalEnviroScreen scores for the disadvantaged community census tracts in a six-mile radius of the project are presented in **Table 6-4** for each of the following environmental stressors that relate to waste management: cleanup sites, hazardous waste generators and facilities, and solid waste facilities.

Hazards and Hazardous Materials. While there are no EJ communities within a six-mile radius, there are a few minority or low-income individuals who reside within the six-mile radius. These individuals may experience disproportionate impacts associated with hazards, hazardous materials, and wildfire impacts if the storage and use of hazardous materials within or near EJ communities occurs to a greater extent than within the community at large or if the project would contribute to or exacerbate the effects of cleanup sites, hazardous waste generators and facilities, and solid waste facilities.

As described in **Section 5.7, Hazards, Hazardous Materials/Waste, and Wildfire**, hazardous material brought onto the project site during construction and operation would be stored consistent with the applicable plans, policies, and regulations. Therefore, the likelihood of a spill or release of sufficient quantity to impact the surrounding community would be very unlikely and considered less than significant with mitigation incorporated. Since the overall CalEnviroScreen score reflects the collective impacts of multiple pollutants and factors, staff examined the individual contributions to indicators as they relate to hazardous materials presented in its analysis. Neither construction nor operation of the project is expected to generate significant hazardous waste other than those generated during equipment maintenance, such as used

lubricating oils and old batteries. Hazardous materials of concern in this analysis are those from construction and operational activities. The handling and disposal of each type of hazardous material depends on the hazardous properties of its constituent materials. Existing plans, policies, and regulations ensure the desired handling and disposal of hazardous material and hazardous waste materials to prevent potential public or environmental health impacts. No disproportionate impacts to EJ population would occur.

Operation of the battery energy storage system (BESS) would include the use of lithium-ion batteries, which could increase the risk of a fire that could emit toxic gases. **Section 4.4, Worker Safety and Fire Protection**, includes COCs and procedures to protect workers from exposure to hazardous material. Staff concluded that the implementation of COCs and the Worker Safety programs would reduce the risk of accidental release of hazardous materials and waste, and exposure to hazardous materials and waste, to less than significant. Staff determined that the potential effects of hazardous materials accidents would be less than significant with mitigation incorporated from **Section 4.4, Worker Safety and Fire Protection**, and **Section 5.7**, **Hazardous, Hazardous Materials/Waste and Wildfire**.

Cleanup Sites and Hazardous Waste Generators and Facilities. The CalEnviroScreen indicator is calculated by considering the number of cleanup sites including Superfund sites on the National Priorities List, the weight of each site, and the distance to the census tract. Sites undergoing cleanup actions by government authorities or property owners, have suffered environmental degradation due to the presence of hazardous substances. Of primary concern is the potential for exposure to these substances.

As described in **Section 5.7, Hazards, Hazardous Materials/Waste, and Wildfire**, the project site is not included on the databases maintained by the Department of Toxic Substances Control's Envirostor or the State Water Resources Control Board's (SWRCB) Geotracker as the location of any hazardous material sites. Neither database identified hazardous material sites on the Cortese list within 1,000 feet of these project components (CalEPA 2024). Although the CalEnviroScreen criteria identified the presence of numerous cleanup sites in four Census tracts within the general area, the project would not be developed on a site identified on a list compiled pursuant to Government Code section 65962.5, and would not present a significant hazard to public health or the environment. Therefore, no impacts related to Government Code section 65962.5 would occur. No impact would occur from encountering known contaminated soil within 1,000 feet of the project. To further reduce the risk of exposure to unknown environmental contamination, a Soils Management Plan would be prepared to identify procedures to address the handling, disposal, and assessment of such materials.

Existing plans, policies, and regulations, and the implementation of COCs for hazardous materials and worker safety, would ensure the desired handling and disposal of

hazardous material and waste materials, preventing potential public or environmental impacts. No disproportionate impacts to an EJ population would occur.

Wildfire. The site is in a Federal Responsibility Area and therefore does not have a Fire Hazard Severity Zone designation from CAL FIRE. The USDA Forest Service Fire Modeling Institute data (see **Figure 5.7-1**) plots the project site as an area with very low Wildfire Hazard Potential. There is sparce vegetation at this desert location and no history of wildfires at, or in the immediate vicinity, of the project site (see **Figure 5.7-2**). Therefore, project activities would not result in disproportionate impacts to an EJ population.

Noise and Vibration

EJ populations may experience disproportionate noise impacts if the siting of unmitigated industrial facilities occurs within or near EJ communities to a greater extent than within the community at large. The area surrounding the site is primarily BLM-managed land. The nearest residence to the project is approximately 3,960 feet away from project's nearest construction activities. Construction activities would increase existing noise levels at the nearest residence, but effects would be temporary and intermittent. San Bernadino County Ordinance exempts noise from construction, provided that construction is limited to between 7 a.m. and 7 p.m., except on Sundays or federal holidays, when construction is not allowed. COC **NOISE-6** would prohibit any pile-driving activities during the hours of 10:00 p.m. and 7:00 a.m., Monday through Saturday, or at any time on Sundays within 1.5 miles of residences. While construction of the proposed project would temporarily increase ambient noise levels, COCs **NOISE-1**, **NOISE-2**, **NOISE-4**, **NOISE-5**, and **NOISE-6**, would ensure that noise generated by project construction activities would be reduced and would not result in a disproportionate impact for the EJ community.

The solar array and BESS operations and maintenance activities and associated infrastructure would be the primary sources of operational noise. The estimated noise levels from the operation of the proposed stationary noise sources on-site are projected to be 24 dBA Leq at the nearby residence. Consequently, these estimated noise levels would fall below the existing daytime ambient noise levels (53 dBA) and the thresholds outlined in Section 83.01.080(c) of the County's Development Code (55 dBA for daytime hours and 45 dBA for nighttime hours). Since the projected noise emissions from the operational phase are not expected to exceed the County's Development Codes, no noise reduction measures would be required, and operation of the project would not result in any disproportionate effects on the EJ population. Furthermore, COC **NOISE-3** would ensure measurement and verification so that the operational noise performance criteria are met.

Public Health

Section 5.10, Public Health, identified that the potential risks to public health during construction would be associated with exposure to PM emissions from diesel-fueled

engines, otherwise referred to as diesel particulate matter (DPM) and fugitive dust that may pose a risk of Valley Fever to individuals near the site. DPM is expected to be the predominant toxic air contaminant (TAC) emitted during construction and is the main contaminant of concern for this project.

Diesel Particulate Matter. The exposure indicator in CalEnviroScreen for diesel PM emissions represents the adverse health effects, such as irritation to the eyes, throat, and nose, cardiovascular and pulmonary disease, and lung cancer from concentrated sources of PM emissions. This indicator is defined by the spatial distribution of DPM emissions from on-road and non-road sources.

Staff conducted a public health assessment by evaluating the information and data provided by the applicant (see **Section 5.10, Public Health**). Staff relied upon the expertise and guidelines of the CalEPA Office of Environmental Health Hazard Assessment (OEHHA) to identify contaminants that cause cancer or other non-cancer health effects and to identify the toxicity, cancer potency factors, and non-cancer Reference Exposure Levels (RELs). The health effects of exposure to toxic emissions are based on impacts to the maximum exposed individual.

Staff evaluated health risks primarily in relation to DPM, because it identified DPM as the TAC expected to be emitted in the largest quantity during project construction. Since OEHHA has not developed an acute REL for DPM, acute non-cancer health effects could not be evaluated.

The results of the health risk assessment indicated that cancer risk and chronic non-cancer risk hazard index were well below MDAQMD thresholds for construction. Project operation would not expose sensitive receptors to substantial pollutant concentrations of DPM (see **Section 5.10, Public Health**). The implementation of COCs for air quality presented in **Section 5.1, Air Quality** to reduce DPM emissions would further reduce health risks. The health risks would be well below the significance thresholds and thus less than significant. No disproportionate impacts to an EJ population would occur.

Pesticide Use. The exposure indicator in CalEnviroScreen for pesticide use represents certain high-hazard, high-volatility substances that may lead to unintended environmental damage. This indicator is defined by the total mass of active pesticide ingredients (filtered for hazard and volatility) used in production-agriculture areas (OEHHA 2021). The proposed project would include vegetation management adjacent to facility components. Pesticides would not be used in areas that are available to the public, and the risk to the public would be less than significant. No disproportionate impacts to an EJ population would occur.

Toxic Releases from Facilities. The exposure indicator in CalEnviroScreen for chemical releases is defined by the toxicity-weighted concentrations of modeled chemical releases to air from facility emissions and off-site incineration.

According to the results of the health risk assessment conducted for the project in **Section 5.10, Public Health**, impacts associated with toxic releases from construction and operation activities (diesel-fueled equipment) would be less than significant. The project would not have a significant cumulative contribution to toxic releases and there would not be any disproportionate impacts on the EJ population.

Valley Fever. *Coccidioidomycosis* or "Valley Fever" is caused by inhaling the spores of the fungus *Coccidioides immitis*, which are released from the soil during soil disturbance (e.g., during construction activities) or wind erosion. Construction activities associated with the project, including ground-disturbing operations, could increase the potential for exposure to airborne spores among nearby residents and on-site workers if such spores are present. When soil is disturbed by activities such as digging, driving, or high winds, fungal spores can become airborne and potentially be inhaled.

Staff concluded that the potential risk to public health and those near the site during construction to be less than significant with mitigation incorporated, and less than significant during project operation. Staff proposes COCs in **Section 4.4, Worker Safety and Fire Protection**, **Section 5.1, Air Quality,** and **Section 5.7 Hazards, Hazardous Materials/Waste, and Wildfire,** that require a Valley Fever Prevention and Response Plan and a Soils Management Plan with enhanced dust control measures, N95 mask use, worker training, medical protocols, and safe handling of contaminated soils to minimize health risks during construction. The potential risk associated with project-related emissions of *Coccidioides* spores would be less than significant. No disproportionate impacts to the EJ population would occur.

Traffic Impacts. The exposure indicator in CalEnviroScreen for traffic impacts represents the vehicles in a specified area, resulting in human exposures to chemicals that are released into the air by vehicle exhaust. Communities in the project area are not exposed to high traffic impacts as compared to the rest of the state. This indicator is defined by the sum of traffic volumes adjusted by road segment length. The project would generate vehicle trips to the site. These trips include workers, material, and equipment deliveries.

Analyzed in **Section 5.14, Transportation**, roads in the vicinity of the project area operate at a sufficient level of service to support temporary construction-related traffic with adherence to COC **TRANS-1**. Operation of the project would not cause a substantial increase in traffic volumes within the transportation system affecting the efficiency of the transportation system, including transit, roadway, bicycle, and pedestrian facilities. Any effect of project-generated traffic during construction would be temporary in nature and is not expected to result in any long-term impacts to the transportation system. Therefore, the project's traffic impact would not have a significant cumulative contribution to the traffic density for the local general population. No disproportionate impacts to an EJ population would occur.

Asthma. The sensitive population indicator in CalEnviroScreen for asthma represents the number of emergency department visits for asthma per 10,000 people. As shown in **Table 6-5**, the census track near the project area has the number of ED visits for asthma per 10,000 people in 2020 was higher than 55 percent of tracts statewide. As described in **Section 5.1, Air Quality**, project construction and operation would emit NOx and VOCs, which are ozone precursors, and other criteria air pollutants. The project would comply with applicable federal, state, and local regulations for air quality attainment planning and implement COCs to reduce emissions from project construction and operation to less than significant. All criteria pollutants and ozone precursors would be below regulatory thresholds. Staff concluded that air quality impacts would be less than significant with mitigation, and the project would not contribute significantly to regional ozone or other criteria air pollutant concentrations, relative to baseline conditions. Furthermore, staff concluded that the project would not result in a cumulatively considerable net increase of any criteria pollutant, and the project's potential to contribute to the cumulative impact of criteria pollutant concentrations would be less than significant with mitigation incorporated.

Furthermore, according to the results of the project analysis cited in **Section 5.10, Public Health**, impacts associated with emissions from construction and operation activities would be less than significant. Health effects of TAC emitted by the project would be less than significant for the project. No disproportionate impacts to an EJ population would occur.

Low-Birth-Weight Infants. This indicator measures the percentage of babies born weighing less than 2,500 grams (about 5.5 pounds) out of the total number of Census tract births. Data for the project area indicates that the percentage of low birthweights is higher than the state average; the census tract in the project area shows a low-birth-weight percentile of 99, meaning the percent low birth weight is higher than 99 percent of tracts statewide. As described in **Section 5.1, Air Quality**, project construction and operation would emit NOx and VOCs, which are ozone precursors, and other criteria air pollutants. The project would comply with applicable federal, state, and local regulations for air quality attainment planning and implement COCs to reduce emissions from project construction and operation to less than significant. All criteria pollutants and ozone precursors would be below regulatory thresholds. Staff concluded that air quality impacts would be less than significant with mitigation, and the project would not contribute significantly to regional ozone or other criteria air pollutant concentrations, relative to baseline conditions. Furthermore, staff concluded that the project would not result in a cumulatively considerable net increase of any criteria pollutant, and the project's potential to contribute to the cumulative impact of criteria pollutant concentrations would be less than significant with mitigation incorporated.

Furthermore, according to the analysis conducted for the project cited in **Section 5.10, Public Health**, impacts associated with emissions from construction and operation activities would be less than significant. Health effects of TACs emitted by the project

would be less than significant for the project. No disproportionate impacts to an EJ population would occur.

Solid Waste Management

A disproportionate solid waste impact on an EJ population could occur if the project would contribute to or exacerbate the effects of local solid waste disposal facilities. Since the overall CalEnviroScreen score reflects the collective impacts of multiple pollutants and factors, staff examined the individual contributions to indicators as they relate to wastes addressed under utilities and system services. The wastes of concern in this analysis are those from construction and operation activities. The handling and disposal of each type of waste is dependent on the hazardous ranking of its constituent materials.

Existing plans, policies, and regulations 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 six-mile radius of the project (see **Figure 6-1**) are presented in **Table 6-4** for each of the following environmental stressors that relate to solid waste facilities. The percentile for each disadvantaged census tract reflects its relative ranking among all of California's census tracts. A disproportionate solid waste management impact on an EJ population could occur if project wastes impacted the disadvantaged community. CalEnviroScreen assigns a score to each category of stressors. To assess the impact of a stressor on the population within a census tract, the score is assigned a weighting factor that is inversely proportional to the distance from the census tract.

Solid Waste Facilities. This indicator is calculated by considering the number of solid waste facilities including illegal sites, the weighting factor of each, and the distance to a census tract. Newer solid waste landfills are designed to prevent the contamination of air, water, and soil with hazardous materials. However, older sites that are out of compliance with current standards or illegal solid waste sites may degrade environmental conditions in the surrounding area and pose a risk of exposure. Other types of facilities, such as composting, treatment, and recycling facilities may raise concerns about odors, vermin, and increased traffic. Census tract 06071010300 scored in the 100th percentile for the Solid Waste Facilities category (see **Table 6-4**). This indicates that the number and type of facilities within or nearby this census tract and the environmental deterioration due to their presence are the highest of tracts statewide. However, CalEnviroScreen indicates that there are no solid waste sites or facilities within a six-mile radius of the project.

Solid waste generated during the construction and operation of the project would be segregated, where practical, for recycling, and would be disposed of where there is adequate capacity for non-hazardous waste. Also, the project would be required to develop and implement plans that would ensure proper disposal of nonhazardous waste at appropriately licensed facilities. The project owner would use solid waste sites or facilities that are verified to be in compliance with current laws, ordinances, regulations,

and standards. In addition, there would be no increase in solid waste generators and facilities in the area due to project construction or operation because there is adequate capacity to dispose of waste from the project. Therefore, there would be no significant impact related to solid waste facilities that would disproportionately impact an EJ population.

Transportation

Generally, reductions in transportation options may significantly impact justice populations. In particular, an impact to bus transit, pedestrian facilities, or bicycle facilities could cause disproportionate impacts to low-income communities, as low-income residents more often use these modes of transportation. As concluded in **Section 5.14, Transportation**, all transportation impacts, including impacts to alternative modes of transportation, would be less than significant to EJ populations. Likewise, the transportation impacts would not be disproportionate.

Visual Resources

According to the analysis conducted for the project cited in **Section 5.15, Visual Resources**, visual impacts associated with the introduction of the proposed project facilities into the existing landscape would be significant and unavoidable. These impacts would primarily affect travelers on I-15, which would pass adjacent to the western boundary of the solar facilities and would be spanned by the interconnecting gen-tie line. Visitors accessing the open space and rural recreational lands in the surrounding areas would also be impacted. While there are no EJ communities within a six-mile radius, per the ACS data, there is one minority individual who resides within the six-mile radius. The closest residence is adjacent to the Shell service station on Rasor Road adjacent to the I-15 eastbound off-ramp. Although this residence would be located in close proximity to the project site, views of the project from the residence would generally be limited to the extreme southern end of the project site and would also be substantially obstructed by the existing service station, utility lines, and telecommunication tower. Therefore, no disproportionate visual impacts to an EJ population would occur.

Water Resources

The project is required to comply with the Clean Water Act (CWA) and California's Porter-Cologne Water Quality Control Act by controlling the discharge of pollutants during its construction and operation phases. In addition, the majority of drinking water is supplied from surface water sources from outside of the area. Also, the project would implement modern stormwater and containment controls that would improve upon the site's potential to release contaminants to the environment. The project's water resources impacts are expected to be less than significant.

A disproportionate water resources impact could occur if the project contributes to drinking water degradation, exacerbates groundwater contamination, or discharges additional pollutants to impaired surface water bodies. For stationary stressors related

to water resources, the weighting factor is inversely proportional to distance away from the project and diminishes to zero for distances larger than 1,000 meters (0.6 mile). The rural residences within a six-mile radius of the project are sparse.

Drinking Water Contaminants. CalEnviroScreen aggregates drinking water quality data from the California Department of Public Health, the U.S. EPA, and the California SWRCB. The score provided by the Drinking Water Contaminant metric calculation is intended to rank water supplies relative to their history or likelihood to provide water that exceeds drinking water standards. Low-income rural communities, particularly those served by small community water systems, can be disproportionately exposed to contaminants in their drinking water. The rural residences within a six-mile radius of the project are sparse. CalEnviroScreen scores indicate that the drinking water contamination threat in the area is high and ranks the area above the 87th percentile for contaminated drinking water. However, the project is not expected to contribute significantly to drinking water source degradation.

During construction, the project would require the use of heavy machinery and would involve activities that could potentially loosen existing surface soils and sediments, increasing the potential for erosion and the discharging of pollutants into local waterways. Accidental release of fuel, oils, lubricants, antifreeze, and other pollutants may occur during construction and could result in the infiltration of pollutants into groundwater and the underlying aquifer, degrading water quality in the area. During operations and maintenance of the solar array and BESS, accidental spills of hydrocarbon fuels, oils, greases, antifreeze, and other liquids, as well as leaching of treated wastewater from the proposed septic field, into the underlying groundwater may occur. Additionally, similar to the construction period, groundwater contamination may occur during the decommissioning phase when the project operation will be terminated (RE 2025k).

However, prior to site mobilization, a Stormwater Pollution Prevention Plan (SWPPP) would be prepared as required by the Construction General Permit. The SWPPP would require the implementation of Best Management Practices to control stormwater runoff that could affect groundwater quality. A Drainage, Erosion, and Sedimentation Control Plan would also be prepared to manage stormwater during project operation. Similarly, a Closure, Decommissioning, and Reclamation Plan would be prepared to ensure public health and safety, environmental protection, and compliance with applicable laws, ordinances, regulations, and standards, including those related to water quality and hydrology. Therefore, no disproportionate impacts on the area's EJ population are anticipated with respect to groundwater and drinking water contaminants.

Groundwater Threats. Common groundwater pollutants found at contaminant releasing sites in California include gasoline and diesel fuels; chlorinated solvents, and other volatile organic compounds; heavy metals such as lead, chromium, and arsenic; polycyclic aromatic hydrocarbons; persistent organic pollutants like polychlorinated biphenyls and pesticides; and perchlorate. CalEnviroScreen aggregates data from the

SWRCB's GeoTracker website about groundwater threats. The CalEnviroScreen score provided by the Groundwater Threat metric calculation is intended to rank the relative risk of environmental impact from groundwater contamination. CalEnviroScreen indicates that there are no groundwater threat sites within a six-mile radius of the project. The Project is not expected to exacerbate groundwater contamination, relative to existing conditions. Requirements to comply with the CWA by controlling the discharge of pollutants during project construction and operation; and implementation of modern stormwater and containment controls would limit the site's potential to release contaminants to groundwater. Therefore, the project is not expected to degrade groundwater quality any further than baseline conditions. No project-related disproportionate groundwater effects would occur.

Impaired Water Bodies. CalEnviroScreen aggregates data from the SWRCB's Final 2024 California Integrated Report (CWA Section 303(d) List/305(b) Report). The score provided by the Impaired Water Bodies metric calculation is intended to rank the relative risk of impaired water bodies within each census tract. There are areas with EJ populations (see **Tables 6-2** and **6-3**) within a six-mile radius of the project site. According to CalEnviroScreen, there are no impaired bodies of water within a six-mile radius of the project site. Moreover, the project is not expected to impair local water bodies because it is required to comply with the CWA which requires the project to control the discharge of pollutants during its construction and operation phases. In addition, the project would implement modern stormwater and containment controls that would limit the site's potential to release contaminants to the environment. No disproportionate impacts to EJ populations using the area's water bodies would occur.

6.4 References

ACS 2023 – American Community Survey (ACS). 2019-2023 ACS 5-year Estimates. Tables C17002 (Ratio of Income to Poverty Level in the Past 12 Months) and B03002 (Hispanic or Latino Origin by Race) Accessed online at: https://data.census.gov/table?text=c17002&g=1400000US06071010300

CalEPA 2024 – California Environmental Protection Agency (CalEPA). Cortese List Data Resources. Accessed on June 23, 2025. Accessed online at: https://calepa.ca.gov/sitecleanup/corteselist/

CalEPA 2022 – California Environmental Protection Agency (CalEPA). Final Designation of Disadvantage Communities Pursuant to Senate Bill 535, May 2022. Accessed online at: https://calepa.ca.gov/wp-content/uploads/2022/05/Updated-Disadvantaged-Communities-Designation-DAC-May-2022-Eng.a.hp_-1.pdf

CEQ 1997 – CEQ (Council on Environmental Quality). Guidance Under the National Environmental Policy Act. https://www.epa.gov/sites/default/files/2015-02/documents/ej_guidance_nepa_ceq1297.pdf

CEC 2024 – California Energy Commission (CEC). Disadvantaged Communities Advisory Group (DACAG). Informational Proceeding on Non-Energy Benefits and Social

Costs. CA Disadvantaged Communities Advisory Group Equity Framework. Docket Number 24-OIIP-03. TN#259888. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OIIP-03

CEC 2023 – California Energy Commission (CEC). Justice Access Equity Diversity Inclusion (JAEDI) Framework. Appendix A: Justice Access Equity Diversity Inclusion Framework. CEC-100-2022-001-CMF-APA. February 2023. Accessed online at: https://www.energy.ca.gov/sites/default/files/2023-11/CEC-JAEDI-Framework_ada.pdf

LCI 2020 – Office of Land Use and Climate Innovation (LCI). General Plan Guidelines. Chapter 4: Required Elements. 4.8 Environmental Justice Element. Accessed online at: https://lci.ca.gov/docs/20200706-GPG_Chapter_4_EJ.pdf

OEHHA 2021 – California Environmental Protection Agency's Office of Environmental Health Hazard and Assessment (OEHHA). CalEnviroScreen 4.0, October 2021. Accessed online at: https://oehha.ca.gov/media/downloads/calenviroscreen/report/calenviroscreen40reportf2021.pdf

RE 2025k – Resolution Environmental (TN 261595). Chapter 2_Project Description, Revision 1, Section 2.7, dated February 7, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

U.S. EPA 2015 – United States Environmental Protection Agency (U.S. EPA). Guidance on Considering Environmental Justice During the Development of Regulatory Actions, May 2015. Accessed online at: https://www.epa.gov/sites/default/files/2015-06/documents/considering-ej-in-rulemaking-guide-final.pdf

Section 7

Public Benefits

7 Public Benefits

7.1 Regulatory Setting

Public Resources Code section 24454.8 incorporates Public Resources Code section 25523(h), which states: "The commission shall prepare a written decision after the public hearing on an application, which includes …[a] discussion of any public benefits from the project including, but not limited to, economic benefits, environmental benefits, and electricity reliability benefits." Such identified benefits may be discussed in detail in various sections of staff's environmental assessment such as Socioeconomics and Mandatory Opt-In Requirements. A qualitative discussion addressing public benefits is appropriate as there is no specific threshold of benefit necessary under this section for project approval. Consistent with this directive, staff describes, in summary form, the key benefits of the project relating to economic, environmental, and reliability benefits.

7.2 Economic, Environmental, and Electric Reliability Public Benefits

Economic

As detailed in **Section 5.11, Socioeconomics**, the project's public benefits include economic benefits typical of a large-scale industrial project with an extended construction period. These benefits include construction employment and associated payroll, sales and use tax revenues, equipment rentals, and local spending generated by the project and its workforce. Following construction, the project would employ a minimal number of staff and would continue to contribute tax revenues to the state and local community.

According to the County Assessor's Office, following construction the project would be assessed to determine the applicable possessory interest tax. Resulting tax revenues would be allocated among county agencies in accordance with standard distribution formulas, including the San Bernardino County Fire Protection District, as further described in **Section 5.11**. Because the project is located within the Baker Unified School District (BUSD) boundary, it would be required to pay a one-time School Development Impact Fee to BUSD, calculated based on the total square footage of building space constructed.

During construction and operation, the project would also generate state and county sales and use tax revenues. Sales tax liability would depend on the point of sale and the location from which equipment and materials are purchased, with ongoing sales tax revenues continuing during operation at a lower level than during construction. Use taxes would apply to eligible equipment and materials purchased outside the State of California. In addition to these direct revenues, the project would generate indirect and

induced fiscal benefits, as summarized in the applicant's Opt-In Application, Confidential Appendix P.

Environmental

As discussed in **Section 3, Project Description**, the project's renewable generation would contribute to meeting the State of California's renewable energy policy objectives as described by the interim targets in Clean Energy, Jobs, and Affordability Act of 2022 (Senate Bill 1020, Laird, Chapter 361, Statute of 2022) that require renewable energy and zero-carbon resources to supply 90 percent of all retail electricity sales by 2035 and 95 percent of all retail electricity sales by 2040.

The project's battery storage system would also contribute to the state's 100 Percent Clean Energy Act of 2018 (Senate Bill 100, De León, Chapter 312, Statute of 2018) policy objectives with a 2045 goal of California's electricity system to be carbon free by capturing and storing renewable energy when generation is plentiful and dispatching energy for use when it is scarce.

Reliability

Reliability is an evaluation of the robustness of the state's electrical system, the grid, and the project's impact on that system. As discussed in **Section 3, Project Description**, the solar photovoltaic (PV) and battery energy storage system facilities can assist grid operators in more effectively integrating intermittent renewable resources into the statewide grid. The project would include a 300 megawatt (MW) solar PV facility with a battery storage system capable of storing up to 300 MW of electricity for four hours (up to 1,200 megawatt-hours).

As discussed in **Section 4.3, Transmission System Engineering**, Los Angeles Department of Water and Power would make upgrades to ensure the grid would be in compliance with reliability standards with the project's interconnection.

Overall, the state would benefit from the project's reliability contributing to the diversity of renewable generation. In addition, the state's electrical grid reliability would increase with the project providing electricity during increased load demand.

Conclusions

Consistent with Public Resources Section 25523(h), this section provides a summary description of the economic, environmental, and reliability benefits of the project. Information regarding community benefits (Pub. Resources Code, § 25545.10) and net positive economic benefit to the local government (Pub. Resources Code, § 25545.9, which applies under the Opt-In program established by SB 254) is discussed in **Section 10, Mandatory Opt-In Findings**.

Section 8

Alternatives

8 Alternatives

8.1 Introduction

This section evaluates alternatives to the proposed Soda Mountain Solar Project (SMSP). Staff reviewed the alternatives analysis in the application, using that as a starting point for the alternatives analysis in this staff assessment.

The California Environmental Quality Act (CEQA) requires an evaluation of the comparative effects of a range of reasonable alternatives to the project that would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project (CEQA Guidelines §15126.6, subd. (f)). This section evaluates alternatives to the proposed SMSP. It also summarizes the alternatives that were considered but eliminated from further study because they would not meet most of the basic project objectives or were determined to be infeasible. These include alternative battery energy storage technologies that have not yet reached commercial maturity or do not provide the necessary efficiencies; a 100 percent hydrogen (H2) alternative that was ruled out due to low production efficiency and substantial water demand; and fuel cell technologies that were considered infeasible because of long startup times, limited supporting infrastructure, and constraints associated with on-site fuel storage. Alternative site locations were also reviewed but dismissed due to the absence of suitable land near necessary electrical infrastructure, challenging terrain, and a lack of sufficiently large contiguous parcels along the Adelanto–Meade transmission corridor.

Alternatives selected for detailed evaluation and comparison with the proposed project include the No Project Alternative, the Bighorn Sheep (BHS) Buffer and Relocated Battery Energy Storage System (BESS) Alternative #1, and the BHS Buffer and Relocated BESS Alternative #2.

8.2 Summary of Conclusions

Staff evaluated three alternatives that were found to be potentially feasible and that could avoid or reduce some of the proposed project's potentially significant impacts:

- No Project Alternative
- BHS Buffer and Relocated BESS Alternative #1
- BHS Buffer and Relocated BESS Alternative #2

The No Project Alternative would avoid all impacts of the proposed project. The BHS Buffer and Relocated BESS Alternative #1 and BHS Buffer and Relocated BESS Alternative #2 would avoid or substantially lessen the impacts expected to occur to biological resources (desert big horn sheep) but not visual resources under the proposed project. **Table 8-1** (at the end of this section) provides a summary comparison of the proposed project's environmental impacts and those of the No

Project Alternative, the BHS Buffer and Relocated BESS Alternative #1, and the BHS Buffer and Relocated BESS Alternative #2.

The BHS Buffer and Relocated BESS Alternative #1 and the BHS Buffer and Relocated BESS Alternative #2 were determined by staff to avoid or substantially lessen potentially significant effects of the proposed project while achieving the project's basic objectives. However, due to added ground disturbance and the additional gen-tie length required to connect the BESS facilities to the proposed on-site substation as required for the BHS Buffer and Relocated BESS Alternative #1, the BHS Buffer and Relocated BESS Alternative #2 was the chosen Environmentally Superior Alternative that meets the project objectives and substantially reduces or avoids some of the proposed project's significant impacts.

8.3 CEQA Requirements

As the CEQA lead agency for the proposed SMSP, the California Energy Commission (CEC) is required to consider and discuss alternatives to the project. The CEQA Guidelines provide the regulatory requirements for an alternatives analysis in an environmental impact report (EIR) (Cal. Code Regs., tit. 14, § 15000 *et seq*.). Section 15126.6 of the CEQA Guidelines provides 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;
- Focus on alternatives that would avoid or substantially lessen any significant effects of the project, even if these alternatives would impede to some degree attainment of the project objectives, or would be more costly; and
- Describe the rationale for selecting alternatives to be discussed and identify alternatives that were initially considered but then rejected from further evaluation.

CEQA requires that an EIR "consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation" (Cal. Code Regs., tit. 14, § 15126.6, subd. (a)). Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are failure to meet most of the basic project objectives, infeasibility, or inability to avoid significant environmental impacts (Cal. Code Regs., tit. 14, § 15126.6, subd. (c)). The range of potentially feasible alternatives selected for analysis is governed by a "rule of reason," requiring evaluation of only those alternatives "necessary to permit a reasoned choice. The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project" (Cal. Code Regs., tit. 14, § 15126.6, subd. (f)).

An EIR is not required to consider alternatives that are infeasible (Cal. Code Regs., tit. 14, § 15126.6, subd. (a)). In addressing feasibility of alternatives, factors that may be considered are 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)). 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)). CEQA defines feasible to mean "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors" (Pub. Resources Code, § 21061.1, and Cal. Code Regs., tit. 14, § 15364).

The lead agency is also required to evaluate the "No Project" alternative along with its impact. Analyzing a No Project alternative allows decision makers to compare the impacts of approving the project with the impacts of not approving the project (Cal. Code Regs., tit. 14, § 15126.6, subd. (e)(1)). "The 'No Project' analysis shall discuss the existing conditions at the time the notice of preparation is published…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. If the environmentally superior alternative is the 'No Project' alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives" (Cal. Code Regs., tit. 14, § 15126.6, subd. (e)(2)).

8.4 Project Objectives and Alternatives Screening

The process of selecting alternatives for analysis begins with establishing project objectives. Section 15124(b) of the CEQA Guidelines addresses the requirement for an EIR to contain a statement of objectives, as follows:

> *A clearly written statement of objectives will help the lead agency develop a reasonable range of alternatives to evaluate in the EIR 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 and may discuss the project benefits.*

The applicant's purpose is to contribute to the achievement of California's renewable energy goals and create a vital new point of interconnection (POI) for renewable energy in San Bernardino County to connect to California's electric transmission infrastructure (RE 2024m).

The applicant's project objectives are as follows:

- Assist the State of California in achieving or exceeding its Renewables Portfolio Standard (RPS) and greenhouse gas emissions reduction objectives by developing and constructing new California RPS–qualified solar power generation facilities producing approximately 300 megawatts (MW).
- Produce and transmit electricity at a competitive cost.
- Provide a new source of energy storage that assists the state in achieving its energy storage mandates.

- Use the existing transmission unused capacity that provides approximately 300 MW of capacity.
- Utilize existing energy infrastructure to the extent possible by locating solar power generation facilities near existing infrastructure, such as electrical transmission facilities.
- Site solar power generation facilities in areas of San Bernardino County that have the best solar resource to maximize energy production and the efficient use of land.
- Develop a solar power generation facility in San Bernardino County that would support the economy by investing in the local community, creating local construction jobs, and increasing tax and fee revenue to the County.

The alternatives were also selected in consideration of one or more of the following factors:

- The extent to which the alternative would accomplish most of the basic objectives of the project.
- The feasibility of the alternative, taking into account site suitability, economic viability, availability of infrastructure, consistency with regulatory limitations, and whether the project owner can reasonably acquire, control, or otherwise have access to the site or off-site locations that could potentially be a project alternative.
- The appropriateness of the alternative in contributing to a "reasonable range" of alternatives necessary to permit a reasoned choice.
- The requirements of CEQA Guidelines to consider a "No Project" alternative and to identify an "environmentally superior" alternative in addition to the no-project alternative (CEQA Guidelines, § 15126.6).

8.5 Environmental Impacts of the Project

As described previously, CEQA requires a discussion of alternatives that would avoid or lessen any of the project's significant effects. Throughout this staff assessment, staff evaluates the impacts of implementing the proposed SMSP and recommends conditions of certification (COCs) and mitigation measures (MMs) to reduce potentially significant impacts to less-than-significant levels.

A summary of each of the environmental resource area COCs and impact assessment is provided in **Section 1, Executive Summary**. Under the proposed project, biological resources represent one of the resource areas with several potentially significant impacts prior to mitigation. Jurisdictional project components are anticipated to result in significant and unavoidable impacts to desert BHS, even with staff's proposed COCs. In addition, the project may adversely affect federally or state-listed wildlife species and other special-status species, including desert tortoise, desert kit fox, burrowing owl, American badger, and LeConte's thrasher.

With implementation of staff's recommended COCs, the jurisdictional project components would have a less than significant impact related to biological resources except for desert BHS. A review of the impacts and existing scientific data on desert BHS identified that the proposed project would intrude into important habitat for this species at the base of the south Soda Mountains, which could risk the persistence of this herd in the project area. Based on this information, staff and California Department of Fish and Wildlife (CDFW) concluded that the only way to mitigate this impact was to reduce the project footprint to avoid sensitive habitat areas. This information was used to develop the BHS Buffer and Relocated BESS Alternative #1, as well as the BHS Buffer and Relocated BESS Alternative #2. Both are evaluated in this section. The BHS Buffer and Relocated BESS Alternative #1 and BHS Buffer and Relocated BESS Alternative #2 were designed to reduce the project footprint to avoid sensitive BHS habitat by avoiding the placement of PV panels in these sensitive areas.

Another resource area with several potentially significant impacts (prior to mitigation) is public safety related to potential battery energy storage system (BESS) fires. Lithium-ion BESS facilities can experience thermal runaway events that release flammable gases and toxic compounds, posing risks of fire or explosion. When sited adjacent to major transportation corridors such as I-15, these events could trigger highway closures, impede emergency response, and create cascading regional vulnerabilities. Relocating the BESS farther from I-15 substantially reduces these risks by increasing separation from public roadways, minimizing the likelihood of traffic disruptions and large-scale evacuations, and improving firefighter access and containment strategies. The BHS Buffer and Relocated BESS Alternative #1 and the BHS Buffer and Relocated BESS Alternative #2 design modifications would enhance conformance with safety standards and mitigate potential significant impacts to public health and transportation systems.

Staff has identified no significant impacts on resources evaluated in **Section 5.5, Efficiency and Energy Resources**; therefore, this topic is not included in the impact summaries below. For the other topics covered in **Section 5, Environmental Impact Assessment**, COCs are recommended for a mix of project-specific resource impacts. and to ensure the project would be consistent with applicable plans, policies, and regulations. This analysis of alternatives includes discussions of whether any of the project impacts could be substantially lessened or avoided by an alternative to the project. Potentially significant impacts associated with the project are summarized as follows:

Air Quality – Construction emissions associated with the project would include emissions associated with the operation of off-road equipment, haul-truck trips, on-road worker vehicle trips, vehicle travel on paved and unpaved surfaces, and fugitive dust from material handling activities. The estimated construction emissions have been grouped into four stages in California Emissions Estimator Model (CalEEMod) based on the types of equipment and workload: 1) site preparation and grading (including mobilization, site preparation, grading, fencing, preparation of roads and laydown areas, and installation of measures in the Stormwater Pollution Prevention Plan

(SWPPP) as well as erosion control features); 2) structural construction (including the installation of solar array structural components including piles, racking systems, and foundations); 3) solar array installation (including installation of solar and BESS inverters, solar panels, battery storage systems, and ancillary equipment, and would also include trenching activities to install cables and other electrical equipment); and 4) inspections, testing, and commissioning. The project is within a 2,670-acre area with a parking area and several buildings. Project construction would not expose sensitive receptors to substantial criteria pollutant concentrations. COCs are recommended to ensure that impacts from criteria pollutant emissions, including fugitive dust, would be less than significant during project construction.

As shown in **Section 5.1, Air Quality** in this staff assessment, estimated operational emissions for all pollutants would be well below the Mojave Desert Air Quality Management District (MDAQMD) significance thresholds and the General Conformity De Minimis Threshold. However, in light of the existing PM and ozone non-attainment status for the project site area, staff considers the operational nitrogen oxides (NOx), volatile organic compounds (VOCs), and particulate matter (PM) emissions to be potentially CEQA significant, and thus, the project is required to comply with MDAQMD Rule 403, Fugitive Dust Control. Additionally, to address its contribution to the potentially ongoing nonattainment of the PM and ozone standards, staff recommends that the off-road equipment and fugitive dust emissions during operation be mitigated to the extent feasible.

Implementation of all COCs for air quality would reduce potentially significant impacts to less than significant.

Biological Resources – There are no federal- or state-listed plant species that are expected to be present in or near the project site. Project construction has the potential to cause potential direct and indirect impacts on one special-status plant: Utah vine milkweed (*Funastrum utahense*), a California Rare Plant Rank (CRPR) 4.3 perennial plant that flowers between April and June. This species was detected along the proposed gen-tie route. An additional eight special-status plant species were determined to have some potential to occur in or near the project site, but they were not detected during multiple years of floristic surveys.

There are six special-status wildlife species present within or near the project area. These include desert tortoise (*Gopherus agassizii*), western burrowing owl (*Athene cunicularia*), loggerhead shrike (*Lanius ludovicianus*), desert bighorn sheep (*Ovis canadensis nelsoni*), American badger (*Taxidea taxus*), and desert kit fox (*Vulpes macrotis*). There are an additional 32 species that have at least some potential to occur in or near the project area based on the presence of suitable habitat, proximity to documented occurrences, and/or through coordination with CDFW. The Mojave fringe-toed lizard is a CDFW species of special concern and has a low-to-moderate potential to occur in the southern portion of the project area. Although not detected in surveys, the project site occurs adjacent to a known occurrence of this species. The desert tortoise is federally and state-listed as threatened under the federal Endangered Species Act

(ESA) and California Endangered Species Act (CESA), respectively. This species was detected at low densities and is considered present on the project site. In addition, large numbers of desert tortoise burrows of varying age and use were found during protocol surveys of the project site. Direct and indirect impacts on desert tortoises are expected to occur and could include collision or crushing by heavy equipment and vehicles, direct exposure to herbicides, and displacement from occupied habitat. Indirect impacts include increased edge effects due to habitat fragmentation, increased competition for resources, increased risk of predation by ravens after site development, and the introduction of invasive plant species.

Project construction could cause direct impacts on special-status and common bird species through destruction of nests or eggs, or disruption of breeding behavior. Indirect impacts could include loss of habitat due to colonization of invasive or noxious weeds and long-term alterations of habitat. Project construction could directly impact habitat used by birds for foraging or winter migration. Birds could also collide with the solar arrays or, for certain waterfowl, become trapped within the arrays after landing.

Project construction could directly impact western burrowing owl and their burrows. Indirect impacts on western burrowing owls could include loss or degradation of foraging or breeding habitat. Construction work could destroy occupied burrows or cause owls to abandon burrows. Burrowing owls have been observed on the project site and in adjacent habitat. Human presence, noise, vibration, and fugitive dust could cause temporary impacts on breeding behavior and possibly nest abandonment. Golden eagle (*Aquila chrysaetos*) is a state fully protected species under the CESA and is a well-known resident in the region. A nest is known to occur along I-15 approximately 5.2 miles to the northeast of the project site. Loggerhead shrike, Crissal thrasher (*Toxostoma crissale*), Bendire's thrasher (*Toxostoma bendirei*), and LeConte's thrasher (*Toxostoma lecontei*) are CDFW species of special concern and are known to occur in the project area. Bendire's thrasher and LeConte's thrasher are being considered for potential listing by the state. They are likely infrequent nesters in scrub communities present at the project site and along portions of the linear facilities.

The project area provides habitat for denning mammal species. Direct impacts on denning mammals, including desert kit fox and American badger, could include loss of individual animals, destruction of natal dens, disruption of breeding behavior, and temporary and permanent loss of habitat.

The project area is adjacent to important habitat for desert BHS. Construction of the project has the potential to disrupt use of important seasonal foraging habitat, displace sheep from currently occupied habitat, adversely affect the health of the existing herd, and could reduce the potential for this species to use a planned wildlife crossing located north of the project site. These impacts would be considered significant and unavoidable even with the implementation of staff's proposed COCs and would conflict with the requirements of CESA to fully mitigate impacts to a fully protected species.

The project would include construction of a gen-tie line to a new substation proposed on the north side of I-15. Avian species can be electrocuted by transmission lines from flying into the electrical lines, if wings simultaneously contact two conductors of different phases, or if body parts simultaneously contact a conductor and grounded hardware. Birds may also collide with the shield wire, which is a narrow ground wire that is typically placed along the top of the conductor. Birds are also at risk from collision with numerous solar arrays.

The project would cause temporary and permanent impacts on vegetation communities, including various desert scrub communities. The project would also substantially alter the hydrology of an existing alluvial fan and result in the degradation of numerous ephemeral drainages that cross the project site.

Implementation of all COCs for biological resources and all other COCs referenced in **Section 5.2, Biological Resources** would reduce potentially significant impacts to less than significant and would follow CESA requirements for all but one species, desert BHS. Even with implementation of staff's proposed COCs, construction and operation of the project would result in significant and unavoidable impacts to desert BHS and would not align with the requirements of CESA.

Climate Change and Greenhouse Gas (GHG) Emissions – Construction activities would cause GHG emissions resulting from fossil-fuel combustion in the engines of construction equipment and the vehicles carrying construction materials and workers to and from the site. The overall construction GHG emissions amortized over 40 years would be equivalent to an annualized rate of 204 metric tons (MT) of carbon-dioxide equivalent (CO2e) per year for the 18-month construction period.

During operation, the project would lead to a net reduction in GHG emissions across the state's electricity system. With the implementation of staff's proposed COC **GHG-1**, which requires the project to use refrigerants consistent with the hydrofluorocarbons prohibition regulation, the greenhouse gas emissions related to the project would not conflict with any plans, policies, or regulations adopted for the purpose of reducing the emissions of greenhouse gases. Therefore, impacts would be less than significant in this area.

Cultural and Tribal Cultural Resources – The project has the potential to cause significant impacts on buried or inadvertently discovered cultural or tribal cultural resources. The archaeological project area of analysis has a moderate probability of containing buried archaeological resources, which could meet CEQA's criteria for historical resources. If such resources were damaged during construction, it would be considered significant because of the cultural loss to affiliated California Native American tribes or other local communities and the cultural and scientific data loss to all. Ground disturbance associated with project construction could result in the inadvertent discovery of human remains and associated funerary items that meet CEQA's criteria for historical, unique archaeological, or tribal cultural resources. Damage to human remains would be a significant impact under CEQA. With implementation of

the recommended COCs for cultural and tribal cultural resources, these potentially significant impacts would be reduced to less than significant.

Geology, Paleontology, and Minerals – The project has the potential to impact geologic hazards, especially soil erosion. Geologic hazards, such as strong seismic ground shaking and soil erosion, may impact the project. Potential impacts associated with geologic hazards would be mitigated to less than significant through appropriate methods for project design, grading, construction, and operation that are based on the results of a site-specific geotechnical investigation, consistent with the California Building Code (CBC) and other applicable plans, policies, and regulations, and comply with staff's proposed COCs. Compliance with COCs, including **GEO-1**, Facility Design COCs, and Water Resources COCs, would mitigate potential impacts the project may have on geologic hazards to less than significant. Compliance would also mitigate potential impacts from geologic hazards on the project to less than significant.

The project's ground disturbing activities would likely encounter and disturb Quaternary sedimentary deposits with a high paleontological sensitivity. Compliance with staff's proposed COCs **PAL-1** through **PAL-8** would mitigate potential impacts to paleontological resources to less than significant.

No known mineral resources or unique geologic features of commercial, scientific, and recreational value occur at the project site. The project would have a less than significant impact on these resources.

Hazards, Hazardous Materials/Waste, and Wildfire – Project construction would include transport of hazardous substances to the project site that would be used and stored there. Hazardous waste would be generated during construction that would be collected by a licensed hazardous waste hauler for transfer to appropriate waste management facilities. Project operation and maintenance would include transport, use, and on-site storage of hazardous materials. COCs are recommended to ensure secure transport, storage, and off-site disposal, treatment, or recycling of hazardous materials; therefore, these potentially significant impacts would be reduced to less than significant. The risk of wildland fires is not significant at the project site or along the gen-tie line alignment.

With implementation of COCs in this section and **Section 4.4, Worker Safety and Fire Protection**, potential impacts of improper management of hazardous material on the public and the environment would be reduced to less than significant.

Project site preparation and excavation would disturb the ground, and this work could encounter contaminated groundwater or soil; implementation of COCs for hazards and hazardous materials and waste would ensure worker protection from potential toxicant exposure and reduce potentially significant impacts to less than significant.

The project site is not within an area designated by the state as a high fire hazard severity zone. The main fire hazard would be caused by the use of vehicles and

equipment, which could ignite dry vegetation and result in a fire. Use of construction equipment that could cause sparks from welding or grading work have a greater potential to result in an ignition. COCs recommended in **Section 4.4, Worker Safety and Fire Protection**, would reduce potential impacts from wildland fires to less than significant, including a COC to ensure access to the site by emergency responders.

Land Use –The proposed project would use Rasor Road during project construction and operation. Rasor Road serves as the primary access route to the Rasor Off-Highway Vehicle (OHV) Special Recreation Management Area (SRMA). Project construction activities would include re-routing a 0.4-mile segment of Rasor Road between South Array #2 and South Array #3 and widening this Rasor Road segment to a maximum width of 26 feet. Staff assumes that public access along Rasor Road would need to be limited or closed during road improvement and realignment activities and during movement of heavy equipment. Closure of Rasor Road would effectively preclude access to the Rasor OHV SRMA, which is a designated recreational resource. With implementation of staff recommended COCs, project activities would not preclude access to the Rasor OHV SRMA, and any temporary restrictions or access delays along Rasor Road would be communicated to the public. Potential impacts to recreation access would be mitigated to less than significant.

Noise and Vibration – Use of certain equipment during construction would increase ambient noise levels at the project's sensitive noise receptor. With implementation of several COCs, potentially significant construction-related noise impacts would be reduced to less than significant. During project operations, ambient noise levels would be below the San Bernardino General Plan noise threshold; however, staff recommends a COC to ensure the project would not distinctly increase the ambient noise level and to ensure the project meets operational noise performance criteria.

Public Health – Project construction emissions would include emissions associated with the operation of off-road equipment, haul-truck trips, on-road worker vehicle trips, vehicle travel on paved and unpaved surfaces, and fugitive dust from material handling activities. With the implementation of staff's proposed COCs to minimize personnel and public exposure to Valley fever, the project would have a less than significant impact on public health. The project would not include the use of any mobile or stationary equipment during operations that would be sources of significant DPM emissions. Therefore, operation of the project would be less than significant.

Socioeconomics – Construction of the proposed project would increase short-term demand for local fire protection and EMS due to the presence of a temporary construction workforce, use of heavy machinery, and on-site fuel storage. During operations, the introduction of high-voltage solar infrastructure and the proposed lithium-ion BESS would create a permanent but limited increase in demand for emergency response capabilities, including specialized training and equipment to address potential electrical or fire-related incidents. These activities would occur in a region already characterized by limited emergency service coverage and extended response times.

To ensure that adequate fire and emergency response capacity is available to meet both direct and cumulative service demands, COCs are recommended requiring the project owner to provide fair-share funding and coordinated implementation with the San Bernardino County Fire Protection District (SBCFPD). This condition allows SBCFPD to recover costs associated with increased service needs during both construction and operation and supports regional fire protection readiness. With implementation of this condition, along with continued coordination among SBCFPD, Bureau of Land Management (BLM), and California Department of Forestry and Fire Protection (CAL FIRE), the project's incremental contribution to public service demand would be effectively mitigated. The conditions are incorporated as COCs in **Section 4.4, Worker Safety and Fire Protection**, in this Staff Assessment. As a result, socioeconomic impacts related to increased demand for emergency services would be reduced to a less than significant level.

Transportation – The project would result in minimal vehicle trips (less than 10) per day during the operational phase. During construction, the project would generate hundreds of vehicle trips per day, but these would not degrade the performance of I-15 or the Rasor Road Interchange to a degree that exceeds any County or Caltrans standards. The exception would be conditions on Friday afternoons that coincide with a holiday weekend, when eastbound traffic volumes on I-15 are particularly high. This potential impact would be avoided with adherence to staff-proposed COC **TRANS-1**. The project would not cause an impact related to vehicle miles travelled during either the operational or construction phase. The project would also need to adhere to State and County guidelines for the transport of hazardous materials as identified in COCs **TRANS-3** and **TRANS-4**. The conditions are incorporated as COCs in **Section 5.14, Transportation**, in this Staff Assessment. As a result, impacts related to transportation would be less than significant.

Visual Resources – The project would substantially degrade the exiting visual character or quality of public views of the site, and staff concluded that this impact would remain significant even after implementation of COCs and MMs. Staff evaluated 11 Key Observation Points (KOPs) and concluded from all 11 of the KOPs that, given the existing physical environment and observable land use character, that the color, form, texture, scale, structure heights, and equipment on the proposed project site could not be fully camouflaged or screened to reduce impacts to less than significant. Staff also concluded that the level of new light, glare, and reflectance emitted by the proposed project and from the construction laydown area(s) would have a less-than-significant effect on the environment with effective implementation of the staff-proposed COCs **VIS-2** and **VIS-4** through **VIS-6**, and MMs **VIS-1** and **VIS-3**. However, staff also concluded that the project would conflict with several identified regulations relating to aesthetics/visual resources and the preservation of scenic quality, and that even with implementation of required COCs and MMs, the instances of regulatory conflict would remain.

Water Resources – Ground-disturbing construction activities could cause degradation of water quality or an increase in rate or volume of stormwater runoff. There is also potential for off-site flooding to occur during project construction. Implementation of COCs addressing all project elements of stormwater management during project construction and operation would reduce impacts to less than significant.

First encountered groundwater is lower than 400 feet below ground surface based on results of aquifer testing. Therefore, it is unlikely that there would be a need for dewatering during construction. However, in the unlikely event dewatering is found to be necessary, the project owner would be allowed to discharge uncontaminated water under the Construction General Permit. If dewatering discharge was determined to be contaminated, a special permit through the Lahontan Regional Water Quality Control Board (LRWQCB) would be necessary depending on the nature of the contamination.

The proposed project's water demand is estimated at 319 acre-feet for construction expected to last 1.5 years (average of 213 acre-feet per year [AFY]) and 5.6 AFY for project operations. Project water demand during both construction and operation would be provided by groundwater extraction from the Soda Mountain subbasin of the Soda Lake Valley groundwater basin (6-033), which has been identified as a very low priority basin. The subbasin is non-adjudicated and is outside the jurisdiction of the Mojave Water Agency and other water districts. Installation of groundwater production wells and subsequent monitoring of the groundwater resource would be conducted in accordance with the Desert Groundwater Management Ordinance (San Bernardino County Ordinances, Chapter 6, Article 5, commencing with Section 33.06551) to protect groundwater resources within unincorporated and unadjudicated desert regions of the San Bernardino County through implementation of the COCs. Based on the water supply report for the project, water supplies during normal and drought conditions were estimated to be sufficient to serve the project. (See **Section 5.16, Water Resources** of this Staff Assessment for details.)

COCs would ensure compliance with the groundwater management and water quality control plans during project construction and operation. With implementation of all recommended COCs, impacts related to water resources would be reduced to less than significant.

8.6 Alternatives Considered and Not Evaluated Further

CEQA provides that the range of alternatives to the project, or to the location of the project, is to include those that would feasibly attain most of the basic project objectives but would avoid or substantially lessen any of the project's significant effects. CEQA defines feasible as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors" (Cal. Code Regs., tit. 14, §§ 15126.6, subd. (c), and 15364).

Some of the alternatives initially considered by staff for this analysis were eliminated from detailed consideration due to potential feasibility issues, failure to reduce any

significant environmental impacts, or failure to meet key project objectives. Staff evaluated the characteristics of other energy generating and storage technologies compared to the solar and BESS technologies proposed by the applicant.

Initially, the applicant did not provide a comparative site analysis for the proposed project and stated that no alternative site of sufficient size to accommodate both the solar and BESS facilities was under the applicant's control (RE 2024jj). However, a subsequent filing, Chapter 4, Alternatives – February 2025 – Revision 1 (RE 2025w), docketed on February 9, 2025, provided a discussion of the applicant's alternative site screening process, conducted to meet BLM requirements for granting a right-of-way (ROW) lease. The ROW would allow for construction, operation, maintenance, and decommissioning of a solar facility consistent with the project footprint described in the applicant's July 23, 2024, Opt-In Application Project Description (RE 2024m).

The 2025 Alternatives document states that the applicant evaluated multiple alternative sites prior to entering into the ROW lease for the proposed Soda Mountain location. Based on that analysis, the applicant concluded that identifying a suitable site for the energy generation and storage system—one that would feasibly meet most of the basic project objectives, avoid or substantially reduce at least one significant effect, and be reasonably available for acquisition, control, or access—was not possible.

CEC staff conducted an independent desktop analysis of available real estate in the region that could accommodate a solar and BESS facility of similar size and meet the applicant's screening criteria. This analysis confirmed that no feasible alternative sites were available that would both accommodate the proposed project and substantially lessen or eliminate any of its significant environmental impacts.

The following discussions provide staff's reasons for eliminating these alternatives from further analysis and comparison to the project.

8.6.1 Fuel Cell Technology Alternative

Fuel cells convert chemical energy into electrical energy. There are several types of fuel cells, which vary according to the types of electrochemical reactions that take place in the cells, the types of catalysts required, the operating temperature ranges, the fuel requirements, and other factors affecting the applications suitable for the fuel cells.

Solid Oxide Fuel Cells (SOFCs)

SOFCs are electrochemical devices that convert the chemical energy of a fuel and oxidant directly into electrical energy. They operate at high temperatures, as high as 2,100 degrees Fahrenheit (°F) or 1,149 degrees Celsius (°C). Operating at high temperatures enables these fuel cells to use a variety of fuels to produce H2. SOFCs most commonly use natural gas as fuel but can also use biogas and gases made from coal as fuel (U.S. DOE 2025a). Carbon monoxide (CO) is a product of the chemical reaction created by the fuel and steam molecules.

SOFCs are resilient and not susceptible to CO poisoning, which affects the voltage output of other types of fuel cells, such as polymer electrolyte membrane (PEM) fuel cells (also called proton exchange membrane fuel cells). SOFCs can reform fuel internally due to their resiliency against CO poisoning and because they operate at extremely high temperatures. This reduces the cost associated with adding an external reformer to the balance of plant. However, SOFCs require long start-up time to reach operating temperature, generate electricity, and they are typically configured, and more suitable, to serve as a prime base load power.

Potential Feasibility Issues

SOFC applications include serving base load power for data centers, retail, healthcare, and critical manufacturing facilities. A commercial application includes eBay's data center in Utah, which uses thirty 200-kilowatt (kW) SOFCs to provide continuous base load power to the information technology, or IT load (6 MW), 8,760 hours per year, with the electric grid as its backup power supply. Additionally, some data centers (e.g., Apple and Equinix) have supplemented their base load power demand (IT and cooling systems) with SOFCs, but they rely on the electric grid to support other loads while retaining traditional uninterruptible power supply (UPS) and generators for emergency power (Data Center Knowledge 2013).

As mentioned, SOFCs have slow startup times, because it takes time to reach critical operating temperatures—start-up times can take up to 60 minutes (GenCell 2018). The California Independent System Operator (California ISO) real-time market (RTM) can issue dispatch instructions with as little as 5 to 15 minutes' notice. (The California ISO Real-Time Market Activities provides guidelines for running the RTM process and for procuring ancillary services in the RTM.) Start-up times should be quick enough so that a project can be dispatched with little notice. The SMSP BESS would be designed to discharge 1,200 megawatt-hours (MWh) of stored electrical energy back to the transmission grid when the energy is needed.

SOFCs could use the underground natural gas pipeline system for fuel. At least one pipeline connection would be needed to supply the project with natural gas, and the project site has a nearby gas distribution line available for connection. For SOFCs to meet the project objective of assisting with the state's goals for supplying electricity with renewable energy sources, it would need to be fueled by H2. The H2 pipeline infrastructure is currently limited (approximately 1,600 miles of H2 pipelines in the U.S.), and no pipeline exists near the project site; therefore, H2 would need to be stored onsite, or generated and stored onsite. See the subsections, "Onsite Fuel Storage" and "Onsite Generation," below, for further discussion.

PEM Fuel Cells

PEM fuel cells are typically used for low-power applications that require intermittent power, such as mobile services or small stationary applications, like backup generators for communication towers. Their power capacity range between 10 and 125 kW. PEM fuel cell capacity has increased to up to 1 MW delivered in the size of a 40-foot-long

International Organization for Standardization (ISO) container (Plug Power 2024).[1] The width of each container is 8 feet, making the total area occupied by each container 320 square feet (sq. ft.). For a 300-MW generation system, which is the capacity needed for the project, the footprint required would be approximately 96,000 sq. ft., or 2.2 acres. Should onsite fuel storage be needed, which would be likely, the footprint would increase.

PEM fuel cells operate at low temperatures and require fuels that are carbon-free and rich in H2 content, preferably pure H2, for maximum voltage output and quick start-up times. H2 can be stored onsite via pressure vessels, piped to the site, or made onsite from a methane source, such as natural gas or from water through electrolysis. These options are discussed in more detail below. Unlike SOFCs, CO poisoning is an important issue for PEM fuel cells because they cannot tolerate large amounts of CO (Fuel Cell Store 2019).

Potential Feasibility Issues

Potential feasibility issues associated with using PEM fuel cells for utility-scale generation include the supply of H2 fuel. The H2 pipeline infrastructure is nonexistent; therefore, H2 would need to be stored onsite, or generated and stored onsite, as described below.

Onsite Fuel Storage. Both a 1-MW PEM fuel cell and a 1-MW SOFC consume 66 to 69 kilograms (kg) of H2 fuel per MWh (Plug Power 2023). The project would need fuel to power generation for up to four hours. The amount of H2 needed per 1-MW fuel cell for four hours of operation would be approximately 270 kg.[2] Thus, the project would need approximately 81,000 kg of H2 for 300 MW of fuel cells to operate for four hours (not including redundant fuel cells).

The simplest way to store large volumes of H2 would be to compress it. H2 can be compressed to less than 0.42 percent of its gas volume at atmospheric pressure. The gauge pressure of H2 stored as a high-pressure gas is approximately 3,600 pounds per square inch (psi) (U.S. DOE 2001). Compressed H2 could be transported and stored onsite on a Type IV trailer, which is approximately 53 feet long, 8½ feet wide, and 13 feet tall, and would support eight, 25-foot-long H2 cylinders with a total capacity of approximately 1,100 kg (Gardner Cryogenics 2022). The project would need approximately 74 trailers and 35,000 sq. ft. (approximately 1 acre) of space onsite to store fuel for 300 MW of fuel cells for up to four hours of operation.

Alternatively, the project could construct a storage system that includes one large or several small pressure vessels to store such a large amount of compressed H2. The

1An ISO container is a container which has been built in accordance with the International Organization for Standardization regulations.
2 H2 fuel calculation: 67.5 kg per hour (average consumption rate) x 4 hours = 270 kg of H2 per 1-MW fuel cell.

project site would need storage for approximately 143,000 cubic feet,[3] or over 3.3 acre-feet (AF) of compressed H2 for 300 MW of fuel cells (not including redundant fuel cells).

H2 can also be stored in liquid form, known as liquid hydrogen gas (LHG), to reduce its volume and thus its storage footprint. LHG storage requires a smaller footprint than compressed H2 gas for the same H2 fuel capacity. LHG could be transported and stored on the same trailer type as compressed H2. However, LHG would have a larger volume of H2 capacity, approximately 4,400 kg, stored in a single H2 cylinder (Gardner Cryogenics 2022). To store the fuel needed for 300 MW of fuel cell capacity for 4 hours of operation, the project would need approximately 19 trailers for LHG storage, which would require 9,000 sq. ft. (approximately 0.2 acre) of space onsite.

Alternatively, as mentioned above, the project could include construction of a storage system with one to several pressure vessels to store large amounts of LHG. The project would need approximately 40,400 cubic feet[4] (approximately 1 AF) of LHG for 300 MW of fuel cells (as compared to 143,000 cubic feet [approximately 3.3 AF] for compressed H2 gas).

Although LHG has the benefit of requiring a smaller footprint than compressed H2, problems exist with storing the liquid. LHG would need to be stored and distributed in specialized equipment, including insulated storage tanks, to keep the fuel in liquid state at atmospheric pressure, which requires a temperature of minus 423 °F (217 °C). For LHG to remain at a constant temperature and pressure, it must allow for natural evaporation known as boil-off gas (BOG). BOG is a loss of stored fuel that occurs when the ambient temperature heats the insulated tanks. LHG must release this gas to maintain its liquid state. The release in gas occurs at a rate of approximately 1 percent per day (Army Logistician 2000).

Other constraints exist for both compressed and liquified H2 storage systems. Safely managing these systems would require special expertise and equipment, which would add to the cost and complexity of the project. Fuel storage equipment must comply with the standards specified by the National Fire Protection Association along with the local codes to protect against hazardous material release, fire, and explosions during natural disasters and accidents. Additionally, permits for the storage of hazardous materials would be needed pursuant to the local codes. The presence of such storage systems would also likely raise concerns of public safety (for example, due to the flammability of H2) and introduce new compliance and potential safety impacts that would not occur under the project.

3 Compressed H2 fuel conversion calculation: 67.5 kg per hour x 4 hours x 1/240 compression ratio x 423.3 cubic feet per kg x 300 MW = 143,000 cubic feet for 300-MW fuel cell.
4 Liquid H2 fuel conversion calculation: 67.5 kg per hour x 4 hours x 1/848 compression ratio x 423.3 cubic feet per kg x 300 MW = 40,400 cubic feet for 300-MW fuel cell.

Onsite Generation. Alternatively, H2 for both PEM fuel cells and SOFCs can be supplied using other methods, such as electrolysis. Electrolysis is a promising option for carbon-free H2 production, using electricity to cause the chemical reaction of splitting water into H2 and oxygen (O2). The reaction takes place in a unit called an electrolyzer. Like fuel cells, electrolyzers consist of an anode and a cathode separated by an electrolyte. There are different types of electrolyzers mainly due to the different electrolyte materials, such as PEM, alkaline, and solid oxide, but their function is essentially the same—generating H2 (U.S. DOE 2025b).

A 1-MW PEM electrolyzer, with an approximate size of a 40-foot ISO container, can generate 18 kg of H2 per hour. For a 300-MW system, the footprint required for the system would be 96,000 sq. ft. (approximately two acres). For every 1 kg of H2 produced, the electrolyzer would need 10 kg of water and 49.9 kilowatt-hour (kWh) of energy (Plug Power 2022). H2 would need to be produced and stored onsite for future use during power generation. As discussed above under "Onsite Fuel Storage," onsite storage of H2 has feasibility issues, including storage space, BOG, the need for specialized equipment, and concerns about public safety.

Reliability Issues for Fuel Cell Technology – Summary of Conclusions

Fuel cells for large-scale peak power demand are not fully proven and have various feasibility constraints, including storage space, BOG, the need for specialized equipment, concerns about public safety, and undetermined reliability. Securing fuel for the cells and storing it is a challenge requiring specialized expertise and increased costs for installing and maintaining systems. Because of the limitations described above, fuel cell technology is currently not a feasible alternative to the project's proposed technology.

8.6.2 Alternative Battery Energy Storage Technologies

The U.S. Department of Energy (U.S. DOE) defines long-duration energy storage (LDES) systems as storage systems capable of delivering electricity for 10 or more hours in duration. Storage systems that can provide electricity for longer than eight hours are also considered LDES systems.[5]

The project objectives for the SMSP specify construction of a 300-MW facility. It would have an energy storage capacity of up to 1,200 MWh, 300 MW for four hours. SMSP is not considered a LDES. The applicant proposes using lithium iron phosphate or a similar battery chemistry. Energy storage technologies are categorized based on the type of energy they store, which is ultimately converted to electrical energy, such as electrochemical storage, mechanical storage, or thermal storage. Staff has considered non-lithium-ion electrochemical (battery) technologies as alternatives to the proposed project. Among this type of technology, staff considered aqueous redox flow batteries

5 In its Decision Requiring Procurement to Address Mid-term Reliability for 2023–2026 and subsequent decisions (D. 21-06-035), the California Public Utilities Commission (CPUC) specifies that long-duration storage means a resource that can deliver at maximum capacity for at least 8 hours.

(RFBs) and metal-air flow batteries. Staff also considered sodium-sulfur, lead-acid, and sodium-ion batteries.

Aqueous Redox Flow Batteries (RFBs)

Aqueous redox flow batteries (RFBs) convert chemical energy into electrical energy by pumping an aqueous electrolyte solution between two storage tanks (positively and negatively charged) with one or more battery cell stacks in between. The battery cells consist of electrodes (anode and cathode) and are divided by an ion-exchange membrane which permit ions to pass during reduction and oxidation chemical reactions (redox reactions). Also, the battery cells are connected to an external electrical circuit which allows for charging and discharging. The design of RFBs allows for the separation of power generation at the battery cell stacks and energy capacity at the electrolyte storage tanks (Adeniran et al. 2022).

Various RFB technologies have been developed with different chemistries, which include vanadium, iron, and zinc. RFB technology can discharge almost 100 percent of its stored energy without impacting system performance or damaging the battery. Because the active electrolytic material is separated from the reactive electrodes in the battery, RFBs have a higher level of safety relative to other electrochemical energy storage technologies. The separation also means that the energy and power capacity of RFBs are independently scalable and modular. The flexibility in design means that RFBs can be configured for specific needs and applications (NREL 2021). Staff considered the vanadium RFBs and iron RFBs since these technologies have demonstrated the ability to provide electricity for 8 or more hours.

Vanadium Redox Flow Batteries

The vanadium RFB technology takes advantage of the properties of vanadium as vanadium may exist in four different oxidation states in solution. As a result, vanadium electrolyte is used in both tanks of the RFB. Vanadium RFB technology offers several advantages, including no permanent contamination from the diffusion of vanadium ions across the membrane, simple regeneration of ion crossover through normal battery operation, and lower levels of gas evolution during rapid charge cycles compared to other flow batteries. Additionally, there is potential for electrolyte recycling between applications. However, there are some disadvantages, such as the need for thermal regulation systems to maintain temperatures between 10 degrees Celsius (°C) and 40°C to prevent thermal precipitation of vanadium species (Lourenssen et al. 2019).

Potential Feasibility Issues. Vanadium RFB applications include provision of peak power and end-of-line voltage support, deferral of conventional transmission and distribution upgrades, and load leveling at substations. More recently, vanadium RFBs have been used as battery storage coupled with renewable power generation. A microgrid application planned by Indian Energy (a Native American-owned microgrid developer) in San Diego County includes a total of 70 MWh of vanadium flow and zinc hybrid cathode battery technologies capable of discharging over a 10-hour duration (CEC 2025). The microgrid system was expected to be fully operational in 2025. There

have not yet been proven demonstrations of vanadium RFBs at the scale of the proposed project. It could take several years for this technology to be proven as a reliable, safe, and operationally dependable option for a utility-scale energy storage project.

Iron Redox Flow Batteries

The iron RFB technology that uses an all-iron construction contains iron in different valance states for both electrodes and aqueous ferrous chloride solutions for the two tanks of electrolyte.

Iron RFBs are cost-effective due to the affordability of iron salts, which are abundant and cheaper than vanadium used in other flow batteries. Graphite electrodes and less expensive electrolytes contribute further to reduced costs. Overall, the design and materials make all-iron redox flow batteries an economical alternative to vanadium-based systems (Dinesh et al. 2018). ESS, Inc. offers its Energy Center™ flexible and modular system for utility-scale applications using iron flow batteries with up to 8 hours of continuous discharge (ESS 2025a). The first commercial deliveries of demonstration Energy Center™ products occurred at the end of 2024 (ESS 2025b).

Potential Feasibility Issues. Similar to vanadium RFBs, the iron RFB technology has not yet been proven at the scale of the proposed project. In July 2024, the Sacramento Municipal Utility District (SMUD) announced its partnership with ESS Tech, Inc. to implement an iron RFB demonstration project in Sacramento that will provide 3.6 MW over an 8-hour duration. Successful completion of the project will enable SMUD to scale the deployment of iron flow LDES up to 200 MW (SMUD 2024). The demonstration project is in its early phases at SMUD's Sacramento Power Academy. It will take some years for this large-scale facility to prove its operational reliability. Commercially available iron RFBs are designed for standard containerized constructions and would likely require a larger footprint for the system than the vanadium RFBs.

Metal-air Flow Batteries

Metal-air flow batteries (MABs) transform chemical energy into electrical energy through redox reactions, forming solid metal oxides that can be recycled. MABs use oxygen from the surrounding air as a cathode source and include an electrolyte which can be either aqueous or non-aqueous depending on the anode material. Additionally, their anodes can be made from affordable materials such as iron. The iron-air MAB uses an aqueous electrolyte solution.

In MABs, metal at the anode converts into ions, while oxygen at the cathode forms hydroxide ions. Oxygen diffuses through a gas diffusion layer, interacting differently with aqueous and non-aqueous electrolytes. During discharge, electrons are released as metal ions dissolve into the electrolyte; these processes are reversed during charging. However, non-ideal conditions may lead to the precipitation of solid discharge products, consuming active electrolytes and reducing energy density (Olabi et al. 2021).

Potential Feasibility Issues

MAB applications include a Form Energy, Inc. demonstration iron-air LDES system being installed next to the Pacific Gas & Electric Company substation in Redwood Valley in Mendocino County. It is designed to produce 1.5 MWs for up to 100 hours (150 MWh). Form Energy received a grant from the CEC in 2023 to build a 5-MW battery system at the site; the smaller system was chosen for installation based on the charging capacity of the substation. This system is expected to be operational in 2026 (The Press Democrat 2025, CEC 2025). There have not yet been proven demonstrations of this type of system at the scale of the proposed project. Additionally, MABs have lower round-trip efficiencies between charging and discharging compared to other electrochemical storage options. The MAB technology would require battery replacement which would not support the proposed project's objective of a technology with a long-term commercial lifespan of at least 30 years.

While non-lithium BESS technologies are progressing, scalability, cost, and storage duration remain key barriers. As a result, while non-lithium solutions are advancing, they are not yet a feasible alternative to the proposed project. Continued innovation, cost reductions, and technological breakthroughs will determine their future viability for large-scale deployment.

Sodium-sulfur Batteries

Sodium-sulfur batteries are a type of high-temperature battery that relies on a reversible redox reaction between molten sodium and sulfur to charge and discharge electricity. Sodium-sulfur batteries have high energy densities, which can make them advantageous for areas with space constraints. Sodium-sulfur batteries are in the initial commercialization phase, marked by high energy density, low levels of self-discharge (which correspond to higher efficiencies), and relatively long cycle life. These storage systems rely on common, abundant, and cheap materials, which may help drive down costs relative to storage systems reliant on scarce minerals (NREL 2021). In addition, sodium-sulfur batteries have high reliability and can be easily installed, relocated, and maintained.

Potential Feasibility Issues

These batteries operate at high temperatures, which presents certain safety issues that could limit applications. Several notable safety failures of deployed sodium-sulfur systems, which caused fires, combined with declining lithium-ion costs, have led to declining deployments (NREL 2021). However, sodium-sulfur battery technology was rejected from further analysis primarily because it is not a proven technology at the scale of the proposed project.

Lead-acid Batteries

Lead-acid battery storage is a mature, widely commercialized technology driven by its applications in transportation. Lead-acid battery storage serves both stationary and automotive applications and is widely used in microgrid systems. The basic components

of a typical rechargeable lead-acid battery system include a lead dioxide (PbO2) positive electrode, a spongy lead (Pb) negative electrode, an electrolyte solution made of higher concentration of aqueous sulfuric acid solution (H2SO4[aq]) and water. There are several subtypes of lead-acid batteries, each with unique advantages and challenges, including: vented lead-acid, valve-regulated lead-acid, absorbent glass mat, and hybrid systems (NREL 2021). Lead-acid batteries have low upfront costs relative to newer battery technologies, including lithium-ion.

Potential Feasibility Issues

Several characteristics, such as their short cycle life and inability to remain uncharged for long periods or to be deeply discharged without permanent damage, have limited their use in utility-scale power system applications. Lead-acid batteries are likely better suited in off-grid applications such as in isolated microgrids, particularly where upfront costs can be a barrier. Lead-acid battery technology was rejected from further analysis because it is not suitable for large, utility-scale power systems (NREL 2021).

Sodium-Ion Batteries (SIBs)

Sodium-Ion batteries (SIBs) are a battery type that functions similarly to Lithium-Ion batteries wherein Na^+ ions leave the cathode to carry electric charge through the internal liquid electrolyte to the anode and are stored there as electrical energy to be discharged. SIBs have a number of advantages, including the abundance of its primary resource, Sodium, as well as a relatively wide set of safe operational temperature ranges. SIBs have a significantly lower risk of catastrophic thermal runaway due to lower intrinsic reactivity and a lower heat of reaction compared to most Lithium-Ion cells, which leads to a decreased risk of propagation in the event of failure.

Potential Feasibility Issues. SIBs are not a mature technology, and there are no SIB grid-scale projects. Two promising companies working on SIB technology deployment ceased operations in 2025 due to high costs and supply chain inadequacies (Natron Energy and Bedrock Materials). Most grid-scale projects have been implemented in China, where performance data is not readily available. SIBs can also have sensitivity to moisture which leads to a faster degradation rate in addition to generally having a lower cycle life compared to most Lithium-Ion batteries. This chemistry also typically has a much lower energy density.

Nickel Manganese Cobalt Oxide (NMC)

Nickel Manganese Cobalt Oxide (NMC) batteries are a Lithium-Ion sub-chemistry that functions similarly to most other Lithium-Ion batteries; Li^+ ions leave the cathode during charge and travel through the internal liquid electrolyte to the anode and are stored there as electrical energy to be discharged. NMC batteries offer a few advantages, including high energy density. The higher energy density also allows for a smaller physical footprint compared to more traditional Lithium-Ion battery chemistries. NMC has been used in projects of multiple sizes in the US, meaning there is proven use of the technology.

Potential Feasibility Issues. NMC batteries require stricter safety measures as they have a number of disadvantages that lead to decreased stability and a higher risk of thermal runaway, including a smaller safe temperature window and high release of heat and gas during failure. There have been multiple examples of runaway events including an explosion in the 2 MW APS McMicken BESS system in Arizona and a major fire in the 750 MW Vistra Moss Landing BESS facility in California. In addition, NMC batteries also have a lower cycle life than other chemistries and wear out quickly.

Lithium Titanate (LTO)

Lithium Titanate (LTO) batteries are another Lithium-Ion sub-chemistry used in BESS technology that function similarly to its other sub-chemistries. The advantages of LTO batteries include a high-cycle life span due to an inherent resistance to lithium plating at the anode, as well as a low degradation rate even at partial charge. This chemistry also has a very low risk of thermal runaway in comparison to other Lithium-Ion battery types as it has a wide range of safe operable temperatures and has a very low risk of Lithium plating.

Potential Feasibility Issues. Some of the disadvantages of LTO batteries include a relatively low energy density, causing the system to require a larger footprint to match the output of other systems. Also, current BESS implementations are mostly at low MW capacity and more focused on short duration energy supply rather than serving the grid for long durations.

8.6.3 100 Percent Hydrogen-fueled Power Plant

The 100 percent H2-fueled power plant technology uses combustion turbines and heat exchangers to burn up to 100 percent H2 as a fuel source to generate power. H2 is abundant but not a readily available resource and would need to either be produced onsite in a separate facility or provided from an offsite source. In addition, 100 percent H2-capable turbines require specialized equipment that is only recently becoming commercially available and is not yet a proven technology for large-scale applications.

100 percent H2-fueled power plants use combustion turbines to burn pure H2 to cleanly generate electricity. Burning pure H2 only produces electricity, heat, and water vapor as byproducts as this is a carbon-free fuel. In addition, though not renewable, H2 is plentiful in the environment and effectively limitless, with its primary source being the atoms in water.

Simple-cycle natural gas-fueled turbines demonstrate higher energy conversion efficiencies of around 40 to 42 percent. For combined cycle natural gas-fueled turbine units, the efficiency is around 54 to 56 percent. In comparison, combined cycle H2-fueled combustion turbines are expected to reach roughly 60 percent efficiency. However, similarly, with higher combustion temperatures, some combined cycle natural gas combustion turbines equipped with advanced turbine blade materials can also reach an efficiency of 59 to 60 percent. Assuming a favorable 60 percent efficiency rate and using the lower heating value of H2 of 33,330 kWh/MT, a 100 percent H2-fueled power

plant would require 60 MTs of H2 per day to meet the same 1,200-MWh expected energy storage capacity as the proposed project.[6]

Hydrogen has a very high flame temperature (3,713 °F [2,045 °C] in air) as well as a much higher flame speed (approximately 3 meters/second [m/s]) compared to natural gas (3560 °F [1,960 °C] and approximately 0.3 m/s, respectively). These factors greatly increase the risk of flashback in a combustion turbine due to the risk of the flame propagating backward into other zones inside the turbine. Blowback is also possible as the high flame speed can cause the fluid to move at high velocity during combustion and possibly push the reacting H2 out of the combustor or extinguish the flame outright. Due to these risks, turbines designed to burn 100 percent H2 are required to safely use this fuel as measures must be included to mitigate flashback and blowback. Standard natural gas turbines cannot be used for this project without retrofitting to minimize the risks.

According to combustion turbine manufacturers, certain new models can be constructed that will soon have pre-planned upgrades available to install, reportedly allowing them to align to turbine compatibility with up to 100 percent H2 combustion (U.S. EPA 2023). In addition, the world's three largest turbine manufacturers have made commitments to develop advanced technologies by the year 2030 or sooner that will enable additional models of new heavy-duty combustion turbines to fire 100 percent H2. For certain existing larger models, manufacturers are developing retrofits that will allow those units to safely increase their levels of H2 co-firing up to 100 percent.

Pure H2 burning also provides pathways for nitrous oxide (NOx) emissions to form as a byproduct of the fuel burning process. Although pure H2 creates no chemical byproducts, the high temperature that is required to burn H2 causes reactions with air that can oxidize free nitrogen in the air and form NOx emissions. The primary way to mitigate this issue is to mix in air to bring the reaction temperature down to a value where these reactions are less likely to occur, but that is not currently an option when using 100 percent H2.

Potential Feasibility Issues

Pure H2, while abundant, is also not a renewable or readily available resource. To use 100 percent H2, it must be produced either on or offsite for use in a facility, as described above for the fuel cell technology alternative. Furthermore, carbon-free H2 production methods are not widely implemented, and the resulting emissions can be significant. More than 95 percent of H2 production in the United States is through the steam-methane reforming process which requires natural gas and yields carbon-based byproducts (U.S. EPA 2023). The reliance on carbon-producing H2 production methods would not be compatible with the project purpose and basic objectives to reduce

6 Calculated as: (1,200-MWh) / (60%) / (33.33-MWh/MT) = 60 MT of H2

statewide greenhouse gas emissions (see subsection "8.4 Factors in Selection of Alternatives," above).

The proposed project's 300-MW BESS facility would occupy approximately 18 acres while the solar facility would occupy the remaining areas of the approximately 2,670-acre project site. The 100 percent H2-fueled power plant alternative would require infrastructure comparable to those found in combined cycle natural gas-fueled power plants, such as a water treatment plant, combustion turbines and heat exchangers. A project proposed by the Los Angeles Department of Water and Power (LADWP) plans to retrofit the existing approximately 50-acre LADWP Scattergood Generating Station with a 346-MW gross capacity 30-percent H2-fueled, rapid-response, combined-cycle generation system (CCGS), with the goal to burn 100 percent H2 by the year 2035. However, the acreage of the LADWP CCGS project does not account for the necessary production, transportation, and storage infrastructure for "green" H2 (carbon-free H2) (LADWP 2025). The approximately 2,670-acre project site could fit the footprint for power generation, production facility, and storage infrastructure needed for the 100 percent H2-fueled power plant alternative. The SMSP would be located on an undeveloped site with no existing H2 pipeline nearby.

In addition, onsite production of green H2 would not be suitable either since it would require significantly higher water demands compared to the project's proposed operational water demand. For example, in the year 2025 the CEC certified the Darden Clean Energy Project which proposed, but ultimately eliminated, a green H2 facility. The Darden Clean Energy Project's green H2 facility was proposed on up to 225 acres, capable of producing up to 140 MTs gaseous H2 per day from 1,000 acre-feet per year of water, and consisting of an electrolyzer, water treatment plant, and ancillary equipment. The SMSP operational water demand is only approximately 5.6 acre-feet per year. There would be significant additional costs associated with building the infrastructure needed for the 100-percent H2-fueled power plant, both for offsite transportation via an H2 pipeline or an onsite green H2 facility. Therefore, the alternative would likely be economically infeasible.

Part of the project's purpose is to utilize a BESS to store excess generation from the solar facility when the electrical energy from the solar facility exceeds demand. The 100 percent H2-fueled power plant alternative would need to be coupled with H2 production via electrolysis to use excess renewable generation. The processes involved with H2 production via electrolysis would introduce additional inefficiencies compared to directly storing and discharging excess generation with a BESS. For example, a typical PEM electrolyzer has an electrical efficiency of up to 60 percent (U.S. EPA 2023). A BESS would be a more efficient use of excess generation with its approximately 85 percent round-trip efficiency. Because of the limitations described above, the 100 percent H2-fueled power plant technology is not a feasible alternative to the project's proposed technology.

8.6.4 Alternative Project Site

The potential feasibility of an alternative site depends on whether that location has the necessary resources and physical conditions to support the construction and operation of the proposed project. CEQA provides that "in some cases there may be no feasible alternative locations for a geothermal plant or mining project which must be in close proximity to natural resources at a given location" (Cal. Code Regs., tit. 14, § 15126.6, subd. (f)(2)(B)). Similarly, the proposed SMSP facilities rely on solar and battery technologies that require siting on land with specific environmental and infrastructural characteristics. These include sufficient contiguous acreage, high solar insolation, relatively flat terrain with minimal grading needs, and proximity to both existing roadway infrastructure and a transmission corridor capable of accepting and delivering new electrical load to the grid. For example, the proposed SMSP site offers favorable geological conditions, including predominantly level desert terrain with elevation differences of no more than 100 feet and slopes generally less than five percent in the areas designated for solar and BESS development.

An alternative site may reasonably be considered infeasible if it lacks any of the following:

(1) a minimum of approximately 2,500 contiguous acres;

(2) terrain with minimal slope to support cost-effective installation and operation;

(3) reasonable site control or access;

(4) adequate solar exposure unobstructed by nearby geological features; and

(5) sufficient proximity to existing transmission infrastructure with available capacity.

Another facet of considering alternative sites is to determine which impacts of the project might be avoided or reduced at a different site. CEQA states that "[o]nly locations that would avoid or substantially lessen any of the significant effects of the project need be considered for inclusion in the EIR" (Cal. Code Regs., tit. 14, § 15126.6, subd. (f)(2)(A)). For the environmental topics covered in this Staff Assessment, the project's potential environmental impacts at the SMSP site would be reduced to less-than-significant levels with implementation of staff's recommended COCs, with the exception of Biological Resources and Visual Resources that despite the imposition of mitigation, impacts would remain significant and unavoidable.

Three alternative site categories are evaluated:

- BLM-Administered Public Land Alternatives
- Private Land Alternatives
- Brownfields/Degraded Lands Alternatives

BLM-Administered Alternative Sites

During the federal environmental review process in 2016, the applicant conducted an initial screening of more than 20 sites located on BLM-administered public lands in southern California. The screening focused on identifying sites that met key siting criteria, including high solar insolation, proximity to existing transmission infrastructure, access to major roadways, and relatively flat terrain (i.e., slopes less than five percent). Following site visits and further investigation, 15 of the candidate sites were eliminated from consideration due to constraints such as pending ROW applications, insufficient acreage, distance from transmission lines, excessive slope, and lack of access.

The remaining four to five sites were excluded from further review after it was determined that they were located within Desert Wildlife Management Areas (DWMAs) designated for the protection of the desert tortoise. These sites were deemed infeasible due to their inconsistency with existing land use management policies, inability to feasibly support the technical requirements of the proposed project, and lack of proximity to adequate transmission infrastructure.

CEC staff has reviewed this analysis and concurs with the conclusion that none of the previously identified BLM-administered alternative sites meet the project's fundamental objectives or required site characteristics. Additionally, staff notes that any site with sufficient proximity to transmission infrastructure would, by necessity, also be near roadway access and therefore likely result in similar aesthetic impacts to those identified for the proposed project site. As such, no BLM-administered alternative site would feasibly avoid or substantially lessen any of the project's significant environmental effects.

Private Land Alternatives

During the 2016 environmental review, the applicant evaluated approximately 4.85 million acres of land within 50 miles of the proposed project site to determine whether suitable private lands were available. The review focused on areas large enough, contiguous, and proximate to transmission infrastructure. Two potential sites were identified with more than 2,500 contiguous acres near an existing transmission line: one of about 12,020 acres (the "West Site") and another of about 3,262 acres (the "East Site"), shown on Figure 1 of the applicant's revised Alternatives Section (RE 2025w). Both were ultimately rejected due to environmental resource constraints that would have reduced the developable area below project objectives. Development at either location could also result in greater biological impacts than the proposed project because of their proximity to the Mojave River wildlife linkage corridor, the Superior–Cronese DWMA (critical habitat for desert tortoise), and the Afton Canyon Area of Critical Environmental Concern (ACEC). In addition, aggregation of the necessary parcels was considered infeasible due to the number of individual landowners and the absence of sales or lease opportunities. Staff conducted a desktop review of potentially available private lands for sale in the area that met the necessary criteria to site the SMSP facility. No such lands were available at the time of this analysis and therefore this alternative site category was found to be infeasible.

Brownfields / Degraded Lands Alternative

In addition to private lands, the applicant evaluated previously disturbed "brownfield" sites, including abandoned mines, Resource Conservation and Recovery Act sites, federal and state Superfund sites, landfills, and other industrial areas within a 50-mile search radius around the project site. While these sites are already disturbed and may reduce some environmental conflicts, none met the project's basic requirements for contiguous land area, transmission access, and proximity to water supply.

Most brownfield parcels were too small, fragmented, or constrained by existing land uses. Inactive mine sites are scattered and lack sufficient acreage, while closed landfills are subject to regulatory restrictions that prevent large-scale redevelopment. Other industrial parcels are limited by existing infrastructure, hazardous materials, or incompatible surrounding uses. Staff conducted a similar desktop review of U.S. EPA contaminated sites and reached the same conclusion as the applicant: no brownfield site identified within the study area could feasibly support a project of the required scale or reduce impacts compared to the proposed site.

Conclusion of Alternative Sites

Sites that fail to meet these criteria would not feasibly support the core functional objectives of the SMSP project or reasonably be expected to avoid or substantially reduce its significant impacts. As a result, the proposed project site is uniquely well-suited for solar and BESS development, and it would be difficult to identify an equivalent available alternative that satisfies the siting constraints analysis. These alternative project sites were therefore rejected from further consideration because an alternate location would not substantially avoid or lessen the project's impacts without undermining overall feasibility.

8.7 Alternatives Selected for Analysis and Comparison to the Project

The following alternatives were selected for analysis and comparison to the project:

- Alternative 1: No Project/No Build Alternative
- Alternative 2: BHS Buffer and Relocated BESS Alternative #1
- Alternative 3: BHS Buffer and Relocated BESS Alternative #2

CEQA provides that the No Project alternative can be "the circumstance under which the project does not proceed" (Cal. Code Regs., tit. 14, § 15126.6, subd. (e)(3)(B)). Consistent with this provision, for this project it is the No Project/No Build Alternative (Alternative 1).

The alternatives are described below, including an assessment of their ability to meet the basic project objectives. Assessments of potential feasibility issues are provided followed by impact comparisons for the project and each alternative. These analyses are followed by subsection "**8.8 Environmentally Superior Alternative**," below, and

a table summarizing the comparison of impacts (**Table 8-1**). **Table 8-2** lists staff members who contributed to this Alternatives section.

As stated previously, staff has identified no potentially significant impacts on resources evaluated in sections covering Efficiency and Energy Resources; therefore, this topic is not included in the comparative impact discussions below. For the other topics covered in **Section 5, Environmental Impact Assessment**, impact analyses are provided comparing impacts of Alternative 1, Alternative 2, and Alternative 3 to the proposed project.

8.7.1 Alternative 1: No Project Alternative

The project site consists of undeveloped federal desert lands managed by BLM within the Mojave Desert. The land has never been cultivated and remains largely in a natural, undisturbed condition characterized by native desert scrub vegetation, including creosote bush and white bursage, with occasional ephemeral washes and sandy alluvial soils. Existing disturbance is minimal and primarily limited to a few dirt access roads, informal vehicle tracks, an OHV dirt road (Rasor Road), and a small, developed area near I-15 at the western boundary. No permanent structures, utilities, or agricultural infrastructure occur on the site. The proposed gen-tie line would extend across federal land to interconnect with the regional transmission network adjacent to the I-15 corridor. Under the No Project Alternative, the site would remain in its current undeveloped and natural state, continuing to support existing land uses such as recreation, wildlife habitat, and BLM resource management. Without project implementation, no large-scale renewable energy facilities would be constructed, and the project's objectives related to renewable energy production, regional grid reliability, and state climate goals would not be achieved. As can be seen in **Table 8-1**, this alternative does not meet any of the project objectives.

As discussed under subsection "**8.5 Environmental Impacts of the Project**," above, staff recommends COCs to reduce the potentially significant impacts identified in the staff assessment to less-than-significant levels, with the exception of Biological and Visual Resources that would remain significant and unavoidable, despite mitigation efforts.

The No Project Alternative would avoid the significant impacts relating to construction and operation of the project (*no impact* compared to the project), summarized as follows:

- **Air Quality** – Under the No Project Alternative, the project site would likely remain in its current state of use as open desert managed by the BLM. This alternative would avoid construction-related air emissions relating to off-road equipment, haul-truck trips, on-road worker vehicle trips, vehicle travel on paved and unpaved surfaces, and fugitive dust from material handling activities. In addition, it would avoid emissions from vehicle trips for panel washing and maintenance activities during project operation. Therefore, the No Project Alternative would have substantially less air quality impacts compared to the project.

- **Biological Resources** – Under the No Project Alternative, the project site would likely remain in its current state of use as open desert managed by the BLM. Portions of the site would continue to be used for off highway vehicle use, recreation, and periodic camping Since no new ground disturbing activities would occur, the No Project Alternative would avoid potential impacts to biological resources associated with the project. Similar to the proposed project, there would be no impacts to federally and or state listed or protected species including desert tortoise, burrowing owl, desert kit fox, American badger, Mojave fringe-toed lizard, or nesting birds. More importantly, the No Project Alternative would avoid significant and unavoidable impacts to desert BHS, a state fully protected species that is known to occur in the south Soda Mountains. Overall, the No Project Alternative would have substantially less impact on biological resources compared to the proposed project.
- **Climate Change and Greenhouse Gas Emissions** – Under the No Project Alternative, the project site would likely remain in its current state of use as open desert managed by the BLM, and none of the construction or operational greenhouse gas (GHG) emissions from the proposed project would be generated. The proposed project would have a net GHG reduction primarily due to the emissions avoided by producing electricity from renewable energy (-71,551 MTs of carbon dioxide equivalent (CO2e)/year). The No Project Alternative would not generate electricity from renewable energy and would not have a net GHG reduction from the indirect effect of generating electricity from renewable energy. Therefore, the No Project Alternative would have greater GHG impacts compared to the proposed project.
- **Cultural and Tribal Cultural Resources** – Under the No Project Alternative, the project site would likely remain in its current state of use as open desert managed by the BLM. Since no new ground disturbing activities or construction would occur, this alternative would avoid potential impacts associated with cultural and tribal cultural resources and have less impact compared to the proposed project.
- **Geology, Paleontology, and Minerals** – Under the No Project Alternative, the project site would likely remain in its current state of use as open desert managed by BLM. Since no new ground disturbing activities or construction would occur, this alternative would avoid potential impacts associated with geology, paleontology, and minerals and have no impacts compared to the proposed project.
- **Hazards, Hazardous Materials/Waste, and Wildfire** – Under the No Project Alternative, the project site would likely remain in its current state of use as open desert managed by the BLM. Since no new ground disturbing activities or construction would occur, this alternative would avoid potential impacts associated with hazards, hazardous materials/waste and wildfire and have less impacts compared to the proposed project.
- **Land Use** – Under the No Project Alternative, there would be no construction or operation activities along Rasor Road. There would be no new project activities under this alternative that would impede public access to the Rasor OHV SRMA, and potential impacts to a designated recreational resource would be avoided. Further,

the alternative would not create a conflict with BLM's land use plans and policies adopted for the purpose of mitigating an environmental effect.

- **Noise and Vibration** – Under the No Project Alternative, the project would not be constructed and therefore would not have an impact on ambient noise levels in the project area. Both temporary loud noises during construction and any increases during project operation would be avoided, therefore, the No Project Alternative would result in no impact to noise and vibration.
- **Public Health** – Under the No Project Alternative, the project site would likely remain in its current state of use as open desert managed by the BLM, and no construction or operational emissions would be generated. Therefore, the No Project Alternative would have substantially less public health impacts compared to the project.
- **Socioeconomics** – Under the No Project Alternative, the SMSP would not be constructed, and the temporary construction employment and associated economic activity that would occur under the proposed project would not be realized. The absence of these short-term economic benefits would not constitute a significant adverse socioeconomic impact.

  The No Project Alternative would not result in population growth, housing demand, or increased demand for public services, and existing socioeconomic conditions would remain unchanged. No new fiscal revenues associated with the proposed project would be generated; however, the absence of these revenues would not result in adverse fiscal impacts. Overall, socioeconomic impacts under the No Project Alternative would be less than significant.
- **Solid Waste** – Under the No Project Alternative, the project site would remain in its current state. The project would not generate solid waste and not contribute to diminishing local landfill capacity.
- **Transportation** – Under the No Project Alternative, the project site would not experience any increase in travel. Therefore, there would be no impact.
- **Visual Resources** – Under the No Project Alternative, the project site would remain in its current undeveloped and natural state and none of the significant and less than significant impacts that would occur under the proposed project would occur. Specifically, the less-than-significant impact on scenic vistas would not occur. Nor would the substantial degradation to the existing visual character or quality of public of the site and its surroundings occur. Additionally, the less-than-significant effect (with mitigation) of new light, glare, and reflectance emitted by the proposed project would not occur. Finally, under the No Project Alternative, there would be no inconsistencies with federal and local visual management objectives, principles, or policies, as would occur under the proposed project.
- **Water Resources** – Under the No Project Alternative, the project site would remain in its current state. The possibility of increased erosion and impact to surface water quality from project construction grading and activities during project

operation would be reduced. There would be no need for crossings of ephemeral streams. Groundwater from the local Soda Mountain subbasin would not be utilized for water supply and the resource would remain pristine.

8.7.2 Alternative 2: BHS Buffer and Relocated BESS Alternative #1

This alternative was developed in coordination with biological resource specialists, noise analysts, and fire-protection consultants to explore project design modifications that would reduce potential biological and public-safety impacts while maintaining the project's renewable-energy generation and energy-storage objectives. **Figure 8-1** is the site plan evaluated for the BHS Buffer and Relocated BESS Alternative #1. Under the BHS Buffer and Relocated BESS Alternative #1, the BESS facility would be relocated farther from I-15 and a 0.25-mile buffer would be established from the 10-percent slope contour that defines the lower extent of important BHS foraging and escape habitat.

These design modifications would reduce potential disturbance to sensitive wildlife areas (discussed in greater detail in **Section 5.2, Biological Resources**) and would also increase separation from public roadways, thereby reducing potential public-safety risks associated with a hypothetical BESS fire or thermal-runaway event (discussed further in **Section 5.10, Public Health**, and **Section 5.7 Hazards, Hazardous Materials, and Wildfire**).

Under this configuration, the proposed BESS facility would be relocated eastward from the I-15 frontage and sited within the central portion of Solar Array #2, rather than near the project's primary access corridor. It would be relocated to this area to provide a larger buffer between the BESS units and I-15. The revised BESS pad would be located approximately 3,100 feet from I-15 and about 1,360 feet north of the existing Rasor Road (OHV) access road, positioning it within the interior of the solar development area. The relocated BESS would remain adjacent to the proposed internal array access roads, providing efficient operational, construction, and emergency access without introducing new off-site roads or additional ground disturbance.

To further reduce biological resource impacts, this alternative incorporates a 0.25-mile (1,320-foot) buffer downslope from the 10-percent slope contour along the site's northern, southern, and eastern boundary, as recommended by CDFW (RE 2024vv, p. 33). This contour marks the geomorphic transition between the relatively flat alluvial fan and the steeper foothill slopes that serve as foraging and escape terrain for BHS. Maintaining a setback from this slope threshold would reduce potential disturbance, lighting, and noise effects in areas used by sheep for seasonal movement and feeding and would preserve ecological connectivity between the valley floor and the adjacent mountainous terrain.

Because the BESS relocation and BHS buffer zone would slightly alter the spatial layout of site infrastructure, the PV array configuration would be re-arranged to avoid encroachment within the buffer. Under the BHS Buffer and Relocated BESS Alternative

#1, approximately 50 acres of solar panels would be relocated from the outer edge of the solar arrays that encroach on the buffer zone and moved to other areas throughout the project site boundary, resulting in a total of approximately 50 acres fewer solar panels. Areas elsewhere on the site, primarily south of the new BESS location along the southern project boundary, would be adjusted to offset the generating capacity lost due to the BHS buffer to the maximum extent feasible and maintain project efficiency within the project footprint.

Additionally, the gen-tie line connecting the BESS and PV arrays to the project's proposed substation/switchyard would need to be lengthened approximately 8,370 feet to reach the POI. This extended segment would likely run parallel to or within the proposed solar array access roads to minimize ground disturbance.

In summary, the BHS Buffer and Relocated BESS Alternative #1 would:

- Move the BESS approximately 3,090 feet from I-15; 1,360 feet from the existing Rasor Road; and 9,460 feet from the nearest sensitive receptor located adjacent to the project-adjacent gas station, and placing it within the central solar field within Solar Array #2;
- Establish a 0.25-mile buffer from the 10-percent slope contour to increase separation from desert BHS foraging and movement habitat;
- Use existing internal access roads for operational and emergency access;
- Reconfigure PV arrays to avoid the buffer area while maintaining generation capacity;
- Extend the gen-tie line approximately 8,370 feet, likely within proposed internal roadways, to reach the proposed substation/switchyard; and
- Increase separation from public roadways, thereby reducing potential public-safety risks associated with a BESS fire or thermal event.

The BHS Buffer and Relocated BESS Alternative #1 would meet most of the project's objectives by preserving renewable energy generation and energy storage capacity while reducing biological and public-safety impacts. Although the buffer zone initially reduced the available area for PV arrays, the applicant was able to reconfigure the array's design in order to offset this loss (RE 2025iiii). The alternative continues to rely on existing transmission infrastructure and internal access roads, supports California's RPS program and energy storage mandates, and maintains compatibility with the site's solar resource potential and land-use efficiency, while reducing potential biological and public-safety impacts through strategic relocating of the BESS facility, establishment of a slope-based buffer for desert BHS, and careful realignment of associated infrastructure.

Potential to Attain the Project Objectives

The BHS Buffer and Relocated BESS Alternative #1 would meet most of the project's objectives by preserving renewable energy generation and energy storage capacity

while reducing biological and public-safety impacts. As mentioned above, the applicant provided a reconfiguration of the array layout (RE 2025iiii), thus ensuring that this alternative would remain a viable option and meet the project objective of providing 300 MW of new California RPS–qualified solar power generation facilities onsite. The alternative continues to rely on existing transmission infrastructure and internal access roads, supports California's RPS program and energy storage mandates, and maintains compatibility with the site's solar resource potential and land-use efficiency, while reducing potential biological and public-safety impacts through strategic relocating of the BESS facility, establishment of a slope-based buffer for desert BHS, and careful realignment of associated infrastructure.

Potential Feasibility Issues

Relocating the BESS into the interior of Solar Array #2 while maintaining a 0.25-mile buffer from the 10 percent slope contour introduces several practical and engineering considerations. The most notable constraint is the need to extend the gen-tie by approximately 8,370 feet to reach the proposed substation. A longer electrical run would increase conductor and trenching costs, may require additional grounding or protection equipment, and can introduce higher electrical losses that reduce system efficiency. Depending on the final alignment, this extension could also require additional construction staging or adjustments to interior access routes, resulting in increased surface disturbance or minor changes to the internal road network. Additionally, this alternative would result in increased ground disturbance associated with the extended length of electrical infrastructure, thereby increasing the potential for impacts to environmental resources. Finally, and as discussed below, this alternative does not substantially reduce risks to travelers on I-15 when compared to the preferred alternative (BHS Buffer and BESS Relocation #2).

Reconfiguring PV arrays to maintain the BHS wildlife buffer could also create layout inefficiencies. Approximately 50 acres of PV panels would need to be shifted elsewhere within the project boundary, potentially increasing direct current (DC) collection trench lengths, altering inverter placement, or resulting in uneven array densities. These changes may raise both labor and material costs and reduce flexibility during detailed electrical design.

Construction logistics present another set of feasibility concerns. The relocated BESS would sit farther from the primary access corridor, which may require reinforcing or widening certain internal roads to support delivery of heavy equipment and to maintain required emergency-access clearances. Fire protection requirements such as hydrants or water supply may need to be revisited depending on the final configuration.

Overall, the alternative remains technically feasible (RE 2025iiii), but would require added electrical and civil engineering refinement, increased internal infrastructure, and careful environmental review to ensure that extended components and redistributed PV areas remain compliant with permitting and resource-management requirements.

Environmental Analysis

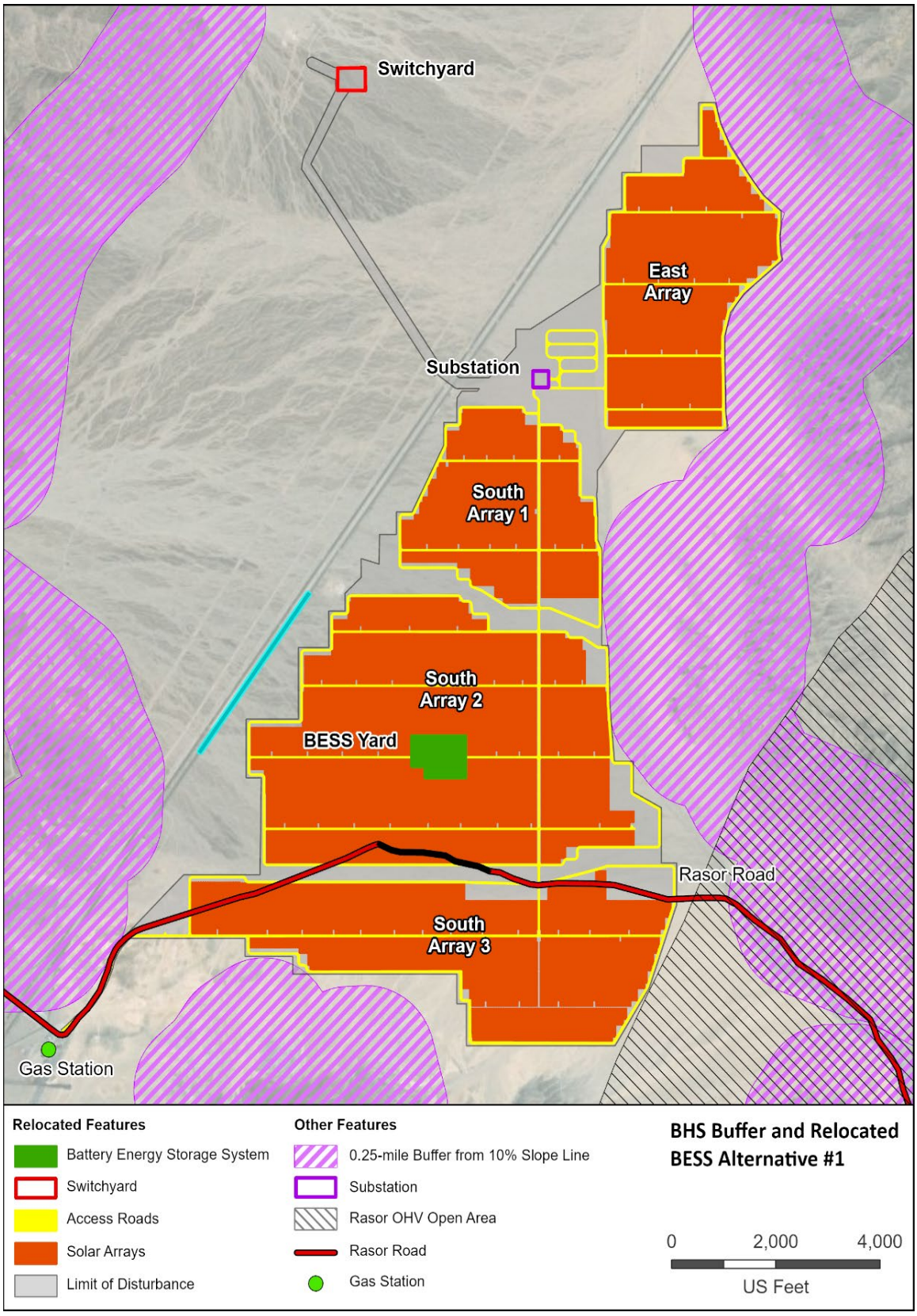
This subsection describes the comparisons of impacts of the BHS Buffer and Relocated BESS Alternative #1 to the SMSP.

Air Quality – Under the BHS Buffer and Relocated BESS Alternative #1, the project footprint would be reduced, and the BESS facilities would be relocated farther from I-15. Under this alternative, fewer ground disturbing and construction activities would occur. Therefore, this would reduce potential impacts related to air quality during construction.

Under this alternative, routine operation and maintenance activities would be limited to the reduced project area. As a result, routine operational air quality impacts would be reduced compared to the proposed project.

Under the BHS Buffer and Relocated BESS Alternative #1, the increased separation from public roadways would reduce potential air quality impacts to any potential receptor traveling on I-15 from a hypothetical BESS fire or thermal-runaway event. However, the BESS would be moved closer (from about 2.9 miles to about 1.8 miles) to the nearest sensitive receptors at the Rasor Road Services Shell Oil gas station. As a result, air quality impacts to the nearest sensitive receptors at the gas station from a hypothetical BESS fire or thermal-runaway event would be greater compared to the proposed project.

Staff recommend the same COCs for the proposed project be adopted if this alternative is selected. With implementation of these COCs, air quality impacts under the BHS Buffer and Relocated BESS Alternative #1 would be less than significant.


Switchyard
East Array
Substation
South Array 1
South Array 2
BESS Yard
Rasor Road
South Array 3
Gas Station
Relocated Features
Battery Energy Storage System
Switchyard
Access Roads
Solar Arrays
Limit of Disturbance
Other Features
0.25-mile Buffer from 10% Slope Line
Substation
Rasor OHV Open Area
Rasor Road
Gas Station
BHS Buffer and Relocated BESS Alternative #1
0
2,000
4,000
US Feet

Biological Resources – Under the BHS Buffer and Relocated BESS Alternative #1, the project footprint would be reduced to avoid important desert BHS habitat located at the base of the south Soda Mountains. Under the BHS Buffer and Relocated BESS Alternative #1, fewer ground disturbing activities would occur and potential impacts on biological resources on the project site would be substantially reduced. This would include reducing direct and indirect impacts to several state or federally protected species and their habitat including desert tortoise (state and federally threatened), burrowing owl (State Candidate for listing), desert kit fox (protected by Cal. Code Regs., tit. 14, § 460), and desert BHS (state Fully Protected). By reducing the footprint of the project away from the foothills of the south Soda Mountains it would avoid areas that supported recent desert tortoise sign, preserve foraging and movement habitat along the perimeter of the project for this and other species, and reduce impacts to important foraging areas for desert BHS. Although this buffer distance is less than the recommended 0.64 to 1.24-mile buffers proposed by Aiello it would align with the recommended 0.25-mile buffer proposed by CDFW.

While impacts to desert BHS may still occur, under the BHS Buffer and Relocated BESS Alternative #1 the impacts would be considered less than significant with mitigation and would meet the fully mitigate standard required by CESA compared to the significant and unavoidable impacts that would occur under the proposed project. The smaller project footprint would also result in a reduction of impacts to state jurisdictional waters. Overall, the BHS Buffer and Relocated BESS Alternative #1 would have less impact on biological resources than the proposed project and avoid significant and unavoidable impacts to desert BHS.

Staff recommends the same COCs for the proposed project be adopted if this alternative is selected. However, for COCs that require compensatory land acquisition, these measures would be revised to reflect the acres of the smaller project footprint compared to the proposed project. With implementation of these COCs, biological resource impacts under the BHS Buffer and Relocated BESS Alternative #1 would be less than significant.

Climate Change and Greenhouse Gas Emissions – Under the BHS Buffer and Relocated BESS Alternative #1, the project footprint would be reduced to avoid important desert BHS habitat located at the base of the south Soda Mountains. Under this alternative, fewer ground disturbing and construction and operation activities would occur. Therefore, this would reduce potential impacts related to climate change and greenhouse gas emissions and thus have less impacts compared to the proposed project.

Staff recommends the same COCs for the proposed project be adopted if this alternative is selected. With implementation of these COCs, climate change and GHG impacts under the BHS Buffer and Relocated BESS Alternative #1 would be less than significant.

Cultural and Tribal Cultural Resources – Under the BHS Buffer and Relocated BESS Alternative #1, the project footprint would be reduced to avoid important desert BHS habitat located at the base of the Soda Mountains. Under this alternative, fewer ground disturbing and construction activities would occur. Therefore, this alternative would reduce potential impacts to previously unknown cultural and tribal cultural resources.

Staff recommends the same COCs for the proposed project be adopted if this alternative is selected. With implementation of these COCs, cultural and tribal cultural resource impacts under the BHS Buffer and Relocated BESS Alternative #1 would be less than significant.

Geology, Paleontology, and Minerals – Under the BHS Buffer and Relocated BESS Alternative #1, the project footprint would be reduced to avoid important desert BHS habitat located at the base of the south Soda Mountains. Under this alternative, slightly fewer ground disturbing and construction activities would occur. This alternative would have similar potential impacts related to geology, paleontology, and minerals as the proposed project.

Staff recommends the same COCs for the proposed project be adopted if this alternative is selected. With implementation of these COCs, geology, paleontology, and mineral impacts under the BHS Buffer and Relocated BESS Alternative #1 would be less than significant.

Hazards, Hazardous Materials/Waste, and Wildfire – Under the BHS Buffer and Relocated BESS Alternative #1, the project footprint and the BESS facilities would be relocated farther from I-15. Under this alternative, construction and operation activities associated with the BESS would occur farther from the freeway corridor (3,100 feet from I-15). As a result, construction and operation-related hazard, hazardous materials and wildfire impacts would be reduced but similar compared to the proposed project. In the event of a hypothetical BESS fire, the increased distance from I-15 should reduce the potential for disruption of traffic on I-15 from smoke.

Staff recommend the same COCs for the proposed project be adopted if this alternative is selected. With implementation of these COCs, hazards, hazardous materials/waste, and wildfire impacts under the BHS Buffer and Relocated BESS Alternative #1 would be less than significant.

Land Use – Staff assumes that the BHS Buffer and Relocated BESS Alternative #1 would require the use of Rasor Road during construction and operation of this alternative and would likely re-route Rasor Road between South Array #2 and South Array #3. Similar to the proposed project, public access along Rasor Road may be limited or closed during movement of heavy construction equipment. Closure of Rasor Road would effectively preclude access to the Rasor OHV SRMA, which is a designated recreational resource. With implementation of staff recommended COCs, construction and operation activities would not preclude access to the Rasor OHV SRMA, and any temporary restrictions or access delays along Rasor Road would be communicated to

the public. Potential impacts to recreation access would be mitigated to less than significant.

Similar to the proposed project, the BHS Buffer and Relocated BESS Alternative #1 would be subject to BLM plans and policies that manage federally designated land uses, such as recreation areas and Section 368 energy corridors. BLM's ROW authorization process would include requirements for the applicant to comply with all applicable policies. The BHS Buffer and Relocated BESS Alternative #1 would not create a new policy conflict with BLM's land use plans and policies.

Staff recommends the same COCs for the proposed project be adopted if this alternative is selected. With implementation of these COCs, land use impacts under the BHS Buffer and Relocated BESS Alternative #1 would be less than significant.

Noise and Vibration – The BHS Buffer and Relocated BESS Alternative #1 would result in no change in noise and vibration impacts as the result of the BESS relocation. The BESS would still be located far enough from the project's nearest noise-sensitive receptor to have no impact.

Reconfiguring the PV arrays to populate the portion of the project site near its southern boundary would slightly increase some construction noise at this receptor but would still be less than significant. Operational noise and vibration impacts as the result of the relocation of the PV panels would be similar to the proposed project.

Staff recommends the same COCs for the proposed project be adopted if this alternative is selected. With implementation of these COCs, noise and vibration impacts under the BHS Buffer and Relocated BESS Alternative #1 would be less than significant.

Public Health – Under the BHS Buffer and Relocated BESS Alternative #1, the project footprint would be reduced, and the BESS facilities would be relocated farther from I-15. Under this alternative, fewer ground disturbing and construction activities would occur. As a result, construction-related public health impacts would be reduced compared to the proposed project.

Under this alternative, routine operation and maintenance activities would be limited to the reduced project area. As a result, routine operational public health impacts would be reduced compared to the proposed project.

Under the BHS Buffer and Relocated BESS Alternative #1, the increased separation from public roadways would reduce potential public health impacts to any potential receptor traveling on I-15 from a hypothetical BESS fire or thermal-runaway event. However, the BESS would be moved closer (from about 2.9 miles to about 1.8 miles) to the nearest sensitive receptors adjacent to the Rasor Road Services Shell Oil gas station. As a result, public health impacts to the nearest sensitive receptors at the gas station from a hypothetical BESS fire or thermal-runaway event would be greater compared to the proposed project.

Staff recommends the same COCs for the proposed project be adopted if this alternative is selected. With implementation of these COCs, public health impacts under the BHS Buffer and Relocated BESS Alternative #1 would be less than significant.

Socioeconomics – Under the BHS Buffer and Relocated BESS Alternative #1, the project would result in temporary construction employment and limited long-term operational employment comparable to the proposed project, with a slight reduction in expenditures due to the reduction in the overall project footprint. Relocating the BESS to the interior of Solar Array #2 and incorporating the BHS buffer would not substantially change the overall construction workforce size, duration, or type of labor required. Accordingly, this alternative would generate short-term economic benefits, although slightly reduced in comparison to the proposed project, through construction expenditures and worker spending similar to those of the proposed project, without inducing long-term population growth.

Construction and operation of the BHS Buffer and Relocated BESS Alternative #1 would not increase demand for permanent housing or public services, as workers would be drawn primarily from the existing regional labor pool. Fiscal effects, including property tax revenues and other applicable taxes and fees, would be similar to those of the proposed project.

Staff recommend the same COCs for the proposed project be adopted if this alternative is selected. With implementation of these COCs, socioeconomic impacts under the BHS Buffer and Relocated BESS Alternative #1 would be less than significant.

Solid Waste – Under the BHS Buffer and Relocated BESS Alternatives #1 and #2, the footprint of the project would be reduced, presumably decreasing the generation of solid waste. This in turn would diminish the impact on local landfill capacity.

Staff recommends that the same COCs identified for the proposed project be applied if this alternative is selected. With implementation of these COCs, solid waste impacts under the BHS Buffer and Relocated BESS Alternative #1 would be less than significant.

Staff recommends the same COCs for the proposed project be adopted if this alternative is selected. With implementation of these COCs, solid waste impacts under the BHS Buffer and Relocated BESS Alternative #1 would be less than significant.

Transportation – The BHS Buffer and Relocated BESS Alternative #1 would use the same primary access (I-15 and Rasor Road) as the proposed project. The BHS Buffer and Relocated BESS Alternative #1 would generate the same level of trips as the proposed project, both during operations and construction. Therefore, the potential impacts would be identical to the proposed project.

Staff recommends the same COCs for the proposed project be adopted if this alternative is selected. With implementation of these COCs, transportation impacts under the BHS Buffer and Relocated BESS Alternative #1 would be less than significant.

Visual Resources – Under the BHS Buffer and Relocated BESS Alternative #1, the BESS facility would be relocated slightly farther away from travelers on I-15. As a result, the BESS facility would appear slightly less visually prominent in motorists' views. However, given the scale of the overall facility and associated visual characteristics, there would be no change in visual resource-related impacts, compared to the proposed project.

Staff recommends the same COCs for the proposed project be adopted if this alternative is selected. Despite the implementation of these COCs, visual resource impacts under the BHS Buffer and Relocated BESS Alternative #1 would remain significant and unavoidable.

Water Resources – Under the BHS Buffer and Relocated BESS Alternative #1, the project footprint would be reduced, presumably decreasing the overall project impact. The impact of erosion and degradation of surface water quality from project construction grading and activities during project operation would be reduced minimally. This alternative would not affect the need for onsite ephemeral stream road crossings, and the project owner would still be required to obtain dredge and fill waste discharge requirements (WDRs) from the LRWQCB. Groundwater would still be extracted from the local Soda Mountain subbasin for water supply, although there may be a minimal reduction of the impact to the resource.

Staff recommends that the same COCs identified for the proposed project be applied if this alternative is selected. With implementation of these COCs, water resource impacts under the BHS Buffer and Relocated BESS Alternative #2 would be less than significant.

8.7.3 Alternative 3: BHS Buffer and Relocated BESS Alternative #2

The BHS Buffer and Relocated BESS Alternative #2 evaluates a layout similar to the BHS Buffer and Relocated BESS Alternative #1 in which the 0.25-mile setback from the 10 percent slope contour that defines the lower extent of desert BHS foraging and escape habitat is met and the BESS is shifted directly east of the applicant's proposed position, while maintaining a 0.25-mile setback from the 10 percent slope contour that defines the lower extent of desert BHS foraging and escape habitat. The purpose of this alternative is to preserve the project's ability to store and deliver renewable energy while increasing separation from I-15 and sensitive wildlife terrain. **Figure 8.2** illustrates the configuration evaluated under this alternative.

By relocating the BESS to an interior portion of the solar field, this alternative avoids the area immediately adjacent to I-15 and increases the distance between the BESS and the highway to approximately 970 feet. The resulting setback reduces the likelihood that drivers would be exposed to smoke, reduced visibility, or chemical inhalation hazards in the unlikely event of a BESS thermal runaway incident. This additional spacing also reduces the potential for visual distraction for motorists and contributes to improved public safety, as discussed further in **Section 5.10, Public Health** and **Section 5.7, Hazards, Hazardous Materials, and Wildfire**.

The eastward relocation also retains the recommended 0.25-mile buffer from the 10 percent slope contour, which helps limit noise, lighting, and human activity near areas used by desert BHS for seasonal movement and feeding. As described in **Section 5.2, Biological Resources**, this buffer helps preserve ecological connectivity between the valley floor and the steeper foothill terrain that supports BHS escape and foraging functions.

A key distinction between this alternative and the earlier relocation scenario is the proximity to the project's proposed substation and switchyard. By shifting the BESS directly east rather than relocating it deeper into Solar Array #2, the BESS remains closer to the POI as the substation would also be relocated adjacent to the BESS facility. This reduces the total length of the required gen-tie segment, which improves overall economic feasibility by minimizing conductor costs, trenching, and supporting infrastructure. The shorter electrical run also reduces energy losses and streamlines power delivery from the BESS to the substation.

Because the BESS is repositioned across the solar field, some reorganization of PV panel placement would be required to avoid encroaching into the 0.25-mile BHS buffer. Approximately 50 acres of PV arrays located too close to the slope threshold would be shifted to other interior areas of the site that fall outside the buffer. To maintain the project's generation capacity, the applicant may redistribute relocated panels within the southern or central portions of the site, adjust row spacing, or employ higher-efficiency modules at the time of construction. These adjustments would occur within the approved project footprint and would not require expansion of the site boundary.

Operational access would continue to rely on the project's internal access roads, and no new off-site roads would be required. Emergency access would likewise remain consistent with the project's overall fire-protection strategy.

In summary, the BHS Buffer and Relocated BESS Alternative #2 would:

- Relocate the BESS to approximately 970 feet east of I-15 to increase separation from public roadways;
- Maintain a 0.25-mile buffer from the 10 percent slope contour to protect desert BHS foraging and movement habitat;
- Reduce the total length of the gen-tie segment by positioning the BESS closer to the project substation (relocated adjacent to the BESS facility), which improves economic feasibility and electrical efficiency;
- Reduce potential risks to motorists by increasing the distance from areas where smoke or chemical releases could occur during a hypothetical thermal runaway event;
- Reconfigure PV arrays to avoid the slope-based buffer while maintaining generation capacity to the extent feasible; and

- Utilize existing internal access routes for construction, operations, and emergency response.

Potential to Attain the Project Objectives

Overall, the BHS Buffer and Relocated BESS Alternative #2 meets the proposed SMSP's principal objectives by maintaining renewable energy production and storage capacity while improving biological resource protection and increasing separation from I-15. Its closer proximity to the substation reduces infrastructure costs and electrical losses compared to the BHS Buffer and Relocated BESS Alternative #1 and provides additional public safety benefits by distancing the BESS from a major transportation corridor.

Potential Feasibility Issues

Although the BHS Buffer and Relocated BESS Alternative #2 presents fewer electrical and infrastructure complications than the first BESS relocation scenario (BHS Buffer and Relocated BESS Alternative #1), several feasibility considerations remain. By shifting the BESS directly east rather than deeper into the solar array, this configuration shortens the required gen-tie extension and reduces associated costs, but the connection would still require several hundred feet of additional conductor, trenching, and protection equipment compared to the proposed project. The alignment would need to be routed through interior portions of the solar field, which may require minor adjustments to PV block spacing or access routes to avoid conflicts with buried utilities and to maintain appropriate clearances.

Reorganizing PV arrays to avoid the 0.25-mile BHS buffer continues to present layout and constructability challenges. Panel blocks removed from buffer-adjacent areas must be relocated elsewhere within the project site, which may lead to longer DC collection pathways, adjustments to inverter locations, or a more complex electrical layout. While these changes are less substantial than those associated with the first relocation alternative, they still introduce design inefficiencies and may result in modest increases in labor and material costs.

Internal access and construction logistics also warrant consideration. Although the BESS remains closer to the substation and internal circulation roads, final design may require targeted upgrades to interior roads to support heavy equipment delivery and emergency access. Fire protection requirements, such as water supply or hydrant spacing, may also need to be re-evaluated depending on the final pad location.

Overall, the BHS Buffer and Relocated BESS Alternative #2 is generally more feasible than the first relocation option because it reduces electrical infrastructure needs and maintains a more compact layout, but would still require careful engineering refinement, biological review, and internal site planning to ensure compatibility with project objectives and resource constraints. Although noting that this alternative "is extremely constrained," the applicant considers it "a feasible alternative" (RE 2025iiii).

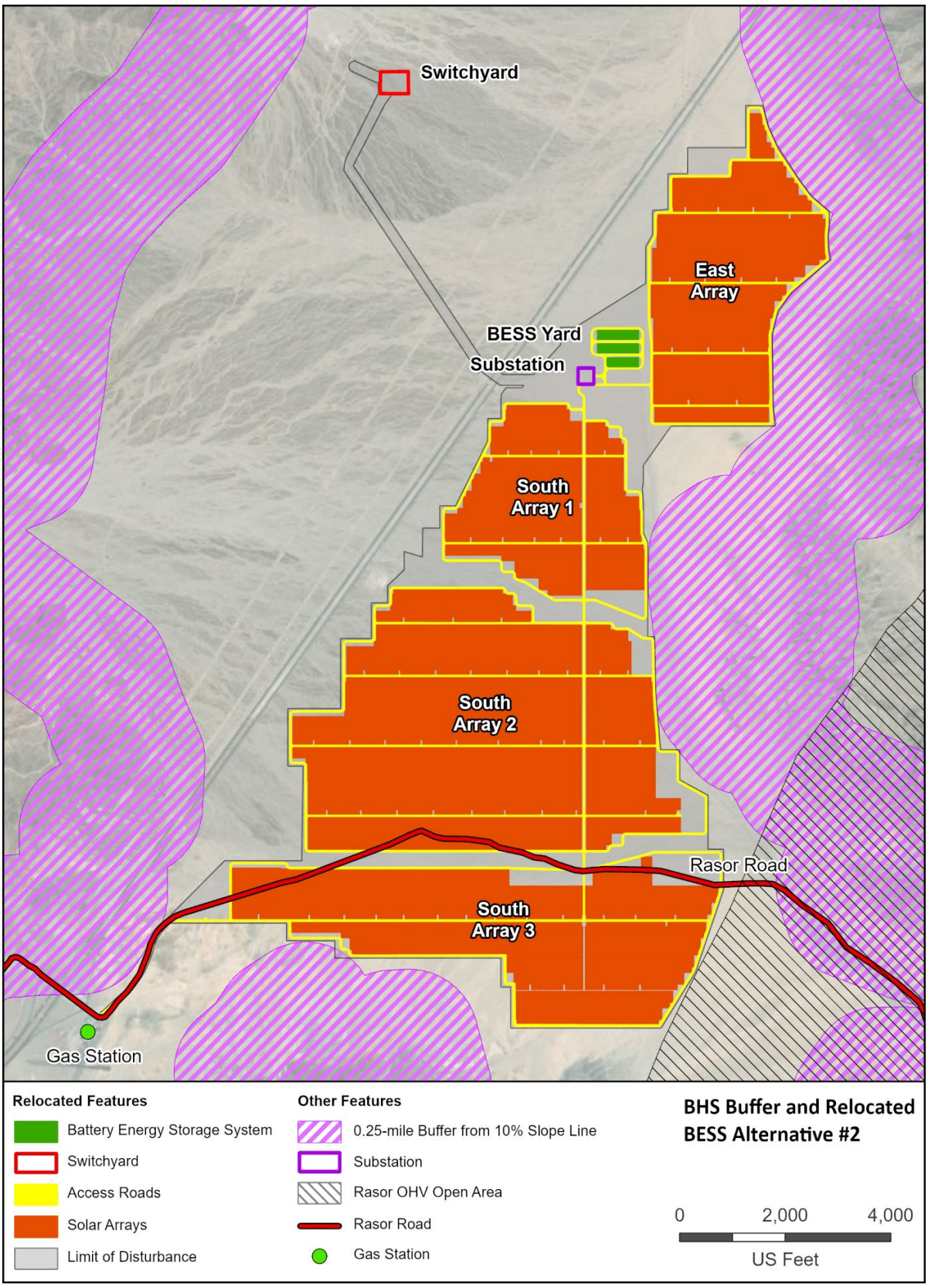
Environmental Analysis

Air Quality – Under the BHS Buffer and Relocated BESS Alternative #2, the overall project footprint would be reduced to avoid important desert BHS habitat located at the base of the south Soda Mountains. Under this alternative, fewer ground disturbing and construction activities would occur as a result of the reduced project footprint. As a result, construction-related air quality impacts would be reduced compared to the proposed project.

Under this alternative, routine operation and maintenance activities would be limited to the reduced project area. As a result, routine operational air quality impacts would be reduced compared to the proposed project.

Under this alternative, the increased separation from public roadways would reduce potential air quality impacts to any potential receptor traveling on I-15 from a hypothetical BESS fire or thermal-runaway event. The distance from the relocated BESS to the nearest sensitive receptors at the Rasor Road Services Shell Oil gas station would be similar to that for the proposed project. Therefore, air quality impacts to the nearest sensitive receptors at the gas station from a hypothetical BESS fire or thermal-runaway event would be similar to those associated with the proposed project.

Staff recommends the same COCs for the proposed project be adopted if this alternative is selected. With implementation of these COCs, air quality impacts under the BHS Buffer and Relocated BESS Alternative #2 would be less than significant.


Switchyard
East Array
BESS Yard
Substation
South Array 1
South Array 2
South Array 3
Rasor Road
Gas Station
Relocated Features
Battery Energy Storage System
Switchyard
Access Roads
Solar Arrays
Limit of Disturbance
Other Features
0.25-mile Buffer from 10% Slope Line
Substation
Rasor OHV Open Area
Rasor Road
Gas Station
BHS Buffer and Relocated BESS Alternative #2
0
2,000
4,000
US Feet

Biological Resources – Under this Alternative, the project footprint would be reduced to avoid important desert BHS habitat located at the base of the south Soda Mountains and the BESS would be located farther from I-15 and closer to the foothills of the south Soda Mountains. This Alternative would have the same reduction in the project footprint as described under the BHS Buffer and Relocated BESS Alternative #1. Fewer ground disturbing activities would occur and potential impacts to biological resources on the project site would be substantially reduced. By placing the BESS closer to the foothills of the south Soda Mountains it would increase the risk to desert BHS in the unlikely event that a BESS fire occurred. It may also increase the presence of human activity closer to desert BHS habitat.

While impacts to desert BHS may still occur, under the BHS Buffer and Relocated BESS Alternative #2, the impacts would be considered less than significant with mitigation and would meet the fully mitigate standard required by CESA compared to the significant and unavoidable impacts that would occur under the proposed project. The smaller project footprint would also result in a reduction of impacts to state jurisdictional waters. Overall, the BHS Buffer and Relocated BESS Alternative #2 would have less impact on biological resources than the proposed project and would avoid significant and unavoidable impacts to desert BHS. However, placing the BESS closer to desert BHS habitat increases potential risks compared to the BHS Buffer and Relocated BESS Alternative #1.

Staff recommends the same COCs for the proposed project be adopted if this alternative is selected. For COCs that require compensatory land acquisition, these measures would be revised to reflect the acres of the smaller project footprint compared to the proposed project. With the implementation of these COCs, biological resource impacts under the BHS Buffer and Relocated BESS Alternative #2 would be less than significant.

Climate Change and Greenhouse Gas Emissions – Under the BHS Buffer and Relocated BESS Alternative #2, the project footprint would be reduced to avoid important desert BHS habitat located at the base of the south Soda Mountains. Under this alternative, fewer ground disturbing and construction and operation activities would occur. Therefore, this would reduce potential impacts related to climate change and greenhouse gas emissions and thus have less impacts compared to the proposed project.

Staff recommends the same COCs for the proposed project be adopted if this alternative is selected. With implementation of these COCs, climate change and GHG impacts under the BHS Buffer and Relocated BESS Alternative #2 would be less than significant.

Cultural and Tribal Cultural Resources – Under the BHS Buffer and Relocated BESS Alternative #2, the project footprint would be reduced to avoid important desert BHS habitat located at the base of the Soda Mountains. Under this alternative, fewer ground

disturbing and construction activities would occur. Therefore, this alternative would reduce potential impacts to previously unknown cultural and tribal cultural resources.

Staff recommends the same COCs for the proposed project be adopted if this alternative is selected. With implementation of these COCs, cultural and tribal cultural resource impacts under the BHS Buffer and Relocated BESS Alternative #2 would be less than significant.

Geology, Paleontology, and Minerals – Under the BHS Buffer and Relocated BESS Alternative #2, the project footprint would be reduced to avoid important desert BHS habitat located at the base of the south Soda Mountains. Under this alternative, slightly fewer ground disturbing and construction activities would occur. This alternative would have similar potential impacts related to geology, paleontology, and minerals as the proposed project.

Staff recommends the same COCs for the proposed project be adopted if this alternative is selected. With implementation of these COCs, geology, paleontology, and mineral impacts under the BHS Buffer and Relocated BESS Alternative #2 would be less than significant.

Hazards, Hazardous Materials/Waste, and Wildfire – Under the BHS Buffer and Relocated BESS Alternative #2, the project footprint would be reduced, and the BESS facilities would be relocated farther from I-15. Under this alternative, construction and operation activities associated with the BESS would occur farther from the freeway corridor (970 feet from I-15). In the event of a hypothetical BESS fire from a thermal-runaway event, the increased distance from I-15 should reduce the potential for disruption of traffic on I-15 from smoke.

Under this alternative, construction and operation-related activities would occur within a smaller footprint but would be similar compared to both the proposed project and the BHS Buffer and Relocated BESS Alternative #1. Therefore, this alternative would be similar but reduced potential impacts related to hazards, hazardous materials and wildfire compared to the proposed project.

Staff recommends the same COCs for the proposed project be adopted if this alternative is selected. With implementation of these COCs, hazards, hazardous materials and wildfire impacts under the BHS Buffer and Relocated BESS Alternative #2 would be less than significant.

Land Use – Staff assumes that the BHS Buffer and Relocated BESS Alternative #2 would require the use of Rasor Road during construction and operation of this alternative and would likely re-route Rasor Road between South Array #2 and South Array #3. Similar to the proposed project, public access along Rasor Road may be limited or closed during movement of heavy construction equipment. Closure of Rasor Road would effectively preclude access to the Rasor OHV SRMA, which is a designated recreational resource. With implementation of staff recommended COCs, construction

and operation activities would not preclude access to the Rasor OHV SRMA, and any temporary restrictions or access delays along Rasor Road would be communicated to the public. Potential impacts to recreation access would be mitigated to less than significant.

Similar to the proposed project, the BHS Buffer and Relocated BESS Alternative #2 would be subject to BLM plans and policies that manage federally designated land uses, such as recreation areas and Section 368 energy corridors. BLM's ROW authorization process would include requirements for the applicant to comply with all applicable policies. The BHS Buffer and Relocated BESS Alternative #2 would not create a new policy conflict with BLM's land use plans and policies.

Staff recommends that the same COCs identified for the proposed project be applied if this alternative is selected. With implementation of these COCs, land use impacts under the BHS Buffer and Relocated BESS Alternative #2 would be less than significant.

Noise and Vibration – The BHS Buffer and Relocated BESS Alternative #2 would result in no change in noise and vibration impacts, when compared to the proposed project, as the result of the BESS relocation. The BESS would still be located far enough from the project's nearest noise-sensitive receptor to have no impact.

Reconfiguring the PV arrays to populate the portion of the project site near its southern boundary would slightly increase some construction noise at this receptor but would still be less than significant. Operational noise and vibration impacts as the result of the relocation of the PV panels would be similar to the proposed project.

Staff recommends the same COCs for the proposed project be adopted if this alternative is selected. With implementation of these COCs, noise and vibration impacts under the BHS Buffer and Relocated BESS Alternative #2 would be less than significant.

Public Health – Under the BHS Buffer and Relocated BESS Alternative #2, the overall project footprint would be reduced. Under this alternative, construction activities would occur over a smaller area as a result of the reduced project footprint. As a result, construction-related public health impacts would be reduced compared to the proposed project.

Under the BHS Buffer and Relocated BESS Alternative #2, routine operational activities associated with the project would also occur within a smaller footprint. As a result, routine operational public health impacts would be reduced compared to the proposed project.

Under this alternative, the increased separation from public roadways would reduce potential public health impacts to any potential receptor traveling on I-15 from a hypothetical BESS fire or thermal-runaway event. The distance from the relocated BESS to the nearest sensitive receptors at the Rasor Road Services Shell Oil gas station would be similar to that for the proposed project. Therefore, public health impacts to the

nearest sensitive receptors at the gas station from a hypothetical BESS fire or thermal-runaway event would be similar to those associated with the proposed project.

Staff recommends the same COCs for the proposed project be adopted if this alternative is selected. With implementation of these COCs, public health impacts under the BHS Buffer and Relocated BESS Alternative #2 would be less than significant.

Socioeconomics – Under the BHS Buffer and Relocated BESS Alternative #2, the project would generate temporary construction employment and limited operational employment, although overall employment and construction expenditures would be slightly reduced compared to the proposed project due to the smaller project footprint. Nevertheless, this alternative would still provide short-term economic benefits to the local and regional economy and would not result in substantial changes to workforce characteristics or duration.

Like the proposed project, the BHS Buffer and Relocated BESS Alternative #2 would not induce population growth or create demand for new housing or public services. Fiscal revenues may be lower than those of the proposed project but would remain beneficial to local jurisdictions and would not result in adverse fiscal effects.

Staff recommends that the same COCs identified for the proposed project be applied if this alternative is selected. With implementation of these COCs, socioeconomic impacts under the BHS Buffer and Relocated BESS Alternative #2 would be less than significant

Solid Waste – Under the BHS Buffer and Relocated BESS Alternative #2, the footprint of the project would be reduced, presumably decreasing the generation of solid waste. This in turn would diminish the impact on local landfill capacity.

Staff recommends that the same COCs identified for the proposed project be applied if this alternative is selected. With implementation of these COCs, solid waste impacts under the BHS Buffer and Relocated BESS Alternative #2 would be less than significant.

Transportation – Under the BHS Buffer and Relocated BESS Alternative #2, the construction activity (trips) would be reduced. However, the ambient conditions on I-15 on Friday afternoons and holiday weekends would still necessitate adherence with **TRANS-1**. The level of trips during operations would be minimal (less than 10 per day) with the proposed project and proportionately less with the BHS Buffer and Relocated BESS Alternative #2.

Staff recommends that the same COCs identified for the proposed project be applied if this alternative is selected. With implementation of these COCs, transportation impacts under the BHS Buffer and Relocated BESS Alternative #2 would be less than significant.

Visual Resources – Under the BHS Buffer and Relocated BESS Alternative #2, the BESS facility would be relocated farther away from I-15 (similar to the BHS Buffer and Relocated BESS Alternative #1), and the length of the gen-tie segment would be

reduced. However, as would be the case for the BHS Buffer and Relocated BESS Alternative #1, given the scale of the overall facility and associated visual characteristics, there would still be no change in the visual resources-related impacts compared to the proposed project.

Staff recommends that the same COCs identified for the proposed project be applied if this alternative is selected. Despite the imposition of COCs, visual resource impacts under the BHS Buffer and Relocated BESS Alternative #2 would remain significant and unavoidable.

Water Resources – Under the BHS Buffer and Relocated BESS Alternative #2, the project footprint would be reduced, presumably decreasing the overall project impact. The impact of erosion and degradation of surface water quality from project construction grading and activities during project operation would be reduced minimally. This alternative would not affect the need for onsite ephemeral stream road crossings, and the project owner would still be required to obtain dredge and fill waste discharge requirements (WDRs) from the LRWQCB. Groundwater would still be extracted from the local Soda Mountain subbasin for water supply, although there may be a minimal reduction of the impact to the resource.

Staff recommends that the same COCs identified for the proposed project be applied if this alternative is selected. With implementation of these COCs, water resource impacts under the BHS Buffer and Relocated BESS Alternative #2 would be less than significant.

8.8 Environmentally Superior Alternative

CEQA requires that an EIR identify the *environmentally superior alternative* and discuss the facts supporting that selection. Alternative 1, the No Project/No Build Alternative, is the environmentally superior alternative because it would avoid all impacts of the project by not creating any physical changes to the environment. However, Alternative 1 would not attain any of the project objectives. "If the environmentally superior alternative is the 'No Project' alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives" (Cal. Code Regs., tit. 14, § 15126.6, subd. (e)(2)).

The BHS Buffer and Relocated BESS Alternative #2 would be environmentally superior to the proposed project because it would substantially reduce the project footprint to avoid important desert BHS habitat at the base of the south Soda Mountains, resulting in fewer ground-disturbing activities and corresponding reductions in construction- and operation-related impacts across multiple resource areas, including air quality, biological resources, climate change and greenhouse gas emissions, cultural and tribal cultural resources, public health, transportation, solid waste, and water resources. Unlike the proposed project, this alternative would avoid significant and unavoidable impacts to desert BHS by meeting the fully mitigated standard under CESA, while still attaining the basic project objectives. In addition, relocation of the BESS farther from I-15 would reduce potential hazards and public health risks associated with a hypothetical BESS fire

or thermal-runaway event affecting freeway users. Although this alternative would place the BESS closer to BHS habitat than the proposed project and the other BESS relocation scenario and therefore presents some biological tradeoffs, those impacts would remain less than significant with mitigation.

Compared to the BHS Buffer and Relocated BESS Alternative #1, this alternative would require a shorter gen-tie extension, which would further reduce the severity of associated environmental impacts. For these reasons, the BHS Buffer and Relocated BESS Alternative #2 would substantially lessen environmental impacts relative to the proposed project and BHS Buffer and Relocated BESS Alternative #1, while remaining technically and economically feasible, and is therefore identified as the environmentally superior alternative among the action alternatives.

TABLE 8-1 SUMMARY COMPARISON OF IMPACTS OF THE PROPOSED PROJECT TO THE ALTERNATIVES				
Environmental Topics and Impacts		**Alternatives**		
	Proposed Project	**No Project/No Build**	**BHS Buffer and Relocated BESS #1**	**BHS Buffer and Relocated BESS #2**
Air Quality				
Conflict with or obstruct implementation of the applicable air quality plan	SM	NI	Less (SM)	Less (SM)
Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard	SM	NI	Less (SM)	Less (SM)
Expose sensitive receptors to substantial pollutant concentrations during construction	SM	NI	Less (SM)	Less (SM)
Expose sensitive receptors to substantial pollutant concentrations during operation	SM	NI	Less (SM)	Less (SM)
Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people	LTS	NI	Less (LTS)	Less (LTS)
Biological Resources				
Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service	SM	NI	Less (SM)	Less (SM)
Have 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 California Department of Fish and Wildlife or U.S. Fish and Wildlife Service	SU	NI	Less (SM)	Less (SM)
Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means	SM	NI	Less (SM)	Less (SM)
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 wildlife nursery sites	SU	NI	Less (SM)	Less (SM)
Conflict with any federal, state, or local plans, policies or ordinances protecting biological resources	SU	NI	Less (SM)	Less (SM)

TABLE 8-1 SUMMARY COMPARISON OF IMPACTS OF THE PROPOSED PROJECT TO THE ALTERNATIVES				
Environmental Topics and Impacts		**Alternatives**		
	Proposed Project	**No Project/No Build**	**BHS Buffer and Relocated BESS #1**	**BHS Buffer and Relocated BESS #2**
Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Communities Conservation Plan, or other approved local, regional, or state habitat conservation plan	LTS	NI	Similar (LTS)	Similar (LTS)
Climate Change and Greenhouse Gas Emissions				
Potential to generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment	SM	NI	Less (SM)	Less (SM)
Potential to conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases	SM	NI	Less (SM)	Less (SM)
Cultural and Tribal Cultural Resources				
Would the proposed project cause a substantial adverse change in the significance of a historical resource pursuant to Public Resources Code, section 15064.5?	PSM	NI	Less (PSM)	Less (PSM)
Would the proposed project cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Public Resources Code, section 15064.5?	PSM	NI	Less (PSM)	Less (PSM)
Would the proposed project disturb any human remains, including those interred outside of dedicated cemeteries?	PSM	NI	Less (PSM)	Less (PSM)
Would the proposed project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code, section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
I- Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code, section 5020.1(k), or	PSM	NI	Less (PSM)	Less (PSM)
II- A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code, section 5024.1. In applying the criteria set forth in subdivision (c)	PSM	NI	Less (PSM)	Less (PSM)

TABLE 8-1 SUMMARY COMPARISON OF IMPACTS OF THE PROPOSED PROJECT TO THE ALTERNATIVES				
Environmental Topics and Impacts		**Alternatives**		
	Proposed Project	**No Project/No Build**	**BHS Buffer and Relocated BESS #1**	**BHS Buffer and Relocated BESS #2**
of Public Resource Code, section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.				
Geology, Paleontology, and Minerals				
Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault	SM	NI	Similar (SM)	Similar (SM)
ii. Strong seismic ground shaking?	SM	NI	Similar (SM)	Similar (SM)
iii. Seismic-related ground failure, including liquefaction	SM	NI	Similar (SM)	Similar (SM)
iv. Landslides	SM	NI	Similar (SM)	Similar (SM)
Result in substantial soil erosion or the loss of topsoil?	SM	NI	Similar (SM)	Similar (SM)
Be located on geologic units or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse	SM	NI	Similar (SM)	Similar (SM)
Be on expansive soil, as defined in Section 1803.5.3 of the California Building Code (2022), creating substantial direct or indirect risks to life or property	SM	NI	Similar (SM)	Similar (SM)
Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater	SM	NI	Similar (SM)	Similar (SM)
Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature	SM	NI	Similar (SM)	Similar (SM)
Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State	LTS	NI	Similar (LTS)	Similar (LTS)

TABLE 8-1 SUMMARY COMPARISON OF IMPACTS OF THE PROPOSED PROJECT TO THE ALTERNATIVES				
Environmental Topics and Impacts		**Alternatives**		
	Proposed Project	**No Project/No Build**	**BHS Buffer and Relocated BESS #1**	**BHS Buffer and Relocated BESS #2**
Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan	LTS	NI	Similar (LTS)	Similar (LTS)
Hazards, Hazardous Materials/Waste, and Wildfire				
Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials	SM	Less (NI)	Similar (SM)	Similar (SM)
Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment	SM	Less (NI)	Less (SM)	Less (SM)
Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school	NI	Less (NI)	Similar (NI)	Similar (SM)
Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code, section 65962.5 and, as a result, would it create a significant hazard to the public or the environment	SM	Less (NI)	Similar (SM)	Similar (SM)
For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area	NI	Less (NI)	Similar (NI)	Similar (NI)
Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan	LTS	Less (NI)	Similar (LTS)	Similar (LTS)
Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires	SM	Less (NI)	Similar (SM)	Similar (SM)
If located in or near state responsibility areas or lands classified as very high fire hazard severity zone:				
i. Substantially impair an adopted emergency response plan or emergency evacuation plan	LTS	Less (NI)	Similar (LTS)	Similar (LTS)
ii. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire	SM	Less (NI)	Similar (SM)	Similar (SM)

TABLE 8-1 SUMMARY COMPARISON OF IMPACTS OF THE PROPOSED PROJECT TO THE ALTERNATIVES

Environmental Topics and Impacts		Alternatives		
	Proposed Project	**No Project/No Build**	**BHS Buffer and Relocated BESS #1**	**BHS Buffer and Relocated BESS #2**
iii. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment	SM	Less (NI)	Similar (SM)	Similar (SM)
iv. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes	SM	Less (NI)	Similar (SM)	Similar (SM)
Land Use				
Preclude access to an established land use	SM	Less (NI)	Similar (SM)	Similar (SM)
Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect	LTS	Less (NI)	Similar (LTS)	Similar (LTS)
Noise and Vibration				
Potential to generate a substantial increase in ambient noise levels in the project vicinity in excess of noise control standards during construction.	SM	Less (NI)	Similar (SM)	Similar (SM)
Potential to generate of a substantial increase in ambient noise levels in the project vicinity in excess of noise control standards during operation.	SM	Less (NI)	Similar (SM)	Similar (SM)
Public Health				
Potential to expose sensitive receptors to substantial pollutant concentrations during construction.	SM	Less (NI)	Less (SM)	Less (SM)
Potential to expose sensitive receptors to substantial pollutant concentrations during operation.	LTS	Less (NI)	Less (SM)	Less (SM)
Socioeconomics				
Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)	LTS	NI	Similar (LTS)	Similar (LTS)
Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere	LTS	NI	Similar (LTS)	Similar (LTS)

TABLE 8-1 SUMMARY COMPARISON OF IMPACTS OF THE PROPOSED PROJECT TO THE ALTERNATIVES

Environmental Topics and Impacts		**Alternatives**		
	Proposed Project	**No Project/No Build**	**BHS Buffer and Relocated BESS #1**	**BHS Buffer and Relocated BESS #2**
Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
i. Fire protection	SM	NI	Similar (SM)	Similar (SM)
ii. Police Protection	LTS	NI	Similar (LTS)	Similar (LTS)
iii. Schools	LTS	NI	Similar (LTS)	Similar (LTS)
iv. Parks	NI	NI	Similar (NI)	Similar (NI)
v. Other public facilities	LTS	NI	Similar (LTS)	Similar (LTS)
Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated	NI	NI	Similar (NI)	Similar (NI)
Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment	LTS	NI	Similar (LTS)	Similar (LTS)
Solid Waste Management				
Generate solid waste in excess of the capacity of local infrastructure	SM	NI	Less (SM)	Less (SM)
Comply with federal, state, and local management and reduction statutes and regulations related to solid waste	NI	NI	Less (NI)	Less (NI)
Transportation				
Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities	SM	NI	Less (SM)	Less (SM)
Conflict or be inconsistent with CEQA Guidelines, section 15064.3, subdivision (b)	NI	NI	Similar (NI)	Similar (NI)

TABLE 8-1 SUMMARY COMPARISON OF IMPACTS OF THE PROPOSED PROJECT TO THE ALTERNATIVES				
Environmental Topics and Impacts		**Alternatives**		
	Proposed Project	**No Project/No Build**	**BHS Buffer and Relocated BESS #1**	**BHS Buffer and Relocated BESS #2**
Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)	NI	NI	Similar (NI)	Similar (NI)
Result in inadequate emergency access	NI	NI	Similar (NI)	Similar (NI)
Visual Resources				
Have a substantial adverse effect on a scenic vista	LTS	NI	Similar (LTS)	Similar (LTS)
Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway	NI	NI	Similar (NI)	Similar (NI)
In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings. (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality	SU	NI	Similar (SU)	Similar (SU)
Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area	SM	NI	Similar (SM)	Similar (SM)
Water Resources				
Violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality	SM	NI	Similar (SM)	Similar (SM)
Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin	SM	NI	Similar (SM)	Similar (SM)
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:	SM	NI	Similar (SM)	Similar (SM)
i. result in substantial erosion or siltation, on- or offsite;	SM	NI	Similar (SM)	Similar (SM)
ii. substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	SM	NI	Similar (SM)	Similar (SM)

TABLE 8-1 SUMMARY COMPARISON OF IMPACTS OF THE PROPOSED PROJECT TO THE ALTERNATIVES

Environmental Topics and Impacts		Alternatives		
	Proposed Project	**No Project/No Build**	**BHS Buffer and Relocated BESS #1**	**BHS Buffer and Relocated BESS #2**
iii. 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; and	SM	NI	Similar (SM)	Similar (SM)
iv. or impede or redirect flood flows	SM	NI	Similar (SM)	Similar (SM)
In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation	NI	NI	Similar (NI)	Similar (NI)
Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan	SM	NI	Similar (SM)	Similar (SM)
Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years	SM	NI	Similar (SM)	Similar (SM)
Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments	SM	NI	Similar (SM)	Similar (SM)

Notes: Impact conclusions for the project and the alternatives are shown using these abbreviations

NI = no impact, meaning no potential to affect the resource
LTS = less-than-significant impact, no mitigation required
SM or PSM = significant or potentially significant impact that can be mitigated to a less-than-significant level
SU or PSU = significant or potentially significant and unavoidable impact that cannot be mitigated to a less-than-significant level

The comparisons of impacts to the project are conveyed using these abbreviations:

- Less
- Similar
- Greater

TABLE 8-2 STAFF CONTRIBUTORS TO THE ALTERNATIVES ANALYSIS	
Technical Area	**Staff**
Air Quality	Jacquelyn Record, Yifan Ding, Ph.D., P.E.
Biological Resources	Chris Huntley, Jamison Miner
Climate Change and Greenhouse Gas Emissions	Jacquelyn Record
Cultural and Tribal Cultural Resources	William E. Larson, M.A. Anthropology
Geology, Paleontology, and Minerals	Kevin M. DeLano, P.G., M.S.
Hazards, Hazardous Materials/Waste, and Wildfire	Nate Berls, Paul Miller
Land Use	Tatiana Inouye, MESM
Noise and Vibration	Jacob Locsin
Public Health	Yifan Ding, Ph.D., P.E.
Technology Alternatives and Facility Design	Ardalan Sofi, Ph.D., P.E. Michele Shi, P.E. Jacob Locsin
Visual Resources	Michael Clayton
Water Resources	James Ackerman, P.G.

8.9 References

Adeniran et al. 2022 – Recent Advances in Aqueous Redox Flow Battery Research. By A. Adeniran, A. Bates, N. Schuppert, A. Menon, and S. Park. Journal of Energy Storage. Volume 56, Part A, December 1, 2022. Accessed: December 2025. Accessed online at: https://www.sciencedirect.com/science/article/pii/S2352152X22019880

Army Logistician 2000 – Hydrogen as an Alternative Fuel. By Peter Kushnir. Army Logistician: Professional Bulletin of United States Army Logistics, PB 700-00-3. Vol. 32, Issue 3. May/June 2000. Accessed: December 2025. Accessed online at: https://web.archive.org/web/20080808053811/http://www.almc.army.mil/alog/issues/MayJun00/MS492.htm

CEC 2025 – California Energy Commission. Long Duration Energy Storage Program. LDES Program Projects. Form Energy, Inc. (Mendocino County); and Indian Energy (San Diego County). Accessed: December 2025. Accessed online at: https://www.energy.ca.gov/programs-and-topics/programs/long-duration-energy-storage-program

Data Center Knowledge 2013 – eBay Goes Live With its Bloom-Powered Data Center. By Rich Miller. September 26, 2013. Accessed: December 2025. Accessed online at: https://www.datacenterknowledge.com/archives/2013/09/26/ebay-goes-live-with-its-bloom-powered-data-center

Dinesh et al. 2018 – Iron-based Flow Batteries to Store Renewable Energies. By A. Dinesh, S. Olivera, K. Venkatesh, M. S. Santosh, M. G. Priya, Inamuddin, A. M.

Asiri, and H. B. Muralidhara. Environmental Chemistry Letters. Volume 16 683–694. February 13, 2018. Accessed: December 2025. Accessed online at: https://doi.org/10.1007/s10311-018-0709-8

ESS 2025a – ESS, Inc. Products, Energy Center™ Rapidly deployable MWh or GWh energy storage for utility, IPP, and commercial customers. Accessed: December 2025. Accessed online at: https://essinc.com/energy-center/

ESS 2025b – ESS, Inc. Press Releases. ESS Celebrates Commercial Launch of Energy Center™ Product. January 16, 2025. Accessed: December 2025. Accessed online at: https://www.businesswire.com/news/home/20250115943878/en/ESS-Celebrates-Commercial-Launch-of-Energy-Center-Product

Fuel Cell Store 2019 – Processing Alternative Fuels for Fuel Cells. By Dr. Colleen Spiegel. Posted March 26, 2019. Accessed: December 2025. Accessed online at: https://www.fuelcellstore.com/blog-section/processing-alternative-fuels-for-fuel-cells

Gardner Cryogenics 2022 – Current Practices to Transfer and Deliver Liquid Hydrogen [workshop presentation]. By Ravi Subramanian. February 24, 2022. Accessed: December 2025. Accessed online at: https://www.energy.gov/sites/default/files/2022-03/Liquid%20H2%20Workshop-Gardner%20Cryogenics.pdf

GenCell 2018 – Comparing Fuel Cell Technologies. By Shelli Zargary. August 24, 2018. Accessed: December 2025. Accessed online at: https://www.gencellenergy.com/news/comparing-fuel-cell-technologies/

LADWP 2025 – Los Angeles Department of Water and Power. Scattergood Generating Station Units 1 and 2 Green Hydrogen-Ready Modernization Project. Accessed: December 2025. Accessed online at: https://www.ladwp.com/community/construction-projects/west-la/scattergood-generating-station-units-1-and-2-green-hydrogen-ready-modernization-project

Lourenssen et al. 2019 – Vanadium Redox Flow Batteries: A Comprehensive Review. By K. Lourenssen, J. Williams, F. Ahmadpour, R. Clemmer, and S. Tasnim. Journal of Energy Storage. Volume 25, October 2019. Accessed: December 2025. Accessed online at: https://www.sciencedirect.com/science/article/pii/S2352152X19302798

NREL 2021 – National Renewable Energy Laboratory. Greening the Grid. USAID Grid-Scale Energy Storage Technologies Primer. By T. Bowen, I Chernyakhovskiy, K. Xu, S. Gadzanku, and K. Coney. July 2021. Accessed: December 2025. Accessed online at: https://www.nrel.gov/docs/fy21osti/76097.pdf

Olabi et al. 2021 – Metal-air Batteries—A Review. By A. G. Olabi, E. T. Sayed, T. Wilberforce, A. Jamal, A. H. Alami, K. Elsaid, S. M. Rahman, S. K. Shah, and M. A. Abdelkareem. Energies. Volume 14. Published November 5, 2021. Accessed: December 2025. Accessed online at: https://doi.org/10.3390/en14217373

Plug Power 2022 – Plug Power, Inc. The Plug EX-425D Electrolyzer. Published April 20, 2022. Accessed: December 2025. Accessed online at: https://resources.plug power.com/electrolyzers/ex-425d-f041122

Plug Power 2023 – Plug Power, Inc. Plug Megawatt Scale Fuel Cell Power Generation Brochure – North America. Published November 28, 2023. Rev: 04/23/2024. Accessed: December 2025. Accessed online at: https://resources.plugpower.com/gensure-stationary-power-fuel-cell/plug-megawatt-scale-fuel-cell-power-generation-brochure-north-america

Plug Power 2024 – Plug Power, Inc. Plug's Megawatt-Scale Fuel Cell Power Generation System [YouTube]. Published January 17, 2024. Accessed: December 2025. Accessed online at: https://resources.plugpower.com/youtube-fuel-cells-for-backup-power/plugs-megawatt-scale-fuel-cell-power-generation-system

RE 2024jj – Resolution Environmental (TN 257936). Chapter 4 Alternatives, dated July 23, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2024m – Resolution Environmental (TN 257912). Chapter 2 Project Description, dated July 23, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2024vv – Resolution Environmental (TN 257948). Appendix D2 Desert BHS Study, dated July 23, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025w – Resolution Environmental (TN 261666). Chapter 4 Alternatives, dated February 10, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03 Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2025iiii – Resolution Environmental (TN 267965). Data request responses, dated December 18, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

SMUD 2024 – Sacramento Municipal Utility District. 2024 News Releases and Media Advisories. SMUD's $10 million state grant advances long-duration battery storage technology in Sacramento. Accessed: December 2025. Accessed online at: https://www.smud.org/Corporate/About-us/News-and-Media/2024/2024/SMUDs-$10-million-state-grant-advances-long-duration-battery-storage-technology-in-Sacramento

The Press Democrat 2025 – Turning Rust into Renewable Energy: Power Supply Coming to Mendocino County That Relies on Iron Rust. By Jeff Quackenbush. Published June 18, 2025. Santa Rosa, CA. Accessed: December 2025. Accessed online at: https://www.pressdemocrat.com/2025/06/18/turning-rust-into-renewable-energy-power-supply-coming-to-mendocino-county-that-relies-on-iron-rust-2/

U.S. DOE 2001 – U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. Hydrogen Fuel Cell Engines and Related Technologies, Module 1: Hydrogen Properties. College of the Desert, Revision 0, December 2001. Accessed: December 2025. Accessed online at: https://p2infohouse.org/ref/45/44490.pdf

U.S. DOE 2025a – U.S. Department of Energy, Hydrogen and Fuel Cell Technologies Office. Types of Fuel Cells. Accessed: December 2025. Accessed online at: https://www.energy.gov/eere/fuelcells/types-fuel-cells

U.S. DOE 2025b – U.S. Department of Energy, Hydrogen and Fuel Cell Technologies Office. Hydrogen Production: Electrolysis. Accessed: December 2025. Accessed online at: https://www.energy.gov/eere/fuelcells/hydrogen-production-electrolysis

U.S. EPA 2023 – U. S. Environmental Protection Agency, Office of Air and Radiation. Hydrogen in Combustion Turbine Electric Generating Units, Technical Support Document. Docket ID No. EPA-HQ-OAR-2023-0072. May 23, 2023. Accessed: December 2025. Accessed online at: https://www.epa.gov/system/files/documents/2023-05/TSD%20-%20Hydrogen%20in%20Combustion%20Turbine%20EGUs.pdf

Section 9

Compliance Conditions and Compliance Monitoring Plan

9 Compliance Conditions and Compliance Monitoring Plan

9.1 Introduction

The Soda Mountain Solar Project (project) Compliance Conditions of Certification (COCs), including a Compliance Monitoring Plan (Compliance Plan), are established as required by Public Resources Code section 25545.11. 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 plans, policies and regulations; and the conditions adopted by the California Energy Commission (CEC) Final Decision (Decision) on the project's Opt-In application (OPT), 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 CEC-approved COCs;
- establish contingency planning, facility non-operation protocols, and closure requirements; and
- establish a tracking method for the technical area COCs that contain measures required to mitigate potentially adverse project impacts associated with construction, operation, and closure below a level of significance; each technical COCs also includes one or more verification provisions that describe the means of assuring that the condition has been satisfied.

9.2 Key Project Event Definitions

The following terms and definitions help determine when various COCs are implemented.

Project Certification

Project certification occurs on the day the CEC dockets its decision after adopting it at a publicly noticed Business Meeting or hearing. At that time, all CEC COCs 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-OPT-8C) to differentiate the compliance phase activities from those of the Opt-in application 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 COC 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, and grid synchronization.

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 "deployable battery energy storage systems," 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.

9.3 Roles and Responsibilities

Provided below is a generalized description of the compliance roles and responsibilities for CEC staff (staff) and the project owner for the construction and operation of the 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, COCs 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 CEC during project preconstruction, 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 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 may schedule 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 CEC and the project owner's technical staff in the status review of all required pre-construction or pre-operation COCs and facilitate staff taking proper action if outstanding conditions remain. In addition, these meetings shall ensure, to the extent possible, that CEC's COCs 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 or exchanging information regarding the project's pre-construction.

Energy Commission Record

The CEC 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):

1. all documents demonstrating compliance with any legal requirements relating to the construction, operation, and closure of the facility;
2. all Monthly and Annual Compliance Reports (MCRs, ACRs) and other required periodic compliance reports (PCRs) filed by the project owner;
3. all project-related formal complaints of alleged noncompliance filed with the CEC; and
4. all petitions for project or COC changes and the resulting action by staff or the CEC.

Chief Building Official Delegation and Agency

Public Resources Code sections 25532 and 25545.11 requires the CEC to establish a monitoring system to assure that any facility it certifies is constructed and operated in a manner consistent with law and the CEC's Decision. In carrying out these responsibilities through monitoring construction and operation of the project, the CEC

has the responsibilities of the chief building official (CBO) consistent with Health and Safety Code section 18949.27 and Title 24, part 2, section 104 (commonly referred to as the California Building Code, or CBC). Staff may delegate some CBO responsibility to either an independent third-party contractor or a local building official, as per section 103.3 of part 2 of the CBC. However, staff retains CBO authority when selecting a delegate CBO (DCBO), including the interpretation and enforcement of state and local codes, and the use of discretion, as necessary, in implementing the various codes and standards. (See section 104.1 of part 2 of the CBC).

The DCBO will be responsible for the implementation of all appropriate codes, standards, and CEC requirements. The DCBO will conduct on-site (including linear facilities) reviews and inspections at intervals necessary to fulfill these responsibilities. The project owner will pay all DCBO fees necessary to cover the costs of these reviews and inspections.

Project Owner Responsibilities

Should the project be approved, the project owner is responsible for ensuring that all COCs and applicable plans, policies, and regulations in the project 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 COCs or applicable plans, policies, and regulations may result in a non-compliance report, an administrative fine, certification revocation, or any combination thereof, as appropriate.

9.4 Compliance Enforcement

The CEC's legal authority to enforce the terms and conditions of its Decision are specified in Public Resources Code sections 25545.11 and 25900. The CEC 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 CEC's actions and fine assessments would take into account the specific circumstances of the incident(s).

Periodic Compliance Reporting

Many of the COCs 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 project 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 COCs may be required more often (e.g. Biological Resources), 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 COCs, CEC 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/.

9.5 Post-Certification Changes to the Energy Commission Decision

The project owner must petition the CEC pursuant to Title 20, California Code of Regulations, section 1882, to amend the Final 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 1882, and the CPM will determine whether staff approval will be sufficient, or whether CEC approval will be necessary.

A project owner is required to submit a $5,000 non-refundable dollar fee for every petition to amend the license for a previously certified facility, pursuant to Public Resources Code section 25806(e). The CEC shall conduct a full accounting of the actual cost of processing the PTA, for which the project owner shall reimburse the CEC if the costs exceed $5,000. Current amounts for PTA fees are available at https://www.energy.ca.gov/programs-and-topics/topics/power-plants/licensing-and-compliance-fees-facilities. Implementation of a project modification without first securing CEC approval may result in an enforcement action including civil penalties in accordance with Public Resources Code, section 25545.11.

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 1882, at the time this compliance plan was drafted. If the CEC 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.

Changes to the Design, Operation or Performance of the Project

The project owner shall submit a Petition to Amend the CEC Decision, pursuant to Title 20, California Code of Regulations, section 1882 (b), when proposing changes to the design, operation, or performance requirements of the project and/or the linear facilities. All project changes that do not require the preparation of a subsequent or supplemental environmental impact report as set forth in California Code of Regulations, title 14, sections 15162 and 15163 are subject to staff approval. Project changes that do require the preparation of a subsequent or supplemental environmental impact report shall be submitted to the CEC for consideration.

A decision by staff to approve a project change is subject to a 14-day public comment period where one may object to staff being able to approve a project change. Any such objection must make a showing supported by facts that the change does not meet the criteria for a staff approved change. Speculation, argument, conjecture, and unsupported conclusions or opinions are not sufficient to support an objection to staff approval.

If there is a valid objection to a staff action, the petition must be considered by the CEC at a publicly noticed meeting.

Change of Ownership and/or Operational Control

Changes of ownership or operational control shall be approved by staff. Upon approval, the new owner/operator is obligated to follow all project conditions of certification and applicable, plans, policies and regulations. Failure to do so subjects the new owner/operator to enforcement actions and civil penalties under Public Resources Code sections 25545.11 and 25534.

9.6 Emergency Response Contingency Planning and Incident Reporting

To protect public health and safety and environmental quality, the COCs include contingency planning and incident reporting requirements to ensure compliance with necessary health and safety practices. A well-drafted contingency plan avoids or limits potential hazards and impacts resulting from serious incidents involving personal injury, hazardous spills, flood, fire, explosions, or other catastrophic events and ensures a comprehensive timely response. All such incidents must be reported immediately to the CPM and documented. These requirements are designed to protect the public, build from "lessons learned," limit the hazards and impacts, anticipate and prevent recurrence, and provide for the safe and secure shutdown and restart of the facility.

9.7 Facility Closure and Certification Termination

The CEC 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 CEC COCs and the plans, policies, and regulations in effect at that time.

Prior to submittal of the facility's Final Closure Plan to the CEC, 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 CEC 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 CEC

approves the Final Closure Plan and Cost Estimate, and the project owner complies with any requirements the CEC may incorporate as conditions of approval of the Final Closure Plan.

Upon approving the project owner's final closure plan, the CEC may direct that the facility's certification be terminated at the time staff finds the closure process contained in the plan has been completed.

9.8 Compliance Conditions of Certification

COM-1 Unrestricted Access. The project owner shall take all steps necessary to ensure that the CPM, responsible CEC 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 CEC staff, delegated agencies, or consultants.

COM-2 Compliance Record. The project owner shall maintain electronic copies of all project files and submittals accessible 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 Opt-In Application;
2. all amendment petitions and CEC 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 COCs or applicable plans, policies and regulations.

The CEC staff and delegate agencies shall, upon request to the project owner, be given unrestricted access to the files maintained pursuant to this condition which includes electronic submission of records to the CEC.

COM-3 Compliance Verification Submittals. Verification lead times associated with the start of construction may require the project owner to file submittals during application or amendment processing, particularly if construction is planned to commence shortly after certification. The verification procedures 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 docket 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 submittal and the condition(s) of certification applicable.

All reports and plans required by the project's COCs 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 submitted electronically by email.

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 COCs; 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 CEC 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 CEC 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 docket 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 **Section 9, Compliance Conditions and Compliance Monitoring Plan**.) 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 COCs;

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 COCs;
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 COCs;
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 docket number, identify the reporting period, and contain the following:

1. an updated compliance matrix which shows the status of all COCs (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 CEC'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 CEC 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, and Ownership/Operational Control Changes. The project owner shall petition the CEC, pursuant to Title 20, California Code of Regulations, section 1882, to modify the design, operation, or performance requirements of the project or linear facilities. The CPM will determine whether staff approval will be sufficient, or whether CEC 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 1882. Section 1882 details the required contents for a petition to amend a CEC Decision.

For changes in ownership or operational control the existing owner/operator and incoming owner/operator shall jointly in writing notify the CPM, 30 days in advance of the pending change in ownership or operational control, the fact of the change and all relevant contact information. Upon the transition, the new owner/operator will be obligated to comply with all requirements of the certification and will be subject to enforcement actions.

A project owner is required to submit a $5,000 non-refundable fee for every petition to amend a previously certified facility, pursuant to Public Resources Code section 25806 (e). The CEC shall conduct a full accounting of the actual cost of processing the PTA, for which the project owner shall reimburse the CEC if the costs exceed $5,000. Current amendment fee information is available on the CEC'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 and residences within one mile of the project boundaries, notifying them of a telephone number to contact project representatives with questions, complaints or concerns. All notifications and complaint forms shall be provided in both English and Spanish to ensure effective communication with Spanish-speaking residents. 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 onsite and make it easily visible to passersby during construction, and first year of project 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 conditions of certification. All other complaints shall be recorded on the complaint form 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;

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 Solid Waste Management; Hazards, Hazardous Materials, and Wildfire; and Worker Safety and Fire Protection).

COM-13 Incident-Reporting Requirements. The project owner shall notify the CPM within one hour after it is safe and feasible, of any incident at the facility that results in any of the following:

1. An event of any kind that causes a "Forced Outage" as defined in the CAISO tariff;
2. The activation of onsite emergency fire suppression equipment to combat a fire;
3. Any chemical, gas or hazardous materials release that could result in potential health impacts to the surrounding population; or create an offsite odor issue; and
4. Notification to, or response by, any off-site emergency response federal, state or local agency regarding a fire, hazardous materials release, onsite injury, or any physical or cyber security incident.

Notification shall describe the circumstances, status, and expected duration of the incident. If warranted, as soon as it is safe and feasible, the project owner shall implement the safe shutdown of any non-critical equipment and removal of any hazardous materials and waste that pose a threat to public health and safety and to environmental quality (also, see specific conditions of certification in the technical sections of Hazards, Hazardous Materials and Wildfire, and Solid Waste Management).

Within six business days of the incident, the project owner shall submit to the CPM a detailed incident report that includes, as applicable, the following information:

1. A brief description of the incident, including its date, time, and location;
2. A description of the cause of the incident, or likely causes if it is still under investigation;
3. The location of any off-site impacts;

4. Description of any resultant impacts;
5. A description of emergency response actions associated with the incident;
6. Identification of responding agencies;
7. Identification of emergency notifications made to federal, state, and local agencies;
8. Identification of any hazardous materials released and an estimate of the quantity released;
9. A description of any injuries, fatalities, or property damage that occurred as a result of the incident;
10. Fines or violations assessed or being processed by other agencies;
11. Name, phone number, and e-mail address of the appropriate facility contact person having knowledge of the event; and
12. Corrective actions to prevent a recurrence of the incident.

The project owner shall maintain all incident report records for the life of the project, including closure. After the submittal of the initial report for any incident, the project owner shall submit to the CPM copies of incident reports within 48 hours of a request.

If the project owner requests that an incident notification or report be designated as a confidential record and not publicly disclosed, the project owner shall submit copies of notices or reports with an application for confidential designation in accordance with CEC regulations.

COM-14 Non-Operation and Repair/Restoration Plans.

a. If the facility ceases operation temporarily (excluding planned and unplanned maintenance for longer than one week (or other CPM approved date), but less than three months (or other CPM-approved date), the project owner shall notify the CPM. Notice of planned non-operation shall be given at least two weeks prior to the scheduled date. Notice of unplanned non-operation shall be provided no later than one week after non-operation begins.

   For any non-operation, a Repair/Restoration Plan for conducting the activities necessary to restore the facility to availability and reliable and/or improved performance shall be submitted to the CPM within one week after notice of non-operation is given. If non-operation is due to an unplanned incident, temporary repairs and/or corrective actions may be undertaken before the Repair/Restoration Plan is submitted. The Repair/Restoration Plan shall include:

   1. Identification of operational and non-operational components of the plant;
   2. A detailed description of the repair and inspection or restoration activities;
   3. A proposed schedule for completing the repair and inspection or restoration activities;

4. An assessment of whether or not the proposed activities would require changing, adding, and/or deleting any COCs, and/or would cause noncompliance with any applicable plans, policies, and regulations; and
5. Planned activities during non-operation, including any measures to ensure continued compliance with all COCs and plans, policies, and regulations.

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 COCs 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 CEC 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 CEC 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 CEC and BLM 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 CEC and BLM 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 CEC and BLM, the project owner, the CPM, and BLM 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 may hold one or more workshops and/or the CEC 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 CEC 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
      a. monitoring and maintenance costs, and long-term equipment
      b. replacement;
   6. a schedule projecting all phases of closure activities for the power plant site and all appurtenances constructed as part of the CEC-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;
   8. 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;
   9. all information additionally required by the facility's COCs applicable to plant closure;
   10. 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.

11. a site disposition plan, including but not limited to proposed rehabilitation, restoration, and/or remediation procedures, as required by the COCs and applicable plans, policies, and regulations, and site maintenance activities;
12. 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;
13. identification of all current conditions of certification, plans, policies, and regulations, federal, state, regional, and local planning efforts applicable to the facility, and
14. proposed strategies for achieving and maintaining compliance during closure;
15. updated mailing list and Listserv of all responsible agencies, potentially interested parties, and property owners within one mile of the facility;
16. identification of alternatives to plant closure and assessment of the feasibility and environmental impacts of these; and
17. description of and schedule for security measures and safe shutdown of all non-critical equipment and removal of hazardous materials and waste (see COCs Solid Waste Management; Hazards, Hazardous Materials, and Wildfire, and Worker Safety and Fire Protection).

If the CEC and BLM 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 CEC and BLM 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 CEC 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.

Upon approving the project owner's final closure plan, the CEC may direct that the facility's certification be terminated at the time staff finds the closure process contained in the plan has been completed.

KEY EVENTS LIST

PROJECT: Soda Mountain Solar Project

DOCKET #: 24-OPT-03

COMPLIANCE PROJECT MANAGER:

EVENT DESCRIPTION	TARGET COMPLETION DATE
Certification Date	
Obtain Site Control	
On-line Date	
POWER PLANT SITE ACTITIES	
Start Site Assessment/Pre-construction	
Start Site Mobilization/Construction (following receipt of LSAA, ITP and WDR)	
Begin Pouring Major Foundation Concrete	
Begin Installation of Major Equipment	
Completion of Installation of Major Equipment	
First Start/Energizing of PV Array or BESS	
Obtain Building Occupation Permit	
Start Commercial Operation	
Complete All Construction	
INTERCONNECTION ACTIVITIES	
Start Switching Station, Transmission Tower and Transmission Line Construction	
Complete Switching Station, Transmission Tower and Transmission Line Construction	
Synchronization with Grid and Interconnection	
WATER SUPPLY ACTIVITIES	
Start Groundwater Well Construction	
Complete Groundwater Well Construction	
Start Construction of Water Supply Storage Tank	
Complete Construction of Water Supply Storage Tank	

COMPLAINT LOG NUMBER:_____ DOCKET NUMBER:_____

PROJECT NAME:_____

COMPLAINANT INFORMATION

NAME:_____ PHONE NUMBER:_____

ADDRESS:_____

COMPLAINT

DATE COMPLAINT RECEIVED:_____ TIME COMPLAINT RECEIVED:_____

COMPLAINT RECEIVED BY: _____ ☐ TELEPHONE ☐ IN WRITING (COPY ATTACHED)

DATE OF FIRST OCCURRENCE:_____

DESCRIPTION OF COMPLAINT (INCLUDING DATES, FREQUENCY, AND DURATION):_____

FINDINGS OF INVESTIGATION BY PLANT PERSONNEL:_____

DOES COMPLAINT RELATE TO VIOLATION OF A CEC REQUIREMENT? ☐ YES ☐ NO

DATE COMPLAINANT CONTACTED TO DISCUSS FINDINGS:_____

DESCRIPTION OF CORRECTIVE MEASURES TAKEN OR OTHER COMPLAINT RESOLUTION:_____

DOES COMPLAINANT AGREE WITH PROPOSED RESOLUTION? ☐ YES ☐ NO

IF NOT, EXPLAIN:_____

CORRECTIVE ACTION

IF CORRECTIVE ACTION NECESSARY, DATE COMPLETED:_____

DATE FIRST LETTER SENT TO COMPLAINANT (COPY ATTACHED):_____

DATE FINAL LETTER SENT TO COMPLAINANT (COPY ATTACHED):_____

OTHER RELEVANT INFORMATION:_____

"This information is certified to be correct."

PLANT MANAGER SIGNATURE:_____ DATE:_____

Section 10

Mandatory Opt-In Requirements

10 Mandatory Opt-In Requirements

10.1 "Facility" Definition Met

Summary of Requirements

The California Energy Commission (CEC) has the authority to certify certain clean and renewable energy facilities.[1] A developer with an eligible project may optionally file with the CEC to obtain a certification to construct and operate the project. The CEC is the "lead agency" under the California Environmental Quality Act (CEQA) and is required to prepare an environmental impact report, mitigated negative declaration, or negative declaration, for any facility that elects to opt-in to the CEC's jurisdiction. With exceptions, the issuance of a certificate by the CEC for an eligible facility is in lieu of any permit, certificate, or similar document required by any state, local, or regional agency, or federal agency to the extent permitted by federal law, and supersedes any applicable statute, ordinance, or regulation of any state, local, or regional agency, or federal agency to the extent permitted by federal law.

An eligible Opt-In project must meet one or more of the definitions of a "facility"[2]:

1. A solar photovoltaic or terrestrial wind electrical generating powerplant with a generating capacity of 50 megawatts or more and any facilities appurtenant thereto.
2. An energy storage system[3] that can store 200 megawatt hours or more of electrical energy.
3. A stationary electrical generating powerplant using any source of thermal energy, with a generating capacity of 50 megawatts or more, excluding any powerplant that burns, uses, or relies on fossil or nuclear fuels.
4. A discretionary project[4] for which the applicant has certified that a capital investment of at least two hundred fifty million dollars will be made over a period of five years.[5] The applicant must additionally provide what the facility would manufacture, produce, or assemble, and how the facility's products or services would be used in the manufacture, production, or assembly of the following:
   a. Energy storage systems or component manufacturing;
   b. Wind systems or component manufacturing;

1 Pub. Resources Code, § 25545.1
2 Pub. Resources Code, § 25545(b)
3 Pub. Util. Code, § 2835
4 Pub. Resources Code, § 21080
5 Pub. Resources Code, § 25545(b)(4)

c. Solar photovoltaic energy systems or component manufacturing; or

d. Specialized products, components, or systems that are integral to renewable energy or energy storage technologies.[6]

5. An electric transmission line carrying electric power from a facility described in paragraph (1), (2), or (3) that is located in the state to a point of junction with any interconnected electrical transmission system.

6. A hydrogen production facility and associated onsite storage and processing facilities that do not derive hydrogen from a fossil fuel feedstock and that receive funding from any of the following:

   a. The Hydrogen Program established pursuant to Section 25664.1.

   b. Section 91530, as added by the Safe Drinking Water, Wildfire Prevention, Drought Preparedness, and Clean Air Bond Act of 2024.

   c. The Alliance for Renewable Clean Hydrogen Energy Systems (ARCHES) authorized by Article 15 (commencing with Section 12100.160) of Chapter 1.6 of Part 2 of Division 3 of Title 2 of the Government Code, as awarded by the United States Department of Energy Office of Clean Energy Demonstrations.

7. A geothermal powerplant or a project that comprises multiple geothermal powerplants on a single site.

Proposed Findings of Fact

Based on the information provided in the application, and additional evidence and information as described below and contained in the record of this proceeding, staff concludes the following facts are supported by substantial evidence in the record:

1. The project would be a solar photovoltaic electrical generating facility with a generating capacity of 300 megawatts (MWs), thus exceeding the minimum 50 MW threshold required to meet the definition of a facility.

2. The project would include an up to 1,200 MW-hour battery energy storage system, thus exceeding the minimum 200 MW-hour threshold required to meet the definition of a facility.

Conclusions

Based on the foregoing findings, staff concludes the project meets one or more of the definitions of a "facility," as required under Public Resources Code section 25545(b) and recommends the CEC adopt these proposed findings and conclusions as they are supported by substantial evidence in the record.

6 Cal. Code Regs., tit. 20, § 1877(b)

10.2 Requirements for Covered Project Under the Labor Code

Summary of Requirements

Public Resources Code section 25545.3.3 requires the applicant to certify that either the entirety of the construction of the project is a public work for purposes of Chapter 1 (commencing with section 1720) of Part 7 of Division 2 of the Labor Code, or the construction of the project is not in its entirety a public work for which prevailing wages must be paid, but all construction workers employed on the project will be paid at least the general prevailing rate of per diem wages. In addition, Public Resources Code section 25545.3.5 requires the applicant to certify that a skilled and trained workforce will be used to perform all construction work.

Proposed Finding of Fact

Based on the information provided in the application, and additional evidence and information as described below and contained in the record of this proceeding, staff concludes the following facts are supported by substantial evidence in the record:

1. In Appendix T of the Opt-In application (RE 2024ll) the applicant certified that construction of the covered project is not in its entirety a public work for which prevailing wages must be paid under Article 1 (commencing with Section 1720) of Chapter 1 of Part 7 of Division 2 of the Labor Code, but applicant has certified that all construction workers employed on the project will be paid at least the general prevailing rate of per diem wages for the type of work and geographic area, as determined by the Director of Industrial Relations pursuant to Sections 1773 and 1773.9 of the Labor Code, except that apprentices registered in programs approved by the Chief of the Division of Apprenticeship Standards may be paid at least the applicable apprentice prevailing rate.
2. Applicant further certifies that, for the portion(s) of the project that are not a public work for which prevailing wages must be paid under Article 1 (commencing with Section 1720) of Chapter 1 of Part 7 of Division 2 of the Labor Code, it will comply with the following statutory requirements, as applicable:
    a. Applicant shall ensure that the prevailing wage requirement is included in all contracts for the performance of all construction work.
    b. All contractors and subcontractors shall pay all construction workers employed in the construction of the project at least the general prevailing rate of per diem wages. Apprentices registered in programs approved by the Chief of the Division of Apprenticeship Standards shall be paid at least the applicable apprentice prevailing rate.
    c. All contractors and subcontractors performing construction work on the project shall employ apprentices at no less than the ratio required in the Labor Code section 1777.5.

d. All contractors and subcontractors performing construction work shall maintain and verify payroll records pursuant to the Labor Code section 1776, make those records available for inspection and copying as provided therein, and furnish those payroll records to the Labor Commissioner pursuant to Labor Code section 1771.4.

e. Except as provided in Public Resources Code section 25545.3.3(b)(6), the obligation to pay prevailing wages and employ apprentices may be enforced by the Labor Commissioner through the issuance of a civil wage and penalty assessment pursuant to the Labor Code sections 1741, 1742, 1771.2, and 1742.1.

f. Contractors and subcontractors performing construction work on the project may be subject to a project labor agreement. The project labor agreement shall include, but is not limited to, all of the following:

   i. Prevailing wages provisions applicable to all construction workers employed in the construction of the project and an arbitration procedure.

   ii. Target hiring provisions as required under Public Resources Code section 25545.3.3(b)(6)(B).

   iii. Apprenticeship utilization provisions committing to increasing the share of work performed by state-registered apprentices above the state-mandated minimum ratio required in the Labor Code section 1777.5.

   iv. Apprenticeship utilization provisions committing to hiring and retaining a certain percentage of state-registered apprentices that completed the Multi-Craft Core pre-apprenticeship training as defined in the Unemployment Insurance Code section 14005(t).

3. In Appendix T of the Opt-In application (RE 2024ll), the applicant certified that a skilled and trained workforce will be used to perform all construction work on the project, and it will comply with the following statutory requirements, as applicable:

   a. All contracts shall require for the performance of work that every contractor and subcontractor at every tier will individually use a skilled and trained workforce to construct the project.

   b. Every contractor and subcontractor must use a skilled and trained workforce to construct the project.

   c. Except as provided in Public Resources Code section 25545.3.5(e), contractors and subcontractors that fail to use a skilled and trained workforce shall be subject to the penalties provided in the Public Contract Code section 2603.

   d. Applicant must retain records, including copies of monthly reports, that demonstrate compliance with the Public Contract Code section 2600 while the project or contract is being performed and for three years after completion of the project or contract. The applicant must submit these records immediately upon request of the CEC. When submitted to the CEC, these records shall be a public

record under the California Public Records Act and shall be open to public inspection.

4. Applicant further certifies that if all contractors and subcontractors performing work on the project are subject to a project labor agreement, the project labor agreement will include:
   a. Provisions requiring compliance with the skilled and trained workforce requirement and for enforcement of that obligation through an arbitration procedure.
   b. Targeted hiring provisions, including a targeted hiring plan, on a craft-by-craft basis to address job access for local, disadvantaged, or underrepresented workers, as defined by a local agency.
   c. Apprenticeship utilization provisions that commit all parties to increasing the share of work performed by state-registered apprentices above the state-mandated minimum ratio required in the Labor Code section 1777.5.
   d. Apprenticeship utilization provisions that commit all parties to hiring and retaining a certain percentage of state-registered apprentices that have completed the Multi-Craft Core pre-apprenticeship training curriculum referenced in the Unemployment Insurance Code section 14005(t).

Conclusions

Based on the foregoing certifications, staff concludes the record contains substantial evidence to support a proposed finding of compliance with Public Resources Code sections 25545.3.3 and 25545.3.5. In addition, to comport with sections 25545.3.3 and 25545.3.5, staff proposes Conditions of Certification (COC) **LABOR-1** requiring compliance with the labor requirements as set forth in this finding.

LABOR-1 The project owner shall implement the construction labor requirements of Public Resources Code sections 25545.3.3 and 25545.3.5.

Verification: Upon request by the Compliance Project Manager (CPM), the project owner shall provide documentation evidencing compliance with the requirements of Public Resources Code sections 25545.3.3 and 25545.3.5.

10.3 Identification of Whether Site is Located at a Prohibited Area

Summary of Requirements

The Opt-In applicant must identify whether the project is located on a prohibited site as identified in Public Resources Code section 25527 or on a site designated by the California Coastal Commission under Public Resources Code section 30413(b) or on a site designated by the San Francisco Bay Conservation and Development Commission under Government Code section 66645(b). For projects on such a site, the Opt-In application shall include documentation of the approval of the public agency having

ownership or control of the land.[7]

Proposed Findings of Fact

Based on the information provided in the application, and additional evidence and information as described below and contained in the record of this proceeding, staff concludes the following facts are supported by substantial evidence in the record:

1. As part of its application, the applicant has identified that the project is proposed entirely on federal lands managed by the Bureau of Land Management, in San Bernardino County, California.
2. The project site is not located on a prohibited site identified in Public Resources Code section 25527, which includes a state, regional, County, or city park; wilderness, scenic, or natural reserve, area for wildlife protection, recreation, historic preservation; or natural preservation area. Although the gen-tie line is located within a federal Area of Critical Environmental Concern (ACEC) intended for wildlife protection (BLM 2016), this designation does not preclude development as long as compensatory mitigation off-sets project impacts.
3. The project site is not located in an area designated by the California Coastal Commission under Public Resources Code section 30413(b).
4. The project is not located on a site designated by the San Francisco Bay Conservation and Development Commission under Public Resources Code section 66645(b).

Conclusions

Based on the location of the project, staff has concluded that the site is not within a prohibited site as identified in Public Resources Code section 25527 or on a site designated by the California Coastal Commission under Public Resources Code section 30413(b) or on a site designated by the San Francisco Bay Conservation and Development Commission under Government Code section 66645(b). Staff recommends the CEC may adopt this proposed finding and conclusion as it is supported by substantial evidence in the record.

10.4 Net Positive Economic Benefit to the Local Government

Summary of Requirements

Public Resource Code section 25545.9(a) states:

> *"The commission shall not certify a site and related facility under this chapter unless the commission finds that the construction or operation of the facility will have an overall net positive economic benefit to the local government that would have had permitting authority over the site and related facility."*

7 Cal. Code Regs., tit. 20, § 1877(e)

Economic benefits may include, but are not limited to, employment growth, housing development, infrastructure and environmental improvements, assistance to public schools and education, assistance to public safety agencies and departments, and property taxes and sales and use tax revenues.[8]

Under Public Resource Code section 25545.9(b), there is a rebuttable presumption that the construction or operation of the facility will have an overall net positive economic benefit to San Bernardino County.

10.5 Legally Binding Enforceable Agreement(s) for Community Benefits of the Project

Summary of Requirements

Public Resources Code section 25545.10(a) states that the CEC shall not certify a site and related facility unless the CEC finds that the applicant has entered into one or more legally binding and enforceable agreements with, or that benefit, a coalition of one or more community-based organizations, such as workforce development and training organizations, labor unions, social justice advocates, local governmental entities, California Native American tribes, or other organizations that represent community interests, where there is mutual benefit to the parties to the agreement.[9]

The topics and specific terms in the community benefits agreements may vary and may include workforce development, job quality, and job access provisions that include, but are not limited to, any of the following[10]:

1. Terms of employment, such as wages and benefits, employment status, workplace health and safety, scheduling, and career advancement opportunities.
2. Worker recruitment, screening, and hiring strategies and practices, targeted hiring planning and execution, investment in workforce training and education, and worker voice and representation in decision making affecting employment and training.
3. Establishing a high road training partnership, as defined in Section 14005 of the Unemployment Insurance Code.

The topics and specific terms in the community benefits agreement may also include, but not be limited to, funding for or providing specific community improvements or amenities such as park and playground equipment, urban greening, enhanced safety crossings, paving roads and bike paths, and annual contributions to a nonprofit or community-based organization that awards grants to organizations delivering community-based services and amenities.[11]

8 Cal. Code Regs., tit. 20 § 1879(a)(7); Pub. Resources Code § 25545.9
9 Pub. Resources Code, § 25545.10(a)
10 Id.
11 Pub. Resources Code, § 25545.10(b)

The topics and specific terms in agreements with California Native American tribes may include, but not be limited to, cultural preservation and revitalization programs, joint management and stewardship agreements, open-space preservation agreements, repatriation and reparations agreements, and other compensatory mitigation programs.[12]

Proposed Findings of Fact

Based on the information provided in the application, submitted executed agreements and additional evidence and information as described below and contained in the record of this proceeding, staff concludes the following facts are supported by substantial evidence in the record:

1. The applicant has entered into a legally binding and enforceable agreement with the Friends of El Mirage, a California 501(c)(3) non-profit organization which is a qualified community-based advocacy organization under Public Resources Code section 25545.10(a). Friends of El Mirage promote the preservation, use, and restoration of open space areas used by a varied group of outdoor recreationists who promote the positive aspects of vehicular access to multi-use land. The organization is located in El Mirage, California, which is part of San Bernardino County, California.
2. The applicant has identified the following mutual benefit(s) to the parties of the agreement: Friends of El Mirage will benefit by receiving a charitable donation that will help support their projects to (i) improve, protect, and maintain existing trails and dry lake beds and (ii) promote understanding, education, and cooperation between all open space users. This partnership will also allow the applicant to satisfy the requirements of Public Resources Code section 25545.10 in furtherance of developing the project in accordance with State of California's renewable energy goals.

Conclusions

Based on the foregoing proposed findings, staff concludes the applicant has entered into one or more legally binding and enforceable agreements with, or that benefit a coalition of one or more community-based organizations as specified in Public Resources Code section 25545.10. Therefore, staff recommends the CEC adopt proposed findings and conclusions consistent with staff's recommendation based on the identified evidence in the administrative record.

12 Pub. Resources Code, § 25545.10(c)

10.6 Identification of Public Agencies that Received Notice of the Application

Summary of Requirements

Consistent with Public Resources Code section 25519 and 25545.8, CEC staff notified the following agencies of the Opt-In application: San Bernardino County (various departments), California Department of Fish and Wildlife, Department of Toxic Substances Control, State Water Resources Control Board, Lahontan Regional Water Quality Control Board, RWQCB Region 6, California Department of Water Resources, Mojave Water Agency, California Public Utilities Commission, California Attorney General, , California Department of Forestry and Fire Protection (CAL FIRE), California Department of Transportation, California Air Resources Board, Native American Heritage Commission, Office of Land Use and Climate Innovation, U.S. Army Corps of Engineers, Office of Health Hazard Assessment, Bureau of Land Management, Mojave Air Quality Management District, Cal OSHA Region 6, U.S. Environmental Protection Agency, California Environmental Protection Agency, California Natural Resources Agency, California Natural Resources Conservation Service, and U.S. Fish and Wildlife Service.

10.7 Environmental Leadership Development Project Requirements

Summary of Requirements

An Opt-In application is deemed an environmental leadership development project certified by the Governor under Public Resources Code section 21178 and eligible for streamlined procedures under Public Resources Code section 21185, if the CEC verifies that the project meets the conditions under Public Resources Code section 21183 and mitigates greenhouse gas (GHG) impacts as required under Public Resources Code section 21183.6.[13]

Under Public Resources Code section 21183 the following conditions must be met:

1. The Project will result in a minimum investment of $100,000,000 in California upon completion of construction, unless otherwise exempt under Public Resources Code section 21180.
2. The project creates high-wage, highly skilled jobs that pay prevailing wages and living wages, provides construction jobs and permanent jobs for Californians, helps reduce unemployment, and promotes apprenticeship training as defined in Public Resources Code section 21183.5.
3. For environmental leadership development projects[14], including a wind or solar energy project or a project that manufactures products, equipment, or components

13 Cal. Code Regs., tit. 20, § 1877(h); Pub. Resources Code, § 25545.13
14 Pub. Resources Code, § 21180(1), (2), and (3)

used for renewable energy generation, or energy efficiency, the project does not result in any net additional emission of GHG, including GHG emissions from employee transportation, as determined by compliance with Public Resources Code section 21183.6.

4. The applicant demonstrates compliance with the requirements of recycling commercial solid waste and organic solid waste as required under Chapter 12.8 (commencing with Section 42649) and Chapter 12.9 (commencing with Section 42649.8) of Part 3 of Division 30, as applicable.
5. The applicant has entered into an agreement that all mitigation measures required to certify the project must be conditions of approval of the project. For environmental mitigation measures, the applicant agrees that those measures will be monitored and enforced by the lead agency for the life of the obligation.
6. The applicant agrees to pay the costs of the trial court and the court of appeal in hearing and deciding any case challenging a lead agency's action on the certified project.
7. The applicant agrees to pay the costs of preparing the record of proceedings for the project concurrent with review and consideration of the project under this division.
8. The applicant demonstrates that the record of proceedings is being prepared in accordance with Public Resources Code section 21186.

Under Public Resources Code section 21183.6, quantification and mitigation of impacts of environmental leadership development projects[15] including a solar energy project from the impacts of GHG must be as follows:

1. The environmental baseline for GHG emissions be based on the physical environmental conditions in the vicinity of the project site at the time the application is submitted.[16]
2. The mitigation of the impacts resulting from the emissions of GHG must be achieved in accordance with the following priority:
   a. Direct emissions reductions from the project that also reduce emissions of criteria air pollutants or toxic air contaminants through implementation of project features, project design, or other measures, including, but not limited to, energy efficiency, installation of renewable energy electricity generation, and reductions in vehicle miles traveled.
   b. The remaining unmitigated impacts shall be mitigated by direct emissions reductions that also reduce emissions of criteria air pollutants or toxic air contaminants within the same air pollution control district or air quality management district in which the project is located.

15 Id.
16 Cal. Code Regs., tit. 14, § 15125

c. The remaining unmitigated impacts shall be mitigated through the use of offsets that originate within the same air pollution control district or air quality management district in which the project is located, consistent with the Health and Safety Code[17], including, the requirement that the offsets be real, permanent, quantifiable, verifiable, and enforceable, and shall be undertaken from sources in the community in which the project is located or in adjacent communities.

d. The remaining unmitigated impacts shall be mitigated using of offsets that originate from sources that provide a specific, quantifiable, and direct environmental and public health benefit to the region in which the project is located.

Proposed Findings of Fact

Based on the information provided in the application, and additional evidence and information as described below and contained in the record of this proceeding, staff concludes the following facts are supported by substantial evidence in the record:

Public Resources Code Section 21183 Required Proposed Findings

1. The project will result in a minimum investment of $100,000,000 in California upon completion of construction. (RE 2024qq).
2. The applicant has identified that construction of the project would generate employment. Project construction is estimated to directly generate an average of 200 full-time equivalent construction workers over the 18-month construction schedule, with an estimated peak of approximately 300 workers on-site during peak construction months. (RE 2024qq, RE 2024u).
   a. The applicant has certified that these workers will be paid prevailing wages and living wages as evident by their employment agreements. (RE 2024ll, RE 2024qq).
   b. Operation of the project would not require full-time onsite staff. On an as-needed basis over the 40-year expected lifetime of the project, 25 to 40 technicians would be required to conduct routine inspections, maintenance, equipment operation, and/or security. Therefore the project would provide permanent jobs for Californians. The applicant certifies that it plans to promote apprenticeship training. (RE 2024ll, RE 2024qq).
   c. The proposed project is a solar facility and is therefore a qualified environmental leadership development project under Public Resources Code section 21180(b)(1), (2), or (3).
3. As described in the Air Quality and Greenhouse Gas Emissions sections, by displacing energy from natural gas powerplants, the project would not result in any

17 Pub. Resources Code, § 38500

net additional emissions of GHG. Therefore, the project complies with Public Resources Code section 21183.6 (RCI 2023q).

4. In order to comply with recycling commercial solid waste and organic solid waste requirements under Public Resources Code sections 42649 and 42649.8, as applicable the applicant would ensure that recycling of commercial and organic waste are stipulations in the construction contractor's contract. Construction materials would be sorted on-site throughout construction and transported to appropriate waste management facilities. Recyclable materials would be separated from non- recyclable items and stored until they could be transported to a designated recycling facility. Recycling would be in accordance with applicable California state requirements. Wooden construction waste (such as wood from wood pallets) would be sold, recycled, or chipped and composted. Other compostable materials, such as vegetation, may also be composted off-site. Non-hazardous construction materials that cannot be reused or recycled would likely be disposed of at a Class II/III landfill. Hazardous waste and electronic waste would not be placed in a landfill but rather would be stored onsite for less than 90 days and would be transported to a treatment, storage, and disposal facility by a licensed hazardous waste transporter. All contractors and workers would be educated about waste sorting, appropriate recycling storage areas, and how to reduce landfill waste.
5. The potential waste streams that would be generated during construction and operation of the Project, the waste classifications, and disposal facilities in the vicinity of the Project are detailed in Appendix R, Waste Management Plan of the Opt-In Application package. Furthermore, the Project must comply with the California Green Building Standards Code, also known as CALGreen, which includes mandatory recycling. Code Section 5.408 requires that 65 percent of the nonhazardous waste be recycled or salvaged for reuse. Code Section 5.408.3 (excavated soil and land clearing debris) requires that 100 percent of trees, stumps, rocks, and associated vegetation and soils resulting from land clearing shall be reused or recycled.
6. Upon certification of this project the applicant will have entered into an agreement that any and all mitigation measures contained within the Final Decision of certification will be conditions of approval of the project, those conditions will be fully enforceable by the CEC or another agency designated by the CEC. The CEC will monitor and enforce the mitigation measures for the lifetime of the project.
7. The applicant has agreed to pay the potential costs of the trial court and the court of appeal in hearing and deciding any case challenging the CEC's action on the certified project.
8. The applicant has agreed to pay the costs of preparing the record of proceedings for the project concurrent with review and consideration of the project.
9. The preparation and certification of the record of proceedings for this project complies with Public Resources Code section 21186.

Public Resources Code Section 21183.6 Required Proposed Findings

1. The application demonstrates that the environmental baseline for greenhouse gas emissions was based on the physical environmental conditions in the vicinity of the project site when the application was submitted on August 1, 2024.
2. This document requires any and all mitigation measures resulting from the emissions of greenhouse gases to be in accordance with the priorities outlined in Public Resources Code section 21183.6.

Conclusions

Staff has verified and concluded that the record contains evidence to support a finding that the project meets the requirements of Public Resources Code section 21183, and may be deemed, an environmental leadership development project under Public Resources Code section 21178. In addition, staff proposes COC **WASTE-1** and recommends **MM WASTE-1** (for the utility switchyard) requiring compliance with solid waste management mitigation measures required to certify the project, as set forth in this proposed finding.

Staff has also verified and concluded that the record contains evidence to support a finding that the impacts of greenhouse gas emissions were quantified and mitigated in a manner consistent with Public Resources Code section 21183.6, and therefore staff recommends that the CEC may adopt this proposed finding and conclusion.

10.8 Potential for Restoring the Site if Application Rejected

Summary of Requirements

As part of the Opt-In application, the applicant must demonstrate the potential for restoring the site as necessary to protect the environment if the CEC denies approval of the application.[18]

Proposed Findings of Fact

Based on the information provided in the application, and additional evidence and information as described below and contained in the record of this proceeding, staff concludes the following facts are supported by substantial evidence in the record:

1. Project site preparation and construction would not begin prior to application approval and thus restoration work would not be necessary.

Conclusions

Staff concludes that the applicant has sufficiently evaluated and identified the potential for restoring the project site as required under California Code of Regulations, title 20,

18 Cal. Code Regs., tit. 20, § 1879(a)(3); Pub. Resources Code, §§ 25545.8 and 25523(e)

section 1879(a)(3) and therefore staff recommends that the CEC may adopt this proposed finding and conclusion.

10.9 Minimum Standards of Efficiency

Summary of Requirements

The applicant must demonstrate compliance with the recommended minimum standards of efficiency for the operation of a new facility at a particular site that are technically and economically feasible, as required under Public Resources Code section 25402(d). The applicant must certify that standards recommended by the CEC have been considered, which certification shall include a statement specifying the extent to which conformance with the recommended standards will be achieved.[19]

Proposed Findings of Fact

Based on the information provided in the application, and additional evidence and information as described below and contained in the record of this proceeding, staff recommends the CEC make the following findings and conclusions because the record contains substantial evidence for their support:

The CEC has not recommended minimum standards of efficiency for the proposed project. The applicant is not required to demonstrate compliance with minimum efficiency standards, as no minimum efficiency standards have been applied to this project.

Conclusions

Based on the foregoing proposed findings, the applicant is not required to demonstrate compliance with minimum efficiency standards, as no efficiency standards apply to this project. Therefore, staff proposes the CEC may adopt this finding and conclusion as it is supported by substantial evidence in the record.

10.10 References

BLM 2016 – U.S. Bureau of Land Management. Desert Renewable Energy Conservation Plan. Land Use Plan Amendment to the California Desert Conservation Plan, Bishop Resource Management Plan, and Bakersfield Resource Management Plan. Approved September 14, 2016. Accessed online at: https://eplanning.blm.gov/eplanning-ui/project/66459/570

RE 2024u – Resolution Environmental (TN 257920). Section 3-14 Population and Housing, dated July 23, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

19 Cal. Code Regs., tit. 20 § 1879(a)(1); Pub. Resources Code, § 25523(d)

RE 2024gg – Resolution Environmental (TN 257933). Appendix E1 Aquatic Resources Delineation, dated July 23, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

RE 2024ll – Resolution Environmental (TN 257938). Appendix T Labor Certifications, dated July 23, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-03

Section 11

Override Findings and Recommendations

11 Override Findings and Recommendations

Staff's Recommendations

11.1 Summary of Staff's Recommendations

The proposed project has multiple significant and unavoidable impacts on biological resources and visual resources.

CEC staff recommends the CEC certify the Environmentally Superior Alternative, the Big Horn Sheep Buffer and Relocated BESS Alternative #2, as described in **Section 8, Alternatives,** of the Staff Assessment. This alternative has been determined to be feasible by the applicant. The Big Horn Sheep Buffer and Relocated BESS Alternative #2 would reduce the impacts to desert big horn sheep to less than significant. Since staff recommends the CEC certify the Environmentally Superior Alternative, a statement of overriding considerations is not evaluated for impacts to biological resources. However, visual resources would remain significant and unavoidable. Specifically, staff concludes given the existing physical landscape, the project would substantially degrade the existing visual character or quality of public views of the site and its surroundings from all 11 applicant-submitted key observation points as described in **Section 5.15, Visual Resources**, of the SA**.**

11.2 Discussion of Significant Environmental Impacts That Cannot be Avoided or Mitigated and Project Benefits

California Code of Regulations, title 14, section 15091 and California Code of Regulations, title 20, section 1748(b)(8) provides that the CEC cannot approve a project with one or more significant environmental effects unless the CEC makes certain findings based on substantial evidence in the record.

These findings include specific economic, legal, social, technological, or other considerations, including provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or project alternatives identified in the environmental analysis.

In addition, California Code of Regulations, title 14, section 15093, authorizes an agency, based on substantial evidence to balance, as applicable, the economic, legal, social, technological, or other benefits, including region-wide or statewide environmental benefits, of a proposed project against its unavoidable environmental risks when determining whether to approve the project. If the specific economic, legal, social, technological, or other benefits, including region-wide or statewide environmental benefits, of a proposed project outweigh the unavoidable adverse environmental effects, the adverse environmental effects may be considered acceptable.

Taken together, the regulations require an agency to not approve a project with significant and unavoidable impacts unless, after careful consideration, the agency identifies other benefits of the project that outweigh the environmental damage.

As detailed in **Section 5.15, Visual Resources**, significant and unavoidable impacts have been identified in the area of visual resources. Specifically, staff concludes given the existing physical landscape, the project would substantially degrade the existing visual character or quality of public views of the site and its surroundings from all 11 applicant-submitted key observation points (KOP).

While staff concludes there is a significant and unavoidable impact to visual resources, staff concludes there is substantial and compelling evidence in the record to support a CEC decision to approve the project by issuing a statement of overriding considerations. As set forth in **Section 3, Project Description, Section 4.1, Facility Design, Section 4.3, Transmission System Engineering, Section 5.1, Air Quality, Section 5.3, Climate Change and Greenhouse Gas Emissions, Section 5.11, Socioeconomics,** and **Section 7, Public Benefits,** the project provides regional economic benefits, construction and engineering jobs, grid reliability benefits, support for California's renewable energy and GHG emission reduction goals, and displacement of fossil fuel generation and corresponding air pollution.

If the CEC decides to approve the project, there would be substantial evidence to support such action.

11.3 Findings of Fact

Based on substantial evidence, CEC staff makes the following findings:

1. Impacts to visual resources caused by the Soda Mountain Solar Project will be significant and unavoidable at all 11 Key Observation Points.
2. No feasible migitation measures were identified in the Staff Assessment that could mitigate or avoid the project's significant effects on visual resources.
3. The Soda Mountain Solar Project would provide the following benefits:
    a. Assists the State of California in achieving or exceeding its Renewables Portfolio Standard and greenhouse gas emissions reduction objectives by developing and constructing new California Renewables Portfolio Standard–qualified solar power generation facilities producing approximately 300 MW.
    b. Provides a new source of energy storage that assists the state in achieving its energy storage mandates.
    c. Contributes to the diversity of renewable generation.
    d. Contributes to the state's electrical grid reliability by providing renewable electricity during increased load demand.
    e. Uses the existing unused transmission capacity that provides approximately 300 MW of capacity.

f. Utilizes existing energy infrastructure to the extent possible by locating solar power generation facilities near existing infrastructure, such as electrical transmission facilities.

g. Supports the San Bernardino County economy by investing in the local community, creating local construction jobs, and increasing tax and fee revenue to the County.

h. Provides the following economic benefits to San Bernardino County:

   i. Project construction is estimated to directly generate an average of 200 full-time equivalent construction workers over the 18-month construction schedule, with an estimated peak of approximately 300 workers on-site during peak construction months.

   ii. On an as-needed basis, over the 40-year expected lifetime of the project, 25 to 40 technicians would be required to conduct routine inspections, maintenance, equipment operation, and/or security.

   iii. The direct, indirect, and induced county sales taxes during construction will generate approximately $9.0 million.

4. There are no feasible alternatives to the Soda Mountain Solar Project that would avoid or substantially lessen the significant impacts to visual resources and achieve most of the benefits and objectives of the project.

11.4 Recommended Determination Regarding CEQA Override Considerations

Based on substantial evidence and detailed analysis, staff recommends the CEC find that on balance, the project's significant impacts to visual resources are outweighed by the project's benefits.

Section 12

Authors and Reviewers

12 Authors and Reviewers

Lead Agency—California Energy Commission

Section Authors

Staff	Section(s)
Alvin Greenberg	Worker Safety and Fire Protection
Ardalan Sofi	Efficiency and Energy Resources, Facility Design, Noise and Vibration, Facility Reliability, Mandatory Opt-In Regulations
Ashley Gutierrez	Compliance Conditions and Compliance Monitoring Plan
Chris Huntley	Biological Resources
Collin Crawford	Alternatives, Socioeconomics, Environmental Justice
Daniel Jones	Worker Safety and Fire Protection
Irene Kaufman	Land Use, Mandatory Opt-In Regulations
Jacob Locsin	Noise and Vibration
Jacquelyn Record	Climate Change and Greenhouse Gas Emissions, Air Quality, Mandatory Opt-In Regulations
James Ackerman	Solid Waste Management, Water Resources
Jamison Miner	Biological Resources
John Carrier	Alternatives, Socioeconomics, Environmental Justice
John Heiser	Mandatory Opt-In Regulations
Kevin Delano	Geology, Paleontology, and Mineral Resources
Lauren DeOliveira	Cultural and Tribal Cultural Resources
Michael Clayton	Visual Resources
Michael Hoke	Cultural and Tribal Cultural Resources
Michelle Shi	Efficiency and Energy Resources
Nate Berls	Hazardous Materials Management/Waste and Wildfire
Negar Vahidi	Land Use, Mandatory Opt-In Regulations
Paul Miller	Hazardous Materials Management/Waste and Wildfire, Worker Safety and Fire Protection
Roger Hatheway	Cultural and Tribal Cultural Resources
Steve Brown	Transportation
Sudath Edirisuriya	Transmission Line Safety and Nuisance, Transmission System Engineering
Tatiana Inouye	Land Use, Mandatory Opt-In Regulations
Yifan Ding	Air Quality, Public Health

Supervision and Management

Staff	Role
Regina Galer	Director, Siting, Transmission, and Environmental Protection (STEP) Division
Dian Vorters	Deputy Director, STEP Division
Eric Knight	Siting and Environmental Branch Manager
Brett Fooks	Safety and Reliability Branch Manager
Joseph Hughes	Engineering Branch Manager
Ann Crisp	Biological Resources Unit Supervisor
Kaycee Chang	CEQA Project Management Unit Supervisor
Gabriel Roark	Cultural Resources Unit Supervisor
Hurshbir Shahi	Compliance and Enforcement Unit Supervisor
Wenjun Qian	Air Quality and Public Health Unit Supervisor
Shahab Khoshmashrab	Facility Design Unit Supervisor
Abdel-Karim Abulaban	Geosciences Unit Supervisor
William E. Larson	Work Authorization Manager and Reviewer, Cultural and Tribal Cultural Resources

Project Management/Legal

Staff	Role
Lisa Worrall	Project Manager
Mariah Ponce	Staff Counsel
Devin Black	Staff Counsel
Crystal Cabrera	Staff Counsel
Susan Cochran	Staff Counsel

Project Assistant

Staff	Role
Marichka Haws	Project Assistant
Lorenzo Cano	Student Assistant
Yiming Luo	Student Assistant

Appendix A

Cumulative Scenario

Appendix A: Cumulative Scenario

Cumulative Scenario

Preparation of the cumulative impact analysis is required under the California Environmental Quality Act (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 environmental impact report (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," and therefore potentially significant (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, § 15064(h)(1)). Together, these projects comprise the cumulative scenario which forms the basis of the cumulative impact analysis.

The discussion of cumulative impacts must reflect the severity of the impacts, as well as the likelihood of their occurrence, yet the discussion need not be as detailed as the discussion of environmental impacts attributable to the project alone. When the combined cumulative impact associated with the project's incremental effect and the effects of other projects is not significant, the EIR shall briefly indicate why the cumulative impact is not significant and is not discussed in further detail in the EIR. (Cal. Code Regs., tit. 14, § 15130(a)(2)).

The cumulative impact discussion is intended to be guided by the standards of practicality and reasonableness (Cal. Code Regs., tit. 14, § 15130(b)). CEQA Guidelines sections applicable to a cumulative impact analysis state the following:

- CEQA Section 15355: "Cumulative impacts" refers to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.
    - (a) The individual effects may be changes resulting from a single project or a number of separate projects.
    - (b) The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.
- CEQA Guidelines Section 15130(a)(1): As defined in Section 15355, 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. An EIR should not discuss impacts which do not result in part from the project evaluated in the EIR.

- CEQA Guidelines Section 15064(h)(4): The mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulatively considerable.

Development of Cumulative Project Scenario

Under CEQA, there are two commonly used methodologies for establishing the cumulative impact scenario—the "list approach" and the "projections approach." The list approach uses a "list of past, present, and probable future projects producing related or cumulative impacts" (Cal. Code Regs., tit. 14, § 15130(b)(1)(A)). The projections approach uses a "summary of projections contained in an adopted local, regional or statewide plan, or related planning document, that describes or evaluates conditions contributing to the cumulative effect" (Cal. Code Regs., tit. 14, § 15130(b)(1)(B)).

This staff assessment uses the list approach to provide an understanding and context for analyzing the potential cumulative effects related to the proposed project. The project list supplements the cumulative scenario with information on specific projects that are proposed or under construction in the surrounding communities.

The cumulative projects list provided by the San Bernardino County Land Use Services Department contained past, present, or probable future projects located near the proposed project that would potentially be constructed within one year before or after the proposed project. The cumulative projects list initially focused on projects within a six-mile radius of the proposed project site. Projects located outside the six-mile radius can still contribute to regional cumulative impacts due to their size and resource demands, and were included based on the potential to cause related cumulatively considerable impacts. As the direct and indirect effects of a project are generally evaluated within a smaller radius (e.g., six miles for dispersion modeling, 10 miles for biological resource special-status species, etc.), a radius of up to six miles, with the inclusion of projects outside this radius where appropriate, encompasses a sufficient geographic area for identifying a comprehensive list of cumulative projects to be analyzed in the cumulative scenario.

A list of these projects is shown in **Table A-1** along with an identification number, a brief description, distance from the project site, and status. Staff created, reviewed, and utilized **Table A-1** and **Figure A-1** (a map showing the approximate location of the cumulative projects [below]) to determine which projects comprise the cumulative setting for each technical area.

The analysis of cumulative effects considers several variables including geographic (spatial) limits, time (temporal) limits, and the characteristics of the resource being evaluated. For each resource area, this staff assessment evaluates the cumulative impacts as follows:

- Defines the geographic scope of cumulative impact analysis for each discipline, based on the likely geographic extent in which proposed project impacts could combine with those of other projects.
- Evaluates the effects of the proposed project in combination with past and present (existing) projects within the geographic scope defined for each discipline.
- Evaluates the effects of the proposed project with foreseeable future projects that occur within the geographic scope defined for each discipline.

TABLE A-1 MASTER CUMULATIVE PROJECT LIST

Map ID Number	Project Name	Description	Location	Distance to SMSP (miles)	Status
1	Brightline West - Las Vegas to Victor Valley	This project proposes to construct a 218-mile-long, electric rail service from Las Vegas to Victor Valley. Segment 3 of this project would travel within the 100-foot-wide I-15 freeway median immediately adjacent to the project site.	Segment 3 adjacent to SMSP, Baker	0.05	Environmental review concluded in September 2023. Pre-construction field work initiated in January 2023.
2	Ivanpah Control Transmission Line Project	Southern California Edison (SCE) is proposing to demolish segments of their existing right-of-way and build a new alignment to remediate discrepancies (proposed action). The project travels across approximately 321 miles of existing 115 kilovolt subtransmission lines, collectively referred to as the Ivanpah-Control line, spanning Inyo, Kern, and San Bernardino counties, California. SCE proposes to replace existing steel lattice towers with metal tubular monopoles throughout the line.	Inyo County, Kern County, San Bernardino County	0.62	Environmental Impact Statement In Progress - Analysis & Document Preparation
3	I-15 Mojave Wildlife Crossings Restoration Project R129.75 (Soda Mountain)	This project proposes to construct wildlife crossings and directional fencing in the Mojave Desert at three locations along I-15 near Cave Mountain (Postmile [PM] R116.70), Soda Mountain (PM R129.75), and Clark Mountain (PM 168.05).	Soda Mountain crossing at PM R129.75, Baker	1.15	CDFW concurrence October 13, 2023. Anticipated construction start date mid-2026, anticipated completion date late 2027.

TABLE A-1 MASTER CUMULATIVE PROJECT LIST

Map ID Number	Project Name	Description	Location	Distance to SMSP (miles)	Status
4	Love's Travel Stop and Manufactured Home Park Project	Conditional Use Permit to construct and operate a Love's Travel Stop comprised of a 9,600 square foot convenience store, 2,600 square foot fast food restaurant, 12 auto fueling stations, eight truck fueling stations, truck weighing station, 100 overnight truck parking spaces, 11 recreational vehicle overnight parking spaces with hook-ups, 5,000 square foot dog park, and recreational vehicle sewage dump station on 22.59 acres; and to construct and operate a manufactured home park comprised of eight units on 2.18 acres.	72020 Baker Boulevard, Baker	7.36	Pending Approval, Notice of Determination filed February 18, 2025
5	I-15 Mojave Wildlife Crossings Restoration Project R116.70 (Cave Mountain)	This project proposes to construct wildlife crossings and directional fencing in the Mojave Desert at three locations along I-15 near Cave Mountain (Postmile [PM] R116.70), Soda Mountain (PM R129.75), and Clark Mountain (PM 168.05).	Soda Mountain crossing at PM R129.75, Baker	7.40	CDFW concurrence October 13, 2023. Anticipated construction start date mid-2026, anticipated completion date late 2027.
6	Eldorado Pisgah Lugo Transmission Line Rating Remediation (TLRR) Project	Remediation of existing line between state line Nevada and Hesperia, CA.		6	Eldorado Pisgah Lugo TLRR Project
7	Dagget Solar Power	Daggett Solar Power 1 LLC, a subsidiary of NRG Renew, LLC,	Daggett, CA	37.07	Operational

TABLE A-1 MASTER CUMULATIVE PROJECT LIST

Map ID Number	Project Name	Description	Location	Distance to SMSP (miles)	Status
		(Applicant) proposes six (6) Conditional Use Permits to construct and operate a solar energy generation and storage project on ~3,500 acres east of Daggett, CA in San Bernardino County. The proposed project would be a photovoltaic solar (PV) energy facility with associated on-site substations, inverters, fencing, roads and supervisory control and data acquisition (SCADA) system of up to 650 megawatts (MW). The project would also include up to 450 MW of energy storage and an overhead power line, referred to as a generation tie line (gen-tie line), which would connect the project to its points of interconnection, which are the existing SCE-owned Coolwater substations, located ~ 2 miles west of the project site. The project would utilize existing electrical transmission infrastructure adjacent to the existing Coolwater Generating Station to deliver renewable energy to the electric grid.			
8	Reido Farms LLC	Tentative Parcel Map and Conditional Use Permit to create a separate 27.2 acre (net) parcel from an existing 91.9-gross acre	Newbury Springs, CA	37.20	Approved.

TABLE A-1 MASTER CUMULATIVE PROJECT LIST

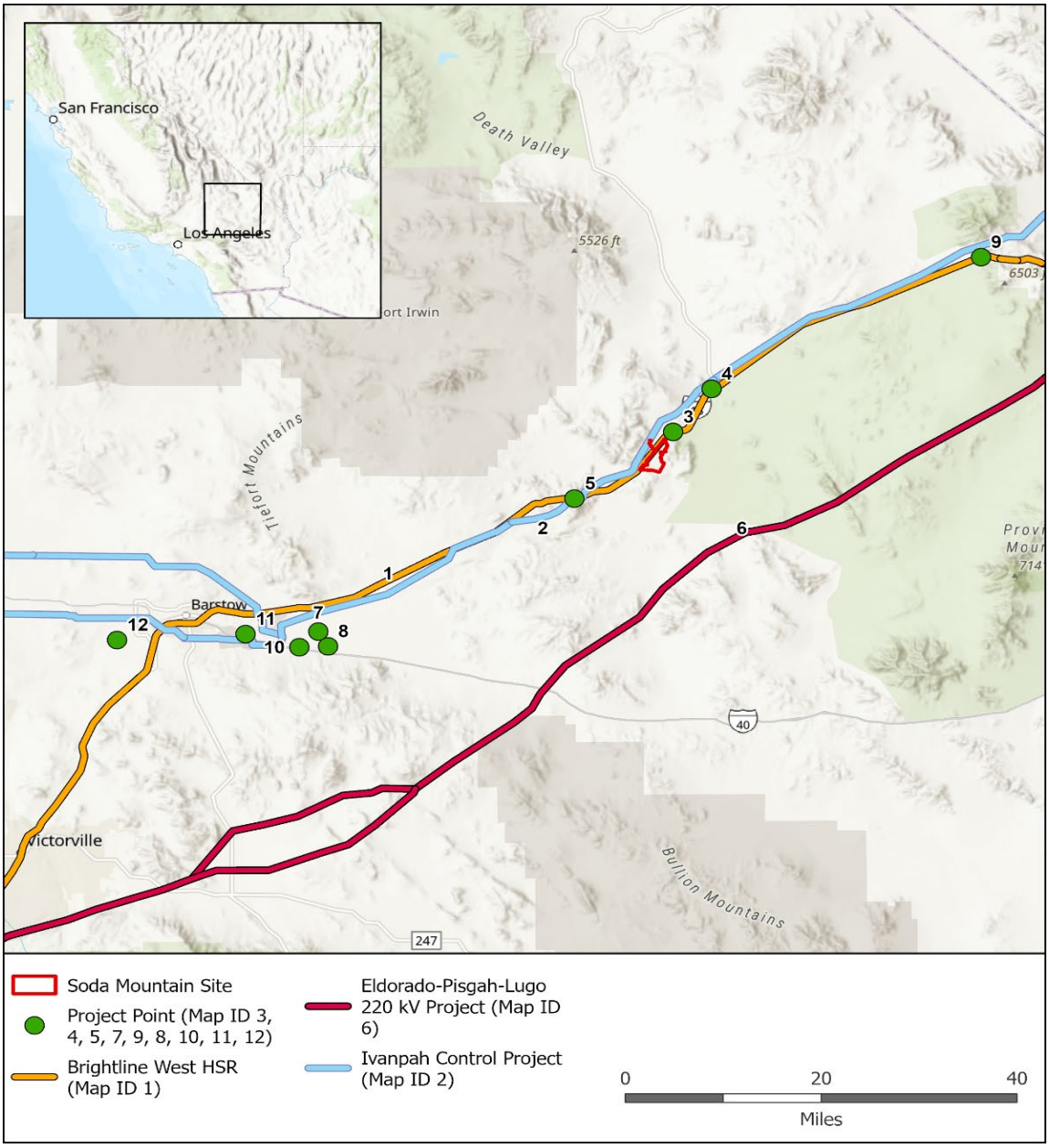
Map ID Number	Project Name	Description	Location	Distance to SMSP (miles)	Status
		parcel to construct and operate a 3- MW community solar PV facility, northwest of the intersection of Minneola Road and Larch Street in the Newberry Springs area of San Bernardino County			
9	I-15 Mojave Wildlife Crossings Restoration Project R168.05 (Clark Mountain)	This project proposes to construct wildlife crossings and directional fencing in the Mojave Desert at three locations along I-15 near Cave Mountain (Postmile [PM] R116.70), Soda Mountain (PM R129.75), and Clark Mountain (PM 168.05).	Soda Mountain crossing at PM R129.75, Baker	38.45	CDFW concurrence October 13, 2023. Anticipated construction start date mid-2026, anticipated completion date late 2027.
10	Dagget Solar 33	Conditional Use Permit to construct and operate a 7MW solar PV power generating facility with battery storage capabilities on a portion of an approximately 142-acre property in the community of Daggett.	Daggett, CA	39.90	Approved.
11	Dagget Solar 66	Conditional Use Permit to construct and operate a 7-MW solar PV power generating facility with battery storage capabilities on a portion of an approximately 142-acre property in the community of Daggett.	Daggett, CA	43.90	Approved.
12	City of Barstow General Plan Update & Barstow International	Comprehensive update to the City of Barstow General Plan and the Barstow International Gateway (BIG) Specific Plan project	North of Main Street west of Lenwood Road north	60.31	DEIR anticipated late 2025

TABLE A-1 MASTER CUMULATIVE PROJECT LIST

Map ID Number	Project Name	Description	Location	Distance to SMSP (miles)	Status
	Gateway (BIG) Specific Plan	proposed by the BNSF Railway Company (BNSF). The BIG Specific Plan proposes an integrated rail facility and onsite transload warehouse center. BIG would allow for direct transfer of containers from ships at the Ports of Los Angeles and Long Beach to trains for transport through the Alameda Corridor onto the BNSF mainline to BIG. The BIG Specific Plan consists of a rail yard, a transload warehouse center, and a private utility (i.e., a solar farm). The BIG Specific Plan would also establish site-specific zoning regulations and development standards for the Specific Plan area. The total BIG project site is approximately 5,000 acres.	and south of railroad, Baker and Sphere of Influence, 34° 53' 44.8728" North and 117° 1' 2.2116" West		

Sources: Barstow 2024, BLM 2024, BLM 2025, Caltrans 2025, San Bernardino County 2021a, San Bernardino County 2021b, San Bernardino 2025a, San Bernardino County 2025b, San Bernardino County 2025c and US DOT FRA 2024

Figure A-1 Approximate Location of Cumulative Projects



Sources: Barstow 2024, BLM 2024, BLM 2025, Caltrans 2025, San Bernardino 2019, 2021a, 2021b, 2023, 2025, and US DOT FRA 2024
Note: Project point refers to a representative geographic point used to depict the location of the projects.

To reflect the greatest potential for combined impacts, the cumulative analysis assumes that all projects defined in the cumulative scenario are constructed or operating during the construction and operation period of the proposed project.

This cumulative list was developed using the list method (as defined under CEQA). Staff's cumulative impact analysis considers environmental effects associated with those projects identified in **Table A-1** in conjunction with the impacts identified for the project. **Table A-1** provides information on cumulative projects that could combine with the effects of the proposed project. Applicable cumulative projects consist of projects that are reasonably foreseeable or currently operational and would be constructed or operated during the life of the proposed project. Cumulative projects include land development or public works projects that are planned or approved and, given their physical proximity to the project area or an overlap in the transportation routes used during construction, could potentially contribute to the same environmental effects as the proposed project.

The detailed analysis of the cumulative impacts on individual environmental resources is provided within the respective technical sections of the environmental impact assessment.

References

Barstow 2024 – City of Barstow. Notice of Preparation (NOP) for Environmental Impact Report and Notice of a Public Scoping Meeting. February 15, 2024. Accessed online at: https://www.barstowca.org/home/showpublisheddocument/8491/638434192375770000

BLM 2024 – Bureau of Land Management. BLM National NEPA Register: Eldorado Pisgah Lugo TLRR Project. Last updated: December 15, 2024. Accessed online at: https://eplanning.blm.gov/eplanning-ui/project/2025779/510

BLM 2025 – Bureau of Land Management. BLM National NEPA Register: Ivanpah Control Transmission Line Project. Last updated September 30, 2025. Accessed online at: https://eplanning.blm.gov/eplanning-ui/project/2019363/510

Caltrans 2025 – Caltrans District 8 Projects: I-15 Wildlife Crossings. Accessed on: August 2025. Accessed online at: https://dot.ca.gov/caltrans-near-me/district-8/district-8-current-projects/i-15-wildlife-crossings

San Bernardino County 2019 –County of San Bernardino Daggett Solar Power Facility Final Environmental Impact Report. 2019. Accessed online at: https://lus.sbcounty.gov/wp-content/uploads/sites/48/Environmental/Daggett-Solar-Power-Facility-Final-EIR-09-04-2019-1.pdf

San Bernardino County 2021a – San Bernardino County Planning Division, Land Use Services (San Bernardino County). San Bernardino County Initial Study/Mitigated Negative Declaration Environmental Checklist Form, Solar 66, PROJ-2020-00144/

P201800521, Ralph Laks, APN: 0516-011-04 & 0516-012-02, March 2021. Available online at: https://lus.sbcounty.gov/wp-content/uploads/sites/48/Environmental/Solar66/Solar-66-PROJ-2020-00144-IS-revised.pdf

San Bernardino County 2021b – San Bernardino County Planning Division, Land Use Services (San Bernardino County). Land Use Services Department Planning Commission Staff Report, National Trails Solar 33, P201800520/PROJ-2020-00145, APN: 0416-041-52, Planning Commission Hearing: November 18, 2021. Available online at: https://lus.sbcounty.gov/wp-content/uploads/sites/48/PC/Solar-33-Staff-Report-FINAL.pdf

San Bernardino 2023 – San Bernardino Initial Study/Mitigated Negative Declaration Environmental Checklist Form. November 2023. Accessed online at: https://lus.sbcounty.gov/wp-content/uploads/sites/48/Environmental/BMT_MINNEOLA_SOLAR_PROJ_2022_00071/Initial-Study.pdf

San Bernardino 2025a – San Bernardino County Land Use Services Planning Commission Staff Report. Hearing date January 23, 2025. Accessed online at: https://lus.sbcounty.gov/wp-content/uploads/sites/48/2.-Loves-Travel-Stop-and-Manufactured-Home-Park.pdf

San Bernardino County 2025b – San Bernardino County Planning Division, Land Use Services (San Bernardino County). County of San Bernardino, Land Use Services/Planning Division, Renewable Energy Projects as of February 2025. Last modified April 22, 2025. Available online at: https://lus.sbcounty.gov/wp-content/uploads/sites/48/SolarProjectListFEB2025.pdf

San Bernardino County 2025c – San Bernardino County Planning Division, Land Use Services (San Bernardino County). San Bernardino County Environmental Documents, Desert Region website. Updated daily. Available online at: https://lus.sbcounty.gov/planning-home/environmental/desert-region/

US DOT FRA 2024 – U.S. Department of Transportation, Federal Railroad Administration. Rail Network Development: Brightline West - Las Vegas to Victor Valley (formally XpressWest). Last updated October 2, 2024. Accessed online at: https://railroads.dot.gov/rail-network-development/environment/environmental-reviews/brightline-west-las-vegas-victor-valley

Appendix B

Mailing List

Appendix B: Mailing List

The following is the mailing list for the Soda Mountain Solar Project.

The following is a list of the State agencies that received State Clearinghouse notices and documents:

- California Air Resources Board (ARB)
- California Department of Conservation (DOC)
- California Department of Fish and Wildlife, Region 6 (CDFW)
- California Department of Forestry and Fire Protection
- California Department of Parks and Recreation
- California Department of Transportation, District 8 (DOT)
- California Emergency Management Agency
- California Highway Patrol
- California Native American Heritage Commission (NAHC)
- California Natural Resources Agency
- California Public Utilities Commission (CPUC)
- California Regional Water Quality Control Board, Region 6 (RWQCB)
- California Department of Toxic Substances Control
- California Department of Water Resources
- Office of Historic Preservation
- State Water Resources Control Board, Division of Water Quality

Table B-1 presents the list of occupants and property owners contiguous to the project site and a list of property owners within 1,000 feet of the project site and 500 feet of project linears.

Table B-2 presents the list of agencies, including responsible and trustee agencies and the public library.

Table B-3 presents the list of interested parties.

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

NAME	ADDRESS	CITY	STATE	ZIP
WIRELESS CINGULAR	12900 PARK PLAZA DR	CERRITOS	CA	90703
LOS ANGELES SMSA LTD	425 MARKET ST 30TH FL	SAN FRANCISCO	CA	94105
COX COMMUNICATIONS	PO BOX 8430	KANSAS CITY	MO	64114
BEACON STATION INC	3823 QUEEN ELIZABETH CT	LAUGHLIN	NV	89029
BEACON STATION INC	PO BOX 220	BAKER	CA	92309
AMERICAN TELEPHONE AND TELEGRAPH CO	411 MONTARA ROAD SUITE 108	BARSTOW	CA	92311
MOJAVE NATIONAL PRESERVE	2701 BARSTOW ROAD	BARSTOW	CA	92311

TABLE B-2 AGENCIES

NAME	TITLE	AGENCY	ADDRESS	CITY	STATE	ZIP
NANCY SANSONETTI	SUPERVISING PLANNER	COUNTY OF SAN BERNARDINO, ENVIRONMENTAL MANAGEMENT DIVISION	825 EAST THIRD STREET	SAN BERNARDINO	CA	92414
MANIKHONE CRUZ	PLANNER	COUNTY OF SAN BERNARDINO, DEPARTMENT OF PUBLIC WORKS	825 EAST THIRD STREET	SAN BERNARDINO	CA	92414
DANIEL R. MUNSEY	FIRE CHIEF/FIRE WARDEN	SAN BERNARDINO COUNTY FIRE PROTECTION DISTRICT	598 S TIPPECANOE AVE	SAN BERNARDINO	CA	92408
SHANNON D. DICUS	SHERIFF/CORONER	SAN BERNADINO COUNTY SHERIFF'S DEPARTMENT	655 EAST THIRD STREET	SAN BERNARDINO	CA	92415 -0061
NATHAN HUNSICKER	PLANNER	SAN BERNARDINO COUNTY LAND USE SERVICES	385 N. ARROWHEAD AVE. FIRST FLOOR	SAN BERNARDINO	CA	92415 -0187
DAVID ALANIZ	PROGRAM MANAGER	SAN BERNARDINO COUNTY PUBLIC HEALTH, ENVIRONMENTAL HEALTH SERVICES	451 E. VANDERBILT WAY	SAN BERNARDINO	CA	92408
JULIE DONNELL	ASSISTANT FIELD MANAGER	BUREAU OF LAND MANAGEMENT, BARSTOW FIELD OFFICE	2601 BARSTOW ROAD	BARSTOW	CA	92311
MARC STAMMER	BARSTOW FIELD MANAGER	BUREAU OF LAND MANAGEMENT, CALIFORNIA DESERT DISTRICT OFFICE	1201 BIRD CENTER DRIVE	PALM SPRINGS	CA	92262
ALEXIS FRANCOIS, M.A.	ARCHAEOLOGIST	BUREAU OF LAND MANAGEMENT, BARSTOW FIELD OFFICE	2601 BARSTOW RD.	BARSTOW	CA	92311

TABLE B-2 AGENCIES

NAME	TITLE	AGENCY	ADDRESS	CITY	STATE	ZIP
JEFFREY D. RUESCH	WATERMASTER SERVICES MANAGER	MOJAVE WATER AGENCY	13846 CONFERENCE CENTER DRIVE	APPLE VALLEY	CA	92307 -4377
TIN HA	ELECTRICAL ENGINEERING ASSOCIATE	LOS ANGELES DEPARTMENT OF WATER AND POWER	111 N. HOPE ST.	LOS ANGELES	CA	90012

TABLE B-3 INTERESTED PARTIES

NAME	TITLE	AFFILIATION	ADDRESS	CITY	STATE	ZIP
KEVIN EMMERICH	CO-FOUNDER	BASIN AND RANGE WATCH	P.O. BOX 70	BEATTY	NV	89003
LAURA CUNNINGHAM	CALIFORNIA DIRECTOR	WESTERN WATERSHEDS PROJECT	P.O. BOX 70	BEATTY	NV	89003
JEFF AARDAHL	SENIOR CALIFORNIA REPRESENTATIVE	DEFENDERS OF WILDLIFE	P.O. BOX 401	FOLSOM	CA	95763
STEVE BARDWELL	PRESIDENT	MORONGO BASIN CONSERVATION ASSOCIATION	P.O. BOX 24	JOSHUA TREE	CA	92252