

Proponent's Environmental Assessment for Southern California Edison Company's Cal City Substation 115 kV Upgrade Project Volume 2

March 14, 2023 (PEA submittal date)

Upgrade and expansion of Cal City Substation, construction of new Kramer-Cal City and Cal City-Edwards-Holgate 115 kV subtransmission lines, installation of new telecommunications infrastructure along the proposed new lines, and associated improvements to two additional existing substations and a switchyard are proposed.

The Cal City Substation 115 kV Upgrade Project would be located in the City of California City, Kern County, and San Bernardino County.

Application A.23-XX-XX to the California Public Utilities Commission

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Chapter 4 Description of Alternatives

This chapter identifies alternatives to the Cal City Substation 115 kV Upgrade Project (Proposed Project). Section 15126 of the California Environmental Quality Act (CEQA) Guidelines states that:

“an EIR shall 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 but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives.”

As described in Chapter 2, Introduction, the Proposed Project is being proposed to meet the following objectives:

- Add load-serving capacity in the Electrical Needs Area (ENA) to serve current and long-term forecast electrical demand
- Improve system reliability within the ENA by providing diverse routes of power supply to the region
- Improve system operational flexibility by minimizing the reliance on Edwards Substation (which is located on Edwards Air Force Base [EAFB], a military base with restricted access) to provide power to the ENA (adjacent to the military base)
- Improve system reliability within the ENA by providing a diversely-routed second 115 kV source line to Edwards Substation

These objectives were used to develop and evaluate alternatives to the Proposed Project.

4.1 Alternatives Considered

4.1.1 Alternatives Suggested, Considered, or Studied by the CAISO or by CAISO Stakeholders

No alternatives were suggested, considered, or studied by the California Independent System Operator (CAISO) or by CAISO stakeholders.

4.1.2 Alternatives Suggested by the Public or Agencies

No alternatives were suggested by the public or agencies during public outreach efforts conducted by the applicant.

4.1.3 Reduced Footprint Alternatives

No reduced footprint alternatives were considered.

4.1.4 Project Phasing Options

No project phasing options were considered. As described in Chapter 3, Proposed Project Description, there are no current or reasonably foreseeable plans for expansion or future phases of development associated with the Proposed Project; however, there is potential for full Cal City Substation build-out in the future within the fence line. In addition, no significant environmental impacts were identified that could be ameliorated through the temporal phasing of the Proposed Project.

4.1.5 Alternative Facility and Construction Activity Sites

The subsections that follow describe substation site and construction activity site alternatives that were considered for the Proposed Project.

4.1.5.1 Substation Site Alternatives

The Proposed Project involves the modification or expansion of existing Southern California Edison (SCE) substations. SCE currently owns the parcels where the Cal City Substation expansion will occur. Because portions of the Cal City Substation site have been previously developed and impacted, expanding the existing substation on this site would reduce potential new impacts when compared to constructing a new substation on a previously undisturbed site. As a result, no substation site alternatives were considered.

4.1.5.2 Construction Activity Site Alternatives

SCE evaluated numerous sites for staging areas, construction laydown areas, and helicopter landing zones; the locations of such areas and zones that are feasible given the topography of the Proposed Project alignment are included as part of the Proposed Project.

4.1.6 Renewable Energy, Energy Conservation, Energy Efficiency, Demand Response, Distributed Energy Resources, and Energy Storage Alternatives

4.1.6.1 Microgrid Alternative

The Microgrid Alternative includes the construction of up to sixteen 10 megawatt (MW) microgrid facilities to supply the projected capacity to the ENA. Each microgrid facility would require the construction of a battery energy storage substation and, due to the lack of existing infrastructure to charge the batteries, an approximately 8 MW photovoltaic solar system, an approximately 8 MW wind turbine, and an approximately 10 MW generator. Each of these microgrid facilities would require approximately 40 acres of new permanent land disturbance; therefore, the total new disturbance for this alternative would be approximately 640 acres. The photovoltaic solar systems that would be used to charge the batteries in instances where wind generation is not sufficient are the primary drivers of the new land requirements for this alternative. This alternative would also involve the construction of the previously described Kramer-Edwards-Holgate 115 kV Subtransmission Line.

The Microgrid Alternative would add the projected load-serving capacity to the ENA and provide a second 115 kV subtransmission source line to Edwards Substation, meeting two of the Proposed Project objectives; however, it would result in substantial permanent land disturbance and would be cost prohibitive. This alternative would also fail to meet the third Proposed Project objective as it would not improve operational flexibility by reducing SCE's reliance on Edwards Substation. Due to the substantial costs; permanent land disturbance requirements; and associated impacts to biological, cultural, paleontological, and hydrologic resources; as well as the failure to meet one of the Proposed Project objectives, the Microgrid Alternative was dismissed from further consideration.

4.1.7 Avoid or Limit the Construction of New Transmission-Voltage Facilities

All of the alternatives would involve the construction of 66 kV or 115 kV facilities. Transmission-voltage facilities are required to meet the Proposed Project objectives for the following two reasons:

- Under an N-1¹ condition, distribution-voltage facilities will not be able to supply the projected load to meet the demand in the ENA.
- As described previously, as the overall length of the distribution-voltage network increases, it limits these facilities' ability to continue to serve the projected load. Utilizing distribution-voltage facilities as source lines is a short-term solution to address future load growth.

4.1.8 Other Technological Alternatives

As described in Section 4.1.6, SCE evaluated the Microgrid Alternative, which involves the use of microgrids as a technological alternative.

4.1.9 Route Alternatives and Route Variations

SCE has identified seven route alternatives and route variations for the Proposed Project. A description of each alternative and its ability to satisfy the Proposed Project's objectives are provided in the subsections that follow.

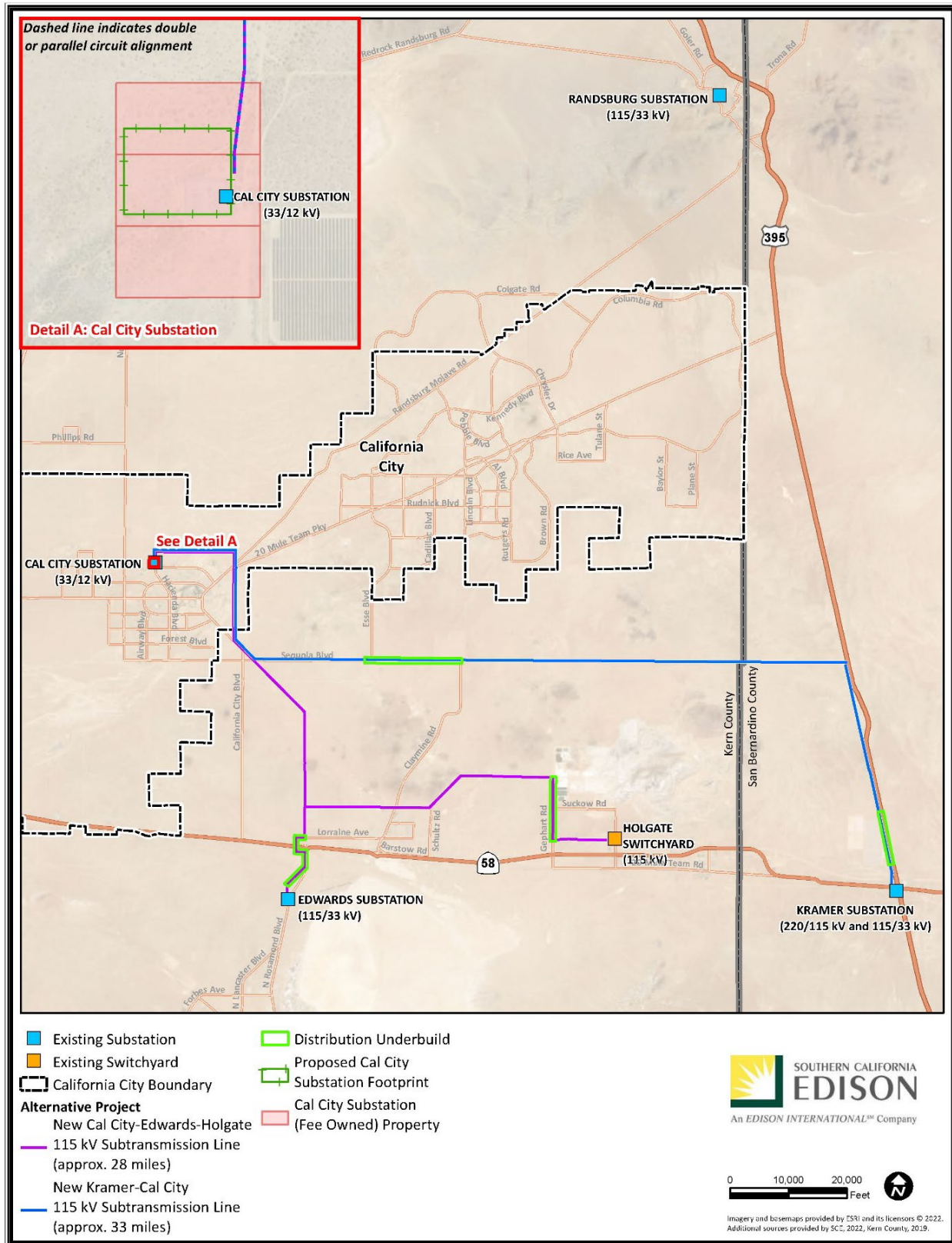
4.1.9.1 Sequoia Boulevard Alternative

This route alternative differs from the Proposed Project in that the new Kramer-Cal City 115 kV Subtransmission Line would follow a different route than that identified for the Proposed Project.

This alternative, depicted in Figure 4-1, begins at Kramer Substation and generally follows an existing utility corridor north along U.S. 395 for approximately 7.6 miles (versus 18.5 miles for the Proposed Project). The route then turns due west and travels overland in an area with no existing utility infrastructure or access roads for approximately 4.4 miles, to 270th Street. At this point, the route parallels Sequoia Boulevard, an existing unimproved dirt road, for approximately 15 miles, to the intersection of Sequoia Boulevard and 140th Street, where the route meets the proposed Cal City-Edwards-Holgate 115 kV Subtransmission Line. From this location, the alternative route for the new Kramer-Cal City 115 kV Subtransmission Line follows the same route as the Cal City-Edwards-Holgate 115 kV Subtransmission Line associated with the Proposed Project.

¹ A sequence of events consisting of the initial loss of a single generator or transmission component (Primary Contingency), followed by system adjustments, followed by another loss of a single generator or transmission component (Secondary Contingency).

Figure 4-1 Sequoia Boulevard Alternative



The alternative route for the new Kramer-Cal City 115 kV Subtransmission Line would include the same components as the Proposed Project; however, the new Kramer-Cal City 115 kV Subtransmission Line would be shortened from approximately 42 miles to approximately 34 miles, an approximately 8-mile reduction in length. As with the Proposed Project, the alternative would involve distribution underbuild along portions of the proposed subtransmission line alignments. The alternative route would include transferring approximately 6 miles of existing distribution lines from existing poles to the new 115 kV poles associated with the Kramer-Cal City 115 kV Subtransmission Line.

This alternative would satisfy all of the Proposed Project objectives by adding the projected capacity to the ENA, reducing reliance on Edwards Substation, adding a second 115 kV subtransmission source line to Edwards Substation, and improving system reliability by providing diverse routes of power to the region. However, the approximately 7 miles of the new Kramer-Cal City 115 kV Subtransmission Line and new Cal City-Edwards-Holgate 115 kV Subtransmission Line that would be constructed physically adjacent to each other (i.e., non-diverse) would satisfy the final objective to a lesser degree when compared to the more diverse routes associated with the Proposed Project. Placing these lines physically adjacent to each other increases the vulnerability of both lines being subject to a concurrent outage due to a common event, thereby reducing reliability.

In addition, approximately 19 miles of the new Kramer-Cal City 115 kV Subtransmission Line associated with the Sequoia Boulevard Alternative would be located in remote areas with rugged terrain and no existing access or along existing dirt roads that would require significant grading and improvement prior to construction. As a result of its remote location and lack of proximity to other development, the Sequoia Boulevard Alternative would establish a new utility corridor along a previously undisturbed landscape, resulting in potentially greater impacts to biological (e.g., special-status species individuals and their habitat), cultural, paleontological, hydrological, and other natural resources than the Proposed Project, despite the shorter subtransmission line alignment.

Although the Sequoia Boulevard Alternative would not provide diverse routes of power within the ENA to the same degree as the Proposed Project, it would add the projected load-serving capacity to the ENA, reduce reliance on Edwards Substation to serve off-base load, and would satisfy the project objective of providing a second source line to Edwards Substation. Thus, this alternative has been carried forward for analysis in Chapter 6.

4.1.9.2 Cal City-Edwards and Edwards-Holgate Alternative

The Cal City-Edwards and Edwards-Holgate Alternative involves constructing distinct Cal City-Edwards and Edwards-Holgate 115 kV Subtransmission Lines rather than utilizing a single-circuit tap (i.e., Cal City-Edwards-Holgate 115 kV Subtransmission Line) to provide the second source line to Edwards Substation. All remaining Proposed Project components would be unchanged under this alternative. As a result, this alternative would involve the following scope elements:

- Construct a new 115 kV subtransmission line from Kramer Substation to Cal City Substation (approximately 40 miles).
- Construct a new 115 kV subtransmission line from Cal City Substation to Edwards Substation (approximately 11 miles).

- Construct a new 115 kV subtransmission line from Edwards Substation to Holgate Switchyard² (approximately 13.6 miles).
- Expand the existing Cal City Substation to include 115/33 kV and 115/12 kV switchracks.
- Equip two new 115 kV line positions at Edwards Substation, one new 115 kV line position at Holgate Switchyard, and one new 115 kV line position at Kramer Substation.
- Construct two new 33 kV and 14 new 12 kV distribution getaways at Cal City Substation.

The Cal City-Edwards and Edwards-Holgate Alternative would satisfy three of the four Proposed Project objectives by adding the projected load-serving capacity in the ENA and adding a second source line to Edwards Substation. In addition, it is assumed that the lines could be constructed in a diverse fashion. This alternative would not improve system operational flexibility as the second source line to Cal City Substation would be connected to Edwards Substation. Under this configuration, if Edwards Substation experienced an outage, the Cal City Substation would rely entirely on the single Kramer-Cal City 115 kV Subtransmission Line as a source line. This alternative would increase the reliance on Edwards Substation, which is located on EAFB, to provide power to the ENA. In addition, this alternative would increase the total length of 115 kV subtransmission lines located on EAFB. The access restrictions associated with Department of Defense (DoD) installations (such as EAFB) inhibit efficient operating and maintenance practices. Furthermore, the Cal City-Edwards and Edwards-Holgate Alternative would be unlikely to avoid or reduce any potentially significant environmental effects, as off-base infrastructure and access improvements would be similar in nature and extent to those described for the Proposed Project. In addition, SCE anticipates this alternative would increase the severity of environmental impacts associated with hazards, hazardous materials, and public safety, due to increased infrastructure construction and operation on EAFB. The portions of EAFB that would likely to be crossed by this alternative may contain hazardous materials and/or unexploded ordnance. Construction and ongoing operation and maintenance (O&M) activities in these locations have the potential to expose personnel and the public to these hazards. Further, DoD access restrictions associated with EAFB may limit SCE's ability to effectively operate and maintain facilities in these locations. Because this alternative would not increase system operational flexibility, and would instead increase reliance on facilities located on EAFB, and due to the fact that this alternative would not avoid or reduce any potentially significant environmental effects, the Cal City-Edwards and Edwards-Holgate Alternative was dismissed from further consideration.

4.1.9.3 Randsburg Alternative

The Randsburg Alternative would involve the following scope elements:

- Construct a new 115 kV subtransmission line from Cal City Substation to Randsburg Substation (approximately 26 miles).
- Construct a new 115 kV subtransmission line from Cal City Substation to Edwards Substation (approximately 11 miles).
- Expand the existing Cal City Substation to include a 115/12 kV switchrack while retaining the existing 33/12 kV facilities.
- Equip one new 115 kV line position at Edwards Substation.
- Rebuild the 115 kV switchrack and install a new Mechanical Electrical Equipment Room at Randsburg Substation.

² Multiple alternatives involve the addition of a transformer at Holgate Switchyard, which would convert this facility to a substation. For the sake of simplicity in this chapter, this facility will be referenced as Holgate Switchyard regardless of the inclusion of a transformer to avoid confusion.

- Construct 14 new 12 kV distribution getaways at Cal City Substation.
- Underbuild the Heavy 33 kV or Pappas 33 kV Extension lines (between 26 and 35 miles).
- Upgrade the existing Balchen 33 kV or Castle Butte 33 kV lines to 115 kV (between 14 and 20 miles).

This alternative would satisfy three of the four Proposed Project objectives by adding the projected load-serving capacity in the ENA and adding a second source line to Edwards Substation. In addition, it is assumed that the lines could be constructed in a diverse fashion. This alternative would not improve system operational flexibility as the second source line to Cal City Substation would be connected to Edwards Substation. As described previously, if Edwards Substation experienced an outage, Cal City Substation would rely entirely on the single Cal City-Randsburg 115 kV Subtransmission Line as a source line, and the efficient O&M of facilities on EAFB is challenging due to DoD access restrictions. In addition, the Randsburg Alternative would require the complete rebuild of an additional substation—Randsburg—when compared to the Proposed Project. Rebuilding Randsburg Substation would require the acquisition of additional land that is located in proximity to known cultural resources. In addition, portions of the Randsburg Substation have been identified as potential historical resources (Urbana Preservation & Planning, LLC 2020). The required substation expansion and subtransmission line construction would have the potential to permanently impact these cultural and historical resources, representing an increase in potential impacts when compared to the Proposed Project. Further, this alternative would be unlikely to avoid or reduce any potentially significant environmental effects for the Proposed Project. For these reasons, the Randsburg Alternative was dismissed from further consideration.

4.1.9.4 Windhub Alternative

The Windhub Alternative would involve the following scope elements:

- Construct two new 66 kV lines from Cal City Substation to Windhub Substation (approximately 25 miles each).
- Expand the existing Cal City Substation to include 66/33 kV and 66/12 kV switchracks, and remove the existing 33/12 kV facilities at Cal City Substation.
- Equip one 66 kV line position at Windhub Substation.
- Construct two new 33 kV and 14 new 12 kV and distribution getaways at Cal City Substation.

The Windhub Alternative would meet two of the four Proposed Project objectives, as lines associated with this alternative could potentially be constructed in a diverse fashion. This alternative would meet current and long-term forecast electrical demand in the ENA, as it would result in 168 megavolt amperes (MVA) of capacity,³ which meets the projected demand of 167 MVA. However, there would be no reserve capacity for any future load growth immediately after the project is built. The Windhub Alternative would fail to meet the two remaining Proposed Project objectives. This alternative would not improve system operational flexibility as it would not change SCE's reliance on Edwards Substation. Additionally, a second source line to Edwards Substation would not be constructed. For these reasons, the Windhub Alternative was dismissed from further consideration.

³ The four 28 MVA transformers would result in a total transformer nameplate rating of 112 MVA. SCE typically plans its distribution substation transformers using a planned load limit (PLL) of 130 percent of the transformer nameplate rating, which would result in 146 MVA of capacity.

4.1.9.5 Goldtown Alternative

The Goldtown Alternative would involve the following scope elements:

- Construct one new 66 kV line to Goldtown Substation (between 6 and 35 miles) or potentially rebuild one or more existing 66 kV lines that connect to Goldtown Substation (between 19 and 35 miles each).
- Construct a new 33/12 kV substation in the ENA.
- Extend the 66 kV switchrack and construct a new 33 kV switchrack at Goldtown Substation.
- Equip one or more 66 kV line positions at existing substations in the area to accommodate new and/or rebuilt 66 kV lines.
- Construct six new 33 kV lines from Goldtown Substation to the new 33/12 kV substation in the ENA (approximately 25 miles each).
- Construct fourteen new 12 kV distribution getaways at the new 33/12 kV substation in the ENA.

The Goldtown Alternative would meet two of the four Proposed Project objectives, as lines associated with this alternative could potentially be constructed in a diverse fashion. This alternative would meet current and long-term forecast electrical demand in the ENA, as it would result in 146 MVA of capacity in the ENA, which meets the projected demand of 146 MVA. However, there would be no reserve capacity for any future load growth immediately after the project is built. The Goldtown Alternative would fail to meet two remaining Proposed Project objectives. This alternative, utilizing new or rebuilt lines to Goldtown Substation, would not improve system operational flexibility as it would not change SCE's reliance on Edwards Substation, nor would it add a second 115 kV source line to Edwards Substation. In addition, by installing the six new 33 kV source lines between Goldtown Substation and the new 33/12 kV substation along diverse paths, more than 150 circuit miles of new line would be required. When compared to the Proposed Project, this alternative would require at least triple the length of new source lines. This increase in source lines would result in a substantial increase in project cost and environmental impacts during construction. This alternative would also require the construction of a new 33/12 kV substation and the expansion of the existing Goldtown substation. Goldtown Substation cannot be expanded within its current property; therefore, additional land would be required at this location. Finally, 33 kV source lines are not an ideal solution for bringing capacity to the ENA due to limitations on equipment to correct for voltage and power factor and reliability concerns during an N-1 contingency during peak load conditions. In addition, as the overall length of the distribution lines within a network grows, it limits the network's ability to continue to serve load, making this a short-term solution to address future load growth. For these reasons, the Goldtown Alternative was dismissed from further consideration.

4.1.9.6 Kramer-Edwards Alternative

The Kramer-Edwards Alternative would involve the following scope elements:

- Construct one new 115 kV line from Kramer Substation to Edwards Substation (approximately 21 miles).
- Construct a new 33/12 kV switchrack at Cal City Substation.
- Equip one 115 kV line position and extend the 115 kV and 33 kV switchracks at Edwards Substation.
- Equip one 115 kV line position at Kramer Substation.
- Construct six 33 kV lines from Edwards Substation to Cal City Substation (approximately 11 miles each).
- Construct fourteen 12 kV distribution getaways at Cal City Substation.

The Kramer-Edwards Alternative would satisfy two of the Proposed Project objectives, as it would add a second 115 kV source line to Edwards Substation, and lines associated with this alternative could potentially be constructed in a diverse fashion. However, this alternative would fail to meet the remaining two Proposed Project objectives. This alternative would result in 120 MVA of capacity in the ENA, which does not meet the projected demand of 146 MVA and therefore does not meet the current and long-term forecast electrical demand in the ENA. This alternative would also fail to improve system operational flexibility because it would increase the reliance on Edwards Substation, as the six new 33 kV lines that would serve as the source to Cal City Substation would all traverse EAFB. Efficient O&M of these additional facilities on EAFB would be challenging due to DoD access restrictions. In addition, the six new 33 kV source lines between Edwards Substation and Cal City Substation would be installed along diverse paths, which would require more than 120 circuit miles of new line. When compared to the Proposed Project, this alternative would require approximately triple the length of new source lines. This increase in source lines would result in a substantial increase in project cost and environmental impacts during construction. Finally, 33 kV source lines are not an ideal solution for bringing capacity to the ENA due to limitations on equipment to correct for voltage and power factor and reliability concerns during an N-1 contingency during peak load conditions. In addition, as the overall length of distribution lines within a network grows, it limits the network's ability to continue to serve load, making this a short-term solution to address future load growth. For these reasons, the Kramer-Edwards Alternative was dismissed from further consideration.

4.1.9.7 Kramer-Edwards-Holgate Alternative

The Kramer-Edwards-Holgate Alternative would involve the following scope elements:

- Construct one new 115 kV Kramer-Edwards-Holgate Subtransmission Line (approximately 26 miles).
- Equip one 115 kV line position at Edwards Substation.
- Construct a new 115/33 kV switchrack at Holgate Switchyard.
- Equip one 115 kV line position at Kramer Substation.
- Construct a new 33/12 kV substation in the ENA.
- Construct six 33 kV lines from Holgate Switchyard to the new 33/12 kV substation in the ENA (approximately 25 miles each).
- Construct fourteen 12 kV distribution getaways at the new 33/12 kV substation in the ENA.

The Kramer-Edwards-Holgate Alternative would satisfy three of the Proposed Project objectives, as it would add a second 115 kV source line to Edwards Substation, and lines associated with this alternative could potentially be constructed in a diverse fashion. This alternative would result in 146 MVA of capacity in the ENA, which meets the projected demand of 146 MVA and therefore meets the current and long-term forecast electrical demand in the ENA. However, there would be no reserve capacity for any future load growth immediately after the project is built. This alternative would fail to meet the remaining Proposed Project objective. In addition, this alternative would fail to improve system operational flexibility, as it would increase SCE's reliance on Edwards Substation to serve load within the ENA. Efficient O&M of these additional facilities on EAFB would be challenging due to DoD access restrictions. In addition, the six new 33 kV source lines between Holgate Switchyard and the new 33/12 kV substation in the ENA would be installed along diverse paths, which would require more than 150 circuit miles of new line. When compared to the Proposed Project, this alternative would require at least triple the length of new source lines. This increase in source lines would result in a substantial increase in environmental impacts during

construction. Finally, 33 kV source lines are not an ideal solution for bringing capacity to the ENA due to limitations on equipment to correct for voltage and power factor and reliability concerns during an N-1 contingency during peak load conditions. As the overall length of distribution lines within a network grows, it limits the network's ability to continue to serve load, making this a short-term solution to address future load growth. For these reasons, the Kramer-Edwards-Holgate Alternative was dismissed from further consideration.

4.1.10 Alternative Engineering or Technological Approaches

As described in Section 4.1.6, SCE evaluated the Microgrid Alternative, which involves the use of microgrids as an alternative engineering or technological approach.

4.2 No Project Alternative

CEQA requires an evaluation of the No Project Alternative so that decision makers can compare the impacts of approving the Proposed Project with the impacts of not approving the Proposed Project (CEQA Guidelines, section 15126.6[e]). Under the No Project Alternative, SCE would attempt to provide additional capacity to the ENA; however, due to lack of existing infrastructure in the area these mitigating actions would fall well short of the forecasted demand. Furthermore, SCE would have limited opportunities to connect additional services and customers in the area. Therefore, the No Project Alternative would fail to meet any of the Proposed Project's objectives because it would not bring sufficient capacity to the ENA to meet forecasted demand, would not minimize reliance on Edwards Substation to provide power to the ENA, would not bring a second 115 kV source line to Edwards Substation, and would not diversify the sources of power to the ENA.

4.3 Rejected Alternatives

None of the alternatives addressed in Section 4.1, with the exception of the Sequoia Boulevard Alternative, were selected by SCE for analysis in Chapter 6.

The subsections in Section 4.1 for each rejected alternative present a description of the alternative and its components, a discussion about the extent to which the alternative would meet the underlying purpose of the project and its basic objectives, a discussion about the implications of attempting to implement the alternative, and a description of why the alternative was rejected.

Because the non-selected alternatives do not meet all of the Proposed Project objectives when compared to the Proposed Project, SCE has not performed any analysis to determine if any significant impacts could result from implementation of any of the rejected alternatives. The Sequoia Boulevard Alternative was selected for analysis because it does meet all of the Proposed Project objectives, though to a lesser degree than the Proposed Project. However, as analyzed in Chapter 6, the Sequoia Boulevard Alternative would not reduce or avoid any significant environmental impacts of the Proposed Project, and would potentially exacerbate the significant and unavoidable aesthetic impact identified for the Proposed Project.

SCE did not receive any comments from the public or agencies on any of the alternatives during preparation of the Proponent's Environmental Assessment document.

Chapter 5 Environmental Analysis

This Chapter examines the potential environmental impacts of the Cal City Substation 115 kV Upgrade Project (Proposed Project). The organization of Chapter 5 is described, along with a brief description of the major components included for each resource area.

Organization of Resource Area Sections

Environmental analysis of the Proposed Project by resource area is provided in Sections 5.1 through 5.20 of Chapter 5 of this Proponent's Environmental Assessment (PEA). These sections present the environmental and regulatory setting, impact questions, methodology, impact analysis, applicable California Public Utilities Commission (CPUC) Draft Environmental Measures, and applicant proposed measures (APMs). Tables and figures are included within the text of each section. The sections are organized as follows:

- Chapter 5.1, Aesthetics
- Chapter 5.2, Agriculture and Forestry Resources
- Chapter 5.3, Air Quality
- Chapter 5.4, Biological Resources
- Chapter 5.5, Cultural Resources
- Chapter 5.6, Energy
- Chapter 5.7, Geology, Soils, and Paleontological Resources
- Chapter 5.8, Greenhouse Gas Emissions
- Chapter 5.9, Hazards, Hazardous Materials, and Public Safety
- Chapter 5.10, Hydrology and Water Quality
- Chapter 5.11, Land Use and Planning
- Chapter 5.12, Mineral Resources
- Chapter 5.13, Noise
- Chapter 5.14, Population and Housing
- Chapter 5.15, Public Services
- Chapter 5.16, Recreation
- Chapter 5.17, Transportation
- Chapter 5.18, Tribal Cultural Resources
- Chapter 5.19, Utilities and Service Systems
- Chapter 5.20, Wildfire

Mandatory findings of significance are presented in Section 5.21. Chapter 6 presents a comparison of the Proposed Project alternatives. Chapter 7 presents a discussion of cumulative impacts and other CEQA considerations, including growth-inducing impacts. Chapter 8 presents the PEA preparers and contributors. Finally, references for each environmental resource evaluated are presented in Chapter 9, References.

Environmental Setting

The analysis of each resource category begins with an examination of the existing physical setting (baseline conditions as determined pursuant to section 15125(a) of the CEQA Guidelines) that may be impacted by the Proposed Project.

Regulatory Setting

The regulatory setting provides a discussion of federal, state, and local regulations, plans, policies, and/or laws that are directly relevant to the environmental resource area being analyzed.

Impact Questions

This section identifies the criteria used to determine when physical changes to the environment created as a result of the Proposed Project would be considered significant. The significance criteria serve as a benchmark for determining if a project would result in a significant adverse environmental impact when evaluated against the baseline. According to the CEQA Guidelines section 15382, 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. The significance determination under each impact analysis is made by comparing the construction and operation impacts of the Proposed Project with the conditions in the environmental setting and comparing the difference to the significance criteria.

Impact Analysis

This section identifies the methodology used to analyze potential environmental impacts for each resource area. Some evaluations may be quantitative, while others, are qualitative.

This section also includes the analysis of potential impacts associated with each resource area. The impacts are compared to the significance criteria to determine the level of significance.

The impact sections focus on those impacts that are considered potentially significant per the requirements of CEQA. An impact is considered significant if it leads to a “substantial, or potentially substantial, adverse change in the environment.” Impacts from the Proposed Project fall within one of the following categories:

No Impact: There would be no impact to the identified resource as a result of the Proposed Project.

Less than Significant: Some impacts may result from the Proposed Project; however, they are judged to be less than significant. Impacts are frequently considered less than significant when the changes are minor relative to the size of the available resource base or would not change an existing resource. A “less-than-significant impact” applies where the environmental impact does not exceed the significance threshold.

Less than Significant with Mitigation: Significant adverse impacts may occur; however, with proper applicant proposed measures, the impacts can be reduced to less than significant.

Significant Impacts (also referred to as **Significant and Unavoidable**): Adverse impacts may occur that would be significant even after applicant proposed measures have been applied to minimize their severity. A “significant impact” applies where the environmental impact exceeds the significance threshold, or information was lacking to make a finding of less than significant.

CPUC Draft Environmental Measures

Attachment 4 of the CPUC's *Guidelines for Energy Project Applications Requiring CEQA Compliance: Pre-filing and PEAs* provides Draft Environmental Measures for consideration during PEA development. These Draft Environmental Measures are considered for each resource area analyzed in Chapter 5 of this PEA. Most potentially significant impacts associated with the Proposed Project have been reduced to a less than significant level with incorporation of APMs. Further, for resource areas where potentially significant impacts may occur, no CPUC Draft Environmental Measures are available. Therefore, no CPUC Draft Environmental Measures have been included for any resource areas at this time.

Applicant Proposed Measures

CEQA Guidelines section 15126.4(a)(3) states that mitigation measures are not required for effects which are not found to be significant. Therefore, where an impact is found to be less than significant, no APMs may be proposed. Where there is the potential for the Proposed Project to result in a significant impact, APMs have been identified. For the purposes of CEQA, APMs are treated as mitigation measures that could minimize potentially significant or significant impacts that may result from the Proposed Project. Compliance with laws, regulations, ordinances, and standards designed to reduce impacts to less-than-significant levels are not considered mitigation measures under CEQA. CEQA Guidelines section 15370 defines mitigation to include:

- Avoiding the impact altogether by not taking a certain action or parts of an action
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation
- Rectifying the impact by repairing, rehabilitating, or restoring the impacted environment
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action
- Compensating for the impact by replacing or providing substitute resources or environments

A complete list of APMs is provided in Chapter 3, Table 3-14.

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5.1 Aesthetics

This section examines visual resources in the vicinity of the Cal City Substation 115 kV Upgrade Project (Proposed Project), as well as the potential impacts to the aesthetic character of the landscape that may result from construction and operation of the Proposed Project.

Visual resources are generally defined as the natural and built features of the landscape that can be viewed. Landforms, water, and vegetation patterns are among the natural landscape features that define an area's visual character, whereas buildings, roads and other structures reflect human modifications to the landscape. These natural and built landscape features are considered visual resources that contribute to the public's experience and appreciation of the environment.

The visual analysis is based on a review of technical data, including Proposed Project maps and drawings provided by Southern California Edison Company (SCE), aerial and ground-level photographs of the Proposed Project area, and computer-generated visual simulations. Additionally, planning policy documents, regional atlases, and geographic information system (GIS) data were reviewed. Field observations were conducted in March and August 2022 to document existing visual conditions in the Proposed Project area, as well as photograph representative views toward the Proposed Project from key potentially sensitive viewpoint locations (Figure 5.1-1: Viewpoint Locations Map). Section 5.1.1.6, Visual Setting and Representative Views describes 18 representative photographs (Figure 5.1-2: Representative Photographs) that document existing visual conditions in the Proposed Project area.

5.1.1 Environmental Setting

The Proposed Project is located in Kern County and San Bernardino County in the Mojave Desert region of California on federal, state, private, and municipal land (see Figure 5.11-3 for land ownership in the Proposed Project vicinity). These lands include unincorporated areas of Kern County and San Bernardino County, City of California City, Edwards Air Force Base (EAFB) controlled by the Department of Defense (DoD), and public lands under the jurisdiction of the BLM and the California Department of Fish and Wildlife (CDFW). Approximately 90 percent of the Proposed Project is located within undeveloped open areas, with the remaining 10 percent located within developed areas (including the City of California City). The study area is in the high desert region bounded by the Sierra Nevada Mountains and the Transverse Ranges, in the Mojave Desert geographic subdivision. Most of the study area is relatively flat, ranging between 2,250 and 2,600 feet above mean sea level (amsl), and includes portions of the Peerless Valley, Antelope Valley, and Fremont Valley. The study area is bordered by the Rand Mountains and Red Mountain to the north and the Gravel Hills to the east.

Landscapes in the study area include alluvial fans, flood plains, terraces, basin floors, fan piedmonts, gravel pits, hills, mountains, quarries, rock pediments, and sand sheets.

Figure 5.1-1 Viewpoint Locations Map

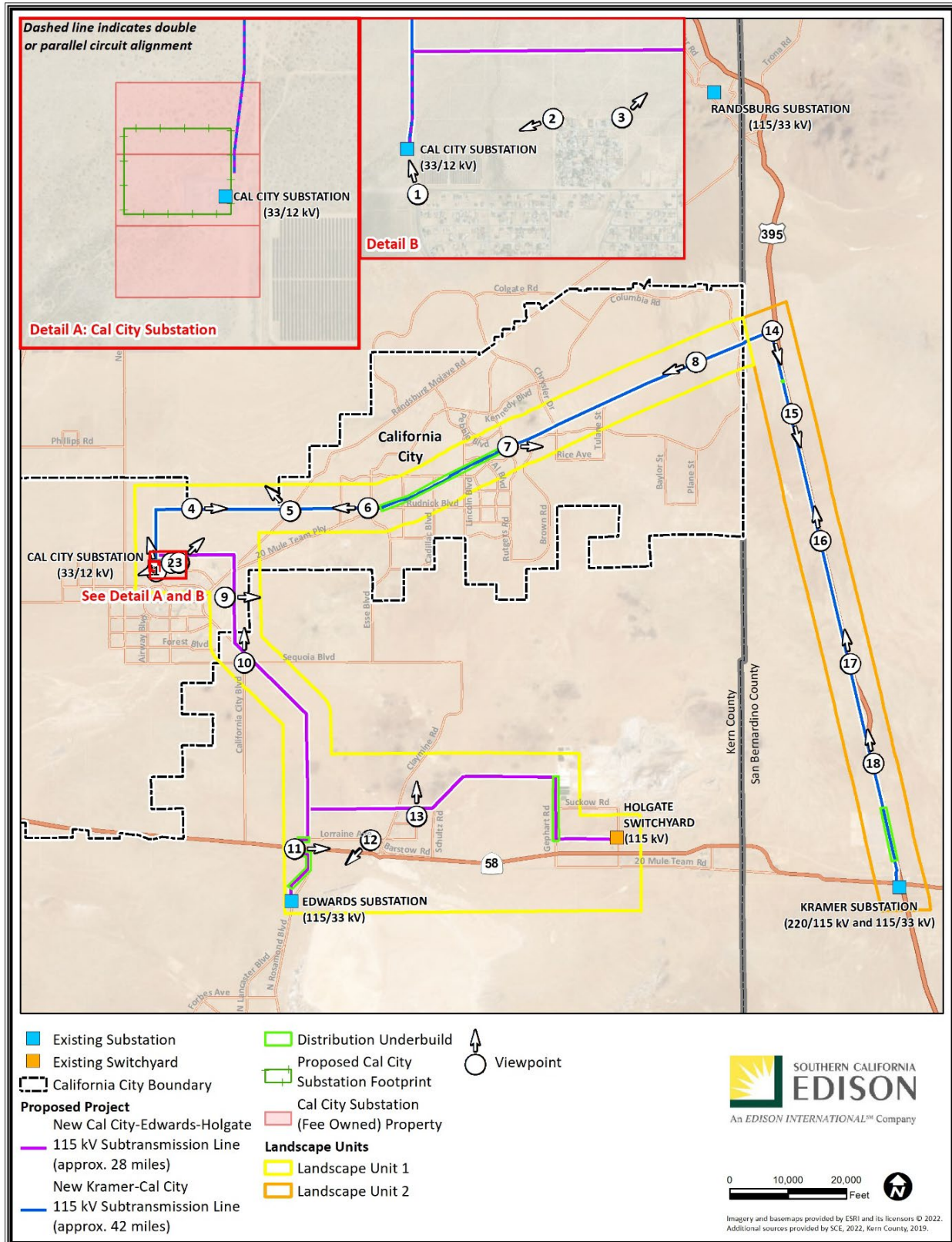


Figure 5.1-2 Existing Condition from Proposed Project Viewpoints



Viewpoint 1: Cal City Substation at Mendiburu Road, Looking North-Northwest



Viewpoint 2: Cal City Substation at Sarah Street Residences, Looking West-Southwest



Viewpoint 3: Sarah Street, Looking Northeast



Viewpoint 4: Rudnick Boulevard at Cache Creek, Looking East



Viewpoint 5: Rudnick Boulevard and Randsburg Mojave Road, Looking Northwest



Viewpoint 6: Rudnick Boulevard and Oscar Avenue, Looking West



Viewpoint 7: Twenty Mule Team Parkway and Rutgers Road, Looking East



Viewpoint 8: Twenty Mule Team Parkway and Temple Street, Looking Southwest



Viewpoint 9: Rome Beauty Drive, Looking East



Viewpoint 10: California City Boulevard and Sequoia Boulevard, Looking North



Viewpoint 11: SR-58 Eastbound, Looking East



Viewpoint 12: Lorraine Avenue and 160th Street, Looking Southwest



Viewpoint 13: Bernard Avenue and Flint Street, Looking North



Viewpoint 14: Twenty Mule Team Parkway Utility Corridor, Looking Southeast



Viewpoint 15: Southbound U.S. 395, Looking Southeast



Viewpoint 16: Off-Highway Vehicle (OHV) Trails, Looking Northwest



Viewpoint 17: Northbound U.S. 395 at OHV Turnoff, Looking Northwest



Viewpoint 18: Northbound U.S. 395 at Marshall Street, Looking Northwest

5.1.1.1 Landscape Setting

Elevations range from approximately 2,320 to 3,110 feet above mean sea level. Vegetation in undeveloped areas includes low-growing desert grasses and scrub, which are typical in the Mojave Desert. As described in more detail in this section, land uses in the vicinity of the Proposed Project are undeveloped, open space, protected wildernesses and preserves, BLM-managed lands, EAFB (controlled by DoD), mineral extraction, recreation, commercial, residential, agricultural zoned land, and energy infrastructure.

The Proposed Project alignment skirts around the eastern and northern perimeter of the City of California City to the Cal City Substation. The majority of the Proposed Project alignment is sparsely settled with rural residences and recreational open space, connected by dirt trails and few paved roads other than highways or those within city limits. Other developed areas surrounding portions of the Proposed Project alignment include Kramer Junction, which includes commercial development and the Kramer Substation; the communities of Boron and Desert Lake, which includes low-density residential and commercial development, the Holgate Substation, and an open pit Borax mine; and the community of North Edwards, which includes rural residential and commercial development. Edwards Substation is located to the south of North Edwards, on the south side of State Route (SR-) 58. The former Boron Federal Aviation Administration (FAA) Radar Station is located near the eastern edge of the Proposed Project Alignment, off United States (U.S) Highway 395 (U.S. 395).

As described in Section 5.5, Cultural Resources, in the 1960s, major development was planned for thousands of acres of land around the City of California City. In anticipation of this development, this land was subdivided into tens of thousands of lots connected by unpaved dirt roads. However, these major development plans never came to fruition. Today, the sprawling grid of empty lots and a network of mostly unpaved dirt roads remains. With the exception of this previous disturbance, much of the Proposed Project area is largely undeveloped, and existing electrical transmission lines within existing rights-of-way (ROWs) constitute dominant features in the landscape, as do major highways—including SR-58 and U.S. 395—that are spanned by the existing electrical lines, along with a railroad line operated by Burlington Northern Santa Fe Railway. The landscape is generally characterized by its expansive views of the flat Mojave Desert with occasional topographic features that are bounded by foothills and mountainous terrain. Pale tones of green, brown, red, and gray are visible in the desert vegetation and exposed earth surface. Because much of the land in the Proposed Project vicinity is undeveloped, sources of nighttime lighting include vehicles on roadways, interspersed residences, and commercial buildings.

5.1.1.2 Project Visibility and Viewshed

The project viewshed is defined as the general area from which the Proposed Project would be visible. For purposes of describing a project's visual setting and assessing potential visual impacts, the viewshed can be divided into distance zones of foreground, middle ground, and background views. The foreground is defined as the distance between the viewer and 0.25 to 0.5 mile. Landscape detail is most noticeable, and objects generally appear most prominent when seen in the foreground. The middle ground is 0.5 to 3 miles from the viewer, and the background extends beyond 3 to 5 miles from the viewer.

In the analysis of the Proposed Project, emphasis is placed on the potential effects on foreground viewshed conditions, although consideration is also given to the potential effects on the more distant views. Project visibility includes locations along nearby roads and highways, as well as more distant locations. Existing visual conditions are described in the following sections.

5.1.1.3 Scenic Resources

Scenic resources are defined as landscape patterns and features that are considered visually or aesthetically pleasing, and therefore contribute positively to the definition of a distinct community or region. Natural and built features that comprise landscape patterns are visual resources that can be viewed by the general public, thus contributing to the public's experience and appreciation of the environment. Scenic resources may include trees or important vegetation; landform elements (e.g., hills, ridgelines, or rock outcroppings); water features (e.g., rivers, bays, or reservoirs); and landmarks, important buildings, or historic structures.

Scenic resources identified in the vicinity of the Proposed Project are discussed in the subsections that follow.

5.1.1.3.1 Parks and Open Spaces

The Proposed Project crosses or is adjacent to numerous open spaces, parks, off-highway vehicle (OHV) areas, and wilderness areas variously managed by the BLM, the City of California City, Kern County, and the CDFW. These areas provide a range of recreational opportunities and scenic values in the Proposed Project area. Additional information on the recreational facilities within the Proposed Project area is provided in Section 5.16, Recreation.

5.1.1.3.2 Scenic Vistas

For the purposes of this analysis, scenic vistas are defined as distant public views along or through an opening or corridor that is recognized and valued for its scenic quality. No specific scenic vistas have been identified in the Proposed Project vicinity by the California Department of Transportation (Caltrans), the County of San Bernardino, Kern County, or the City of California City (Caltrans 2015, County of San Bernardino 2019, Kern County 2009, City of California City 2009). However, scenic views of desert open spaces, valleys, mountains, and mountain ranges are available from a variety of points throughout the Proposed Project vicinity.

5.1.1.3.3 Scenic Highways

No state-designated scenic highways are located in the Proposed Project area (Caltrans 2018). One highway in the Proposed Project area, SR-58, has been identified as eligible, but not officially designated by Caltrans. As depicted in Figure 3-1, in Chapter 3, Proposed Project Description, SR-58 generally runs east to west in the southern area of the Proposed Project vicinity. The proposed Cal City-Edwards-Holgate 115 kV Subtransmission Line crosses SR-58 north of EAFB and the proposed Kramer-Cal City 115 kV Subtransmission Line crosses SR-58 in the vicinity of Kramer Junction.

The County of San Bernardino has identified SR-58 as a designated scenic route (County of San Bernardino 2019). Kern County does not identify any county-designated scenic routes (Kern County 2009). The City of California City does not identify any designated scenic routes other than eligible scenic highways identified by Caltrans (City of California City 2009).

5.1.1.4 Viewers and Viewer Sensitivity

The primary potentially affected viewer groups within the Proposed Project area are motorists and recreational facility users, along with residents located within viewing distance of the Proposed Project. These viewers experience the Proposed Project area within the context of a setting that includes existing substations, transmission facilities, and other surrounding development and facilities.

5.1.1.4.1 Motorists

Motorists constitute the most substantial viewer group and include both local and regional travelers who are familiar with the visual setting, as well as those using the roads on a less regular basis. Motorists traveling on SR-58 would experience two locations where the Proposed Project alignment would cross over the roadway (once where the proposed Cal City-Edwards-Holgate 115 kV Subtransmission Line extends into EAFB and once where the proposed Kramer-Cal City 115 kV Subtransmission Line extends into Kramer Substation). Motorists on U.S. 395 would view the proposed Kramer-Cal City 115 kV Subtransmission Line for approximately 18 miles, as the line would roughly parallel U.S. 395 within an existing utility corridor for that distance. Existing 220 kV and 115 kV transmission and subtransmission electrical lines strung along tall lattice steel towers (LSTs) currently dominate the view along U.S. 395. A small number of local motorists travel along the partially paved Twenty Mule Team Parkway between U.S. 395 and the City of California City, a stretch of road heavily used by OHV riders. The proposed Kramer-Cal City 115 kV Subtransmission Line would parallel Twenty Mule Team Parkway for approximately 14 miles. Viewer sensitivity for motorists would range from low when views are at highway speed and brief (proposed subtransmission line crossings of SR-58) to moderately high when views are for a longer duration or a lower speed (proposed Kramer-Cal City 115 kV Transmission Line paralleling U.S. 395 and Twenty Mule Team Parkway).

5.1.1.4.2 Recreationalists

Recreationists use parks and trails in the Proposed Project vicinity, such as Twenty Mule Team Parkway, and other OHV areas crossed by the Proposed Project. Recreationists' views range from relatively brief to longer in duration. The sensitivity of this viewer group is considered moderate to high due to the potential for views for extended durations.

5.1.1.4.3 Residents

Nearby residents are located in the City of California City and the communities of North Edwards, Boron, and Desert Lake or in the sparsely settled, rural, residential properties dispersed along the Proposed Project. Within the City of California City, the nearest residence to construction activities would be located approximately 140 feet southeast of the Kramer-Cal City 115 kV Subtransmission Line near the intersection of Twenty Mule Team Parkway and Rudnick Road. The nearest residence to the Cal City Substation is located approximately 780 feet southeast of the existing substation. The location of Proposed Project sensitive receptors, including residences, is shown in Figure 5.13-1. Existing facilities and overhead infrastructure are visible from the residences, and views of the Proposed Project would be seen within the context of existing substations and overhead transmission lines. Depending on the proximity to the Proposed Project, residential viewers tend to have high viewer exposure and awareness; therefore, the sensitivity of this viewer group is considered high.

5.1.1.5 Light and Glare

Existing sources of light and glare within the Proposed Project alignment area include nighttime highway traffic along U.S. 395, SR-58, and other roadways, as well as localized lighting associated with residential development. Another source of light and glare within the Proposed Project area is from the existing Cal City, Edwards, Holgate, and Kramer Substations, including interior and exterior lighting from buildings, lighting from switch racks, and sensor lights.

5.1.1.6 *Visual Setting and Representative Views*

The following subsections describe the visual character found within the Proposed Project area and include references to a set of 18 photographs that document representative views of the Proposed Project. The viewpoint locations are shown in Figure 5.1-1 and the accompanying photographs are included in Figure 5.1-2.

As a result of the preliminary field investigation, two landscape units¹ for the Proposed Project were identified. Landscape Unit 1, shown in yellow in Figure 5.1-1, includes the portion of the proposed Kramer-Cal City 115 kV Subtransmission Line through the undeveloped center of the City of California City between U.S. 395 and the Cal City Substation; the Cal City Substation; and the proposed Cal City-Edwards-Holgate 115 kV Subtransmission Line. Views of and within Landscape Unit 1 are primarily desert and open-space focused, even when the Proposed Project components are nearby to developed areas such as neighborhoods in the City of California City, North Edwards, or Boron. Landscape Unit 1 includes the portion of the proposed Cal City-Edwards-Holgate Subtransmission Line that roughly parallels SR-58 between the Edwards and Holgate substations, including the crossing of SR-58 by the proposed Cal City-Edwards-Holgate 115 kV Subtransmission Line. Photographs 1 through 13 are associated with Landscape Unit 1.

Landscape Unit 2, shown in orange in Figure 5.1-1, includes the portion of the proposed Kramer-Cal City 115 kV Subtransmission Line that parallels U.S. 395. While the Proposed Project area in this corridor is similar to that in Landscape Unit 1, views of and within Landscape Unit 2 are primarily focused on U.S. 395 and adjacent utility corridor. Landscape Unit 2 also contains more land parcels managed by BLM crossed by the Proposed Project alignment than Landscape Unit 1. Photographs 14 through 18 are associated with Landscape Unit 2.

Landscape Unit 1

Viewpoint 1: Cal City Substation at Mendiburu Road, Looking North-Northwest

As seen in Figure 5.1-2, Viewpoint 1 shows the existing view at the corner bend of Mendiburu Road looking northwest toward the Cal City Substation. This location is representative of views from the nearest residential area adjacent to the Cal City Substation. Looking northwest from this location, the expanded Cal City Substation will be visible in the view between 0.10 and 0.25 of a mile away. Multiple existing distribution lines mounted on wooden poles run north-south from the substation to the proximate neighborhood. The street view of an existing solar field is hidden behind a masonry block wall, as seen on the right of the image. The substation presents as a grey, metallic cluster near the center of the image, partially hidden behind scattered brown and grey-green shrubs. The Black Hills are visible in the distance.

Viewpoint 2: Cal City Substation at Sarah Street Residences, Looking West-Southwest

As seen in Figure 5.1-2, Viewpoint 2 shows the existing view from Sarah Street residences, looking west-southwest toward the Cal City Substation, where the expanded Cal City Substation would be visible in the view approximately 0.5 mile away. This location is representative of views from a residential area near to the Cal City Substation. The substation and its associated structures present as vertical features punctuating the horizon, partially hidden behind scattered brown and grey-green shrubs among crisscrossing dirt roads. The Tehachapi Mountains are visible in the distance.

¹ A “landscape unit” is an area of land that has similar existing landscape character attributes - landform, rockform, waterform, and/or vegetative communities patterns, and describes a geographic area that is useful for inventorying and analyzing scenery. (BLM 2022b)

Viewpoint 3: Sarah Street, Looking NE

As seen in Figure 5.1-2, Viewpoint 3 shows the existing view from Sarah Street residences. Looking northeast from this location, the proposed Cal City-Edwards-Holgate 115 kV Subtransmission Line would be approximately 0.3 mile away and the proposed Kramer-Cal City 115 kV Subtransmission Line would be approximately 2 miles away. No manmade features are distinctly visible, but crisscrossing dirt roads intersect scattered brown and rust-colored shrubs. The Rand Mountains are visible in the distance.

Viewpoint 4: Rudnick Boulevard at Cache Creek, Looking East

As seen in Figure 5.1-2, Viewpoint 4 shows the existing view looking east along Rudnick Boulevard. The road dips where it crosses Cache Creek. This location is representative of views for OHV riders, as it is directly on both a designated City of California City OHV trail and along the proposed Kramer-Cal City 115 kV Subtransmission Line. Looking due east, the proposed subtransmission line would be adjacent to the heavily-used dirt-packed Rudnick Boulevard. A wire fence with metal T-posts is visible along the north side of the roadway, and scattered brown, rust, and silvery-green shrubs fill the landscape. Small hills punctuate the distant horizon.

Viewpoint 5: Rudnick Boulevard and Randsburg Mojave Road, Looking Northwest

As seen in Figure 5.1-2, Viewpoint 5 shows the existing northwest view from Rudnick Boulevard near Randsburg Mojave Road. The photograph is representative of views for OHV riders, as it is directly on a designated OHV trail with the proposed Kramer-Cal City 115 kV Subtransmission Line approximately 0.10 mile to the north. Looking northwest, the proposed subtransmission line will intersect the view from left to right. No manmade features beyond dirt roads are distinctly visible. Scattered silvery-green and olive-brown shrubs fill the landscape, and the Tehachapi and Chuckwalla Mountains are visible in the distance.

Viewpoint 6: Rudnick Boulevard and Oscar Avenue, Looking West

As seen in Figure 5.1-2, Viewpoint 6 shows the existing view along Rudnick Boulevard near its intersection with Oscar Avenue, looking west. This location is representative of views for OHV riders, as it is directly on both a designated City of California City OHV trail and along proposed Kramer-Cal City 115 kV Subtransmission Line. This location is approximately 0.45 mile west of Bill Borax Park, an OHV hub. Looking due west, the proposed subtransmission line will be adjacent to the heavily used dirt-packed Rudnick Boulevard. Scattered silvery-green and olive-brown shrubs fill the landscape, and the desert floor rises sharply in the background to meet the distant Tehachapi Mountains.

Viewpoint 7: Twenty Mule Team Parkway and Rutgers Road, Looking East

As seen in Figure 5.1-2, Viewpoint 7 shows the existing view from the intersection of Twenty Mule Team Parkway and Rutgers Road, looking east. This location is approximately 1 mile southwest of Galileo Hill and is representative of views for both regular motorists and OHV riders, as it is directly on both a designated City of California City OHV trail and along the proposed Kramer-Cal City 115 kV Subtransmission Line. Looking due east, the proposed subtransmission line will be adjacent to a paved section of Twenty Mule Team Parkway. Distribution lines mounted on wooden poles are strung across the northern side of the roadway and scattered silvery-green and olive-brown shrubs fill the landscape. A single hill is visible on the distant horizon.

Viewpoint 8: Twenty Mule Team Parkway and Temple Street, Looking Southwest

As seen in Figure 5.1-2, Viewpoint 8 shows the existing view looking west at the intersection of Twenty Mule Team Parkway and Temple Street. This view is representative of views for OHV riders, as it is directly

on both a designated City of California City OHV trail and along the proposed Kramer-Cal City 115 kV Subtransmission Line. Looking due west along Twenty Mule Team Parkway, the proposed subtransmission line will be adjacent to the roadway. Scattered silvery-green and olive-brown shrubs fill the landscape. Galileo Hill, approximately 5 miles away, interrupts the horizon, with the Tehachapi mountains visible in the far distance.

Viewpoint 9: Rome Beauty Drive, Looking East

As seen in Figure 5.1-2, Viewpoint 9 shows the existing view from the residential neighborhood on Rome Beauty Drive, looking east. From this location, looking due east, the proposed Cal City-Edwards-Holgate 115 kV Subtransmission Line would be approximately 0.25 mile away. An existing distribution line strung across wooden poles is skylined and is the only distinct manmade feature in the view. The landscape is characterized by scattered tan and grey-green shrubs. Castle Butte is visible approximately 3 miles away.

Viewpoint 10: California City Boulevard and Sequoia Boulevard, Looking North

As seen in Figure 5.1-2, Viewpoint 10 shows the existing view from the intersection of California City Boulevard and Sequoia Boulevard, looking north. This location is representative of views of the Proposed Project for motorists on northbound California City Boulevard. From this location, looking due north, the proposed Cal City-Edwards-Holgate 115 kV Subtransmission Line would be approximately 0.3 mile away. An existing distribution line strung across wooden poles is skylined and crosses over California City Boulevard. The landscape is characterized by tufts of grey-green shrubs along the roadside, with tan and rust-colored patches of grasses and shrubs further behind. The Rand Mountains are distantly visible across the horizon.

Viewpoint 11: SR-58 Eastbound, Looking East

As seen in Figure 5.1-2, Viewpoint 11 shows the existing view on eastbound SR-58. This location is representative of motorist views of the Proposed Project from eastbound SR-58 within the City of California City approaching the exit for the northern entrance to EAFB. The view is dominated by the highway and other human made infrastructure such as the overpass bridge, utility poles and lines, signage, and light poles, with low tan and olive-green shrubs filling the landscape with patches of exposed tan earth. Looking east from this location, the proposed Cal City-Edwards-Holgate 115 kV Subtransmission Line would cross the view from left to right approximately 900 feet away.

Viewpoint 12: Lorraine Avenue and 160th Street, Looking Southwest

As seen in Figure 5.1-2, Viewpoint 12 shows the existing view from the southwest corner of the North Edwards residential community, at the corner of Lorraine Avenue and 160th Street, looking southwest. This location is also a potential staging area site for the Proposed Project. The landscape is highly disturbed and compacted from vehicles and other human activity. Few scattered brown shrubs and exposed sandy soil characterize the landscape. The existing transmission corridor and SR-58 are visible to the southwest, approximately 0.5 mile away. The Rosamond Hills are visible in the distance.

Viewpoint 13: Bernard Avenue and Flint Street, Looking North

As seen in Figure 5.1-2, Viewpoint 13 is representative of views of the Proposed Project from the nearest residential area in North Edwards, at the intersection of Bernard Avenue and Flint Street, looking north. The landscape is characterized by dusty tan and silvery-green shrubs and exposed, tan earth. An abandoned motel/apartment structure is visible to the northeast, and a distribution line strung across wooden poles lines the west side of Flint Street. A series of red-toned hills are visible in the background. Looking north from

this location, the proposed Cal City-Edwards-Holgate 115 kV Subtransmission Line would cross the view from left to right approximately 0.27 mile away.

Landscape Unit 2

Viewpoint 14: Twenty Mule Team Parkway Utility Corridor, Looking Southeast

As seen in Figure 5.1-2, Viewpoint 14 shows the existing view looking south at the intersection of Twenty Mule Team Parkway and an existing OHV trail. The landscape is characterized by rusty and olive-brown shrubs, and the U.S. 395 presents as a faint, white linear feature and disappears as it crests the distant rolling hills. Existing electric transmission lines are strung along tall LSTs, which dominate the view. The proposed Kramer-Cal City 115 kV Subtransmission Line would be visible parallel to the existing transmission corridor adjacent to the highway. This location is representative of views of the Proposed Project from and/or on BLM-managed land for motorists on southbound U.S. 395 and recreationalists on the adjacent OHV trails.

Viewpoint 15: Southbound U.S. 395, Looking Southeast

As seen in Figure 5.1-2, Viewpoint 15 shows the existing view looking south-southeast from U.S. 395 near Kramer Station Road. This location is representative of views of the Proposed Project for motorists on southbound U.S. 395. The proposed Kramer-Cal City 115 kV Subtransmission Line would be visible parallel to the existing transmission corridor adjacent to the highway. The landscape is characterized by low rusty and olive-brown shrubs. The outstretched perspective of U.S. 395 and the tall LSTs dominate the view.

Viewpoint 16: OHV Trails, Looking Northwest

As seen in Figure 5.1-2, Viewpoint 16 shows the existing view looking north at the intersection of existing OHV trails adjacent to U.S. 395. The landscape is characterized by low pale tan and olive-brown shrubs, and visible traffic along U.S. 395, approximately 130 feet east. Existing electric transmission lines are strung along tall LSTs, which dominate the view. The proposed Kramer-Cal City 115 kV Subtransmission Line would be visible parallel to the existing transmission corridor adjacent to the Highway. This location is representative of views of the Proposed Project from and/or on BLM-managed land for recreationalists on the adjacent OHV trails.

Viewpoint 17: Northbound U.S. 395 at OHV Turnoff, Looking Northwest

As seen in Figure 5.1-2, Viewpoint 17 shows the existing view looking slightly northwest on the U.S. 395 near an OHV turnoff area. This location is representative of views of the Proposed Project for motorists on northbound U.S. 395 and from and/or on BLM-managed land. The landscape is characterized by patches of small tan and silvery-green shrubs. Red Mountain is visible to the northeast, approximately 17 miles away. The proposed Kramer-Cal City 115 kV Subtransmission Line would be visible parallel to the existing transmission corridor adjacent to the highway.

Viewpoint 18: Northbound U.S. 395 at Marshall Street, Looking Northwest

As seen in Figure 5.1-2, Viewpoint 18 shows the existing view looking slightly northwest on U.S. 395 near Marshall Street. This location is representative of views of the Proposed Project for motorists on northbound U.S. 395 and from and/or on BLM-managed land. The landscape is characterized by patches of small tan and silvery-green shrubs along the roadway with larger rust-colored shrubs scattered beyond. The closed Boron FAA Radar Station presents as a small, white orb atop a small ridge, approximately 2.5 miles to the

northwest. Red Mountain is faintly visible to the northeast, approximately 20 miles away. The proposed Kramer-Cal City 115 kV Subtransmission Line would be visible parallel to the existing transmission corridor adjacent to the highway.

5.1.2 Regulatory Setting

Federal, State, and local regulations were reviewed for applicability to the Proposed Project.

5.1.2.1 Federal

5.1.2.1.1 Federal Land Policy and Management Act of 1976

The Federal Land Policy and Management Act of 1976 (FLPMA) (43 United States Code [U.S.C.] 1701) and the U.S. Department of the Interior’s (DOI) BLM Land Use Planning Handbook (BLM 2005) both emphasize the importance of protecting the quality of scenic resources on public lands. FLPMA sections relevant to the Proposed Project are:

- Section 102(a): “The public lands [shall] be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archaeological values.”
- Section 103(c): Identifies “scenic values” as resources for public management.
- Section 201(a): “The Secretary shall prepare and maintain on a continuing basis and inventory of all public lands and their resources and other values (including...scenic values).”
- Section 505(a): “Each right-of-way shall contain terms and conditions which will...minimize damage to the scenic and esthetic values.”

FLPMA’s legal mandate to protect the quality of scenic resources on public lands is carried out by BLM and detailed in BLM’s Visual Resource Management (VRM) system, described below.

5.1.2.1.2 BLM Visual Resource Management System

The BLM has developed the VRM system for visual resource inventory, management, and impact assessment. VRM class objectives are designated to establish the desired future condition of the visual resource. Class designations are derived from an analysis of scenic quality (rated by landform, vegetation, water, color, influence of adjacent scenery, scarcity, and cultural modification), a determination of viewer sensitivity levels (sensitivity of people to changes in the landscape), and distance zones. Allowable uses and management actions must be planned in accordance with these desired future conditions. The VRM classes set VRM objectives for lands in each class and describe the limits of allowable visual change in the landscape character with which proposed management activities must comply. Management Classes describe the different degrees of modification allowed to the basic elements of the landscape (form, line, color, texture). Management classes and their corresponding goals are defined in Table 5.1-1 and discussed below.

Table 5.1-1 BLM Visual Management Classes and Goals

VRM Class	Goal	Allowed Level of Change
Class I	To preserve the existing character of the landscape.	This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention
Class II	To retain the existing character of the landscape.	The level of change to the characteristic landscape should be low. Management activities may be seen but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
Class III	To partially retain the existing character of the landscape.	The level of change to the characteristic landscape should be moderate. 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.
Class IV	To provide for management activities which require major modification of the existing character of the landscape.	The level of change to the characteristic landscape can be high. Management activities may dominate the view and may be the major focus of viewer attention. However, the impact of these activities should be minimized through careful siting, minimal disturbance, and repeating the basic elements of form, line, color, and texture within the existing setting.

Source: BLM 2022a

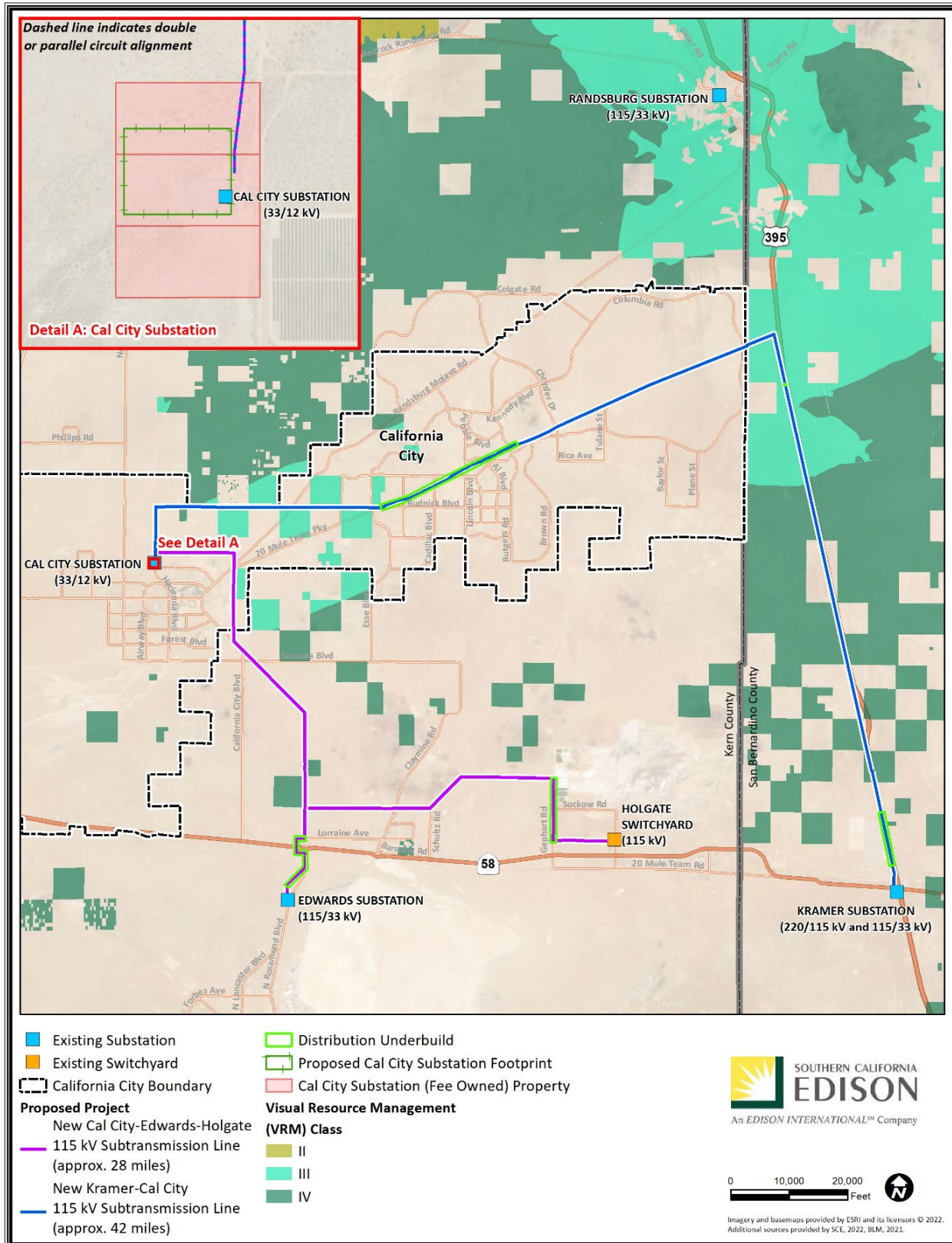
As detailed in Section 5.11, Land Use, although the Proposed Project area includes lands managed by the BLM, DoD, county, city, and private parties, the entirety of the Proposed Project is located within BLM-managed California Desert Conservation Area (CDCA) and is covered by the Desert Renewable Energy Conservation Plan (DRECP). Portions of the Proposed Project within the CDCA and DRECP also cross private and municipal lands. Approximately 13.5 miles of the Proposed Project alignment are located on land managed by the BLM. A map showing the Proposed Project alignment with VRM classes on BLM-administered land is included as Figure 5.1-3.

5.1.2.1.3 BLM Desert Renewable Energy Conservation Plan (DRECP) Record of Decision

Covering more than 20 million acres in seven California counties including Imperial, Inyo, Kern, Los Angeles, Riverside, San Bernardino, and San Diego County, the DRECP was developed as an interagency plan by the BLM, the U.S. Fish and Wildlife Service (USFWS), the California Energy Commission (CEC), and CDFW. The BLM manages approximately 10 million acres of the 22.5 million acres covered in the overall DRECP area.

The DRECP landscape-scale planning effort was undertaken to achieve two sets of overarching goals. The first is Renewable Energy. To address these goals, the plan identifies specific development focus areas with high-quality renewable energy potential and access to transmission in areas where environmental impacts can be managed and mitigated. The second overarching goal concerns conservation. The plan specifies species, ecosystem and climate adaptation requirements for desert wildlife, as well as the protection of recreation, cultural, visual, and other desert resources. Through the DRECP Record of Decision (ROD) an approved Land Use Plan Amendment (LUPA) establishes a policy framework for BLM-managed land, including management and conservation of visual resources. All BLM-administered land crossed by the Proposed Project is within the area governed by the DRECP ROD.

Figure 5.1-3 BLM VRM Classes in Proposed Project Area



5.1.2.1.4 Best Management Practices (BMPs) for Reducing Visual Impact of Renewable Energy Facilities on BLM-Administered Lands

In the *Best Management Practices (BMPs) for Reducing Visual Impact of Renewable Energy Facilities on BLM-Administered Lands* (BLM 2013), the BLM presents 122 BMP recommendations and guidance to avoid or reduce potential visual impacts associated with the siting, design, construction, operation, and decommissioning of utility-scale renewable energy generation facilities, including wind, solar, and geothermal facilities as well as ancillary components, such as electric transmission structures and access. Selection of structure types and selection of appropriate materials surface treatments are among the pertinent BMPs outlined in this document to minimize potential visual effects and contrast associated with transmission facilities.

5.1.2.2 State

5.1.2.2.1 California Department of Transportation: Scenic Highway Program

The State Scenic Highway Program—a provision of Sections 260 through 263 of the Streets and Highways Code—was established by the Legislature in 1963 to preserve and enhance the natural beauty of California through special conservation treatment. The State Scenic Highway System includes both designated scenic highways and “eligible” scenic highways. 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 Caltrans for scenic highway approval, and receives the designation from Caltrans. A city or county may propose adding routes with outstanding scenic elements to the list of eligible highways. However, state legislation is required. No designated state scenic highways are located in the vicinity of the Proposed Project alignment. SR-58, which extends through the southern extent of the Proposed Project alignment, is listed as “eligible” for State Scenic Highway designation (Caltrans 2018).

5.1.2.3 Local

The California Public Utilities Commission (CPUC) has sole and exclusive state jurisdiction over the siting and design of the Proposed Project. Pursuant to CPUC General Order (G.O.) 131-D, Section XIV.B:

“Local jurisdictions acting pursuant to local authority are preempted from regulating electric power line projects, distribution lines, substations, or electric facilities constructed by public utilities subject to the CPUC’s jurisdiction. However, in locating such projects, the public utilities shall consult with local agencies regarding land use matters.”

Consequently, public utilities are directed to consider local regulations and consult with local agencies, but the counties’ and city’s regulations are not applicable as the counties and city do not have jurisdiction over the Proposed Project. Accordingly, the following discussion of local land use regulations is provided for informational purposes only.

5.1.2.3.1 Kern County General Plan

Section 2.3.9, Scenic Route Corridors, of the Circulation Element recognizes several Caltrans-designated “Eligible State Scenic Highways” within the county including portions of US 395 and SR-58 (refer to Table 5.1.3 in Section 5.1.1.2, Scenic Resources). In addition, the Land Use, Open Space, and Conservation Element and the Energy Element address visual resources and aesthetics primarily in commercial and industrial settings, outdoor storage, and landscaping. It also includes general policies for the protection of

oak woodlands and the conservation of open space (Section 1.10, 10, Oak Tree Conservation, Policies 65 and 66) (Kern County 2009).

Section 1.10.7 – Light and Glare

Policy 47 Ensure that light and glare from discretionary new development projects are minimized in rural as well as urban areas.

Policy 48 Encourage the use of low-glare lighting to minimize nighttime glare effects on neighboring properties.

Implementation Measure AA: The County shall utilize CEQA Guidelines and the provisions of the Zoning Ordinance to minimize the impacts of light and glare on adjacent properties and in rural undeveloped areas.

Section 5.4.7 – Transmission Lines

GOAL 1 To encourage the safe and orderly development of transmission lines to access Kern County's electrical resources along routes, which minimize potential adverse environmental effect.

Policy 5 The County should discourage the siting of above-ground transmission lines in visually sensitive areas.

5.1.2.3.2 Kern County Zoning Ordinance

Section 19.81 of the Kern County Zoning Ordinance (Dark Sky Ordinance) provides principles for ensuring that the “natural dark skies” that are considered part of the existing character of Kern County are maintained. The Dark Sky Ordinance includes general requirements for light shielding, fixture types, and mounting heights.

5.1.2.3.3 San Bernardino Countywide Policy Plan

The San Bernardino Countywide Policy Plan Land Use Element contains the following goal and policy related to visual resources:

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 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.

The San Bernardino Countywide Policy Plan Infrastructure and Utilities Element contains the following policy related to visual resources:

Policy IU-5.3 Underground Facilities. We encourage new and relocated power and communication facilities to be located underground when feasible, particularly in the Mountain and Desert regions.

Policy Map NR-3 of the San Bernardino Countywide Plan depicts scenic roadways within the County. The only County-designated scenic route in the vicinity of the Proposed Project is a portion of SR-58 between the Kern County-San Bernardino County Line and U.S. 395. The San Bernardino Countywide Policy Plan Natural Resources Element also contains the following goals and policies related to visual resources:

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.

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.

5.1.2.3.4 City of California City General Plan

The City of California City 2009 General Plan contains goals and policies aimed to reduce visual resource impacts. City of California City General Plan includes the below goals and policies related to preservation of visual resources:

Design/Image Policies

- The City shall promote Dark Sky principles in future residential, commercial, and industrial development.
- All exterior lighting shall be designed to point downward in a manner that will reduce light and glare pollution onto neighboring properties and roadways.
 - All security lighting shall be connected to a timer and/or motion detector.
 - Exterior lighting shall be connected to a timer and/or motion detector.
 - Exterior lighting shall use one of the following types of light: Metal Halide, High Pressure Sodium, Fluorescent, or Low-Pressure Sodium.
 - Exterior lighting shall be fully shielded. “Fully Shielded” denotes lighting fixtures which are shielded, focused, or constructed so that light rays do not project horizontally or vertically.

Overall Policy

- When planning for new development, coordinate with utility companies to designate future or potential electrical transmission line corridors or gas lines as needed to serve the community.

5.1.3 Impact Questions

5.1.3.1 Aesthetics Impact Questions

The significant criteria for assessing the impacts to aesthetics come from the California Environmental Quality Act (CEQA) Environmental Checklist. For aesthetics, the CEQA Checklist asks, would the project:

- Have a substantial adverse effect on a scenic vista?
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

- In nonurbanized 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?
- Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

5.1.3.2 Additional CEQA Impact Questions

There are no CPUC-identified additional CEQA impact questions.

5.1.4 Impact Analysis

5.1.4.1 Aesthetics Methodology

5.1.4.1.1 Photograph and Visual Simulation Methodology

The methodology employed for preparing visual simulations includes systematic site photography, computer modeling, and digital rendering techniques. Photographs used to assess existing conditions and to prepare visual simulations were taken using a digital single-lens reflex camera with standard 50-millimeter lens equivalent, which represents an approximately 40-degree horizontal view angle. Digital aerial photographs and Proposed Project design information will provide the basis for developing three-dimensional computer modeling of the new Proposed Project components. For each simulation viewpoint, viewer location was input from global positioning system data using 5 feet as the assumed eye level. Computer “wireframe” perspective plots will be overlaid on the simulation photographs to verify scale and viewpoint location. Digital visual simulation images will be produced based on computer renderings of the three-dimensional modeling combined with selected digital site photographs. These simulations will provide the reader with a clear image of the location, scale, and visual appearance of the Proposed Project. The images will be accurate within the constraints of the available site and Proposed Project data.

5.1.4.1.2 Federal Highways Administration Methodology

For Landscape Unit 1, the analysis of visual resource impacts associated with the Proposed Project was conducted in accordance with the visual impact assessment system developed by the FHWA in *Visual Impact Assessment for Highway Projects* (2015). The FHWA invested considerable resources in the development and implementation of this method. As a result, it is robust and widely used to provide systematic evaluations of visual change.

The FHWA method addresses the following primary questions:

- What are the visual qualities and characteristics of the existing landscape in the project area?
- What are the potential effects of the project’s proposed alternatives on the area’s visual quality and aesthetics?
- Who would see the project, and what is their likely level of concern about or reaction to the way the project visually fits within the existing landscape?

Applying the FHWA method entails the following six steps:

1. Establish the project’s area of visual influence.
2. Determine who has views of and from the project (“viewer”).
3. Describe and assess the landscape that exists before project construction (“affected environment”).
4. Assess the response of viewers looking at and from the project, before and after project construction (“viewer sensitivity or concern”).
5. Determine and evaluate views of the project for before and after project construction (simulations).
6. Describe the potential visible changes to the project area and its surroundings that would result from the project.

The initial step in the evaluation process was the review of planning documents applicable to the Proposed Project area to gain insight into the type of land uses intended for the general area, and the guidelines given for the protection or preservation of visual resources. Consideration was then given to the existing visual setting within the Proposed Project viewshed, which is defined as the geographical area in which a project can be seen. Site reconnaissance and Google desktop analysis were conducted to view the site and surrounding area, identify potential key observation points (KOPs), and take representative photographs of existing visual conditions. Photographs from the site reconnaissance were selected to represent the “before” conditions from each of the potential KOPs. As shown in Figure 5.1-4, within Landscape Area 1, four KOPs were selected to be used as the basis for analysis of the Proposed Project’s visual effects. The existing visual conditions seen in the views from each of the KOPs were evaluated using the FHWA visual quality assessment system that entails use of a numerical rating system. The FHWA visual quality assessment asks: Is this particular view common or dramatic? Is it a pleasing composition (a mix of elements that seem to belong together) or not (a mix of elements that either do not belong together or contrast with the other elements in the surroundings)? Under the FHWA visual quality analysis system, the visual quality of each view is evaluated in terms of its vividness, intactness, and unity:

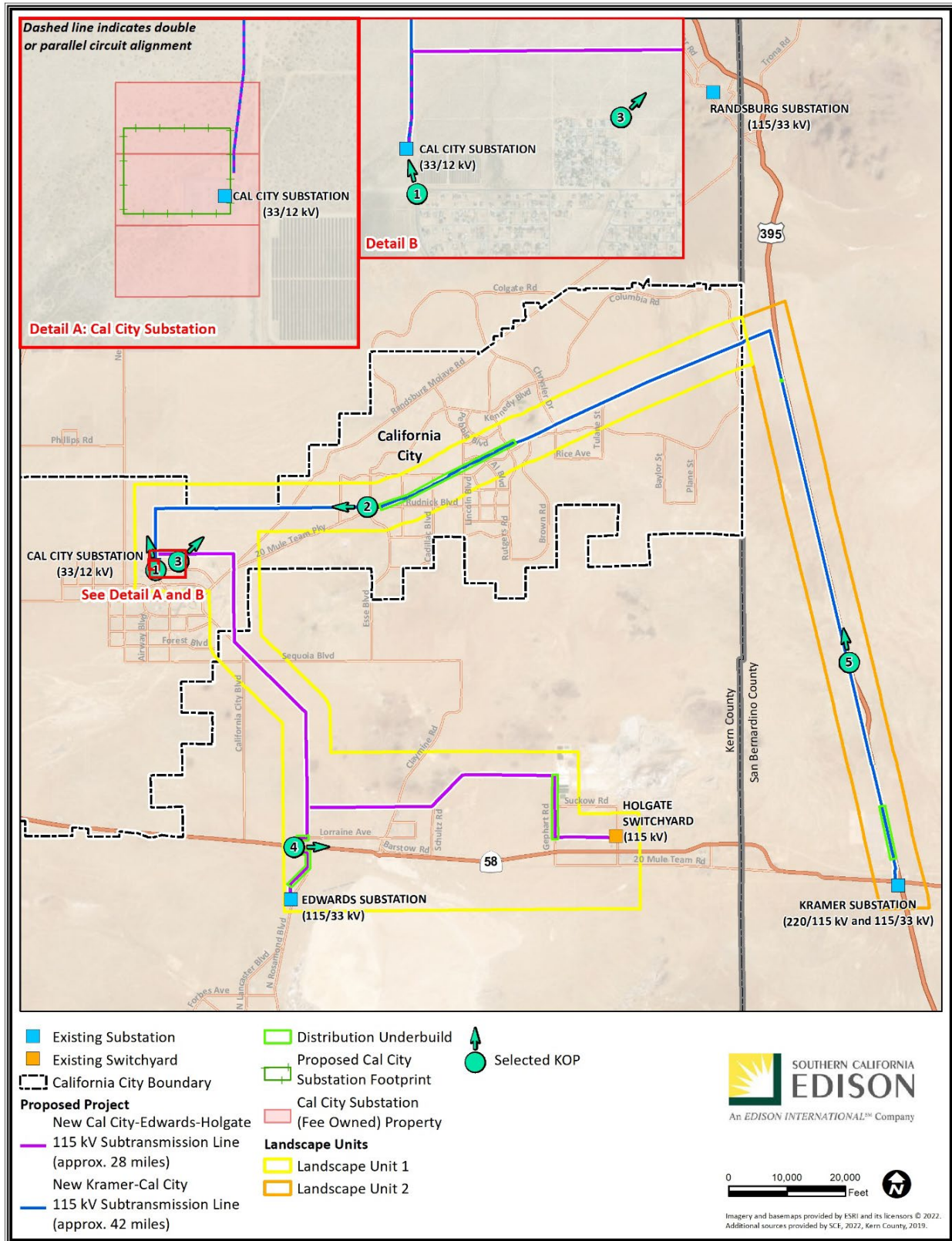
Vividness is defined as the degree of drama, memorability, or distinctiveness of the landscape components. Overall vividness is an aggregated assessment of landform, vegetation, water features, and human-made components in views.

Intactness is a measure of the visual integrity of the natural and human-built landscape and its freedom from encroaching elements. This factor can be present in well-kept urban and rural landscapes, as well as in natural settings. High intactness means that the landscape is free of unattractive features and is not broken up by features and elements that appear out of place. Low intactness means that visual elements that are unattractive and/or detract from the quality of the view can be seen.

Unity is the degree of visual coherence and compositional harmony of the landscape considered as a whole. High unity frequently attests to the careful design of individual components and their relationship in the landscape or refers to an undisturbed natural landscape.

Each of these dimensions of visual quality is documented using an FHWA rating sheet (Appendix J), and for each of these dimensions, a numerical rating score on a scale from 1 to 7 is assigned, where a score of 1 indicates very low visual quality, a score of 4 indicates moderate or average visual quality, and a score of 7 indicates very high visual quality. The scores for each of these three dimensions are added and then averaged to generate an overall visual quality score.

Figure 5.1-4 KOP Locations



To provide a basis for evaluating the Proposed Project’s impacts on these views, visual simulations will be produced according to the methodology described in Section 5.1.4.1.1 to illustrate the “after” visual conditions from each of the KOPs following additional Proposed Project design and selection of KOPs. The “before” site photographs will be included for each KOP in Figure 5.1-5a, Figure 5.1-6a, Figure 5.1-7a, and Figure 5.1-8a. The “after” visual simulations are shown in Figure 5.1-5b, Figure 5.1-6b, Figure 5.1-7b, and Figure 5.1-8b.

Based on review of the simulated views from each KOP, the visual quality of each view will be re-evaluated using the FHWA visual quality evaluative system. The results of the evaluations of the existing and simulated views from each KOP will be documented on FHWA worksheets to be provided. The evaluations of the existing and simulated views will be compared to determine the degree of visual change. Based on the assessment of the degree of visual change that the development of the Proposed Project will bring about and an evaluation of the sensitivity of the view, overall determinations of visual impact will be made and expressed in terms of the impact level (very low to very high).

Once all effects are examined, a determination will be made as to whether any potential impacts will reach a level that would be significant under the four CEQA Guidelines checklist questions discussed in Section 5.1.4.3.

5.1.4.1.3 Bureau of Land Management Methodology

To evaluate visual changes associated with Landscape Unit 2 of the Proposed Project, the BLM’s VRM program will be used to analyze KOP 5 in this landscape. The VRM classification system is a “systematic process used to analyze potential visual impacts of proposed projects and activities.” BLM-managed property was inventoried and assigned one of four classes based on the BLM’s evaluation of the form, line, color, and texture of the existing landform/water, vegetation, and structures. Class I is assigned to all special areas that require maintaining a natural environment that is essentially unaltered by man. Classes II, III, and IV are assigned based on a combination of factors that include scenic quality, sensitivity level, and distance zones. The classes and their associated BLM management objectives are as follows:

Class I: The objective of this class is to preserve the existing character of the landscape. The class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.

Class II: The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

Class III: The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. 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.

Class IV: The objective of this class is to provide for management activities that require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of

viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating basic elements.

As shown in Figure 5.1-3, the VRM classes for BLM-managed land within the area of the Proposed Project are Class III and IV. While the VRM program does not apply to non-federal lands, the VRM methodology was used for Landscape Unit 2 because the highest concentration of BLM-managed land traversed by the Proposed Project occurs within this landscape unit.

The assigned class is used to determine the potential impact resulting from the Proposed Project. The classification system was developed to “provide the basis for the consideration of visual resources in the BLM’s resource management planning process.” The VRM class assigned to the area is compared to the Proposed Project to determine what, if any, mitigation is required to meet the VRM class objectives.

To evaluate the changes resulting from the Proposed Project within Landscape Unit 2, site reconnaissance was conducted to view the site and surrounding area, identify potential KOPs, and take representative photographs of existing visual conditions, according to the methodology described in Section 5.1.4.1.1. Photographs from the site reconnaissance were selected to represent the “before” conditions from each of the potential KOPs. As shown in Figure 5.1-4, within Landscape Unit 2, one KOP was selected to be used as the basis for analysis of the Proposed Project’s visual effects. Figure 5.1-9a shows the existing view from KOP 5 and Figure 5.1-9b shows the simulated view with implementation of the Proposed Project.

While KOP 5 is located within VRM Class IV (Figure 5.1-3), the Proposed Project also crosses VRM Class III land; therefore, Class III objectives were considered. In comparing the pre-construction and post-construction conditions, the BLM Visual Contrast Rating Worksheet Form 8400-4 (Appendix J) documents the existing environment and the changes resulting from the Proposed Project. Section D of the form evaluates the degree of contrast between the existing environment and the changes that would result from the Proposed Project. The contrast associated with each KOP is evaluated for the following elements:

- Form – Contrast in form results from changes in the shape and mass of landforms or structures. The degree of change depends on how dissimilar the introduced forms are to those continuing to exist in the landscape.
- Line – Contrast in line results from changes in edge types and interruption or introduction of edges, bands, and silhouette lines. New lines may differ in their sub-elements (e.g., boldness, complexity, and orientation) from existing lines.
- Color – Changes in value and hue tend to create the greatest contrast. Other factors (e.g., chroma, reflectivity, and color temperature) also increase the contrast.
- Texture – Noticeable contrast in texture usually stems from differences in the grain, density, and internal contrast. Other factors (e.g., irregularity and directional patterns of texture) may affect the rating.

The extent or degree of contrast is evaluated based on the following criteria:

- None – The element contrast is not visible or perceived
- Weak – The element contrast can be seen, but does not attract attention
- Moderate – The element contrast begins to attract attention and begins to dominate the characteristic landscape
- Strong – The element contrast demands attention, would not be overlooked, and is dominant in the landscape

Finally, within Landscape Unit 2, the Proposed Project will be assessed for compatibility with the VRM objectives for its respective VRM class and whether mitigation measures are necessary.

BLM Visual Contrast Rating Worksheet prepared for the KOP selected to represent views within Landscape Unit 2 is provided in Appendix J.

5.1.4.2 Visual Simulations and Visual Change

A set of visual simulations, presented in Figure 5.1-5 through Figure 5.1-9, were prepared to document the Proposed Project-related visual change that would occur at five KOP locations shown in Figure 5.1-4, to provide the basis for evaluating potential visual effects associated with the Proposed Project from these key public views. The simulations presented in Figure 5.1-5 through Figure 5.1-9 each consist of two full-page images designated “a” and “b,” with the existing view shown in the “a” figure, and the after visual simulation in the “b” figure.

This section provides a description of the Proposed Project-related change and an evaluation of potential visual effects on key public views, primarily as represented by the set of five visual simulations. Table 5.1-2 presents an overview including proposed viewpoint location with corresponding visual sensitivity factor(s); approximate viewing distance; and summary of visible change that would occur at each KOP location. For Visual Contrast Rating Worksheets, see Appendix J.

Table 5.1-2 Summary of Visual Change at KOPs

Proposed Photograph Number and Location	Visual Sensitivity Factor	Distance from KOP to Closest Project Component	Summary of Visual Change
Landscape Unit 1			
KOP 1 Viewpoint 1 Cal City Substation	Proximity to residences	0.1 to 0.25 mile	The proposed expanded Cal City Substation appears as a larger and more visually prominent facility in the foreground of the view.
KOP 2 Viewpoint 6 Proposed Kramer-Cal City 115 kV Subtransmission Line	Recreational viewers – primarily OHV	Immediately adjacent, overhead	The proposed Kramer-Cal City 115 kV Subtransmission Line appears as a prominent new linear feature extending through the foreground, middleground, and background of the landscape.
KOP 3 Viewpoint 3 Proposed Cal City-Edwards-Holgate 115 kV Subtransmission Line	Proximity to residences	0.3 mile	The proposed Cal City-Edwards-Holgate 115 kV Subtransmission Line appears as a prominent new linear feature crossing the foreground of the landscape. The proposed Kramer-Cal City 115 kV Subtransmission Line is faintly visible as a new linear feature crossing the middleground of the landscape.

Proposed Photograph Number and Location	Visual Sensitivity Factor	Distance from KOP to Closest Project Component	Summary of Visual Change
KOP 4 Viewpoint 11 Proposed Cal City-Edwards-Holgate 115 kV Subtransmission Line	Crossing of eligible State Scenic Highway	0.25 mile	The proposed Cal City-Edwards-Holgate 115 kV Subtransmission Line appears as a prominent new linear feature crossing the foreground of the landscape.
Landscape Unit 2			
KOP 5 Viewpoint 17 Proposed Kramer-Cal City 115 kV Subtransmission Line	Motorists on U.S. 395 Proximity to BLM land	300 feet	The proposed Kramer-Cal City 115 kV Subtransmission Line appears as a new linear feature in the landscape, adjacent to and parallel to other linear features.

5.1.4.2.1 Landscape Unit 1

KOP 1

The location of KOP 1 is shown in Figure 5.1-4 and the existing view from KOP 1 is shown on Figure 5.1-5a. Primary viewers of the Proposed Project at KOP 1 are nearby residents. The nearest residence to the Cal City Substation is located approximately 780 feet southeast of the existing substation, as shown in Figure 5.13-1. Viewer awareness and exposure would be high because of the residents' proximity to the Proposed Project. Therefore, the sensitivity of this viewer group is considered high.

As shown on Figure 5.1-5a, the street-level view of an existing solar array, approximately 175 feet north of KOP 1, is hidden behind a tan-brown masonry block wall in the foreground, as seen on the right of the image. The existing Cal City Substation is visible approximately 800 feet away in the center of the view. The Cal City Substation presents as a grey, metallic cluster of industrial components, partially hidden behind small sandy mounds and scattered brown and olive-green shrubs. Multiple existing distribution lines mounted on wooden poles are present in the view, providing the most significant vertical elements and somewhat distracting the viewer from the substation view. These wooden distribution poles continue north through the middleground, before disappearing completely. Due to the faintly sloped nature of this location, ground-based middleground elements are largely obscured. Various canyons and mountains are visible in the distant background, 10 miles or further away, but are somewhat obscured by atmospheric haze. Cal City Substation, the adjacent walled-in solar facility, and the overhead utility infrastructure associated with each are the primary focus of this view. The aesthetic quality of the built elements is low, and the view is not intact due to these encroaching built elements. The industrial nature of the Cal City Substation, the adjacent walled-in solar facility, and the associated distribution poles and overhead utility infrastructure are not unified with the natural desert surroundings. The existing view from KOP 1 has a moderately low overall visual quality.

As described in Chapter 3, Proposed Project Description, and shown in Figure 5.1-5b, the Proposed Project would expand the Cal City Substation to the west and north with a variety of improvements. The expanded Cal City Substation appears significantly larger in the view, with additional equipment, such as new 12, 33, and 115 kV switchracks, new transformers, new capacitors, and a new Mechanical Electrical Equipment Room (MEER) being visible behind chain-link fencing. The new Kramer-Cal City and Cal City-Edwards-Holgate 115 kV subtransmission lines would connect to the substation on a double circuit that extends northward. The larger substation contributes to obscuring the distant mountains, and additional

subtransmission and distribution poles contribute to visual clutter and disunity from KOP 1. Given the increase in visibility of the substation and distribution poles compared to the existing condition, intactness would decline. Additional distribution poles are set against the backdrop of the sky, increasing visibility and reducing visual unity. Implementation of the Proposed Project would reduce overall visual quality at KOP 1 but visual quality would remain moderately low.

KOP 2

The location of KOP 2 is shown in Figure 5.1-4 and the existing view from KOP 2 is shown in Figure 5.1-6a. Primary viewers of the Proposed Project at KOP 2 are OHV recreators, as the new Kramer-Cal City 115 kV Subtransmission Line in this location is located directly on a designated California City OHV trail. Recreationists' views range from relatively brief to longer in duration. The sensitivity of this viewer group is considered moderate to high due to the potential for views with extended durations.

KOP 2 is located approximately 0.45 miles west of Bill Borax Park, an OHV hub along Rudnick Boulevard, looking west. Rudnick Boulevard is a heavily used, dirt OHV road and designated OHV trail running east-west in line with KOP 2. A few sandy berms undulate along both sides of the roadway. The ground berms are speckled with small patches of grey-green groundcover foliage. Scattered silvery-green, rusty, and olive-brown shrubs fill the landscape, and no trees or other distinct vegetation are present. The path of Rudnick Boulevard and swaths of rusty and olive-green shrubs continue into the middleground, gently sloping downhill. The flat and gently-sloping portions of the desert floor are not remarkable or distinct from similar sites in the vicinity. In the background, the desert floor continues to slope downhill, before rising sharply and dramatically to meet the distant Tehachapi Mountains approximately 15 miles to the west. The mountains are dramatically silhouetted against the sky and clouds. Rudnick Boulevard is visible as a contrasting linear feature until it disappears into the foothills of the Tehachapi Mountains. Rudnick Boulevard is the only human-made feature visible in KOP 2. The dirt road by itself is not distinct or memorable; however, its extensive linear visibility until its terminus at the base of the Tehachapi Mountains is dramatic and contrasts with the surrounding landscape. The view is generally intact and unified and does not include manmade elements or encroaching elements with the exception of Rudnick Boulevard. The overall visual quality at KOP 2 is moderately high.

As described in the Project Description, Section 3.3.1, and shown in Figure 5.1-6b, the Proposed Project would include the installation of galvanized steel monopoles, approximately 85 feet high, regularly spaced approximately 350 feet apart, to support the new subtransmission line for the portion of the project that is visible in KOP 2. The proposed poles and subtransmission line present as a series of repeating, solid vertical features paralleling Rudnick Boulevard, offset to the south by approximately 15 to 20 feet, and would dominate the foreground view. The striking row of tall, solid, galvanized subtransmission poles would be very distinct from the surrounding natural landscape. They would be the only unnatural material within the view, and thereby present vividly until they disappear into the middle distance. Given the visibility of the steel transmission poles associated with the Proposed Project, intactness of the view would be diminished. The new subtransmission line is not consistent with the form, color, or texture of the surrounding landscape, and overall unity of the view would be reduced. Implementation of the Proposed Project at KOP 2 would reduce overall visual quality from moderately high to moderately low.

KOP 3

The location of KOP 3 is shown in Figure 5.1-4. Primary viewers of the Proposed Project at KOP 3 are nearby residents. The nearest residence to the Proposed Project at KOP 3 is located approximately 0.3 mile south of the nearest new subtransmission line. Viewer awareness and exposure would be high because of

the residents' proximity to the Proposed Project. Therefore, the sensitivity of this viewer group is considered high. The view from KOP 3 is representative for residents along an approximately 1.7 mile stretch south of the proposed Cal City-Edwards-Holgate 115 kV Subtransmission Line where there is no aboveground electrical infrastructure in the existing viewshed. KOP 3 is also representative of OHV recreators, whose view sensitivity is considered moderate to high due to the potential for views with extended durations.

As shown in Figure 5.1-7a, the foreground of KOP 3 is relatively flat and unremarkable with pale, tan sand covering the landscape in between scattered shrubs. No human-made features are distinctly visible, however, clearings in the shrubs form a network of dirt-packed roads, which are faintly visible through less dense patches of vegetation. Scraggly olive-brown and rust-colored woody shrubs are scattered across the landscape. There are no trees, and the vegetation is not distinct or dramatic. The middleground view is relatively flat, before the desert floor gently rises toward the hills in the distance. In the background, the desert haze becomes more prominent, and obscures the details of the distant hills. The faint silhouette of the Rand Mountains, which are approximately 10 miles in the distance, weakly contrasts against the clear skies through the desert haze. The natural desert view is free from encroaching elements and is largely intact. The dirt-packed roads cleared through the brush are only faintly visible through the vegetation, and the unified view presents a generally undisturbed, natural desert landscape. The existing view at KOP 3 has a moderately high visual quality.

As shown in Figure 5.1-7b looking northeast from KOP 3, the new Cal City-Edwards-Holgate 115 kV Subtransmission Line would be located approximately 0.3 miles away and the new Kramer-Cal City 115 kV Subtransmission Line would be approximately 2 miles away. The Proposed Project would install galvanized steel monopoles, approximately 85 feet high, extending east-west across the landscape, spaced regularly, approximately 350 feet apart, to support the new subtransmission lines. Standing tall against the low surrounding scattered vegetation, the new subtransmission infrastructure presents as distinct linear features, which dominate the middleground view. The new Cal City-Edwards-Holgate 115 kV Subtransmission Line would be a dominant visual feature, prominent against the sky. The new Kramer-Cal City 115 kV Subtransmission Line in the distance would be less distinct, but still visible. Infrastructure for both lines would be the only unnatural material within the view, and the distinct linear features contrast with the surrounding, natural landscape. The subtransmission infrastructure would break up the otherwise unified natural view with distinct, hard lines. Given the visibility of the steel transmission poles associated with the Proposed Project, intactness of the view would be diminished. The new subtransmission line is not consistent with the form, color, or texture of the surrounding landscape, and overall unity of the view would be reduced. Implementation of the Proposed Project at KOP 3 would reduce overall visual quality from moderately high to moderately low.

KOP 4

The location of KOP 4 is shown in Figure 5.1-4. Primary viewers of the Proposed Project at KOP 4 are motorists traveling along SR-58. This location is representative of motorist views of the Project from eastbound SR 58 within the City of California City. The sensitivity of this viewer group is considered low due to the short duration of views experienced at highway speeds.

As shown in Figure 5.1-8a, SR 58 gently slopes downhill toward the east, and is paved with asphalt, and painted with typical highway markings. A densely shrub-vegetated median divides the two eastbound lanes from the two westbound lanes. The offramp for EAFB is marked by a large green sign, and slopes upward toward the Muroc Road overpass bridge, which spans north to south across SR 58. The vertical silhouette of light posts are visible against the sky. Wooden distribution poles approximately 65 feet tall rise from the dense shrubs on either side of SR 58. Multiple utility lines on this pole are strung across the highway,

spanning from north to south, and are faintly visible against the sky. Vehicles traveling in both directions are visible from KOP 4. The majority of the middleground view is blocked by the Muroc Road overpass bridge and its earthen abutments across SR 58. The earthen abutments on either side of the Muroc Road overpass bridge add variety to the topography. The bridge sits approximately 0.45 mile east of KOP 4. Underneath the bridge, the middleground views are obscured by vehicular traffic and desert haze. On either side of the bridge, the faint silhouettes of utility poles and signs are visible. Swaths of olive-brown, rust, and silvery-green shrubs are scattered across the center median and fill the landscape on the south side of SR 58. Scattered brown shrubs are dotted across the earthen abutments on either side of the Muroc Road overpass bridge. There are no large trees, and the vegetation is not distinct or dramatic. In the background, the faint silhouette of Saddleback Mountain, approximately 15 miles northeast of KOP 4, and Leuhman Ridge, approximately 12 miles southeast of KOP 4, are visible through the desert haze. SR 58 and its accompanying signage, light posts, fence posts, and road markings and the Muroc Road overpass bridge contrast with the surrounding desert scrub landscape. The wooden distribution poles and lines crossing SR 58 compete with other human-made features for prominence in the view. The overall visual quality of the view at KOP 4 is average.

As shown in Figure 5.1-8b, looking east from KOP 4, the new Cal City-Edwards-Holgate 115 kV Subtransmission Line would cross the SR-58 approximately 900 feet in the distance. The existing distribution line with approximately 65-foot tall wooden poles would be replaced by a new subtransmission line on tubular steel poles approximately 100 feet tall. The poles visible in KOP 4 would be located roughly 125 feet from either side of the highway and approximately 430 feet apart. The 115 kV Cal City-Edwards-Holgate subtransmission line would be strung near the top of the poles, while the existing distribution line would be strung on the lower portion of the new poles. The new steel poles and subtransmission and distribution lines would become the dominant feature in the view from KOP 4, prominent against the sky. Given the visibility of the Proposed Project, intactness of the view would be diminished. The new subtransmission line is not consistent with the surrounding landscape but does somewhat echo the form of the Muroc Road crossing of SR 58; overall unity of the view would be somewhat reduced. Implementation of the Proposed Project at KOP 3 would reduce overall visual quality from average to moderately low.

5.1.4.2.2 Landscape Unit 2

KOP 5

The location of KOP 5 is shown in Figure 5.1-4. This location is representative of views of the Proposed Project for motorists on northbound U.S. 395 and from and/or of BLM-managed land along the U.S. 395 corridor. The sensitivity of this viewer group is considered moderate to high due to the extended duration of views experienced at highway speeds as the Proposed Project parallels the highway.

As shown in Figure 5.1-9a, the asphalt surface of U.S. 395 dominates the view, and creates a solid, undulating band through the surrounding dull tan landscape, before disappearing into the distant foothills. Existing utility lines strung across numerous, large, galvanized lattice steel towers and wooden H-frame structures are prominent in the foreground and disappear with into the haze of the distant hills. The lattice steel towers create an orderly line along the west side of U.S. 395. The weak-contrast landscape is characterized by patches and swaths of small, pale tan and silvery-green shrubs with occasional dots of olive green and rust tones on top of the tan sand. The distinct silhouette of Red Mountain is visible to the northeast, approximately 17 miles away.

As shown in Figure 5.1-9b, the proposed Kramer-Cal City 115 kV Subtransmission Line would be located on the west side of the existing utility corridor, running parallel to the existing electric transmission

structures and U.S. 395. The new Kramer-Cal City 115 kV Subtransmission Line would present as a series of repeating, solid vertical line features visible behind the existing transmission corridor adjacent to the highway. Due to the location of the proposed infrastructure within the existing utility ROW with various structure types, the Proposed Project would fall in unremarkably with the existing utility ROW and its associated infrastructure. The Proposed Project would not contrast with the form, line, or color of the existing landform or vegetation. The additional electric infrastructure introduced by the Proposed Project would contrast somewhat with the existing infrastructure, but the repeating pattern of the new structures ensures that such contrast is weak.

5.1.4.3 Aesthetics Impact Analysis

5.1.4.3.1 Would the project have a substantial adverse effect on a scenic vista?

Construction

Less Than Significant. For the purposes of this evaluation, a scenic vista is defined as a distant public view along or through an opening or corridor that is recognized and valued for its scenic quality. There are no designated state or local scenic vistas in the Proposed Project area. However, the undeveloped desert open spaces and unimpeded views of the surrounding mountains function as scenic vistas and are present throughout the Proposed Project vicinity. Construction activity associated with the Proposed Project would not substantially affect the number of unimpeded views throughout the project vicinity. Therefore, impacts on scenic vistas during construction would be less than significant.

Operation

Less Than Significant. There are no designated state or local scenic vistas in the Proposed Project area. However, scenic vistas exist throughout the Proposed Project vicinity due to the undeveloped desert open spaces and unimpeded views of the surrounding mountains. The proposed improvements would be located primarily within existing utility ROWs that include existing substations, subtransmission and distribution lines, LSTs, H-frame structures, and wooden poles. The proposed facilities would be relatively small compared to the vast desert surroundings and distant mountains in the background, and major views of these mountains would remain unimpeded. While there are locations throughout the project vicinity where the new infrastructure associated with the Proposed Project would impede a given view, the new infrastructure is minor when taken as a whole within the vast landscape. Following construction of the Proposed Project, O&M activities would consist of monthly and annual inspections, as well as equipment testing and maintenance for new and expanded facilities. SCE currently performs O&M activities for the existing substations and their associated source lines and infrastructure. The Proposed Project would not prevent public views of areas that are valued for their scenic quality through installation of new infrastructure or through routine O&M activities. Therefore, impacts on scenic vistas during operation would be less than significant.

5.1.4.3.2 Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

Construction

No Impact. There are no designated state scenic highways in the vicinity of the Proposed Project. Consequently, the Proposed Project would not have the potential during construction to result in damage to scenic resources within a state scenic highway. No impact would occur.

Operation

No Impact. There are no designated state scenic highways in the vicinity of the Proposed Project. Consequently, the Proposed Project would not have the potential during operation to result in damage to scenic resources within a state scenic highway either through installation of new infrastructure or through routine O&M activities. No impact would occur.

5.1.4.3.3 Would the project, in nonurbanized 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?

Construction

Less than Significant Impact. Proposed Project construction would require establishing temporary staging areas for vehicle and equipment parking, as well as material storage. Staging area preparation would include the installation of temporary perimeter fencing that would be removed once construction is complete. Construction-related visual impacts resulting from the temporary presence of equipment, materials, and work crews along the Proposed Project alignment, staging and work areas, and stringing sites would not substantially degrade the existing visual character of the landscape. To varying degrees, construction activity would be noticeable to a small number of local residents in surrounding rural communities, as well as some motorists and recreational visitors. While construction activities would be visible for a period of approximately 24 months, individual activities would be considerably shorter in duration at any one location. The majority of Proposed Project construction activities would occur within undeveloped areas lacking sensitive viewers, and areas that are not visible from publicly accessible vantage points. Visual effects of these activities would be temporary because SCE would restore any land that may be disturbed at the staging areas to as close to pre-construction conditions as feasible. Because construction impacts are temporary, of short duration in any one area, and generally located away from sensitive viewers, the impact will be less than significant.

Operation

KOP 1. Less than Significant with Mitigation. As described in Section 5.1.4.2.1, the existing condition for KOP 1 as shown in Figure 5.1-5a contains low aesthetic quality of built elements. The industrial nature of the Cal City Substation, the adjacent walled-in solar facility and the associated distribution poles and overhead utility infrastructure are not unified with the natural desert surroundings. The existing view from

KOP 1 has a moderately low overall visual quality. Residential views tend to be long in duration and frequent; therefore, viewer sensitivity is high.

As shown in Figure 5.1-5b, the Proposed Project would increase visibility of the substation and distribution poles compared to the existing condition, resulting in a decline in intactness. Additional distribution poles are set against the backdrop of the sky, increasing visibility and reducing visual unity. The simulated view from KOP 1 would have an overall reduction in visual quality but would remain moderately low. Because viewer sensitivity at KOP 1 is high, SCE would implement APMs AES-1 and AES-2 to ensure impacts are less than significant. APM AES-1 would reduce glare and color contrast associated with subtransmission facilities, and APM AES-2 would require a Substation Surface Treatment Plan for the aboveground non-steel structural elements to reduce the aesthetic impact of the substation and ancillary infrastructure. With implementation of APMs AES-1 and AES-2, impacts of the Proposed Project at KOP 1 would be less than significant.

KOP 2. Less than Significant with Mitigation. As described in Section 5.1.4.2.1, the existing condition for KOP 2 as shown in Figure 5.1-6a is generally intact and unified, without manmade elements or encroaching elements with the exception of Rudnick Boulevard extending through the landscape, and has moderately high visual quality. Due to the longer duration of recreationalist views at KOP 2, viewer sensitivity is moderately high.

As shown in Figure 5.1-6b, the Proposed Project would not be unified with the expansive natural surroundings, as it intersects the view from KOP, reducing intactness of the view. As a result, the visual quality of the view from KOP 2 would decrease from moderately high to moderately low. However, the subtransmission poles and conductor, while visible, do not block expansive views of the landscape, including landform and vegetation. Scenic views remain, although slightly fractured by the subtransmission poles in the view. SCE would implement APM AES-1, which would reduce glare and contrast of the subtransmission infrastructure. Impacts of the Proposed Project at KOP 2 would be less than significant.

KOP 3. Significant and Unavoidable. As described in Section 5.1.4.2.1, the existing condition for KOP 3 as shown in Figure 5.1-7a is unified and free from encroaching elements and has a moderately high visual quality. Residential views tend to be long in duration and frequent; therefore, viewer sensitivity is high.

As shown in Figure 5.1-7b, the Proposed Project would break up the otherwise unified natural view with distinct, hard lines from the proposed subtransmission infrastructure. As a result, the visual quality of the view from KOP 3 would decrease from moderately high to moderately low. SCE would implement APM AES-1, which would reduce glare and contrast of the subtransmission infrastructure but this APM would not reduce the potential impact of the Proposed Project at KOP 3 to less than significant. Impacts of the Proposed Project at KOP 3 would be significant and unavoidable.

In addition to APM AES-1 described above, SCE has considered additional feasible mitigation measures to reduce the significant and unavoidable impact of the Proposed Project at KOP 3. While KOP 3 is a discrete location, it is representative of residential views in the Proposed Project vicinity where views are generally unobstructed by existing aboveground infrastructure, such as electrical poles and wires, fencing, buildings, or other equipment. To mitigate the significant and unavoidable impact reflected at KOP 3, the portion of the proposed Cal City-Edwards-Holgate 115 kV Subtransmission Line along the northern perimeter of the City of California City urban center from 90th Street to approximately Cache Creek—a distance of approximately 1.7 miles—could be constructed within concrete duct banks underground. Although the proposed Kramer-Cal City 115 kV Subtransmission Line would remain faintly visible on the horizon from existing residences in this area, constructing this portion of the proposed Cal City-Edwards-Holgate 115 kV Subtransmission Line underground in the vicinity of KOP 3 would otherwise preserve the

existing, unified natural view from existing residences, reducing this impact such that it would be less than significant with mitigation incorporated.

Section 15126.4(a)(1) of the State CEQA Guidelines states if a mitigation measure would cause one or more significant effects in addition to those that would be caused by the project, the effects of the mitigation measure must be discussed, though in less detail than the significant effects of the project as proposed (Section 15126.4(a)(1)(D)). SCE has completed a preliminary review of potential environmental impacts associated with undergrounding approximately 1.7 miles of subtransmission alignment in the vicinity of KOP 3, as described above.

Undergrounding a portion of the proposed Cal City-Edwards-Holgate 115 kV Subtransmission Line in the vicinity of KOP 3 would avoid the Proposed Project's significant and unavoidable aesthetic impact identified at this KOP. However, undergrounding this segment of proposed subtransmission infrastructure would result in increased potential for cultural resources impacts, while increasing the Proposed Project's air quality impacts above the threshold of significance, both significantly and cumulatively. Impacts in all other categories would be the same with implementation of this mitigation option. Therefore, on balance this mitigation option would result in additional significant impacts, and greater environmental impacts overall, as compared to the Proposed Project.

- **Air Quality.** SCE evaluated the potential air quality impacts associated with undergrounding an approximately 1.7-mile segment of the Cal City-Edwards-Holgate 115 kV Subtransmission Line in an effort to reduce the potentially significant visual impact. Without this mitigation option, the Proposed Project would currently generate controlled emissions within Eastern Kern Air Pollution Control District (EKAPCD) of approximately 14.51 tons per year in 2026 during construction, as described in Section 5.2, Air Quality. Because separate crews typically install underground and overhead configurations of subtransmission lines, a second crew in 2026 would be required to complete the subtransmission line. Underground subtransmission line construction would typically begin with the excavation of an approximately 2-foot-wide and 5-foot-deep trench along the approximately 1.7-mile alignment. In order to accommodate other existing buried obstacles (e.g., existing underground utilities), the trench dimensions may need to be expanded based on site-specific conditions. Once excavated, polyvinyl chloride (PVC) conduit would be placed in the trench and concrete would be delivered to the site to form the duct bank. Once completed, the duct bank would be covered with a minimum of 36 inches of slurry mixture, any additional backfill would be added, and the surface would be restored to pre-construction conditions.

As described in Appendix B, typical 115 kV subtransmission line crews would average approximately 47 pounds of PM₁₀ emissions per day of operation from diesel fuel emissions, on-road vehicle travel, and earth moving activities. Underground duct bank construction is anticipated to proceed at the rate of approximately 200 feet per day under typical conditions. As a result, the 1.7-mile segment is anticipated to require approximately 45 days to complete. At this rate, the additional underground construction crew would add approximately 1.1 tons of additional PM₁₀ emissions in 2026.² These additional emissions would result in an exceedance of the EKAPCD's 15-ton threshold. Further, the 1.7-mile trench would generate approximately 3,300 cubic yards of excess spoil which would need to be removed from the Proposed Project site. Removing this spoil, assuming the use of 12-cubic yard dump trucks, would require approximately 275 additional truck trips of approximately 80 miles each.

² Because the proposed Cal City-Edwards-Holgate 115 kV Subtransmission Line would not be constructed overhead along this approximately 1.7-mile segment, emissions associated with overhead subtransmission line construction would be reduced by approximately 0.1 ton in 2026 within EKAPCD, assuming a proportional reduction in overhead construction PM₁₀ emissions. Therefore, the underground construction crew would result in a net increase of approximately 1.0 ton of additional PM₁₀ emissions in 2026.

These truck trips would generate approximately 0.3 tons of PM₁₀ emissions. As a result, the attempt to mitigate the potentially significant visual impacts by undergrounding approximately 1.7 miles of the Cal City-Edwards-Holgate 115 kV Subtransmission Line would result in a significant impact to air quality within the EKAPCD. While implementation of APMs AIR-1 and AIR-2 would reduce PM₁₀ emissions, they would not be reduced below a level of significance, and the air quality impact resulting from this mitigation option would remain significant and unavoidable.

- **Cultural Resources.** As discussed in Section 5.5, Cultural Resources, no determination has been made at this time regarding the Proposed Project’s potential impacts to archaeological or historical resources, as the results of the Cultural Resources Technical Report (CRTR) and Historic-era Built Environment Report (HBER) are pending review and approval by the BLM. However, given the density of cultural resources identified during archaeological surveys in the vicinity, continuous trenching associated with underground installation of subtransmission infrastructure is expected to have a greater potential to encounter and damage subsurface archaeological resources relative to discrete and isolated excavations associated with installation of aboveground structures, as currently designed. Furthermore, continuous, linear ground disturbance would constrain options for avoidance of cultural resources, such as micro-routing and spanning of potentially significant resources. Therefore, while no determination has been made with respect to the Proposed Project’s potential impacts to archaeological or historical resources at this time, it is anticipated that any potential impacts to such resources may be incrementally greater with implementation of this mitigation option.
- **Cumulative Impacts.** As described in Chapter 7, Cumulative Impacts and Other CEQA Considerations, and Section 5.21, Mandatory Findings of Significance, no significant and cumulatively considerable impacts have been identified for the Proposed Project at this time, though no determination has been made with respect to cumulative cultural resources pending review and approval of the CRTR and HBER by the BLM. However, as described above, undergrounding a portion of the proposed subtransmission infrastructure would result in a significant and unavoidable air quality impact, specifically a cumulatively considerable net increase of criteria pollutant emissions. Furthermore, EKAPCD’s *Guidelines for Implementation of the California Environmental Quality Act* state that a project’s potential contribution to cumulative impacts shall be assessed using the same significance criteria as those for the project-specific impacts (EKAPCD 2022). Therefore, the Proposed Project would have a cumulatively considerable contribution to a significant and unavoidable cumulative air quality impact were this mitigation option to be implemented.

Although installing a portion of the proposed Cal City-Edwards-Holgate 115 kV Subtransmission Line underground in the vicinity of KOP 3 would avoid a significant and unavoidable aesthetic impact, total significant impacts would be greater, as described above. Specifically, implementation of this mitigation option would result in a significant and unavoidable air quality impact and a cumulatively considerable contribution to a significant cumulative impact that would otherwise not occur under the Proposed Project. Because this mitigation option would avoid a significant impact only to cause additional significant air quality impacts, while also creating the potential for increased cultural resource impacts, it has been dismissed from further consideration.

KOP 4. Less than Significant with Mitigation. As described in Section 5.1.4.2.1, the existing condition for KOP 4 as shown in Figure 5.1-8a is not especially visually coherent or intact, as numerous contrasting human-made features compete for dominance within the view and has an average visual quality. Due to the short duration of motorist views experienced at highway speeds, viewer sensitivity is low.

As shown in Figure 5.1-8b, the Proposed Project would be visually dominant, resulting in a decrease of intactness and unity in the view, although the form of the new subtransmission line crossing SR 58 echoes that of the existing Muroc Road crossing of SR 58. As a result, the visual quality of the view from KOP 4 would decrease from average to moderately low. SCE would implement APM AES-1, which would require paint and metal finishes to reduce glare and contrast. Given that viewer sensitivity is low at KOP 4, and with implementation of APM AES-1, impacts of the Proposed Project at KOP 4 would be less than significant.

KOP 5. Less than Significant. As described in Section 5.1.4.2.2, the existing condition for KOP 5 as shown in Figure 5.1-9a is visually dominated by manmade elements, such as the asphalt highway and large utility structures. Due to the extended duration of motorist views experienced at highway speeds, as the Proposed Project parallels the Highway, viewer sensitivity is moderately high.

As shown in Figure 5.1-9b, the Proposed Project would add a new linear feature in the landscape, adjacent to and parallel to other linear features. The Proposed Project is visible in KOP 5 but does not attract viewer attention and does not detract from the surrounding landscape. The level of change represented by the Proposed Project at KOP 5 was compared to the VRM Class III objective, which is to partially retain the existing character of the landscape; management activities may attract attention but should not dominate the view of the casual observer. In comparing the pre-construction and post-construction conditions of the Proposed Project at KOP 5, the new subtransmission infrastructure would add a weak level of contrast with the landform, vegetation, and structures of the surrounding landscape, where weak means that the element can be seen but does not attract attention. The Proposed Project is visible but not dominant, and the line and form of the existing linear features is echoed in the new infrastructure. Consequently, the Proposed Project from KOP 5 would be consistent with VRM Class III and would have a less than significant impact. APM AES-1 would be implemented for the Proposed Project, which would contribute to less than significant impacts at KOP 5.

5.1.4.3.4 Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Construction

Less Than Significant Impact. There are approximately 24 residential dwellings, as well as a church and a park, within 500 feet of the Proposed Project. Because much of the land in the Proposed Project vicinity is undeveloped, existing sources of nighttime lighting include vehicles on roadways, interspersed residences and commercial buildings, and lighting associated with existing substations. Construction of the Proposed Project would generally occur during daytime hours. However, at limited times some construction activities, such as de-energizing and re-energizing existing lines along the Proposed Project subtransmission lines and substations, may be required or finished at night while electrical demand is low, and these activities will require lighting for safety. Any required lighting during construction would be limited to individual work areas and would be temporary in nature. Staging yards may be lit for security; however, lighting would be directed on site and away from potentially sensitive receptors. If temporary lighting is needed along the Proposed Project alignment or at staging areas, portable light standards would be placed along the perimeter of the work area or staging area, as necessary. The light standards would be shielded, resulting in light being directed downward and inward (toward the work or staging area). With implementation of shielded, downward and project-facing lighting, temporary impacts of nighttime light and glare on neighboring properties during construction would be less than significant.

Operation

Less Than Significant Impact. As presented in Chapter 3, the Proposed Project includes constructing subtransmission lines between existing substations in the vicinity of the City of California City, EAFB, and U.S. 395 where many overhead power lines currently exist. Additionally, the Proposed Project includes upgrades at existing substations and an expansion of the Cal City Substation.

Existing sources of nighttime lighting in the Proposed Project vicinity include vehicles on roadways, interspersed residences and commercial buildings, and lighting associated with existing substations. Cal City Substation currently has lighting that comes on automatically at night, triggered by a timer. However, under the Proposed Project, the expanded Cal City Substation would not be illuminated at night during regular operation. Rather, lighting would be turned on remotely by SCE personnel prior to entering the substation, only when required for maintenance outages or emergency repairs occurring at night. The expanded substation would require additional lighting similar to what is existing and would consist of high-pressure sodium lights located in the switchyards, around the transformer banks, and in areas of the yard where operating and maintenance activities may take place during evening hours. The lights would be directed downward and shielded to reduce light spill outside the facility. Because additional lighting at the expanded Cal City Substation would be similar to what is existing, and the Proposed Project would reduce nighttime lighting at the substation during normal operation, impacts to visual resources due to new sources of nighttime light at Cal City Substation would be less than significant.

As described in Chapter 3, SCE does not anticipate installing any new structure lighting as part of the Proposed Project, with the exception of aviation lighting and/or marking that may be required for some structures in proximity to EAFB. Upon completion of final design, SCE would file with the FAA for official study and determination of lighting and/or marking requirements for all structures within a 1.5-mile radius of Edwards Substation. No sensitive receptors are located within the 1.5 mile radius of Edwards Substation. Aviation lights are manufactured with focused beacons which direct light upward and outward without illuminating nearby areas directly below the lights, and no visible reflected light would be visible from the ground surface. Additional aviation lighting would be consistent with existing lighting in the vicinity of EAFB. Therefore, aviation lighting would not create a new substantial source of light or glare. Operation and maintenance (O&M) activities associated with the Proposed Project would be similar to those currently performed by SCE for existing facilities, including, but not limited to, repairing conductors, washing or replacing insulators, repairing or replacing other hardware components, repairing or replacing poles and towers, tree trimming, brush and weed control, and access road maintenance. O&M would also include routine inspections and emergency repair within substations and throughout ROWs, which would require the use of vehicles and equipment. SCE inspects subtransmission overhead facilities in a manner consistent with CPUC G.O. 165, which requires observation a minimum of once per year, but inspection typically occurs more frequently to ensure system reliability. Following construction of the Proposed Project, O&M activities would consist of monthly and annual inspections, as well as equipment testing and maintenance for new and expanded facilities. SCE currently performs O&M activities for the existing substations and their associated source lines and infrastructure.

While it is likely that the Proposed Project would result in a nominal increase in O&M activities, such as increased maintenance and inspection trips, O&M activities are not anticipated to occur outside of daylight hours. In the event that O&M activities are required outside of daylight hours, vehicular headlights may be required, and portable light standards similar to those utilized during construction may be used. However, vehicular headlights are an existing source of light in the vicinity, and any additional lighting associated with nighttime O&M activities would be temporary, infrequent, shielded, and directed downward. No new sources of substantial light or glare would be created by these activities.

5.1.4.4 Analysis of Selected Viewpoints

The methodology and assumptions that were applied in selecting key observation points for visual simulation are found in Sections 5.1.4.1.1 and 5.1.4.1.2.

5.1.4.5 Visual Simulation

The methodology and assumptions for completing visual simulations are found in Section 5.1.4.1.1. Supporting images and figures are found at the end of this document in Figure 5.1-1, Figure 5.1-2, and Figure 5.1-5 through Figure 5.1-9 at the end of this section.

5.1.4.6 Analysis of Visual Change

The methodology and assumptions for analyzing visual change are found in Sections 5.1.4.1.1, 5.1.4.1.2, and 5.1.4.2.

5.1.4.7 Lighting and Marking

Aviation lighting and/or marking may be required for some structures in proximity to EAFB. Upon completion of final design, SCE would file with the FAA for official study and determination of lighting and/or marking requirements for all structures within a 1.5-mile radius of Edwards Substation. Section 5.1.4.3.4 describes the potential lighting and marking impacts of the Proposed Project.

5.1.5 CPUC Draft Environmental Measures

There is one CPUC Draft Environmental Measure related to aesthetics: “Aesthetic Impact Reduction During Construction.” As described in Section 5.1.4.3, impacts related to aesthetics during construction would be less than significant. Therefore, this CPUC Draft Environmental Measure is not required.

5.1.5.1 Applicant Proposed Measures

The following APMs would be implemented to reduce aesthetics impacts associated with the Proposed Project:

AES-1: Glare and Color Contrast Reduction for Subtransmission Structures and Conductors. To reduce potential significant impacts associated with glare and color contrast for components of the Proposed Project, the finish on all new subtransmission structures will be non-reflective, such as steel that has been galvanized and treated to create a dulled finish or color treated or other functionally equivalent product/process. These types of finishes are designed to reduce light reflection and color contrast and help blend the structures into the landscape setting. All new subtransmission conductors shall be non-specular and non-reflective and the insulators shall be non-reflective and non-refractive to help reduce glare and minimize contrast with the surrounding environment.

AES-2: Substation Visual Treatments. To minimize potential significant aesthetic impacts associated with expansion of Cal City Substation, the applicant will prepare a surface treatment plan for the aboveground non-steel structural elements associated with the substation. Colors will be selected according to their ability to reduce the aesthetic impact of the substation and ancillary infrastructure. All color finishes will be flat and non-reflective. The applicant will consult with the City of California City prior to the submittal of the plan to the California Public Utilities Commission (CPUC) 60 days prior to start of construction for comments and approval.

5.1.6 Alternatives

For an evaluation of Proposed Project alternatives, see Chapter 6, Comparison of Alternatives.

Figure 5.1-5a KOP 1 Existing View



Existing view, looking northwest toward Cal City Substation.

Figure 5.1-5b KOP 1 Simulated View with Proposed Project



Simulated view looking northwest toward the proposed, expanded Cal City Substation.

Figure 5.1-6a KOP 2 Existing View



Existing view looking west along Rudnick Boulevard.

Figure 5.1-6b KOP 2 Simulated View With Proposed Project



Simulated view of the proposed Kramer-Cal City 115 kV Subtransmission Line along Rudnick Boulevard, looking west.

Figure 5.1-7a KOP 3 Existing View



Existing view looking northeast from residential area.

Figure 5.1-7b KOP 3 Simulated View With Proposed Project



Simulated view of the proposed Cal City-Edwards-Holgate and Kramer-Cal City 115 kV subtransmission lines looking northwest from residential area.

Figure 5.1-8a KOP 4 Existing View



Existing view looking east along SR-58.

Figure 5.1-8b KOP 4 Simulated View with Proposed Project



Simulated view of the proposed Cal City-Edwards-Holgate 115 kV Subtransmission Line crossing SR-58, looking east.

Figure 5.1-9a KOP 5 Existing View



Existing view looking northwest along U.S. 395.

Figure 5.1-9b KOP 5 Simulated View with Proposed Project



Simulated view of the proposed Kramer-Cal City 115 kV Subtransmission Line paralleling U.S. 395, looking northwest.

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5.2 Agriculture and Forestry Resources

This section describes the agriculture and forestry resources in the vicinity of the Cal City Substation 115 kV Upgrade Project (Proposed Project), as well as the potential impacts that may result from construction and operation of the Proposed Project.

Research for this analysis involved a review of the following resources:

- California Department of Conservation’s (DOC’s) Farmland Mapping and Monitoring Program (FMMP) Important Farmland maps
- United States (U.S.) Department of Agriculture’s Natural Resources Conservation Service (NRCS) publications
- California Department of Forestry and Fire Protection’s (CAL FIRE’s) Fire and Resources Assessment Program maps and publications
- Local agency planning documents
- Aerial photographs

5.2.1 Environmental Setting

The Proposed Project is located in Kern County and San Bernardino County in the Mojave Desert region of California on federal, state, private, and municipal land. These lands include unincorporated areas of Kern County and San Bernardino County, City of California City, Edwards Air Force Base (EAFB) controlled by the Department of Defense, and public lands under the jurisdiction of the Bureau of Land Management and the California Department of Fish and Wildlife. Approximately 90 percent of the Proposed Project is located within undeveloped open areas, with the remaining 10 percent located within developed areas (including the City of California City). The environmental setting section describes the existing agricultural and forestry resources in the Proposed Project area.

5.2.1.1 Agricultural Resources and GIS

5.2.1.1.1 Areas Designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance

Agricultural land is designated by the DOC and identified in the 2016 FMMP and defined by the California Environmental Quality Act (CEQA). The goal of the FMMP is to provide consistent and impartial data to decision makers for use in assessing present status, reviewing trends, and planning for the future of California’s agricultural land resources. The FMMP produces Important Farmland Maps, which combine soil quality, available irrigation, and land use information. Farmland is defined in CEQA as land that qualifies under the FMMP as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance:

- **Prime Farmland** has the best combination of physical and chemical characteristics able to sustain long-term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the 4 years prior to the mapping date.
- **Farmland of Statewide Importance** is similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the 4 years prior to the mapping date.

- **Unique Farmland** consists of lesser-quality soils and produces the state’s leading agricultural crops. This land is usually irrigated, but includes non-irrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the 4 years prior to the mapping date.

Additional categories, including Farmland of Local Importance, Grazing Land, Confined Animal Agriculture, Nonagricultural and Natural Vegetation, Semi-agricultural and Rural Commercial Land, Vacant or Disturbed Land, Rural Residential Land, Urban and Built-up Land, and Water, are identified within Important Farmland Maps, but are not considered Important Farmland for agricultural impact assessment purposes (DOC 2016).

The Proposed Project is not located on lands identified as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance by the DOC. The closest Important Farmland is approximately 9.6 miles north of the proposed Kramer-Cal City 115 kV Subtransmission Line.

5.2.1.1.2 Areas Under Williamson Act Contract

The Proposed Project is not located on lands under a Williamson Act Contract. No portion of the Proposed Project would traverse lands under a Williamson Act contract in San Bernardino County or Kern County (DOC 2016). The closest Williamson Act parcels are located 10.1 miles north of the proposed Kramer-Cal City 115 kV Subtransmission Line.

5.2.1.1.3 Agricultural Use Zoning

Figure 5.2-1 illustrates the agricultural zoning within 1 mile of the Proposed Project. Approximately 16.5 miles of the Proposed Project is located on lands zoned for agricultural use in Kern County and approximately 22.8 miles of the Proposed Project is located on lands zoned for agricultural use in the City of California City. The Proposed Project would not traverse lands zoned for agricultural use in San Bernardino County.

5.2.1.1.4 Areas Subject to Active Agricultural Use

Based on field surveys conducted in fall 2021, the Proposed Project would not traverse lands under active agricultural use.

5.2.1.1.5 GIS Data

GIS data for agricultural resources within the Proposed Project area are provided under separate electronic cover.

5.2.1.2 Forestry Resources and GIS

5.2.1.2.1 Forest Land

Forest lands are defined in California Public Resources Code (PRC) section 12220(g) as being capable of supporting “10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits.” Figure 5.2-2 illustrates the distribution of lands categorized by CAL FIRE and the United States Forest Service (USFS) as having

Figure 5.2-1 Agricultural Zoning within 1 Mile of the Proposed Project

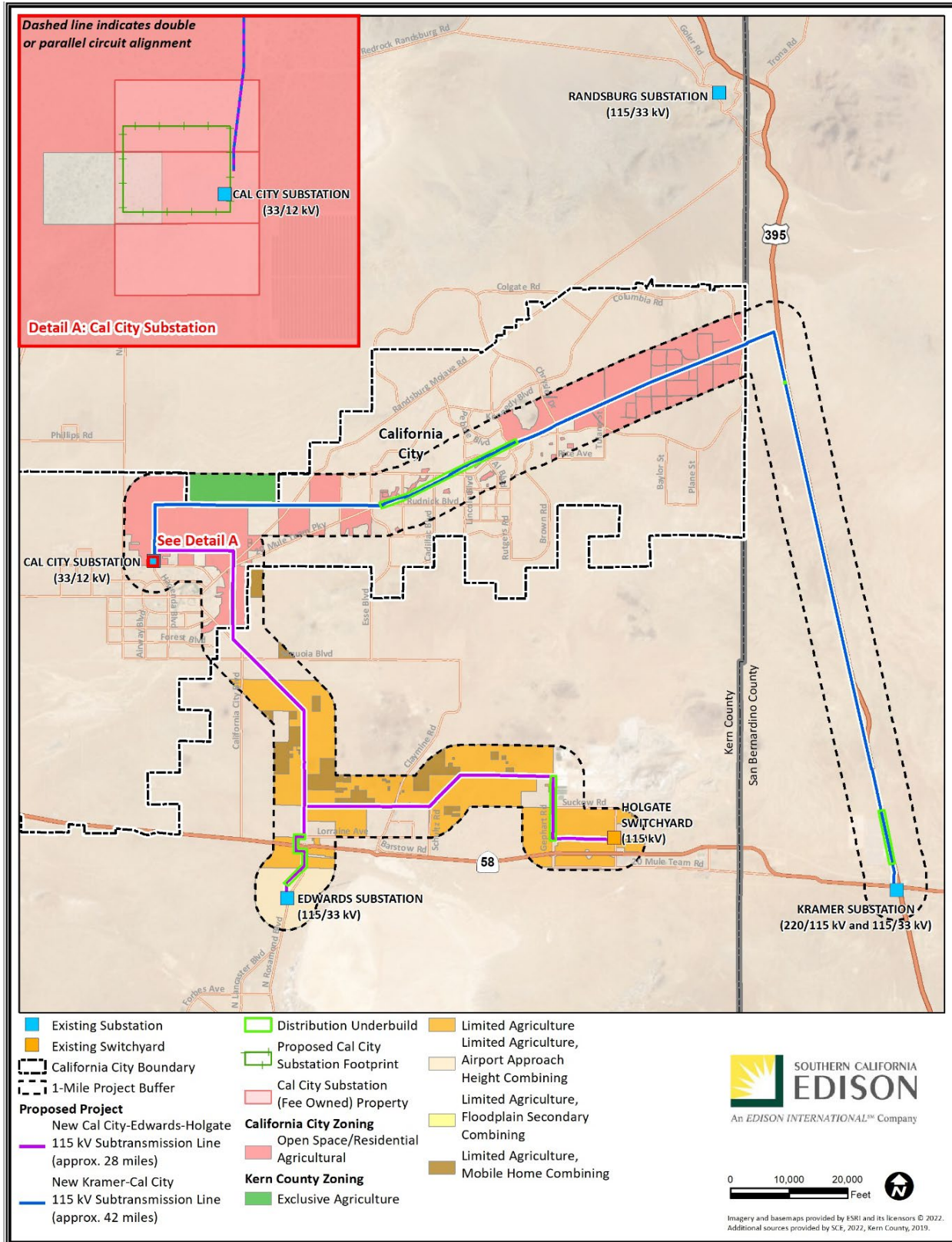
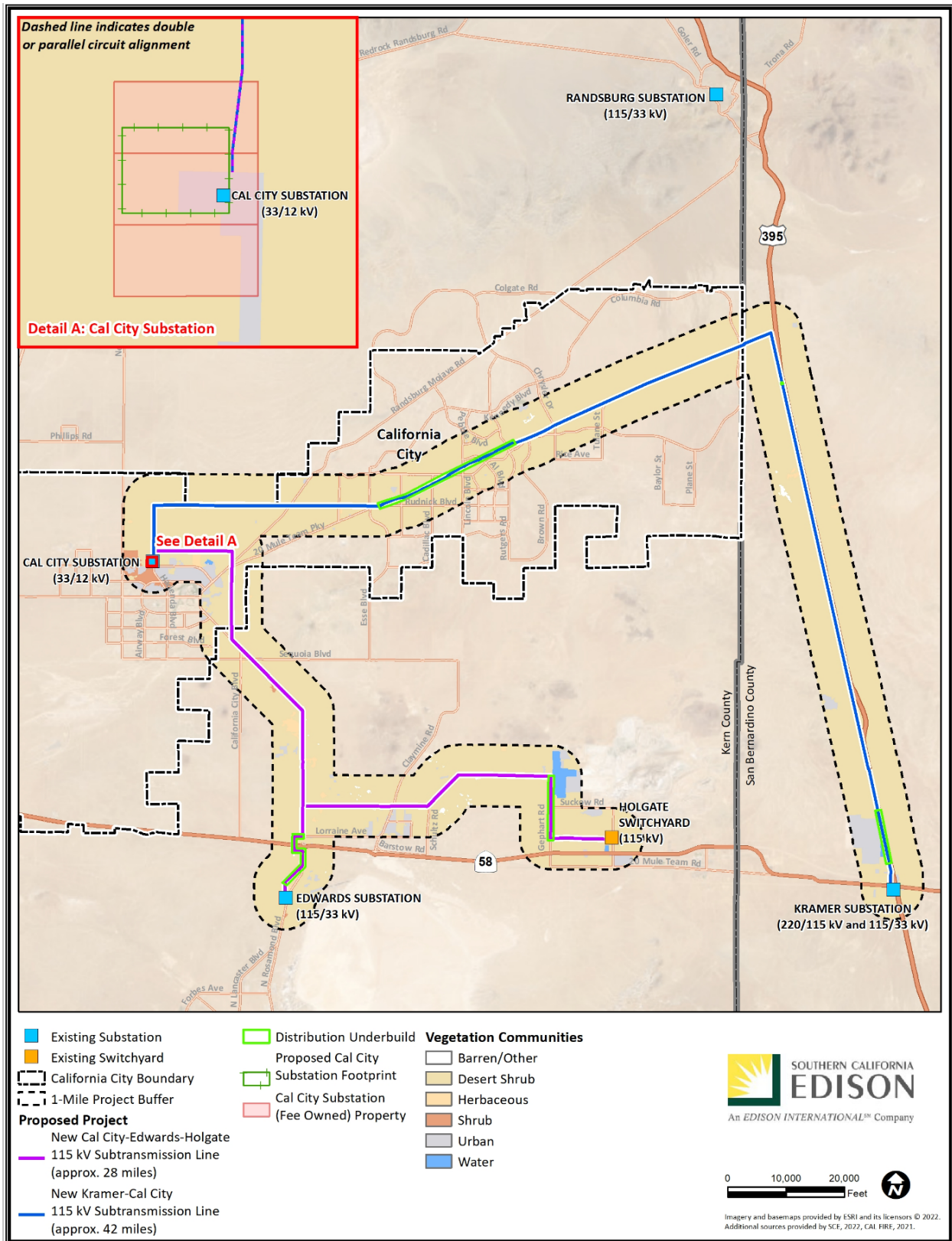


Figure 5.2-2 CAL FIRE Identified Vegetation Communities within 1 Mile of the Proposed Project



greater than 10 percent tree density (CAL FIRE 2015, USFS 2020). The Proposed Project would not cross lands identified by CAL FIRE or USFS as forest land.

5.2.1.2.2 Timberland

PRC section 4526 defines timberland to mean “land, other than land owned by the federal government and land designated by the board [State Board of Forestry and Fire Protection] as experimental forest land, which is available for, and capable of, growing a crop of trees of a commercial species used to produce lumber and other forest products, including Christmas trees. Commercial species shall be determined by the board on a district basis.” The Proposed Project would not cross lands that meet the definition of timberland as defined by PRC section 4526 (Kern County 2021, San Bernardino County 2020).

5.2.1.2.3 Timberland Production Zones

PRC section 51104(g) defines timberland production zone (TPZ) as “an area which has been zoned pursuant to Section 51112 or 51113 and is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses” (CAL FIRE 2015, USFS 2020). The Proposed Project would not cross lands zoned by the City of California City, San Bernardino County, or Kern County as forest land (as defined in PRC section 12220(g)), timberland (as defined by PRC section 4526), or timberland zoned Timberland Production (Kern County 2021, San Bernardino County 2020).

5.2.1.2.4 GIS Data

GIS data for forestry resources within the Proposed Project area are provided under separate electronic cover.

5.2.2 Regulatory Setting

Federal, state, and local regulations were reviewed for applicability to the Proposed Project and are described below.

5.2.2.1 Federal

5.2.2.1.1 Farmland Protection Policy Act

The National Agricultural Land Study of 1980-1981 found that millions of acres of farmland were being converted out of agricultural production in the United States each year. The 1981 Congressional report, “Compact Cities: Energy-Saving Strategies for the Eighties” (Compact Cities report), identified the need for Congress to implement programs and policies to protect farmland and combat urban sprawl and the waste of energy and resources that accompanies sprawling development.

The Compact Cities report indicated that much of the sprawl was the result of programs funded by the federal government. With this in mind, Congress passed the Agriculture and Food Act of 1981 (Public Law 97-98) containing the Farmland Protection Policy Act (FPPA)—Subtitle I of Title XV, section 1539-1549. The final rules and regulations were published in the Federal Register on June 17, 1995. The FPPA and its implementing rules and regulations set forth provisions intended to minimize the impact federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses.

5.2.2.2 State

5.2.2.2.1 Williamson Act

The California Land Conservation Act of 1965 (Williamson Act) (California Government Code (CGC) section 51200 *et seq.*) enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. In return, landowners receive property tax assessments that are much lower than normal because they are based upon farming and open space uses as opposed to full market value.

The Williamson Act also allows local governments to establish agricultural preserves, which are parcels of land set aside for agricultural uses (CGC section 51230). They must include a minimum of 100 acres, and they typically avoid areas where public utility improvements and associated land acquisitions may be necessary. Although the Williamson Act does not specify compatible land uses for property located adjacent to contract lands or agricultural preserves, it does state that cities and counties must determine compatible land use types while recognizing that temporary or permanent population increases frequently impair or hamper agricultural operations (CGC section 51220.5).

CGC section 51238 includes the provisions related to the Williamson Act that state, “notwithstanding any determination of compatible uses by the county or city pursuant to this article, unless the board or council after notice and hearing makes a finding to the contrary, the erection, construction, alteration, or maintenance of gas, electric, water, communication, or agricultural laborer housing facilities are hereby determined to be compatible uses within any agricultural preserve.”

5.2.2.2.2 California Government Code Sections 51100 to 51155

Chapter 6.7 of the CGC (sections 51100 to 51155) regulates timberlands within the State of California. According to the code, examples of compatible uses are watershed management; grazing; and the erection, construction, alteration, or maintenance of electric transmission facilities. Chapter 6.7 of the CGC includes the California Timberland Productivity Act of 1982 and the Forest Taxation Reform Act of 1976. Commercial timberlands are afforded protection through the State’s Forest Taxation Reform Act of 1976, which mandates the creation of TPZs to restrict and protect commercial timber resources.

5.2.2.2.3 California Public Resources Code Section 12220 *et seq.*

PRC section 12220 *et seq.* includes provisions related to the California Forest Legacy Program Act of 2007. PRC section 12220 *et seq.* governs forestry, forests, and forest resources, as well as range and forage lands within the State of California. PRC section 12220(g) defines “Forest land” as “land that can support 10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits.”

5.2.2.2.4 California Public Resources Code Section 4526

PRC section 4511 *et seq.* includes provisions related to the Z'berg-Nejedly Forest Practice Act of 1973. The Z'berg-Nejedly Forest Practice Act of 1973 prohibits a person from conducting timber operations, as defined, unless a timber harvesting plan prepared by a registered professional forester has been submitted to, and is approved by, the Department of Forestry and Fire Protection. The Z'berg-Nejedly Forest Practice Act of 1973 includes PRC section 4526 which defines “Timberland” as “land, other than land owned by the federal government and land designated by the board as experimental forest land, which is available

for, and capable of, growing a crop of trees of a commercial species used to produce lumber and other forest products, including Christmas trees. Commercial species shall be determined by the board on a district basis.”

5.2.2.3 Local

The California Public Utilities Commission (CPUC) has sole and exclusive state jurisdiction over the siting and design of the Proposed Project. Pursuant to CPUC General Order (G.O.) 131-D, Section XIV.B:

“Local jurisdictions acting pursuant to local authority are preempted from regulating electric power line projects, distribution lines, substations, or electric facilities constructed by public utilities subject to the CPUC’s jurisdiction. However, in locating such projects, the public utilities shall consult with local agencies regarding land use matters.”

Consequently, public utilities are directed to consider local regulations and consult with local agencies, but the counties’ and city’s regulations are not applicable as the counties and city do not have jurisdiction over the Proposed Project. Accordingly, the following discussion of local land use regulations is provided for informational purposes only.

5.2.2.3.1 Kern County General Plan

Land use designations for the Project alignment are discussed in greater detail in Section 5.11, Land Use and Planning, and are illustrated in Figure 5.11-2. The Land Use, Open Space, and Conservation Element of the Kern County General Plan contains the following goals and policies related to agriculture and forestry resources:

Section 1.6 – Residential

GOAL 5 Promote mixed-densities within developments to increase average density, increase greenbelts and paths, reduce consumption of agriculture land, open space, and reduce costs of infrastructure.

Policy 5 Discourage premature urban encroachment into areas of intense agriculture areas.

Section 1.9 – Resource

GOAL 1 To contain new development within an area large enough to meet generous projections of foreseeable need, but in locations which will not impair the economic strength derived from the petroleum, agriculture, rangeland, or mineral resources, or diminish the other amenities which exist in the County.

GOAL 2 Protect areas of important mineral, petroleum, and agricultural resource potential for future use.

GOAL 5 Conserve prime agriculture lands from premature conversion.

Policy 7 Areas designated for agricultural use, which include Class I and II and other enhanced agricultural soils with surface delivery water systems, should be protected from incompatible residential, commercial, and industrial subdivision and development activities.

- Policy 8 Provide for the orderly expansion of new urban-scale infrastructure and development and the creation of new urban-scale centers in a manner that minimizes adverse effects on agriculture and natural resource uses

5.2.2.3.2 Kern County Zoning Ordinance

As shown on Figure 5.2-1, the Proposed Project would traverse the following zones designated for agricultural purposes:

- **Exclusive Agriculture (A).** The purpose of the Exclusive Agriculture (A) District is to designate areas suitable for agricultural uses and to prevent the encroachment of incompatible uses onto agricultural lands and the premature conversion of such lands to nonagricultural uses. Uses in the A District are limited primarily to agricultural uses and other activities compatible with agricultural uses.

Section 19.12.020 of the Kern County Zoning Ordinance lists utilities and communication facilities as a permitted use in the A zone, which includes transmission lines and supporting towers, poles, and underground facilities for gas, water, electricity, telephone, or telegraph service owned and operated by a public utility company or other company under the jurisdiction of the CPUC pursuant to Section 19.08.090, and utility substations.

- **Limited Agriculture (A-1).** The purpose of the Limited Agriculture (A-1) District is to designate areas suitable for a combination of estate-type residential development, agricultural uses, and other compatible uses. Final map residential subdivisions are not allowed in the A-1 District.

Section 19.14.020 of the Kern County Zoning Ordinance lists utilities and communication facilities as a permitted use in the A-1 zone, which includes transmission lines and supporting towers, poles, and underground facilities for gas, water, electricity, telephone, or telegraph service owned and operated by a public utility company or other company under the jurisdiction of the CPUC pursuant to Section 19.08.090, and utility substations.

As shown on Figure 5.2-1, the Proposed Project would also traverse the following zoning combination districts that combine with the base Limited Agriculture (A-1) zoning:

- **Airport Approach Height (H) Combining District.** The purpose of the Airport Approach Height (H) Combining District is to minimize aviation hazards by regulating land uses, restricting the height of buildings and vegetation, and specifying design criteria necessary to promote aviation safety and to implement the requirements of the adopted Airport Land Use Compatibility Plan. The H Combining District may be applied to areas within the vicinity of any public or general-use airport as provided for in the adopted Airport Land Use Compatibility Plan.
- **Floodplain Primary (FPP) Combining District.** The purpose of the Floodplain Primary (FPP) Combining District is to protect the public health and safety and minimize property damage by designating areas that are subject to flooding with high velocities or depths and by establishing reasonable restrictions on land use in such areas. The FPP Combining District shall be applied to those areas lying within the "Floodway" as shown on the Flood Boundary Floodway Map or within the "Designated Floodway" on the State of California's Board of Reclamation's Kern River Designated Floodway Studies, or other maps where engineering studies have been made and adopted by the Kern County Board of Supervisors. Uses in the FPP District are limited to those low intensity uses not involving buildings, structures, and other activities that might adversely affect or be adversely affected by flow of water in the floodway.

Section 19.50.020 of the Kern County Zoning Ordinance lists utilities and communication facilities as a permitted use in the FPP Combining District, which includes transmission lines for gas, electricity,

telephone, or telegraph service owned and operated by a public utility company, not including building, structure, or development which may obstruct flood flows.

- **Mobilehome (MH) Combining District.** The purpose of the Mobilehome (MH) Combining District is to provide for the installation of mobilehomes with or without foundations in agricultural, resource-related, and residential zoned areas. The MH Combining District may be combined with A-1 (Limited Agriculture), R-1 (Low-density Residential), E (Estate), PL (Platted Lands), or the RF (Recreation-Forestry) Districts.

The permitted uses in these combining districts are those permitted by the “base district” with which they are combined. However, the definitions of the H Combining District, and MH Combining District zones crossed by the Proposed Project are silent regarding the use of said zones for the construction or operation of electric transmission lines. The reconstruction of existing electrical infrastructure is not listed as a prohibited use in the base zoning districts.

5.2.2.3.3 San Bernardino Countywide Policy Plan

Land use designations for and within the vicinity of the Proposed Project are discussed in greater detail in Section 5.11, Land Use and Planning, and are illustrated in Figure 5.11-2. The Proposed Project would not traverse agricultural land uses designated by the San Bernardino Countywide Policy Plan Land Use Element.

The San Bernardino Countywide Policy Plan Natural Resources Element contains the following goal and policy related to agriculture and forestry resources:

GOAL NR-7 Agriculture and Soils. The ability of property owners, farmers, and ranchers to conduct sustainable and economically viable agricultural operations.

Policy NR-7.1 Protection of agricultural land. We protect economically viable and productive agricultural lands from the adverse effects of urban encroachment, particularly increased erosion and sedimentation, trespass, and non-agricultural land development.

The San Bernardino Countywide Policy Plan Hazards Element contains the following goal and policy related to agriculture and forestry resources:

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-2.10 Agricultural operations. We require new development adjacent to existing conforming agricultural operations to provide adequate buffers to reduce the exposure of new development to operational noise, odor, and the storage or application of pesticides or other hazardous materials.

5.2.2.3.4 San Bernardino County Development Code

As illustrated by Figure 5.2-1 and by Figure 5.11-3 in Section 5.11, Land Use and Planning, the Proposed Project would not traverse zones designated for agricultural purposes in San Bernardino County.

Section 82.03.040 of the San Bernardino County Development Code regulates development within the agricultural zoning districts.

5.2.2.3.5 City of California City General Plan

Land use designations for and within the vicinity of the Proposed Project are discussed in greater detail in Section 5.11, Land Use and Planning, and are illustrated in Figure 5.11-2. The City of California City General Plan does not include policies related to agriculture, forestry, or timberland that apply to the proposed project.

5.2.2.3.6 City of California City Zoning Ordinance

The City of California City Zoning Ordinance would not include provisions for forest and timberland. As illustrated in Figure 5.2-1, the Proposed Project would traverse the following zone designated for agricultural purposes:

- **Open Space/Residential Agricultural (O/RA) District.** The Open Space/Residential Agricultural (O/RA) District is a combined zoning district. The Open Space (O) District provides for the preservation and conservation of unique natural resource lands, protection and preservation of unique wildlife resources and habitats, protection against flooding by storm water in flood prone areas and the establishment of active and passive recreational uses. The Residential/Agricultural (RA) District provides living area which combines the advantages of urban and rural location by limiting development to very low density one-family dwelling and permitting animals and fowl to be kept for pleasure or hobbies.

Section 9-2.102(c) of the City of California City Zoning Ordinance notes that zoning restrictions “do not apply to the construction, installation, operation, and maintenance of City-owned or occupied facilities or public utility distribution and transmission lines, towers and poles and to underground facilities for private gas, water, electricity or telephone and telegraph services by a public utility under the jurisdiction of the Public Utilities Commission.”

5.2.3 Impact Questions

5.2.3.1 Agriculture and Forestry Impact Questions

The thresholds of significance for assessing impacts come from the CEQA Environmental Checklist. For agriculture and forestry resources, the CEQA Checklist asks, would the project:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program (FMMP) of the California Resources Agency, to nonagricultural use?
- Conflict with existing zoning for agricultural use, or a Williamson Act contract?
- Conflict with existing zoning for, or cause rezoning of, forest land (as defined in PRC section 12220(g)), timberland (as defined by PRC section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?
- Result in the loss of forest land or conversion of forest land to non-forest use?
- Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

5.2.3.2 Additional CEQA Impact Questions

There are no CPUC-identified additional CEQA impact questions.

5.2.4 Impact Analyses

5.2.4.1 *Agriculture and Forestry Methodology*

Agricultural and forestry impacts were evaluated based upon a review of DOC farmland classifications, data from San Bernardino County, Kern County, the City of California City, and CAL FIRE, regulatory requirements that apply to the various agricultural and forestry lands crossed by the Proposed Project, and the potential for the Proposed Project to affect agricultural and forestry resources.

5.2.4.2 *Agriculture and Forestry Impact Analysis*

5.2.4.2.1 **Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use?**

Construction

No Impact. The Proposed Project would not cross Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. The closest Important Farmland is approximately 9.6 miles from the Proposed Project. Therefore, construction of the Proposed Project would not convert any Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to nonagricultural uses, and no impact would occur.

Operation

No Impact. As presented in Chapter 3, the Proposed Project includes constructing subtransmission lines between existing substations in the vicinity of the City of California City, EAFB, and U.S. 395 where many overhead power lines currently exist. Operation and maintenance (O&M) activities associated with the Proposed Project would be similar to those currently performed by Southern California Edison Company (SCE) for existing facilities, including, but not limited to, repairing conductors, washing or replacing insulators, repairing or replacing other hardware components, repairing or replacing poles and towers, tree trimming, brush and weed control, and access road maintenance. O&M would also include routine inspections and emergency repair within substations and throughout rights-of-way, which would require the use of vehicles and equipment. SCE inspects subtransmission overhead facilities in a manner consistent with CPUC G.O. 165, which requires observation a minimum of once per year, but inspection typically occurs more frequently to ensure system reliability. Following construction of the Proposed Project, O&M activities would consist of monthly and annual inspections, as well as equipment testing and maintenance for new and expanded facilities. SCE currently performs O&M activities for the existing substations and their associated source lines and infrastructure. While it is likely that the Proposed Project would result in a nominal increase in O&M activities, such as increased maintenance and inspection trips, none of the Proposed Project components would convert any Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to nonagricultural uses, as no such land is located in the vicinity of the Proposed Project. Even with an increase in O&M activities, O&M of the Proposed Project would not affect any Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. Therefore, no impact would occur.

5.2.4.2.2 Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

Construction

No Impact. The Proposed Project would not traverse any lands under Williamson Act contract. The closest Williamson Act parcels are located 10.1 miles north of the Proposed Project. The Proposed Project alignment would cross through lands zoned for Exclusive Agriculture (A) and Limited Agriculture (A-1) in Kern County. However, sections 19.12.20 and 19.14.020 of the Kern County Zoning Ordinance lists utilities and communication facilities as a permitted use on lands zoned for A and A-1, which includes transmission lines and supporting towers, poles, and underground facilities for gas, water, electricity, telephone, or telegraph service owned and operated by a public utility company or other company under the jurisdiction of the CPUC pursuant to section 19.08.090, and utility substations. Therefore, construction of the Proposed Project would be consistent with existing zoning, would not conflict with Williamson Act contracts, and no impact would occur.

Operation

No Impact. O&M activities associated with the Proposed Project would be similar to those currently performed by SCE for existing substations and their associated lines and infrastructure. It is likely that the Proposed Project would result in a nominal increase in O&M activities, such as increased maintenance and inspection trips. However, even with an increase in O&M activities, O&M the Proposed Project would be consistent with the uses allowed under existing zoning, and the Project would not conflict with active Williamson Act contracts because there are no such parcels in the vicinity of the Proposed Project. Therefore, no impact would occur.

5.2.4.2.3 Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

Construction

No Impact. The Proposed Project would not be located on lands zoned or designated as timberland or forest land. No portion of the alignment is identified by CAL FIRE as having greater than 10 percent tree density meeting the definition of forest lands under PRC section 12220(g). Therefore, construction of the Proposed Project would not conflict with existing zoning or result in the rezoning of forest land or timberland. No impact would occur.

Operation

No Impact. As previously described, O&M activities associated with the Proposed Project would be similar to those currently performed by SCE for existing substations and their associated lines and infrastructure. . It is likely that the Proposed Project would result in a nominal increase in O&M activities, such as increased maintenance and inspection trips. However, even with an increase in O&M activities, O&M of the Proposed Project would be consistent with the uses allowed under existing zoning. The Project would not result in the rezoning of forest or timberland because there are no such lands in the vicinity of the Proposed Project. Therefore, no impact would occur.

5.2.4.2.4 Would the project result in the loss of forest land or conversion of forest land to non-forest use?

Construction

No Impact. The Proposed Project would not be located on lands zoned or designated as forest land. No portion of the alignment is identified by CAL FIRE as having greater than 10 percent tree density meeting the definition of forest lands under PRC section 12220(g). Therefore, construction of the Proposed Project would not result in the loss or conversion of forest land, and no impact would occur.

Operation

No Impact. As previously described, O&M activities associated with the Proposed Project would be similar to those currently performed by SCE for existing substations and their associated lines and infrastructure. It is likely that the Proposed Project would result in a nominal increase in O&M activities, such as increased maintenance and inspection trips. However, even with an increase in O&M activities, O&M of the Proposed Project would not affect forest land because the alignment is not located on lands zoned or designated as forest land. Therefore, no impacts related to loss or conversion of forested land would occur.

5.2.4.2.5 Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

Construction

No Impact. Construction of the Proposed Project would not involve any other changes in the existing environment that could result in the conversion of farmland to non-agricultural use or forest land to non-forest use. As described in Chapter 2, Introduction, the Proposed Project is designed to accommodate growth in the Electrical Needs Area (ENA) and would not result in indirect growth. Further, the ENA does not include any farmland or forest land, and the Proposed Project would not be located on active farmland or land designated as forest land. Therefore, no impact would occur.

Operation

No Impact. As previously described, O&M activities associated with the Proposed Project would be similar to those currently performed by SCE for existing substations and their associated lines and infrastructure. It is likely that the Proposed Project would result in a nominal increase in O&M activities, such as increased maintenance and inspection trips. However, as described in Chapter 2, Introduction, the Proposed Project is designed to accommodate growth in the ENA and would not result in indirect growth. Furthermore, the ENA does not include any farmland or forest land, and the Proposed Project would not be located on active farmland or land designated as forest land. Therefore, the increase of O&M activities would not result in indirect impacts such that the loss or conversion of farmland or forested land would occur resulting from O&M of the Proposed Project. No impact would occur.

5.2.4.3 Prime Farmland Soil Impacts

There is no Prime Farmland identified in the vicinity of the Proposed Project. Therefore, no impacts to Prime Farmland soils would occur.

5.2.4.4 *Williamson Act Impacts*

There are no Williamson Act lands identified in the vicinity of the Proposed Project. Therefore, the Proposed Project would not impact Williamson Act lands.

5.2.5 CPUC Draft Environmental Measures

There are no CPUC Draft Environmental Measures identified for Agricultural and Forestry Resources.

5.2.5.1 *Applicant Proposed Measures*

No impacts to agriculture or forestry resources would occur as a result of the Proposed Project. As such, there are no applicant proposed measures.

5.2.6 Alternatives

For an evaluation of Proposed Project alternatives, see Chapter 6, Comparison of Alternatives.

5.3 Air Quality

This section describes the air quality in the area of the Cal City Substation 115 kV Upgrade Project (Proposed Project), as well as the potential impacts to air quality from construction and operation of the Proposed Project.

Research for this analysis involved a review of the following resources:

- National Ambient Air Quality Standards (NAAQS) and California Air Quality Standards (CAAQS) established by the United States Environmental Protection Agency (USEPA) and California Air Resources Board (CARB), respectively
- Local air quality emissions from CARB’s iADAM system
- Local agency planning documents

5.3.1 Environmental Setting

The Proposed Project is located in Kern County and San Bernardino County in the Mojave Desert region of California on federal, state, private, and municipal land. These lands include unincorporated areas of Kern County and San Bernardino County, City of California City, Edwards Air Force Base (EAFB) controlled by the Department of Defense, and public lands under the jurisdiction of the Bureau of Land Management and the California Department of Fish and Wildlife. Approximately 90 percent of the Proposed Project is located within undeveloped open areas, with the remaining 10 percent located within developed areas (including the City of California City). The environmental setting section describes the existing air quality in the Proposed Project area.

5.3.1.1 Air Quality Plans

The Proposed Project area is located entirely within the Mojave Desert Air Basin (MDAB). The MDAB covers approximately 27,300 square miles and includes eastern Kern County, northeast Los Angeles County, eastern Riverside County, and most of San Bernardino County. The MDAB is bounded by the Colorado River Valley to the south and east, and by mountains on its remaining sides. The MDAB covers most of California’s high desert and is California’s largest air basin. Within the MDAB, the Proposed Project is under the jurisdiction of the Eastern Kern Air Pollution Control District (EKAPCD) and the Mojave Desert Air Quality Management District (MDAQMD).

The EKAPCD encompasses approximately 3,700 square miles and is located in the northwestern portion of the MDAB. The EKAPCD has jurisdiction over the entire eastern portion of Kern County. The MDAQMD encompasses approximately 20,000 square miles and covers the majority of the MDAB. The MDAQMD has jurisdiction over San Bernardino County’s high desert and portions of Riverside County.

It is the responsibility of the EKAPCD and MDAQMD to ensure that state and federal ambient air quality standards are achieved and maintained in their geographical jurisdictions. Health-based air quality standards have been established by California (i.e., CAAQS) and by the federal government (i.e., NAAQS) for the following criteria air pollutants (CAPs): ozone (O₃), carbon monoxide (CO), nitrogen dioxide (NO₂), particulate matter with a mean diameter of less than 10 microns (PM₁₀), particulate matter with a mean diameter of less than 2.5 microns (PM_{2.5}), sulfur dioxide (SO₂), and lead (Pb). Furthermore, California has set additional standards for sulfates, hydrogen sulfide (H₂S), vinyl chloride (C₂H₃Cl), and visibility reducing particles (VRP). Attainment of the CAAQS and NAAQS protects sensitive receptors and the public from criteria pollutants that are known to have adverse human health effects. Each district’s attainment status is

provided in Table 5.3-1. As described in Section 5.3.2.3.2, the MDAQMD has prepared an attainment plan to address O₃ within its jurisdiction.

Approximately 70 percent of the new 115 kV subtransmission line alignment, including the entirety of the Cal City-Edwards-Holgate 115 kV Subtransmission Line, and the existing Cal City and Edwards Substations and Holgate Switchyard are located within the jurisdiction of the EKAPCD. The remaining portion of new 115 kV subtransmission line alignment and Kramer Substation are located within the jurisdiction of the MDAQMD.

5.3.1.2 Air Quality

The USEPA compares ambient air criteria pollutant measurements with NAAQS to assess the status of air quality of regions within the states. Similarly, the CARB compares air pollutant measurements in California to CAAQS. Based on these comparisons, regions within the states and California are designated as one of the following categories:

- **Attainment.** A region is designated as attainment if monitoring shows ambient concentrations of a specific pollutant are less than or equal to NAAQS or CAAQS. In addition, areas that have been re-designated from nonattainment to attainment are classified as “maintenance areas” for a 10-year period to ensure that the air quality improvements are sustained.
- **Nonattainment.** If the NAAQS or CAAQS is exceeded for a pollutant, then the region is designated as nonattainment for that pollutant.
- **Unclassifiable.** An area is designated as unclassifiable if the ambient air monitoring data are incomplete and do not support a designation of attainment or nonattainment.

Presently, the ambient air in the Proposed Project area is classified by the CARB as nonattainment for O₃ and PM₁₀. The ambient air in the Proposed Project area is either unclassified or classified as attainment for all other state-regulated air pollutants. The attainment status of each CAAQS and NAAQS pollutant is shown in Table 5.3-1.

The EKAPCD and MDAQMD monitor levels of various pollutants by using a network of monitoring stations throughout the MDAB. The closest ambient air quality monitoring station to the Proposed Project alignment that monitors for O₃ and PM₁₀ is Mojave-923 Poole Street, located approximately 12 miles southwest of Cal City Substation. The following exceedances of the NAAQS and CAAQS were measured at this station during 2018, 2019, and 2020 (CARB 2022c):

- The 1-hour O₃ NAAQS was not exceeded on any days from 2018 through 2020.
- The 8-hour O₃ CAAQS was not exceeded on any days from 2018 through 2020.
- The daily PM₁₀ NAAQS was not exceeded during 2018 or 2020 but was exceeded twice during 2019.
- The daily PM₁₀ CAAQS was not exceeded during 2018 or 2020 but was exceeded 15 times during 2019.

Table 5.3-1 Air Quality Standards and Attainment Status

Pollutant	Averaging Time	CAAQS		NAAQS	
		Concentration	Status	Concentration	Status
Ozone (O ₃)	1 Hour	0.09 ppm (180 µg/m ³)	Nonattainment	—	—
	8 Hours	0.070 ppm (137 µg/m ³)	Nonattainment	0.070 ppm	Nonattainment and Unclassified/ Attainment
Respirable Particulate Matter (PM ₁₀)	24 Hours	50 µg/m ³	Nonattainment	150 µg/m ³	Unclassified (EKAPCD) and Nonattainment (MDAQMD)
	AAM	20 µg/m ³	Nonattainment	—	—
Fine Particulate Matter (PM _{2.5})	24 Hours	—	—	35 µg/m ³	Attainment/ Unclassified
	AAM	12 µg/m ³	Attainment	12.0 µg/m ³	Attainment/ Unclassified
Carbon Monoxide (CO)	8 Hours	9.0 ppm (10 mg/m ³)	Unclassified (EKAPCD) and Attainment (MDAQMD)	9 ppm (10 mg/m ³)	Attainment/ Unclassified
	1 Hour	20 ppm (23 mg/m ³)	Unclassified (EKAPCD) and Attainment (MDAQMD)	35 ppm (40 mg/m ³)	Attainment/ Unclassified
Nitrogen Dioxide (NO ₂)	AAM	0.030 ppm (57 µg/m ³)	Attainment	0.053 ppm (100 µg/m ³)	Attainment/ Unclassified
	1 Hour	0.18 ppm (339 µg/m ³)	Attainment	0.100 ppm (188 µg/m ³)	Attainment/ Unclassified
Sulfur Dioxide (SO ₂)	24 Hours	0.04 ppm (105 µg/m ³)	Attainment	0.14 ppm (365 µg/m ³)	Attainment/ Unclassified
	1 Hour	0.25 ppm (655 µg/m ³)	Attainment	0.075 ppm (196 µg/m ³)	Attainment/ Unclassified
	AAM	—	—	0.030 ppm (80 µg/m ³)	Attainment/ Unclassified
Lead (Pb)	30-Day Average	1.5 µg/m ³	Attainment	—	—
	Calendar Quarter	—	—	1.5 µg/m ³	Attainment/ Unclassified
	Rolling 3- Month Average	—	—	0.15 µg/m ³	Attainment/ Unclassified

Pollutant	Averaging Time	CAAQS		NAAQS	
		Concentration	Status	Concentration	Status
Visibility-Reducing Particles (VRP)	8 Hours	Extinction of 0.23 per km	Unclassified	No national standards	
Sulfates	24 Hours	25 µg/m ³	Attainment		
Hydrogen Sulfide (H ₂ S)	1 Hour	0.03 ppm (42 µg/m ³)	Unclassified		
Vinyl Chloride (C ₂ H ₃ Cl)	24 Hours	0.010 ppm (26 µg/m ³)	No information available		

Note: Some jurisdictions may have multiple attainment statuses for each pollutant. In these instances, the attainment status that represents the location of the Proposed Project has been reported.

Acronyms: ppm = parts per million; mg/m³ = milligrams per cubic meter; ppm = parts per million; µg/m³ = micrograms per cubic meter; AAM = Annual Arithmetic Mean; km = kilometer; EKAPCD = Eastern Kern Air Pollution Control District; MDAQMD = Mojave Desert Air Quality Management District

Source: CARB 2022a

5.3.1.3 Sensitive Receptor Locations

Some exposed population groups—including children and people who are elderly or ill—can be especially vulnerable to airborne chemicals and irritants and are termed “sensitive receptors.” In addition, due to sustained exposure durations, all persons located within residential areas are considered sensitive receptors. In general, sensitive receptor locations include, but are not limited to, schools, hospitals, day care centers, convalescence homes, residential uses, places of worship, libraries, offices, city and county buildings, and outdoor recreational areas.

Due to the remote nature of much of the Proposed Project alignment, sensitive receptor locations are widely scattered along the alignment, with the nearest receptors being residences located approximately 330 feet south of the Cal City-Edwards-Holgate 115 kV Subtransmission Line alignment south of Suckow Road, as summarized in Table 5.3-2. The Church of Jesus Christ of Latter-day Saints, a place of worship, is also located approximately 330 feet southeast of Staging Area 1-3 along Suckow Road. Section 5.13, Noise; Section 5.15, Public Services; and Section 5.16, Recreation, provide additional descriptions of the locations of residential areas and other sensitive receptors in the vicinity of the Proposed Project alignment.

Table 5.3-2 Sensitive Receptors within 1,000 Feet

Sensitive Receptor Name	Receptor Type	Approximate Distance to Nearest Proposed Project Component	Nearest Proposed Project Component
Cal City MX Park	Recreation	875 feet	Kramer-Cal City 115 kV Subtransmission Line
Borax Bill Park & Station	Recreation	Adjacent	Kramer-Cal City 115 kV Subtransmission Line
Occupied Residential Dwelling	Residential	Adjacent	Kramer-Cal City 115 kV Subtransmission Line
Occupied Residential Dwellings (approximately 15)	Residential	600 feet	Cal City Substation and Staging Areas 1-15, 1-16, and 1-17
California City High School	School	620 feet	Cal City Substation and Staging Areas 1-15, 1-16, and 1-17
California City Memorial Park	Cemetery	870 feet	Cal City-Edwards-Holgate 115 kV Subtransmission Line
Occupied Residential Dwelling	Residential	920 feet	Cal City-Edwards-Holgate 115 kV Subtransmission Line

Sensitive Receptor Name	Receptor Type	Approximate Distance to Nearest Proposed Project Component	Nearest Proposed Project Component
The Church of Jesus Christ of Latter-day Saints	Place of Worship	330 feet	Staging Area 1-3
Occupied Residential Dwellings (approximately 19)	Residential	370 feet	Staging Area 1-2
Occupied Residential Dwellings (approximately 4)	Residential	330 feet	Cal City-Edwards-Holgate 115 kV Subtransmission Line
Occupied Residential Dwellings (approximately 5)	Residential	575 feet	Cal City-Edwards-Holgate 115 kV Subtransmission Line
Occupied Residential Dwellings (approximately 6)	Residential	760 feet	Cal City-Edwards-Holgate 115 kV Subtransmission Line

5.3.2 Regulatory Setting

Federal, state, and local regulations were reviewed for applicability to the Proposed Project.

5.3.2.1 Federal

5.3.2.1.1 Clean Air Act

The 1970 federal Clean Air Act (CAA) established ambient air quality standards for six pollutants—O₃, PM₁₀, CO, NO₂, SO₂, and Pb—that are known to have adverse impacts on human health and the environment. To protect human health and the environment, the USEPA set primary and secondary maximum ambient thresholds for CAPs. The primary thresholds were set to protect human health, particularly for children and the elderly, as well as for individuals who suffer from chronic lung conditions (e.g., asthma and emphysema). The secondary standards were set to protect the natural environment and prevent further adverse effects on animals, crops, vegetation, and buildings. NAAQS are the combined primary and secondary standards set by the USEPA. The 1977 CAA Amendments required each state to develop and maintain a State Implementation Plan (SIP) for each CAP that exceeds the NAAQS for that pollutant. The SIP serves as a tool to reduce levels of pollutants known to cause impacts if they exceed ambient thresholds and to achieve compliance with the NAAQS. In 1990, the CAA was further amended to strengthen regulation of both stationary and mobile emission sources for the CAPs.

In 2001, the USEPA implemented new health-based NAAQS for O₃ and PM₁₀. A new federal O₃ standard of 0.080 ppm, established in 1997 and was based on a longer averaging period (8 hours versus 1 hour), recognizing that prolonged exposure to O₃ is more damaging. In March 2008, the USEPA further lowered the 8-hour O₃ standard from 0.080 ppm to 0.075 ppm. The new federal standard for PM is based on finer particles (PM_{2.5} versus PM₁₀), recognizing that PM_{2.5} may remain in the lungs longer and contribute to greater respiratory illness. In February 2007, the NAAQS for NO₂ was amended to lower the existing not to exceed 1-hour standard of 0.25 ppm to 0.18 ppm and established a new annual standard of 0.030 ppm. In October 2015, the national 8-hour O₃ primary and secondary standards were lowered from 0.075 ppm to 0.070 ppm. Table 5.3-1 contains a list of the NAAQS and CAAQS.

5.3.2.2 State

5.3.2.2.1 California Clean Air Act

The California Clean Air Act of 1988 (CCAA) provided the framework for the management of air quality throughout the state. The CCAA requires local air quality management districts to develop and implement

strategies to attain the CAAQS. For some pollutants, the CAAQS are more stringent than the NAAQS, and the CCAA mandated that the air quality management districts prepare air quality management plans (AQMPs) specifying how both the federal and state standards would be met. The CAAQS are listed in Table 5.3-1.

The CARB enforces the CAAQS and works with the State’s Office of Environmental Health Hazard Assessment in identifying toxic air contaminants (TACs) and enforcing rules related to TACs, including the Air Toxic Hot Spots Information and Assessment Act of 1987. Enacted to identify TAC hot spots where emissions from specific sources may expose individuals to an elevated risk of adverse health effects, this law requires that a business or other establishment identified as a significant source of toxic emissions must provide the affected population with information about health risks posed by those emissions.

5.3.2.3 Local

The California Public Utilities Commission (CPUC) has sole and exclusive state jurisdiction over the siting and design of the Proposed Project. Pursuant to CPUC General Order (G.O.) 131-D, Section XIV.B:

“Local jurisdictions acting pursuant to local authority are preempted from regulating electric power line projects, distribution lines, substations, or electric facilities constructed by public utilities subject to the CPUC’s jurisdiction. However, in locating such projects, the public utilities shall consult with local agencies regarding land use matters.”

Consequently, public utilities are directed to consider local regulations and consult with local agencies, but the counties’ and city’s regulations are not applicable as the counties and city do not have jurisdiction over the Proposed Project. Accordingly, the following discussion of local land use regulations is provided for informational purposes only.

5.3.2.3.1 Eastern Kern Air Pollution Control District

The EKAPCD seeks to attain and maintain NAAQS and CAAQS and to ensure air pollutants do not pose a nuisance or significant health threat. The EKAPCD has adopted two plans to address the EKAPCD’s nonattainment status for O₃: *Reasonably Available Control Technology State Implementation Plan (2020)* and *Ozone Attainment Plan (2017)*.

The EKAPCD established the following rules to regulate air quality that are applicable to the Proposed Project:

- Rule 401 – Visible Emissions. This rule prohibits the discharge of visible emissions into the atmosphere from any single source of emission whatsoever.
- Rule 402 – Fugitive Dust. This rule prevents, reduces, and mitigates ambient concentrations of anthropogenic fugitive dust emissions to an amount sufficient to attain and maintain NAAQS and CAAQS.
- Rule 404.1 – Particulate Matter Concentration. This rule regulates the allowable concentration of particulate matter discharged per standard cubic foot of gas at standard conditions. Concentrations may not exceed 0.1 grains per standard cubic foot of gas.
- Rule 405 – Particulate Matter Emission Rate. This rule describes the limits of emission rates for particulate matter discharge into the atmosphere from any source operation.
- Rule 407 – Sulfur Compounds. This rule controls the discharge of sulfur compounds. Sulfur compounds may not exceed 0.2 percent by volume.

- Rule 410 – Organic Solvents. This rule prohibits the discharge of more than 15 pounds of organic materials into the atmosphere in one day.
- Rule 419 – Nuisance. This rule prohibits the discharge of air contaminants, from any source, or other materials that cause injury, detriment, nuisance, or annoyance to the public.

5.3.2.3.2 Mojave Desert Air Quality Management District

The MDAQMD stipulates rules and regulations with which all projects within their jurisdiction must comply. In addition, the MDAQMD provides methodologies for analyzing a project's impacts under the California Environmental Quality Act (CEQA). The following plans, rules, and regulations apply to all sources within the MDAQMD's jurisdiction.

The MDAQMD established the following rules to regulate air quality that are applicable to the Proposed Project:

- Rule 401 – Visible Emissions. This rule provides limits for the visible emissions from sources within the MDAQMD.
- Rule 402 – Nuisance. This rule prohibits the discharge of air contaminants, from any source, or other materials that cause injury, detriment, nuisance, or annoyance to the public.
- Rule 403 – Fugitive Dust Control. This rule requires actions to prevent, reduce, and mitigate fugitive dust to reduce the amount of PM₁₀ entrained in the ambient air from anthropogenic sources within the district.
- Rule 404 – Particulate Matter Concentration. This rule regulates the allowable concentration of particulate matter discharged per standard cubic foot of gas at standard conditions.

Federal 75 ppb Ozone Attainment Plan (Western Mojave Desert Non-attainment Area)

The MDAQMD is required to prepare an Air Quality Attainment Plan that outlines measures to achieve attainment levels for CAPs and avoid future levels that exceed applicable standards. The MDAQMD has developed the Federal 75 ppb Ozone Attainment Plan (MDAQMD 2017), which aims to achieve and maintain the NAAQS for O₃ by July 2027. This plan includes the latest planning assumptions regarding population vehicle activity, and industrial activity and provides an update of previously submitted plans and summaries of progress.

Reasonable Further Progress/Rate-of-Progress Plan

The MDAQMD adopted the Reasonable Further Progress/Rate-of-Progress Plan (MDAQMD 1994) to present milestone dates beginning in 1996 and continuing every 3 years thereafter by demonstrating Reasonable Further Progress (RFP) and attainment of the O₃ NAAQS by milestone dates. These emissions are verified at each milestone date to determine RFP until the O₃ NAAQS is attained.

5.3.2.4 Air Permits

Southern California Edison Company (SCE) has not identified the need to apply for or receive any air quality-related permits from the EKAPCD or MDAQMD; SCE will comply with applicable rules and will develop and implement required plans.

5.3.3 Impact Questions

5.3.3.1 Air Quality Impact Questions

The significant criteria for assessing the impacts to air quality come from the CEQA Environmental Checklist. For air quality, the CEQA Checklist asks, would the project:

- Conflict with or obstruct implementation of the applicable air quality plan?
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard?
- Expose sensitive receptors to substantial pollutant concentrations?
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

5.3.3.1.1 Emissions Thresholds

The EKAPCD *Guidelines for Implementation of CEQA* (EKAPCD 2022b) provides air quality significance thresholds for operation of a project but does not include any thresholds for the construction phase of a project. As a result, these operational threshold values were used in the absence of construction significance thresholds.

A project would have a significant air quality impact on the environment, if it would, within the EKAPCD jurisdiction:

- emit CAP levels exceeding the trigger levels in EKAPCD Rule 210.1 of 15 tons per year of PM₁₀, 27 tons per year of sulfur oxides, or 25 tons per year of volatile organic compound (VOC) or nitrogen oxides (NO_x);
- emit more than 137 pounds per day of NO_x or VOC from motor vehicle trips (indirect sources only);
- cause or contribute to an exceedance of any CAAQS or NAAQS;
- exceed the EKAPCD health risk public notification thresholds; or
- be inconsistent with adopted federal or state air quality attainment plans.

The MDAQMD updated their *CEQA and Federal Conformity Guidelines* in February 2020. The guidelines provide a framework for preparing air quality evaluations for environmental documents. The guidelines recommend specific criteria and threshold levels for determining whether a project may have a significant adverse air quality impact. The MDAQMD CEQA Guidelines direct multi-phased projects (e.g., a project with a construction phase and separate operation phase) with phases shorter than one year be compared to the district's daily thresholds. Because the Proposed Project's construction phase will last more than one year, the MDAQMD's annual thresholds have been utilized for this analysis.

Table 5.3-3 contains the applicable thresholds for both construction and operation and maintenance (O&M) phases of the Proposed Project within the EKAPCD and MDAQMD.

Table 5.3-3 Thresholds of Significance

Pollutant	Eastern Kern Air Pollution Control District Threshold (Tons per Year)	Mojave Desert Air Quality Management District Threshold (Tons per Year)
Respirable Particulate Matter (PM ₁₀)	15	15
Fine Particulate Matter (PM _{2.5})	None identified	12
Carbon Monoxide (CO)	None identified	100
Nitrogen Oxides (NO _x)	25	25
Sulfur Dioxide (SO ₂)	27	25
Reactive Organic Gases (ROGs)/Volatile Organic Compounds (VOCs)	25	25

Sources: MDAQMD 2020; EKAPCD 2022b

5.3.3.2 Additional CEQA Impact Questions

There are no CPUC-identified additional CEQA impact questions.

5.3.4 Impact Analysis

5.3.4.1 Air Quality Methodology

Impacts to air quality within the Proposed Project area were determined by comparing the anticipated emissions from the construction and O&M phases of the Proposed Project to applicable annual emissions thresholds established by the EKAPCD and MDAQMD. These emissions estimates were generated using the methods established in version 2022.1 of the California Emissions Estimator Model, CARB's Emission Factor (EMFAC) model, and Swiss Federal Office of Civil Aviation (FOCA) *Guidance on the Determination of Helicopter Emissions* as documented in Appendix B. Aerial photographs were also used to identify potential sensitive receptors for their potential exposure to pollutants and odors.

5.3.4.2 Air Quality Impact Analysis

5.3.4.2.1 Would the project conflict with or obstruct implementation of the applicable air quality plan?

Construction

No Impact. The EKAPCD and MDAQMD are the agencies responsible for managing local air quality and administering California and federal air pollution control programs, ensuring attainment and maintenance of the ambient air quality standards. To this end, the districts have each established air quality plans to address nonattainment areas. A project would be considered inconsistent with an air quality plan or applicable attainment plan if it could cause population and/or employment growth or growth in vehicle-miles traveled in excess of the growth forecasts included in an applicable air quality plan or attainment plan. Because construction of the Proposed Project would not result in population growth, it would not conflict with the growth projections used in the development of the applicable air quality plans. Section 5.14, Population and Housing, provides a more detailed discussion of economic and population growth.

Annual emissions associated with Proposed Project construction would be temporary and would represent a small fraction of the regional emission inventories included in the applicable air quality plans.

Construction of the Proposed Project would be performed in compliance with applicable air district rules and regulations, ensuring that activities would be consistent with air district efforts to achieve attainment and maintenance of the standards. The Proposed Project-related annual emissions occurring in compliance with these rules and regulations would not conflict with or obstruct implementation of the applicable air quality plans.

Because the Proposed Project's annual construction emissions are not expected to substantially contribute to regional emissions and would not conflict with the growth projections in the applicable air quality plans, and because construction of the Proposed Project would be performed in compliance with applicable air district rules and regulations, the Proposed Project would not conflict with or obstruct implementation of the applicable air quality plans, and there would be no impact.

Operation

No Impact. As presented in Chapter 3, the Proposed Project includes constructing subtransmission lines between existing substations in the vicinity of the City of California City, EAFB, and U.S. 395 where many overhead power lines currently exist. O&M activities associated with the Proposed Project would be similar to those currently performed by SCE for existing facilities, including, but not limited to, repairing conductors, washing or replacing insulators, repairing or replacing other hardware components, repairing or replacing poles and towers, tree trimming, brush and weed control, and access road maintenance. O&M would also include routine inspections and emergency repair within substations and throughout rights-of-way, which would require the use of vehicles and equipment. SCE inspects subtransmission overhead facilities in a manner consistent with CPUC G.O. 165, which requires observation a minimum of once per year, but inspection typically occurs more frequently to ensure system reliability. Following construction of the Proposed Project, O&M activities would consist of monthly and annual inspections, as well as equipment testing and maintenance for new and expanded facilities. SCE currently performs O&M activities for the existing substations and their associated source lines and infrastructure. Overall, the Proposed Project would result in a nominal increase in O&M activities, such as increased maintenance and inspection trips. These activities would not result in population growth and represent a minor incremental increase in regional emissions. As a result, these emissions would not affect the inventories included in the applicable air quality plans and would be consistent with air district efforts to achieve attainment and maintenance of the standards. Therefore, no impact would occur from operation of the Proposed Project.

5.3.4.2.2 Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard?

Construction

Less than Significant Impact with Mitigation. Proposed Project construction would require the use of off-road construction equipment, on-road vehicles, and up to two helicopters,¹ as itemized in Table 3-10 and Table 3-11 in Chapter 3, Proposed Project Description. These vehicles would generate CAP emissions that could contribute to existing or projected violations of the ambient air quality standards for ozone and PM₁₀. Table 5.3-4 summarizes the anticipated uncontrolled annual emissions, by air district, for each year of construction and compares them to the applicable thresholds.

¹ For modeling purposes, it was assumed that one light-duty helicopter would be used during cable/conductor installation and one medium-duty helicopter would be used for structure installation.

Table 5.3-4 Annual Uncontrolled Construction Emissions

Construction Year	Annual Uncontrolled Emissions (Tons per Year)					
	Reactive Organic Gas (ROG)	Nitrous Oxides (NO _x)	Carbon Monoxide (CO)	Sulfur Dioxide (SO ₂)	Respirable Particulate Matter (PM ₁₀)	Fine Particulate Matter (PM _{2.5})
Eastern Kern Air Pollution Control District						
2026	1.57	9.75	13.27	0.05	41.28	4.80
2027	1.62	7.15	11.92	0.04	32.46	3.65
2028	0.05	0.43	0.81	0.00	2.93	0.32
Threshold	25	25	—	27	15	—
Exceeded?	No	No	Not Applicable (N/A)	No	Yes	N/A
Mojave Desert Air Quality Management District						
2026	0.61	3.57	4.60	0.02	15.12	1.77
2027	0.69	2.90	4.66	0.01	12.80	1.44
2028	0.01	0.11	0.17	0.00	0.65	0.07
Threshold	25	25	100	—	15	12
Exceeded?	No	No	No	N/A	Yes	No

As shown in Table 5.3-4, uncontrolled annual emissions would exceed applicable thresholds within the EKAPCD for PM₁₀ during construction in 2026 and 2027 and within the MDAQMD for PM₁₀ during construction in 2026. All other emissions would be below applicable thresholds. To reduce these construction emissions, SCE would implement Applicant Proposed Measures (APM) AIR-1 and AIR-2. APM AIR-1 would require all construction equipment with a rating between 100 and 750 horsepower (hp) to comply with USEPA Tier 4 non-road engine standards. APM AIR-2 would control fugitive dust emissions by requiring disturbed areas to be covered, watered, or treated with a dust suppressant; reduced drop heights from excavators and loaders; all haul trucks to maintain a minimum of 6 inches of freeboard or cover all loads; and trucks to maintain a speed limit of 15 mile per hour on Proposed Project-specific construction routes and within temporary work areas. Table 5.3-5 summarizes the anticipated emissions with these measures implemented.

Table 5.3-5 Annual Controlled Construction Emissions

Construction Year	Annual Controlled Emissions (Tons per Year)					
	Reactive Organic Gas (ROG)	Nitrous Oxides (NO _x)	Carbon Monoxide (CO)	Sulfur Dioxide (SO ₂)	Respirable Particulate Matter (PM ₁₀)	Fine Particulate Matter (PM _{2.5})
Eastern Kern Air Pollution Control District						
2026	1.11	5.28	17.73	0.05	14.51	1.52
2027	1.31	4.06	15.41	0.04	12.38	1.16
2028	0.04	0.37	0.83	0.00	1.20	0.10
Threshold	25	25	—	27	15	—
Exceeded?	No	No	Not Applicable (N/A)	No	No	N/A
Mojave Desert Air Quality Management District						
2026	0.44	2.01	6.44	0.02	5.20	0.55
2027	0.57	1.73	6.12	0.01	4.95	0.45
2028	0.01	0.09	0.17	0.00	0.28	0.02
Threshold	25	25	100	—	15	12
Exceeded?	No	No	No	N/A	No	No

As shown in Table 5.3-5, with the implementation of APMs AIR-1 and AIR-2, controlled construction emissions would not exceed the significance threshold for any criteria pollutant. In order to reduce potential impacts to noise during the construction phase of the Proposed Project, SCE would also implement APM NOI-1. This measure would require all vehicles to minimize idling time to the extent practical, which would reduce exhaust emissions. While this APM is not required to ensure air quality emissions are below applicable thresholds, it would help to further reduce this impact. Construction of the Proposed Project would not result in a cumulatively considerable net increase of criteria pollutants. As a result, impacts would be less than significant after mitigation.

Operation

Less than Significant Impact. As previously described, O&M activities associated with the Proposed Project would be similar to those currently performed by SCE for existing substations and their associated lines and infrastructure. The Proposed Project would result in a nominal increase in O&M activities, such as increased maintenance and inspection trips. The anticipated annual emissions from the increase in regular O&M activities were estimated and summarized in Table 5.3-6. As shown, the anticipated emissions would be well below all applicable thresholds and impacts would be less than significant.

Table 5.3-6 Annual O&M Emissions

Construction Year	Annual Emissions (Tons per Year)					
	Reactive Organic Gas (ROG)	Nitrous Oxides (NO _x)	Carbon Monoxide (CO)	Sulfur Dioxide (SO ₂)	Respirable Particulate Matter (PM ₁₀)	Fine Particulate Matter (PM _{2.5})
Eastern Kern Air Pollution Control District						
Operation and Maintenance (O&M)	0.001	0.007	0.009	< 0.001	0.001	0.001
Threshold	25	25	—	27	15	—
Exceeded?	No	No	Not Applicable (N/A)	No	No	N/A
Mojave Desert Air Quality Management District						
O&M	0.001	0.007	0.009	< 0.001	0.001	0.001
Threshold	25	25	100	—	15	12
Exceeded?	No	No	No	N/A	No	No

5.3.4.2.3 Would the project expose sensitive receptors to substantial pollutant concentrations?

Construction

Less than Significant Impact with Mitigation. Sensitive receptors in the Proposed Project vicinity could be exposed to increases in CAPs as a result of the fugitive dust released during earth-moving activities and vehicle travel on unpaved roads. As described in Section 5.3.1.3, multiple residences and one place of worship are located approximately 330 feet from the Proposed Project along Suckow Road. As described previously, the Proposed Project's controlled emissions would be below all applicable thresholds. Because construction would be completed by multiple construction crews dispersed across the Proposed Project, the actual emissions that would be created at a single site, and thus near a single sensitive receptor, would likely be lower than the overall Proposed Project emissions in most cases. In addition, APM AIR-2 would reduce fugitive dust emissions and the implementation of APM AIR-1 and NOI-1 would reduce CAP emissions from off-road equipment and on-road vehicle use. Impacts would be less than significant due to the separation between construction activities and sensitive receptors and the APMs that would be implemented to reduce emissions.

Operation

No Impact. As previously described, O&M activities associated with the Proposed Project would be similar to those currently performed by SCE for existing substations and their associated lines and infrastructure. The Proposed Project would result in a nominal increase in O&M activities, such as increased maintenance and inspection trips. The majority of new subtransmission, substation, and distribution getaway facilities resulting from the Proposed Project would be located in areas with limited or no sensitive receptors. The anticipated annual emissions from regular O&M activities, summarized in Table 5.3-6, would be well below all applicable thresholds. Typical O&M activities would last less than a single day at each pole location and SCE currently conducts these activities at the four existing substations associated with the Proposed Project. Due to the limited sensitive receptors in the Proposed Project area, limited emissions associated with these activities, and short-term nature of O&M activities, no impact would occur.

5.3.4.2.4 Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Construction

Less than Significant Impact. Due to the nature of the Proposed Project, impacts resulting from other emissions, such as odor, are unlikely. Typical nuisances include odor-producing H₂S, ammonia, chlorine, diesel engine emissions and other sulfide-related emissions. No significant sources of these pollutants would exist during construction. Diesel-engine emissions and the accompanying odor would be short-term, would be isolated to the immediate area surrounding the Proposed Project's temporary construction areas and access roads, would be intermittent in nature, would disperse quickly, and would cease upon completion of construction. As described in Section 5.3.1.3, there are limited sensitive receptors in the vicinity of the planned construction activities. Because emissions and associated odors would be temporary and disperse rapidly with distance from the source, and because the majority of construction activities would occur in unoccupied open areas, construction-generated emissions would not result in the frequent or long-term exposure of a substantial number of people to objectionable emissions and odors. Therefore, impacts would be less than significant.

Operation

Less than Significant Impact. As previously described, O&M activities associated with the Proposed Project would be similar to those currently performed by SCE for existing substations and their associated lines and infrastructure. The Proposed Project would result in a nominal increase in O&M activities, such as increased maintenance and inspection trips. Potential emission sources associated with O&M activities would be limited, with the most likely source being diesel engine emissions and accompanying odors. These emissions would be short-term, limited to the location of the O&M activity, intermittent in nature, disperse quickly, and cease upon completion of the O&M activity at a given location. Because emissions would be temporary and disperse rapidly with distance from the source, and because the majority of O&M activities would occur in unoccupied open areas, O&M-generated emissions and odors would not result in the frequent or long-term exposure of a substantial number of people to objectionable odorous emissions. Therefore, impacts would be less than significant.

5.3.4.3 *Air Quality Emissions Modeling*

Emissions from construction activities were estimated using emission factors and methods from CalEEMod v2022.1, emission factors from the USEPA AP-42, Compilation of Air Pollutant Emission Factors, CARB vehicle emission models, and California Energy Commission and other agency studies (California Air Pollution Control Officers Association [CAPCOA] 2022). Helicopter emissions were estimated based on the Swiss FOCA *Guidance on the Determination of Helicopter Emissions* (FOCA 2015). Emissions modeling results are presented in Appendix B; all calculations, presented in Microsoft Excel format, are provided to the CPUC under separate cover.

5.3.4.4 *Air Quality Emissions Summary*

Tables summarizing the air quality emissions for the Proposed Project and applicable thresholds for each applicable attainment area are presented in Section 5.3.4.2, which also includes a summary of both uncontrolled and controlled emissions. The assumptions that were applied in the controlled emissions estimates are also provided in Appendix B.

5.3.4.5 *Health Risk Assessment*

Review of Office of Environmental Health Hazard Assessment (OEHHA) guidance (OEHHA 2015) indicates that a Health Risk Assessment is not required for the Proposed Project because it does not include operation of new stationary sources that would result in the emissions of toxic air pollutants. Total duration of construction activities could extend for up to 24 months, but it is unlikely the activities within the vicinity of identified sensitive receptors would occur for longer than 2 months, which has been identified as the minimum time for evaluating cancer risks following OEHHA guidance. Section 3.6.5, Work Schedule, describes the various activities that generally range from 1 to 20 days. Staging areas that will be used for a period greater than 6 months would not be located within 1,000 feet of identified sensitive receptors.

5.3.5 **CPUC Draft Environmental Measures**

The Proposed Project would result in less than significant impacts related to air quality with the APMs identified in Section 5.3.5.1; as such, no CPUC Draft Environmental Measures have been identified.

5.3.5.1 *Applicant-Proposed Measures*

5.3.5.1.1 **Air Quality APMs**

The following APM would be implemented to reduce air quality impacts associated with the Proposed Project:

- **AIR-1: Tier 4 Construction Equipment:** All construction equipment with rating between 100 and 750 hp will be required to use engines compliant with EPA Tier 4 non-road engine standards. In the event a Tier 4 engine is not available for any off-road construction equipment with rating at or higher than 100 hp, that documentation of the unavailability will be provided.
- **AIR-2: Dust Control:** During construction, fugitive dust will be controlled by implementing the following measures:
 - Surfaces disturbed by construction activities will be covered or treated with a dust suppressant or water until the completion of activities at each site of disturbance.
 - Inactive, disturbed (e.g., excavated or graded areas) soil and soil piles will be sufficiently watered or sprayed with a soil stabilizer to create a surface crust, or will be covered.
 - Drop heights from excavators and loaders will be minimized to a distance of no more than 5 feet. Vehicles hauling soil and other loose material will be covered with tarps or maintain at least 6 inches of freeboard.
 - Vehicles will adhere a speed limit of 15 miles per hour on Proposed Project-specific construction routes and within temporary work areas.

5.3.5.1.2 **Cross-Referenced APMs**

The following APM would be implemented to reduce air quality impacts associated with the Proposed Project:

NOI-1: SCE shall employ the following noise-control techniques, at a minimum, to reduce construction noise exposure at noise-sensitive receptors during construction:

- Construction activities shall be confined to daytime, weekday and weekend hours established by the San Bernardino County, Kern County, and the City of California City. In the event construction is

required beyond those hours, SCE will notify the appropriate local agency or agencies regarding the description of the work, location, and anticipated construction hours.

- Construction equipment shall use noise reduction features (e.g., mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer.
- Stationary noise sources (e.g., generators, pumps) and staging areas shall be shielded by an enclosure, temporary sound walls, acoustic blankets, or other barrier where noise levels are above 80 dBA at sensitive receptor locations. Heights and specifications of noise barriers will be designed to reduce construction noise to below 80 dBA (FTA, 2006).
- Construction traffic and helicopter flight shall be routed away from residences and schools.
- Unnecessary construction vehicle use and idling time shall be minimized. If a vehicle is not required for use immediately or continuously for construction activities, its engine shall be shut off.

5.3.6 Alternatives

For an evaluation of Proposed Project alternatives, see Chapter 6, Comparison of Alternatives.

5.4 Biological Resources

This section describes the biological resources in the vicinity of the Cal City Substation 115 kV Upgrade Project (Proposed Project), as well as the potential impacts that may result from construction and operation of the Proposed Project.

Research for this analysis involved a review of the following resources:

- Aerial imagery in Google Earth
- California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDDB) RareFind 5
- California Native Plant Society (CNPS) Online Inventory of Rare and Endangered Plants of California
- U. S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC)
- CDFW Special Animals List
- USFWS National Wetlands Inventory (NWI)
- U. S. Geological Survey (USGS) National Hydrography Dataset (NHD)
- USGS Watershed Boundary Dataset (WBD)
- Natural Resources Conservation Service (NRCS) Web Soil Survey
- NRCS National List of Hydric Soils
- Reports and Geographic Information System (GIS) data from other SCE projects in the Proposed Project study area
- Survey data from previous projects in the study area
- Survey data from 2021 and 2022 surveys for the Proposed Project

5.4.1 Environmental Setting

The Proposed Project is located in Kern County and San Bernardino County in the Mojave Desert region of California on federal, state, private, and municipal land. These lands include unincorporated areas of Kern County and San Bernardino County, City of California City, Edwards Air Force Base (EAFB) controlled by the Department of Defense, and public lands under the jurisdiction of the Bureau of Land Management (BLM) and the CDFW. Approximately 90 percent of the Proposed Project is located within undeveloped open areas, with the remaining 10 percent located within developed areas (including the City of California City).

This section provides a detailed description of the biological resources found along the Proposed Project alignment.

5.4.1.1 *Biological Resources Technical Report*

The Cal City Substation 115 kV Upgrade Project Biological Resources Technical Report (BRTR) summarizes the methodologies used during the vegetation community mapping, habitat assessment, aquatic resources delineation, and rare plant surveys performed for the Proposed Project and Sequoia Boulevard Alternative and to support a separate SCE project¹. The report discusses observed natural vegetation communities, potentially jurisdictional aquatic features, observed special-status species, and species with

¹ Kramer-Holgate-Edwards 115kV Subtransmission Line Reconductor Project

the potential to occur along the Proposed Project alignment. The potential for each special-status species to occur in the study area was evaluated according to the following criteria:

- **Occurs.** The species or positive sign was definitively determined to be present in the study area during a site visit or field survey.
- **Absent.** The species or positive sign was not observed in the study area during protocol/focused surveys (wildlife), during the identifiable period after observation at a reference site (plants), and/or the study area lacks key habitat features.
- **Likely.** All study area features indicate this species is very likely present and should be expected according to the following criteria:
 - study area is within the species' geographic range/floristic province;
 - suitable habitat (e.g., soils, vegetation communities, elevation, roost sites, leaf litter/debris, water, host plants) is present; and
 - distance to CNDDDB or other records from the past 25 years is within one mile (fish), 2 miles (plants), or 5 miles (mammals/birds/herps).
- **Unlikely.** Study area is within the species' geographic range and suitable habitat is present, but the species would not be expected to occur or be encountered according to the following criteria:
 - CNDDDB or other records within 5 miles of the study area are over 25 years old; or
 - distance to records from the past 25 years is greater than 1 mile (fish), 2 miles (plants), or 5 miles (mammals/birds/herps).
- **Does Not Occur.** Species would not occur (or is very unlikely to occur) because the study area is outside the known or current geographic/elevation range, lacks habitat or suitable conditions, and/or there is reasonable certainty to assume absence. Other criteria include:
 - CNDDDB or other records within 5 miles of the study area are over 75 years old and the lack of recent records is not due to:
 - the cryptic nature of the species;
 - delayed growth and/or long-lived seed bank;
 - a species that is rarely studied or hard to observe;
 - the study area has a paucity of records due to remoteness;
 - there are few records for similar taxa; or
 - CNDDDB or other records within 5 miles of the study area are from the past 75 years but the locations are noted as a “best guess” or are otherwise inaccurate.

The report is provided in Appendix C to this PEA. Results included in this section of the PEA are for the Proposed Project only.

5.4.1.2 Biological Study Area (Local Setting)

The Proposed Project biological study area (study area) shown in Figureset 5.4-1 includes the Proposed Project's 100- to 350-foot-wide estimated disturbance footprint, plus buffers to account for direct and indirect impacts to biological resources. A 100-foot buffer was used for the aquatic resource delineation and a 250-foot buffer was used for the habitat assessment, vegetation community surveys, and rare plant survey. Buffer widths for all surveys were reduced along portions of the east side of the Proposed Project alignment to include only areas west of U.S. 395, and were expanded in areas along the alignment of the

Proposed Project where disturbance areas extended beyond the estimated 100- to 350-foot-wide disturbance footprint based on more refined design and engineering. Areas for which vegetation community, habitat assessment (wildlife), and aquatic resource survey data from the Ivanpah-Control Project A. 19-07-015 (IC Project) were available were not included in surveys conducted for the Proposed Project; however, applicable IC Project survey data are included in resource area calculations and in Figuresets 5.4-2 and 5.4-3 in this PEA. Observations of special-status plant and wildlife species from the IC Project and other SCE Projects that overlap the study area are also included in this PEA to support evaluations of special-status species' occurrence or potential occurrence within the Proposed Project study area. The IC Project area was resurveyed during the 2022 rare plant survey due to the potential for new plant occurrences in the five years since IC Project surveys were completed. Table 5.4-1 presents the dates on which field surveys along the Proposed Project alignment were conducted. Small areas added to previously mapped areas after field surveys were completed were evaluated and mapped from the desktop on December 8, 2021 and November 8, 2022 (not included in the table). A map of the full survey study area is included in Appendix G of the BRTR (Appendix C of this PEA). Details on the field survey methodology and desktop analysis of data from the IC Project and other SCE Projects are also provided in the BRTR (Appendix C).

Table 5.4-1 Biological Surveys Conducted within the Proposed Project Alignment

Type of Survey	Year ¹	Date(s) ²	Proposed Project Component
Vegetation Community Mapping	2017	April 3 – 18	Kramer-Cal City
	2018	April 2 – 6	Kramer-Cal City
	2021	September 20-24, October 25-29, December 13-16	Cal City-Edwards-Holgate Kramer-Cal City
	2022	September 27-28, October 26-27	Cal City-Edwards-Holgate Kramer-Cal City
Habitat Assessment	2017	May 13	Kramer-Cal City
	2021, wildlife	September 27-30, October 1, 11-14, 19	Cal City-Edwards-Holgate Kramer-Cal City
	2022, rare plants	April 11-16	Cal City-Edwards-Holgate Kramer-Cal City
	2022, wildlife and rare plants	September 27-28, October 26-27	Cal City-Edwards-Holgate Kramer-Cal City
Jurisdictional Delineation	2017	March 13 – 31	Kramer-Cal City
	2018	May (specific features only)	Kramer-Cal City
Aquatic Resources Delineation	2021	September 20-24, October 18-19, December 13-15	Cal City-Edwards-Holgate Kramer-Cal City
	2022	September 27-28, October 26-27	Cal City-Edwards-Holgate Kramer-Cal City
Rare Plant Survey	2022	March 24- April 16	Cal City-Edwards-Holgate Kramer-Cal City

¹ Survey years prior to 2021 are from the SCE Ivanpah-Control Project.

² Includes dates for 2021 and 2022 field surveys.

5.4.1.3 Vegetation Communities and Land Cover

Twenty-one vegetation communities (alliances and associations) and five other land cover types were identified in the study area during the 2021 and 2022 vegetation community mapping and in data from other SCE projects. The identified alliances are all shrubland alliances. A summary of vegetation communities and land cover types identified is presented in Table 5.4-2. Vegetation community ranks in the table are from CDFW (2021d, 2022a). Associations are indicated in italics. CDFW sensitive natural communities are indicated in bold. Indented communities are associations within an alliance and may be sensitive without a state rank. Communities were categorized only to the alliance level when 1) all associations are CDFW

sensitive natural communities, 2) the alliance contains no CDFW sensitive natural communities, or 3) all CDFW sensitive natural communities were determined to be absent. Figureset 5.4-2 shows the vegetation alliances and sensitive associations in the study area along the Proposed Project alignment.

Table 5.4-2 shows estimated impacts for each natural community and land cover type mapped in the study area. Potential temporary impacts include areas where vegetation communities overlap with proposed temporary work areas along the proposed alignments and access roads, helicopter landing zones, guard structures, conductor/cable splicing areas, cable/conductor pull-and-tension/stringing sites, staging areas, distribution pole removal work areas, and Cal City Substation expansion temporary construction work areas that are known at this time and are not currently disturbed. Potential permanent impacts include areas where vegetation communities overlap with the permanent footprint associated with the proposed Cal City Substation expansion, new or improved access roads, individual poles/structures installed along subtransmission alignments, and permanent operation and maintenance (O&M) structure pads that are known at this time and not currently disturbed.

Table 5.4-2 Natural Communities and Land Cover Types Mapped in the Study Area

Vegetation Community or Land Cover Type	Area Mapped on the Proposed Project alignment (acres)	Area Mapped within Anticipated Work Areas with Temporary Impacts (acres)¹	Area Mapped within Anticipated Work Areas with Permanent Impacts (acres)²	California State Rarity Ranking
Natural Communities				
Creosote Bush Scrub Shrubland Alliance	1,693.98	203.12	43.13	S5
<i>Creosote Bush Scrub Shrubland Association</i>	<i>1,598.04</i>	<i>198.35</i>	<i>41.01</i>	<i>S5</i>
<i>Sensitive Associations confirmed to be absent</i>	<i>95.94</i>	<i>4.78</i>	<i>2.12</i>	<i>Unranked, Not Sensitive</i>
Creosote Bush – White Bursage Scrub Shrubland Alliance	974.42	84.31	37.85	S5
<i>Creosote Bush – White Bursage Scrub Shrubland Association</i>	<i>972.14</i>	<i>84.12</i>	<i>37.85</i>	<i>S5</i>
<i>Sensitive Associations confirmed to be absent</i>	<i>2.28</i>	<i>0.19</i>	<i>0.0</i>	<i>Unranked, Not Sensitive</i>
Allscale Scrub Shrubland Alliance	1,066.47	101.31	22.87	S4
<i>Allscale Scrub Shrubland Association</i>	<i>1,029.19</i>	<i>93.35</i>	<i>20.44</i>	<i>Unranked, Not sensitive</i>
<i>Sensitive Associations confirmed to be absent</i>	<i>37.28</i>	<i>7.96</i>	<i>2.43</i>	<i>Unranked, Not Sensitive</i>
Cheesebush – Sweetbush Scrub Shrubland Alliance	88.47	8.84	3.05	S4
<i>Cheesebush Scrub Shrubland Association</i>	<i>37.74</i>	<i>2.63</i>	<i>1.41</i>	<i>Unranked, Not sensitive</i>
<i>Sweetbush Scrub Shrubland Association</i>	<i>0.35</i>	<i>0.0</i>	<i>0.0</i>	<i>Unranked, Not sensitive</i>
<i>Cheesebush – Creosote Bush Scrub Shrubland Association</i>	<i>50.37</i>	<i>6.21</i>	<i>1.64</i>	<i>Unranked, Not sensitive</i>

Vegetation Community or Land Cover Type	Area Mapped on the Proposed Project alignment (acres)	Area Mapped within Anticipated Work Areas with Temporary Impacts (acres)¹	Area Mapped within Anticipated Work Areas with Permanent Impacts (acres)²	California State Rarity Ranking
California Buckwheat – Parish's Goldeneye Scrub Shrubland Alliance	85.60	78.01	0.0	S4
<i>California Buckwheat – White Bursage Scrub Shrubland Association</i>	<i>85.60</i>	<i>78.01</i>	<i>0.0</i>	<i>Unranked, Not sensitive</i>
Fourwing Saltbush Scrub Shrubland Alliance	18.13	0.66	0.36	S4
Rubber Rabbitbrush Scrub Shrubland Alliance	3.59	0.01	0.01	S5
<i>Rubber Rabbitbrush Scrub Shrubland Association</i>	<i>2.81</i>	<i><0.01</i>	<i>0.0</i>	
<i>Sensitive Associations confirmed to be absent</i>	<i>0.78</i>	<i>0.01</i>	<i>0.01</i>	
Spinescale Scrub Shrubland Alliance	710.90	66.87	24.45	Unranked, Sensitive
White Bursage Scrub Shrubland Alliance	130.14	10.26	3.49	S5
<i>White Bursage Scrub Shrubland Association</i>	<i>130.14</i>	<i>10.26</i>	<i>3.49</i>	<i>Unranked, Sensitive</i>
Winterfat Scrubland Shrubland Alliance	71.23	5.92	3.32	S3
Shadscale Scrub Shrubland Alliance	19.84	5.17	0.87	S4
Nevada Joint Fir – Anderson's Boxthorn – Spiny Hop Sage Scrub Shrubland Alliance	105.12	7.36	3.34	S3S4
<i>Anderson's Boxthorn Scrub Provisional Association</i>	<i>24.79</i>	<i>3.63</i>	<i>1.20</i>	<i>Unranked, Sensitive</i>
<i>Cooper's Boxthorn Scrub Provisional Association</i>	<i>44.08</i>	<i>2.10</i>	<i>1.18</i>	<i>Unranked, Not sensitive</i>
<i>Nevada Joint Fir - Anderson's Boxthorn Scrub Association</i>	<i>24.27</i>	<i>1.63</i>	<i>0.96</i>	<i>Unranked, Not sensitive</i>
<i>Nevada Joint Fir – Cooper's Goldenbush Scrub Association</i>	<i>11.97</i>	<i>0.0</i>	<i>0.0</i>	G3G4 S3S4
Total Acres Vegetation	4,967.87	571.84	142.74	
Other Land Cover				
Developed	619.86	95.37	61.13	None
Disturbed	65.04	14.05	2.67	None
Dry lake / Mudflats / Playa	33.92	12.36	0.14	None
Open Water	0.07	0.0	0.0	None

Vegetation Community or Land Cover Type	Area Mapped on the Proposed Project alignment (acres)	Area Mapped within Anticipated Work Areas with Temporary Impacts (acres)¹	Area Mapped within Anticipated Work Areas with Permanent Impacts (acres)²	California State Rarity Ranking
Streambed	0.86	0.03	0.04	None
Total Acres All Areas	5,687.63	693.65	206.72	

None – Not a vegetation community

¹ Potential temporary impact acreages include areas where features overlap with proposed temporary work areas along the proposed alignments and access roads, helicopter landing zones, guard structures, conductor/cable splicing areas, cable/conductor pull-and-tension/stringing sites, staging areas, distribution pole removal work areas, and Cal City Substation expansion temporary construction work areas that are known at this time and are not currently disturbed.

² Potential permanent impact acreages include areas where features overlap with the permanent footprint associated with proposed Cal City Substation expansion, new or improved access roads, individual poles/structures installed along subtransmission alignments, and permanent O&M structure pads that are known at this time and not currently disturbed.

Vegetation communities and land cover types in the study area are described in detail in the BRTR (PEA Appendix C) and summarized herein. The study area consists of approximately 87 percent shrubland natural communities and 13 percent unvegetated/other land cover types. No herbaceous alliances were mapped in the study area.

Creosote bush scrub, creosote bush – white bursage scrub, allscale scrub, and spinescale scrub are the dominant shrubland natural communities throughout the study area along the Proposed Project alignment. These communities are present both in uplands and in ephemeral channels described in Section 5.4.1.4. These communities are characterized by generally wide-spaced mature shrubs and a sparse understory composed of emergent shrubs, subshrubs, and annual herbaceous species. Anthropogenic influence in the form of off-highway vehicle tracks is present throughout the study area.

Other land cover types have little to no vegetation and consist of both anthropogenically disturbed and natural areas. Developed and disturbed lands generally consist of temporarily and permanently anthropogenically influenced areas, including paved and unpaved roadways, substations, buildings, and associated infrastructure. Two other land cover types are associated with potentially jurisdictional areas: dry lake/mudflats/playa and streambed.

5.4.1.3.1 Sensitive Natural Communities

Sensitive natural communities are defined as communities of limited distribution within California or within a county or region. These communities may or may not contain special-status species. The state ranking system for S1 to S3 (CDFW 2021d, 2022a) includes the estimated number of existing acres in California for the sensitive natural communities. The rankings are defined as follows:

- S1, Critically Imperiled: Critically imperiled in California because of extreme rarity (often five or fewer occurrences) or because of some factor(s), such as very steep declines, making it especially vulnerable to extirpation from the state
- S2, Imperiled: Imperiled in California because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state
- S3, Vulnerable: Vulnerable in California due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation

- S4, Apparently Secure: Uncommon but not rare in the state; some cause for long-term concern due to declines or other factors
- S5, Secure: Common, widespread, and abundant in the state

The following five sensitive natural communities were observed within the study area, and cover approximately 949.02 acres, as shown on Figureset 5.4-2:

- Anderson’s Boxthorn Provisional Association (Nevada Joint Fir-Anderson’s Boxthorn-Spiny Hop Sage Scrub Shrubland Alliance)
- Nevada Joint Fir – Cooper’s Goldenbush Association (Nevada Joint Fir-Anderson’s Boxthorn-Spiny Hop Sage Scrub Shrubland Alliance)
- Spinescale Scrub Shrubland Alliance
- White Bursage Scrub Shrubland Association (White Bursage Scrub Shrubland Alliance)
- Winterfat Scrubland Shrubland Alliance

The Spinescale Scrub Shrubland Alliance occupies the largest sensitive community area in the study area (approximately 710.90 acres) along the proposed Kramer-Cal City 115 kV Subtransmission Line. This community occurs in alluvial fans and old lake beds above current ephemeral drainages. Where it occurs in the study area, spinescale (*Atriplex spinifera*) is dominant in the shrub canopy, and other species present include allscale, boxthorn (*Lycium* spp.), cheesebush (*Ambroisa salosa*), and creosote (*Larrea tridentata*). Two associations within the Nevada Joint Fir – Anderson’s Boxthorn – Spiny Hop Sage Scrub Alliance, including the Nevada Joint Fir – Cooper’s Goldenbush Association and Anderson’s boxthorn Provisional Association, and the White Bursage Scrub Association cover a total of approximately 166.89 acres of sensitive communities. The Winterfat Scrubland Shrubland Alliance sensitive community covers approximately 71.23 acres along U.S. 395 on the proposed Kramer-Cal City 115 kV Subtransmission Line. There were no riparian vegetation communities mapped in the study area. CDFW-jurisdictional streambank vegetation is described in Section 5.4.1.4 and acreages are in Table 5.4-3.

5.4.1.4 Aquatic Features

Aquatic resources potentially subject to Lahontan Regional Water Quality Control Board (RWQCB) and CDFW jurisdictions (collectively referred to as potential jurisdictional areas) are present in the study area. Potential jurisdictional areas in the study area include isolated intrastate waters including vegetated channels, unvegetated channels, and culverts. No areas potentially meeting the state or federal jurisdictional wetland definitions were identified in the study area. Cache Creek is the only named aquatic resource in the study area.

Based upon the findings of the aquatic resource delineation surveys, many features in the study area are subject to RWQCB and/or CDFW jurisdiction. Additionally, several non-jurisdictional features (e.g., erosional features, roadside swales) were also observed in the study area. The aquatic resources delineation surveys did not constitute a formal jurisdictional delineation. Because a full jurisdictional delineation of these features was not included in the survey scope, jurisdiction could not be determined for playas, which were mapped as “potentially jurisdictional (to be determined).” A full jurisdictional delineation would be completed approximately one to two years prior to project construction in support of permitting. Jurisdictional resources are further shown in Table 5.4-3 and are described and mapped in the Appendix J of the BRTR (PEA Appendix C).

Table 5.4-3 Aquatic Resources in the Study Area

Jurisdictional Water Type	Amount (acres)¹
USACE Jurisdiction	
Non-Wetland Waters of the U.S.	0.0
Culverted Non-Wetland Waters of the U.S.	0.0
Wetland Waters of the U.S.	0.0
Total Waters of the U.S.	0.0
RWQCB Jurisdiction	
Non-Wetland Waters of the State	5.41
Culverted Non-Wetland Waters of the State	0.15
Wetland Waters of the State	0.0
Total Waters of the State	5.56
CDFW Jurisdiction	
CDFW Jurisdictional Streambed	19.94
Potentially Jurisdictional	
Jurisdiction To Be Determined ²	25.84

¹ Acres estimated in GIS

² Playas were mapped as potentially jurisdictional; jurisdiction would be determined by a formal jurisdictional delineation in support of permitting conducted approximately 1 to 2 years prior to Proposed Project construction.

5.4.1.5 *Habitat Assessment*

5.4.1.5.1 **Special-status Plant Species**

For the purposes of this PEA, special-status plants are defined as:

- Species listed as threatened, endangered, or candidates for listing under the Federal Endangered Species Act (FESA)
- Species listed as rare, threatened, endangered, or candidates for listing under the California Endangered Species Act (CESA)
- Plants listed as rare or endangered under the California Native Plant Protection Act (California Fish and Game Code [CFGCA], section 1900 et seq.)
- Species designated as Sensitive by the BLM on BLM-administered lands (BLM S)
- Focus species in the Desert Renewable Energy Conservation Plan (DRECP) Land Use Plan Amendment (LUPA)
- Plants assigned a California Rare Plant Rank (CRPR) of 1 through 4 by the CNPS
- Species designated as locally important by the Local Agency (San Bernardino County, Kern County, and City of California City) and/or otherwise protected through ordinance or local policy.

Of the 30 special-status plant species evaluated for potential to occur, the following three species were determined to occur and were observed in the study area:

- pink funnel lily (*Androstegium breviflorum*),
- Mojave spineflower (*Chorizanthe spinosa*), and
- western Joshua tree (*Yucca brevifolia* var. *brevifolia*).

Two species, Barstow woolly sunflower (*Eriophyllum mohavense*) and desert cymopterus (*Cymopterus deserticola*), were determined to be likely to occur. The remaining 25 special-status plants were determined to be unlikely to occur or not to occur. Special-status plant species observed in the study area are listed in

Table 5.4-4 and are mapped in Figureset 5.4-2. Special-status plant species that were evaluated for potential to occur but were not observed are listed in Table 5.4-5.

Pink funnel lily was observed at two locations on the eastern side of the study area along U.S. 395 during field surveys conducted for the IC Project in April 2017. The species was not observed during the fall 2021 surveys. On April 8, 2022, biologists identified a flowering and seeding pink funnel lily located outside of the Proposed Project near 20 Mule Team Road.

Two Mojave spineflower populations were mapped in 2017 for the IC Project along U.S. 395 within the study area of the proposed Kramer-Cal City 115 kV Subtransmission Line. Twelve Mojave spineflower plants and 30 populations ranging from tens to thousands of plants were found during the 2022 rare plant surveys. The spineflower plants and populations were found growing in finer soils with some clay and silt components and variable pebble cover forming the substrate in the proposed Kramer-Cal City 115 kV Subtransmission Line and Cal City-Edwards-Holgate 115 kV Subtransmission Line south of Sequoia Boulevard.

Sixteen individual western Joshua trees were observed; two along the proposed Kramer-Cal City 115 kV Subtransmission Line just north of Kramer Junction, and fourteen in the southern portion of the study area within the proposed Cal City-Edwards-Holgate 115 kV Subtransmission Line alignment.

Barstow woolly sunflower was not observed during the 2021 or 2022 field surveys, nor during surveys for other SCE projects.

Total precipitation in the water year 2020/2021 was 0.69 inch; 6.7 inches less than the yearly average of 7.53 inches for the region. From October 2021 through April 30, the total precipitation was 0.88 inch; 6.02 inches less than the yearly average of 6 inches for that time period. These low precipitation levels were potentially insufficient for the Barstow woolly sunflower, an annual species dependent on spring rains, to germinate in spring 2022. Still, small pockets of high- and medium-quality habitat for Barstow woolly sunflower were mapped throughout both alignments in 2022 (Appendix H in the BRTR [PEA Appendix C]).

Based on literature searches, database reviews, and field surveys, no federally listed plant species were determined to occur or to likely occur in the study area. One state-listed plant species occurs in the study area (western Joshua tree, state Candidate Threatened). No state-listed plant species were determined to likely occur in the study area.

Special-status plant species that either occur in the study area or were determined to likely occur in the study area based on the results of the literature review and the field surveys are described below. Special-status plant species that were documented in the study area during the 2021 and 2022 field surveys, as well as during surveys conducted for the IC Project and other SCE projects in the last 5 years are shown in Figureset 5.4-2.

Table 5.4-4 Special-status Plant Species Observed in the Study Area

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur
<i>Androstephium breviflorum</i> pink funnel lily	G4/S2? 2B.2	Perennial bulbiferous herb found in desert dunes, Mojavean desert scrub, and bajadas at 720-2,625 feet amsl. Blooms Mar-Apr.	Occurs. Suitable Mojavean desert scrub is present in the study area. One individual was observed approximately 1.8 miles from the Proposed Project study area, southeast of the Holgate Switchyard, during field surveys conducted in April 2022. This species was also observed at two locations within the study area during field surveys conducted in April 2017.
<i>Chorizanthe spinosa</i> Mojave spineflower	G4/S4 4.2	Annual herb found on alkaline soils in chenopod scrub, Joshua tree woodland, Mojavean desert scrub, and playa habitats at 20-4,265 feet amsl. Blooms Mar-Jul.	Occurs. Suitable chenopod scrub, Joshua tree woodland, Mojavean desert scrub, and playas are present, and alkaline soils are present in the study area. Several populations and individual plants were observed in the study area during field surveys conducted in March and April 2022.
<i>Yucca brevifolia</i> var. <i>brevifolia</i> western Joshua tree	SC Threatened	Perennial tree found on fine, loose, well-drained or gravelly silts, loams, and sands in sagebrush scrub, desert scrub, southwestern shrubsteppe, pinyon and juniper woodland, and desert grassland habitats in hot, dry sites on flats, mesas, bajadas, and gentle slopes in the Mojave Desert at 1,600-6,600 feet amsl. Blooms Mar-Jun.	Occurs. This species was observed in several locations in the study area during field surveys conducted in October 2021 and March, April, and October 2022.

CRPR (CNPS California Rare Plant Rank)

1B = Rare, Threatened, or Endangered in California and elsewhere
 2B = Rare, Threatened, or Endangered in California, but more common elsewhere
 4 = Limited Distribution (Watch List)
 ? = CNPS rank qualifier for an inexact or uncertain rank

CRPR Threat Code Extension

.2 = Moderately threatened in California (20-80% of occurrences threatened/ moderate degree and immediacy of threat)

Source: CNPS 2021a, 2022a; CDFW 2021a, 2022b

Status (Federal/State)

SC = State Candidate
 BLM S = BLM Sensitive Species

Other Statuses

G2 or S2 = Imperiled Globally or Subnationally (state)
 G4/5 or S4/5 = Apparently secure, common and abundant

Status (Regional)

DRECP = Desert Renewable Energy Conservation Plan Focus Species

Table 5.4-5 Special-status Plant Species Not Observed in the Study Area

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur
<i>Allium shevockii</i> Spanish needle onion	G2/S2 1B.3 BLM S	Perennial bulbiferous herb found on soil pockets on rock outcrops and talus slopes in pinyon and juniper woodland and upper montane coniferous forest habitats at 2,800-8,200 feet above mean sea level (amsl). Blooms May-Jun.	Does not occur. Suitable pinyon and juniper woodland and upper montane coniferous forest are not present in the study area. No CNDDDB occurrences have been recorded within 5 miles of the study area.
<i>Calochortus striatus</i> alkali mariposa-lily	G3?/S2S3 1B.2 BLM S DRECP	Perennial bulbiferous herb found on alkaline meadows and ephemeral washes in chaparral, chenopod scrub, meadows and seeps, and Mojavean desert scrub habitats at 230-5,250 feet amsl. Blooms Apr-Jun.	Does not occur. Suitable Mojavean desert scrub, chenopod scrub, and ephemeral washes are present in the study area. However, no CNDDDB occurrences have been recorded within 5 miles of the study area.
<i>Camissonia kernensis</i> ssp. <i>kernensis</i> Kern County evening-primrose	G4T3/S3 4.3	Annual herb found on granitic, sometimes gravelly or sandy soils in chaparral, Joshua tree woodland, and pinyon and juniper woodland habitats at 2,592-6,988 feet amsl. Blooms Mar-May.	Does not occur. Granitic, gravelly, and sandy soils are present in the study area. However, no CNDDDB occurrences have been recorded within 5 miles of the study area.
<i>Canbya candida</i> white pygmy-poppy	G3G4/S3S4 4.2	Annual herb found on gravelly, sandy, granitic soils in Joshua tree woodland, Mojavean desert scrub, and pinyon and juniper woodland at 1,970-4,790 feet amsl. Blooms Mar-Jun.	Does not occur. Suitable Mojavean desert scrub is present, and gravelly, sandy, and granitic soils are present in the study area. However, the only CNDDDB occurrence within 5 miles of the study area is from 1935.
<i>Cryptantha clokeyi</i> Clokey's cryptantha	G3/S3 1B.2	Annual herb found on sandy or gravelly soils in Mojavean desert scrub habitats at 2,378-4,478 feet amsl. Blooms Apr.	Does not occur. Mojavean desert scrub is present, and sandy and gravelly soils are present in the study area. However, no CNDDDB occurrences have been recorded within 5 miles of the study area.
<i>Cymopterus deserticola</i> desert cymopterus	G2/S2 1B.2 BLM S DRECP	Perennial herb found on fine to coarse, loose, sandy soil of flats in old dune areas with well-drained sand in Joshua tree woodland and Mojavean desert scrub habitats at 2,066-4,900 feet amsl. Blooms Mar-May.	Likely. Suitable Mojavean desert scrub is present in the study area, and sandy soils are present. One individual was observed approximately 0.5 mile from the study area during field surveys conducted in April 2022 by SummitWest, and at several locations within approximately 2.5 to 3.1 miles in during field surveys conducted in April 2017. Multiple CNDDDB occurrences have been recorded within 5 miles of the study area, including two from 2009 within 2 miles of the study area.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur
<i>Deinandra arida</i> Red Rock tarplant	SR G1/S1 1B.2	Annual herb found on volcanic tuff and dry to moist sites where water has collected along ephemeral streams or road edges in Mojavean desert scrub habitats at 985-3,100 feet amsl. Blooms Apr-Nov.	Does not occur. Suitable Mojavean desert scrub, ephemeral streams, and road edges are present in the study area, though volcanic tuff is not present. No CNDDDB occurrences have been recorded within 5 miles of the study area.
<i>Deinandra mohavensis</i> Mojave tarplant	SE G2/S3 1B.3 BLM S DRECP	Annual herb found on low sand bars in riverbeds, mostly in riparian areas or ephemeral grassy areas in chaparral, coastal scrub and riparian scrub habitats at 2,100-2,250 feet amsl. Blooms (Jan-May) Jun-Oct.	Does not occur. Suitable ephemeral riparian areas are present in the study area. However, no CNDDDB occurrences have been recorded within 5 miles of the study area.
<i>Delphinium recurvatum</i> recurved larkspur	G2?/S2? 1B.2 BLM S	Perennial herb found on alkaline soils in chenopod scrub, cismontane woodland, and valley and foothill grassland habitats at 10-2,600 feet amsl. Blooms Mar-Jun.	Unlikely. Suitable chenopod scrub is present and alkaline soils are present in the study area. The only CNDDDB occurrence within 5 miles of the study area overlaps the study area, but it is from 1952.
<i>Dudleya abramsii</i> ssp. <i>calcicola</i> Limestone dudleya	G4T4/S4 4.3	Perennial herb found on rocky limestone places in chaparral and pinyon and juniper woodland habitats at 1,640-8,530 feet amsl. Blooms Apr-Aug.	Absent. No chaparral or pinyon and juniper woodland habitats are present in the study area. No CNDDDB occurrences have been recorded within 5 miles of the study area.
<i>Eremothera boothii</i> ssp. <i>Boothii</i> Booth's evening-primrose	G5T4/S3 2B.3	Annual herb found in Joshua tree woodland and pinyon and juniper woodland habitats at 2,674-7,874 feet amsl. Blooms Apr-Sep.	Does not occur. The study area is outside the geographic range of this subspecies as described in Baldwin et al. (2012). The only CNDDDB occurrence located within 5 miles of the study area is from 1988 and mapped as a best guess.
<i>Eriophyllum mohavense</i> Barstow woolly sunflower	G2/S2 1B.2 BLM S DRECP	Annual herb found in open silty or sandy areas, barren ridges, or margins of playas in chenopod scrub, Mojavean desert scrub and playa habitats at 1,640-3,150 feet amsl. Blooms Mar-May.	Likely. Suitable chenopod scrub, Mojavean desert scrub, and playas are present in the study area. Open areas with silty and sandy soils are present. Multiple CNDDDB occurrences have been recorded within 5 miles of the study area, including one occurrence from 2017, which is located approximately 0.5 mile east of the study area.
<i>Erythranthe rhodopetra</i> Red Rock Canyon monkeyflower	G1/S1 1B.1 BLM S	Annual herb found on sandy soils in washes derived from sedimentary rock of the Ricardo formation in Mojavean desert scrub habitat at 2,000-3,000 feet amsl. Blooms Mar-Apr.	Does not occur. Suitable Mojavean desert scrub and sandy soils are present in the study area. However, no CNDDDB occurrences have been recorded within 5 miles of the study area.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur
<i>Eschscholzia minutiflora</i> ssp. <i>twisselmannii</i> Red Rock poppy	G5T2/S2 1B.2 BLM S	Annual herb found on volcanic tuff in Mojavean desert scrub habitat with <i>Larrea</i> , <i>Lycium</i> , <i>Eriogonum</i> , <i>Isomeris</i> , and <i>Hemizonia</i> at 2,230-4,040 feet amsl. Blooms Mar-May.	Unlikely. Suitable Mojavean desert scrub is present in the study area. This species was observed approximately 4.5 miles north of the study area during field surveys conducted in April 2017. However, no CNDDDB occurrences have been recorded within 5 miles of the study area.
<i>Euphorbia vallis-mortae</i> Death Valley sandmat	G3/S3 4.2	Perennial herb found on sandy or gravelly sites in Mojavean desert scrub habitat at 755-4,790 feet amsl. Blooms May-Oct.	Does not occur. Suitable Mojavean desert scrub is present, and sandy and gravelly soils are present in the study area. However, no CNDDDB occurrences have been recorded within 5 miles of the study area.
<i>Goodmania luteola</i> golden goodmania	G3/S3 4.2	Annual herb found on alkaline or clay soils in meadows and seeps, Mojavean desert scrub, playas, and valley and foothill grassland habitats at 65-7,200 feet amsl. Blooms Apr-Aug.	Does not occur. Suitable Mojavean desert scrub, and playas are present, and alkaline and clay soils are present in the study area. However, no CNDDDB occurrences have been recorded within 5 miles of the study area.
<i>Hecastocleis shockleyi</i> prickle-leaf	G4/S4 3	Perennial shrub found on rocky slopes and washes, often on carbonate or slate in chenopod scrub and Mojavean desert scrub habitats at 3,937-7,217 feet amsl. Blooms May-Jul.	Does not occur. Suitable chenopod scrub and Mojavean desert scrub habitats are present in the study area. However, no CNDDDB occurrences have been recorded within 5 miles of the study area.
<i>Layia heterotricha</i> pale-yellow layia	G2/S2 1B.1 BLM S	Annual herb found on alkaline or clay soils in open areas in cismontane woodland, coastal scrub, pinyon and juniper woodland, and valley and foothill grassland habitats at 984-5,594 feet amsl. Blooms Mar-Jun.	Does not occur. No suitable cismontane woodland, coastal scrub, pinyon and juniper woodland, or valley and foothill grassland habitats are present, though suitable alkaline and clay soils are present in the study area. No CNDDDB occurrences have been recorded within 5 miles of the study area.
<i>Loeflingia squarrosa</i> var. <i>artemisiarum</i> sagebrush loeflingia	G5T3/S2 2B.2 BLM S	Annual herb found on sandy flats and dunes and sandy areas around clay slicks with <i>Sarcobatus</i> , <i>Atriplex</i> , and <i>Tetradymia</i> in desert dunes, Great Basin scrub, and Sonoran desert scrub habitats at 2,297-5,300 feet amsl. Blooms Apr-May.	Unlikely. Suitable desert dune habitats are present in the study area. Sandy and clay soils and <i>Atriplex</i> spp. are also present. One CNDDDB occurrence from 2006 is located approximately 2.5 miles from the study area.
<i>Mentzelia eremophila</i> solitary blazing star	G4/S3S4 4.2	Annual or perennial herb found in Mojavean desert scrub habitat at 2,300-4,000 feet amsl. Blooms Mar-May.	Does not occur. Suitable Mojavean desert scrub habitat is present in the study area. However, no CNDDDB occurrences have been recorded within 5 miles of the study area.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur
<i>Mentzelia tridentata</i> creamy blazing star	G3/S3 1B.3	Annual herb found in Mojavean desert scrub habitat at 2,300-3,850 feet amsl. Blooms Mar-May.	Does not occur. Suitable Mojavean desert scrub habitat is present in the study area. However, no CNDDDB occurrences have been recorded within 5 miles of the study area.
<i>Muilla coronata</i> crowned muilla	G3/S3 4.2	Perennial bulbiferous herb found on barren flats and ridges in sandy, granitic soils in chenopod scrub, Joshua tree woodland, Mojavean desert scrub, and pinyon and juniper woodland habitats at 2,200-6,430 feet amsl. Blooms Mar-Apr (May).	Does not occur. Suitable chenopod scrub and Mojavean desert scrub habitats are present, and sandy, granitic soils are present in the study area. However, no CNDDDB occurrences have been recorded within 5 miles of the study area.
<i>Nemacladus gracilis</i> slender nemacladus	G4/S4 4.3	Annual herb found on sandy or gravelly places in cismontane woodland and valley and foothill grassland habitats at 394-6,234 feet amsl. Blooms Mar-May.	Does not occur. No suitable cismontane woodland or valley and foothill grassland habitats are present, though sandy and gravelly soils are present in the study area. No CNDDDB occurrences have been recorded within 5 miles of the study area.
<i>Pediomelum castoreum</i> Beaver Dam breadroot	G3/S2 1B.2 BLM S	Perennial herb found on sandy soils in washes and roadcuts in Joshua tree woodland and Mojavean desert scrub habitats at 2,000-5,000 feet amsl. Blooms Apr-May.	Does not occur. Suitable Mojavean desert scrub habitat is present, and sandy soils are present in the study area. However, the only CNDDDB occurrence recorded within 5 miles of the study area is an undated observation from before 1996, exact location unknown.
<i>Phacelia nashiana</i> Charlotte's phacelia	G3/S3 1B.2 BLM S	Annual herb found on granitic soils and sandy or rocky areas on steep slopes or flats in Joshua tree woodland, Mojavean desert scrub, and pinyon and juniper woodland habitats at 1,970-7,220 feet amsl. Blooms Mar-Jun.	Does not occur. Suitable Mojavean desert scrub habitat is present, and granitic, sandy, and rocky soils are present in the study area. However, no CNDDDB occurrences have been recorded within 5 miles of the study area.
<i>Sclerocactus polyancistrus</i> Mojave fish-hook cactus	G3/S3 4.2	Perennial shrub found on well-drained soil, sometimes on limestone, on rocky, gravelly mesas, slopes, and outcrops in Great Basin scrub, Joshua tree woodland, and Mojavean desert scrub habitats at 2,100-7,612 feet amsl. Blooms Apr-Jul.	Does not occur. Suitable Mojavean desert scrub habitat is present, and rocky, gravelly soils are present in the study area. However, no CNDDDB occurrences have been recorded within 5 miles of the study area.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur
<i>Senna covesii</i> Cove's cassia	G5/S3 2B.2	Perennial herb found on dry, sandy desert washes and slopes in Sonoran desert scrub habitat at 738-4,250 feet amsl. Blooms Mar-Jun (Aug).	Does not occur. No suitable Sonoran desert scrub habitat is present in the study area, though dry, sandy desert washes are present in the study area. The only CNDDDB occurrence recorded is a 2013 occurrence within 2 miles of the study area which overlaps the study area and is believed to consist of transplants outside the native range. The study area is outside the known range of this species.

Regional Vicinity refers to within a five-mile search radius of the study area.

CRPR (CNPS California Rare Plant Rank)

- 1A = Presumed extirpated in California, and rare or extinct elsewhere
- 1B = Rare, Threatened, or Endangered in California and elsewhere
- 2A = Presumed extirpated in California, but common elsewhere
- 2B = Rare, Threatened, or Endangered in California, but more common elsewhere
- 3 = Need more information (Review List)
- 4 = Limited Distribution (Watch List)

CRPR Threat Code Extension

- .1 = Seriously endangered in California (>80% of occurrences threatened/high degree and immediacy of threat)
- .2 = Moderately threatened in California (20-80% of occurrences threatened/ moderate degree and immediacy of threat)
- .3 = Not very endangered in California (<20% of occurrences threatened/ low degree and immediacy of threat)

Source: CNPS 2021a, 2022a; CDFW 2021a, 2022b

Status (Federal/State)

- SE = State Endangered
- SC = State Candidate
- SR = State Rare
- BLM S = BLM Sensitive Species

Other Statuses

- G1 or S1 = Critically Imperiled Globally or Subnationally (state)
- G2 or S2 = Imperiled Globally or Subnationally (state)
- G3 or S3 = Vulnerable to extirpation or extinction Globally or Subnationally (state)
- G4/5 or S4/5 = Apparently secure, common and abundant

Status (Regional)

- DRECP = Desert Renewable Energy Conservation Plan Focus Species

5.4.1.5.2 Special-status Wildlife Species

For the purposes of this PEA, special-status wildlife species are defined as:

- Species listed as threatened, endangered, or candidates for listing under the FESA
- Species listed as rare, threatened, endangered, or candidates for listing under the CESA
- Species designated as Fully Protected (FP), Species of Special Concern (SSC), or Watch List (WL) by CDFW
- Species designated as BLM S
- Birds designated as Birds of Conservation Concern (BCC) by the U.S. Fish and Wildlife Service (USFWS)
- Focus species in the DRECP
- Species designated as locally important by the Local Agency (San Bernardino County, Kern County, and City of California City) and/or otherwise protected through ordinance or local policy
- Species protected under the Federal Bald and Golden Eagle Protection Act
- Bats considered by the Western Bat Working Group to be “high” or “medium” priority (WBWG 2017)
- Species protected from take per CFGC Chapter 5, section 460

SCE identified 22 special-status wildlife species with potential to occur within 5 miles of the study area. Of these, the following eight special-status wildlife species were observed within the study area during the 2021 and 2022 surveys:

- Mojave desert tortoise (*Gopherus agassizii*; Federally and State Threatened; DRECP Focus Species)
- Cooper’s hawk (*Accipiter cooperii*; WL)
- burrowing owl (*Athene cunicularia*; SSC, BLM S, DRECP Focus Species)
- California horned lark (*Eremophila alpestris actia*; WL)
- prairie falcon (*Falco mexicanus*; WL and BCC)
- loggerhead shrike (*Lanius ludovicianus*; SSC) and
- LeConte’s thrasher (*Toxostoma lecontei*; DRECP Focus Species, BCC)
- Desert kit fox (*Vulpes macrotis arsipus*; CFGC)

Medium- to high-quality habitat, including nesting habitat for special-status bird species, was mapped for species that occur or potentially occur in the study area. Habitat for the following species that may require future focused or protocol-level surveys or species-specific mitigation measures, is mapped in Figureset 5.4-3:

- burrowing owl
- desert tortoise
- Mohave ground squirrel

Incidental observations of special-status wildlife species were collected during all field surveys; focused/protocol surveys were not conducted. Locations of observed special-status wildlife species and active burrowing owl and desert kit fox burrows and dens are shown in Figureset 5.4-3. Locations

information for observed special-status wildlife species and their sign are also presented in Table 5.4-6, along with their potential to occur in other locations within the study area.

Table 5.4-7 lists the special-status wildlife species that were not observed within the study area along with their potential to occur within the study area. A summary of special-status wildlife reported from the study area is provided below. The area of each species' mapped medium- to high-quality habitat is provided in Table 5.4-8.

Details about observed special-status wildlife species, including habitat requirements, species descriptions, and life history, are provided in the BRTR in PEA Appendix C.

Table 5.4-6 Special-status Wildlife Species Observed in the Study Area

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur
Reptiles			
<i>Gopherus agassizii</i> Mojave desert tortoise	FT ST DRECP	Widely distributed in the Mojave, Sonoran, and Colorado Deserts from below sea level to 2,200 meters (7,220 feet). Most common in desert scrub, desert wash, and Joshua tree habitats, but occurs in almost every desert habitat except those on the most precipitous slopes.	Occurs: Suitable habitat is present, and this species was observed in the study area. One live tortoise, two carcasses, one Class 3 pallet, one Class 2 burrow, one Class 3 burrow, and two burrows of unknown class were observed in the study area during vegetation community mapping and habitat assessment surveys in October 2021. Nine live tortoises, two carcasses, three pallets, three Class 1 burrows, two Class 2 burrows, five Class 3 burrows, two Class 4 burrows, one Class 5 burrows, and one burrow of unknown class were observed in the study area during rare plant surveys in March and April 2022. One live tortoise in a newly mapped burrow, one Class 1 burrow, four Class 2 burrows (two with scat), one Class 3 burrow, and two Class 5 burrows were observed during aquatic resources and habitat assessment surveys in the study area in September and October 2022.
Birds			
<i>Accipiter cooperii</i> Cooper’s hawk	WL	Inhabits woodlands, chiefly of open, interrupted, or marginal type. Nest sites are found mainly in riparian growths of deciduous trees, as in canyon bottoms on river floodplains; also, in live oaks.	Does Not Occur (Nesting); Occurs (Foraging): Suitable nesting habitat is absent from the study area; however, suitable foraging habitat is present. In addition, this species was observed during the October 2021 vegetation community mapping and habitat assessment surveys.
<i>Athene cunicularia</i> burrowing owl	SSC BLM S DRECP BCC	A yearlong resident of open, dry grassland and desert habitats, and in grass, forb, and open shrub stages of pinyon-juniper and ponderosa pine habitats. Subterranean nester and is dependent upon burrowing mammals, most notably the California ground squirrel. Formerly common in appropriate habitats throughout the state, excluding the humid northwest coastal forests and high mountains.	Occurs: Two non-breeding burrowing owls and five potentially active wintering burrowing owl burrows were observed in the study area during vegetation community mapping and habitat assessment surveys in October 2021. Three active burrows were observed in the study area during rare plant surveys in March 2022. Two inactive burrows were observed in the study area during habitat and aquatic resources surveys in September 2022. Suitable nesting, migration, and wintering habitats are present.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur
<i>Eremophila alpestris actia</i> California horned lark	WL	Resident of coastal regions, chiefly from Sonoma County to San Diego County. Also found in the main part of the San Joaquin Valley and east to the foothills. Inhabits short-grass prairies, bald hills, mountain meadows, open coastal plains, fallow grain fields, and alkali flats. Nests in hollows on the ground.	Occurs: Suitable nesting habitat is present, and several observations of this species were recorded during vegetation community mapping and habitat assessment surveys in October 2021, outside of the breeding season.
<i>Falco mexicanus</i> prairie falcon	WL BCC	Uncommon permanent resident that ranges from southeastern deserts, northwest throughout the Central Valley and along the inner Coast Ranges and Sierra Nevada. Distributed from annual grasslands to alpine meadows, but associated primarily with perennial grasslands, savannahs, rangeland, some agricultural fields, and desert scrub areas. Usually nests in a scrape on a sheltered ledge of a cliff overlooking a large, open area.	Does Not Occur (Nesting); Occurs (Foraging): Suitable nesting habitat is absent from the study area; however, suitable foraging habitat is present. Several observations of this species were recorded during vegetation community mapping and habitat assessment surveys in October 2021, outside of the breeding season. This species was observed during rare plant surveys in April 2022, during the breeding season. One individual was observed during habitat assessment surveys in October 2022, outside the breeding season.
<i>Lanius ludovicianus</i> loggerhead shrike	SSC	A common resident and winter visitor in lowlands and foothills throughout California. Nests in densely foliated shrubs or trees.	Occurs: Suitable nesting habitat is present in the study area. In addition, several observations of this species were recorded during vegetation community mapping and habitat assessment surveys in October 2021 and September and October 2022, outside of the breeding season. This species was also observed during rare plant surveys in April 2022, during the breeding season.
<i>Toxostoma lecontei</i> LeConte's thrasher	BCC	Desert resident; primarily of open desert wash, desert scrub, alkali desert scrub, and desert succulent scrub habitats. Commonly nests in a dense, spiny shrub or densely branched cactus in desert wash habitat, usually two to eight feet above ground.	Occurs: Suitable nesting habitat is present in the study area. In addition, several observations of this species were recorded during vegetation community mapping and habitat assessment surveys in October 2021, outside of the breeding season. This species was also observed during rare plant surveys in April 2022, during the breeding season.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur
Mammals			
<i>Vulpes macrotis arsipus</i> desert kit fox	CFGC	Inhabits open, level desert areas with loose-textured soils supporting scattered, shrubby vegetation with little human disturbance.	Occurs: One active kit fox den was observed in the study area during habitat assessment surveys in October 2021. One additional active kit fox den was observed in the study area during rare plant surveys in April 2022. One active and two inactive dens were observed in the study area during habitat and aquatic resources surveys in September and October 2022.

Status (Federal/State)

- FT = Federally Threatened
- ST = State Threatened
- SC = State Candidate
- SSC = CDFW Species of Special Concern
- WL = CDFW Watch List
- BCC = Bird of Conservation Concern
- BLM S = BLM Sensitive Species
- CFGC = California Fish and Game Code

Status (Regional)

- DRECP = Desert Renewable Energy Conservation Plan Focus Species
- Source: CDFW 2021a, 2022b

Table 5.4-7 Special-status Wildlife Species Not Observed in the Study Area

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur
Birds			
<i>Agelaius tricolor</i> tricolored blackbird	ST SSC BLM S DRECP BCC	A highly colonial species that is most numerous in the Central Valley and vicinity. Largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few kilometers of the nesting colony.	Does Not Occur: Suitable open water with protected nesting substrate is absent from the study area. In addition, the only CNDDDB record within 5 miles of the study area from within 25 years states the population is possibly extirpated.
<i>Aquila chrysaetos</i> golden eagle	FP WL BLM S DRECP BCC	Found in rolling foothills, mountain areas, sage-juniper flats, and desert habitats. Cliff-walled canyons provide nesting habitat in most parts of range; also nests in large trees in open areas.	Does Not Occur (Nesting); Likely (Foraging): Suitable grassland and shrub foraging habitats are present in the study area. Two historical golden eagle nests that were once active, but have been inactive since 2012, are present within 5 miles of the study area. Both nests were located on cliffs, which are absent from the study area.
<i>Asio otus</i> long-eared owl	SSC	Inhabits riparian bottomlands in tall willows and cottonwoods. Also inhabits belts of live oak trees paralleling stream courses. This species requires adjacent open land that is productive with mice. This species also requires the presence of old nests created by crows, hawks, or magpies for breeding.	Does Not Occur: The study area is outside of the known breeding range of this species and suitable tall willows, cottonwoods, and live oak trees are absent from the study area.
<i>Charadrius montanus</i> mountain plover	SSC BLM S DRECP BCC	Winter resident from September through March. Southern California range includes Imperial Valley, plowed fields of Los Angeles and western San Bernardino counties, and along the central Colorado River valley. Uses open grasslands, plowed fields with little vegetation, and open sagebrush areas.	Unlikely: Migration and wintering habitat is present, and the study area is in the known winter range of this species. However, there are no CNDDDB records from within 5 miles of the study area.
<i>Charadrius nivosus</i> western snowy plover	FT SSC BCC	Inhabits sandy beaches, salt pond levees, and shores of large alkali lakes. Requires sandy, gravelly, or friable soils for nesting.	Does Not Occur: Suitable habitat is absent and the study area is outside of the known range of this species.
<i>Gymnogyps californianus</i> California condor	FE SE FP DRECP	Requires vast expanses of open savannah, grasslands, and foothill chaparral in mountain ranges of moderate altitude. Nesting sites are found in deep canyons containing clefts in the rocky walls. Forages up to 100 miles from the roost/nest.	Does Not Occur: The study area is outside of the known range of this species and there are no CNDDDB records within 5 miles of the study area.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur
<i>Toxostoma crissale</i> Crissal thrasher	SSC BLM S	Resident of southeastern deserts in desert riparian and desert wash habitats. Nests in dense vegetation along streams/washes. Preferred nesting substrate includes mesquite, screwbean mesquite, ironwood, catclaw, acacia, arrow weed, and willow.	Does Not Occur: The study area is outside of the known range of this species and there are no CNDDDB records within 5 miles of the study area.
<i>Vireo vicinior</i> gray vireo	SSC BLM S BCC	Inhabits dry chaparral and chamise-dominated habitats in the mountains of the Mojave Desert. Also associated with juniper and <i>Artemisia</i> sp. This species forages, nests, and sings in areas formed by a continuous growth of twigs approximately 1 to 5 feet above the ground.	Does Not Occur: The study area is outside of the known range of this species and there are no CNDDDB records within 5 miles of the study area.
Mammals			
<i>Antrozous pallidus</i> pallid bat	SSC BLM S DRECP WBWG H	Prefers rocky outcrops, cliffs, and crevices with access to open habitats for foraging. Day roosts are in caves, crevices, mines, and occasionally in hollow trees and buildings. Night roosts may be in more open sites, such as porches and open buildings. A wide variety of habitats are occupied, including grasslands, shrublands, woodlands, and forests from sea level up through mixed conifer forests.	Does Not Occur: Suitable caves, crevices, mines, and hollow trees for roosting are absent from the study area. In addition, there are no CNDDDB records within 5 miles of the study area.
<i>Corynorhinus townsendii</i> Townsend’s big-eared bat	SSC BLM S DRECP WBWG H	Resident of California in a wide variety of habitats. Most common in mesic sites. Requires caves, mines, tunnels, and cave-like human-made structures for roosting. Extremely sensitive to human disturbance.	Does Not Occur: Suitable caves, mines, tunnels, or other cave-like structures for roosting are absent from the study area. In addition, the only two CNDDDB observations from the region are over 25 years old and are not within 5 miles of the study area.
<i>Euderma maculatum</i> spotted bat	SSC BLM S WBWG H	Occupies a wide variety of habitats from arid deserts and grasslands through mixed conifer forests. Typically forages in open terrain, over water and along washes. Feeds almost entirely on moths. Roosts in rock crevices in cliffs or caves. Occasionally roosts in buildings.	Does Not Occur: Suitable rock crevices for roosting and water sources for foraging are absent from the study area. In addition, the only two CNDDDB observations from the region are over 25 years old and are not within 5 miles of the study area.
<i>Onychomys torridus tularensis</i> Tulare grasshopper mouse	BLM S SSC	Inhabits hot, arid valleys and scrub deserts in the southern San Joaquin Valley. The species’ diet is almost exclusively composed of arthropods and therefore an abundant supply of insects is required.	Does Not Occur: The study area is outside of the known range of this species and there are no records within 5 miles of the study area.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur
<i>Taxidea taxus</i> American badger	SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats. Needs sufficient food, friable soils, and open, uncultivated ground. Preys on burrowing rodents and digs burrows.	Likely: Suitable habitat is present in the study area. In addition, there are three CNDDDB records within 6 miles of the study area from the past 25 years.
<i>Xerospermophilus mohavensis</i> Mohave ground squirrel	ST BLM S DRECP	Inhabits open desert scrub, alkali scrub, and Joshua tree woodland in the Mojave Desert. Prefers sandy to gravelly soils and avoids rocky areas. Uses burrows at the base of shrubs for cover and nesting.	Likely: Suitable habitat is present in the study area. In addition, there are multiple CNDDDB records within 5 miles of the study area from the past 25 years. This species was not detected during protocol surveys conducted at the Cal City Substation in 2020 and 2021. ¹

¹Chavka, K. 2021

Status (Federal/State)

FE = Federally Endangered
 FT = Federally Threatened
 SE = State Endangered
 ST = State Threatened
 FP = CDFW Fully Protected
 SSC = CDFW Species of Special Concern
 WL = CDFW Watch List
 BCC = Bird of Conservation Concern
 BLM S = BLM Sensitive Species

Status (Regional)

DRECP = Desert Renewable Energy Conservation Plan Focus Species
 WBWG H = Western Bat Working Group – High Priority
 Source: CDFW 2021a, 2022b

Reptiles

One special-status reptile species was observed during the 2021 and 2022 surveys: Mojave desert tortoise (Federally- and State-threatened, DRECP Focus Species).

During vegetation community mapping and habitat assessment surveys for the Proposed Project in October 2021, two carcasses, one Class 3 pallet, one Class 2 burrow, one Class 3 burrow, and two Unknown Class burrows were observed in the study area. One live tortoise was also observed during the surveys. Nine live tortoises, two carcasses, three pallets, three Class 1 burrows, two Class 2 burrows, five Class 3 burrows, two Class 4 burrows, one Class 5 burrow, and one burrow of unknown class were observed in the study area during rare plant surveys in March and April 2022. One live tortoise at a burrow mapped during previous surveys, one Class 1 burrow, four Class 2 burrows (two with scat), one Class 3 burrow, and two Class 5 burrows were observed during aquatic resources and habitat assessment surveys in the study area in September and October 2022. The desert tortoise observations are located in the study area of the proposed Cal City-Edwards-Holgate 115 kV Subtransmission Line and the proposed Kramer-Cal City 115 kV Subtransmission Line. Medium- to high-quality habitat occurs throughout the study area.

No other special-status reptile species have been reported in the study area.

Birds

Six special-status bird species were observed within the study area during the 2021 and 2022 surveys: Cooper's hawk, burrowing owl, California horned lark, prairie falcon, loggerhead shrike, and LeConte's thrasher.

Suitable nesting habitat for Cooper's hawk (CDFW WL) is absent from the study area; however, suitable foraging habitat and appropriate prey species are present. Multiple Cooper's hawk observations were recorded during the 2021 surveys.

The study area contains highly suitable habitat for burrowing owls (CDFW SCC and BLM S) including desert scrub vegetation and friable soils. Two live burrowing owls and five potentially active burrowing owl burrows were observed within the study area during vegetation mapping and habitat assessment surveys in October 2021. Three active burrows were observed in the study area during rare plant surveys in March 2022. Two inactive burrows were observed in the study area during additional habitat assessment and aquatic resources surveys in September 2022. The burrowing owl observations are located within both Proposed Project subtransmission line components.

The study area also contains highly suitable habitat for California horned lark (CDFW WL), including areas with low herbaceous vegetation and widely scattered low shrubs. Several observations of California horned larks were recorded during vegetation mapping and habitat assessment surveys in October 2021.

Prairie falcons (CDFW WL and BCC) occur within the region, and several observations of foraging prairie falcons were recorded within the study area during vegetation mapping and habitat assessment surveys in October 2021, as well as during the April 2022 rare plant surveys. In addition, one individual was observed during additional habitat assessment surveys conducted in October 2022, outside the breeding season. Suitable prey species, including ground squirrels, lizards, and birds, occur within the study area.

The study area contains highly suitable habitat for loggerhead shrike (CDFW SSC), including desert scrub habitat with suitable hunting perches. Several observations were recorded during vegetation mapping and

habitat assessment surveys in October 2021, during rare plant surveys in April 2022, and during additional habitat assessment survey conducted in September and October 2022.

Suitable habitat for LeConte's thrasher (BCC) is also present in the study area. Several observations were recorded during vegetation mapping and habitat assessment surveys in October 2021 and during rare plant surveys in April 2022.

Golden eagle (*Aquila chrysaetos*; FP, CDFW SSC, BLM S, DRECP Focus Species, and USFWS BCC) was not observed within the study area during the surveys. Two golden eagle nests that were once active, but have been inactive since 2012, are present between approximately 1.53 and 2.72 miles of the study area. Both nests were located on cliffs, which are absent from the study area. Grassland and shrub foraging habitat, with prey species such as white-tailed antelope squirrel (*Ammospermophilus leucurus*), black-tailed jackrabbit (*Lepus californicus*), and desert cottontail (*Sylvilagus audubonii*), is present throughout the undeveloped parts of the study area.

No special-status bird species were observed to be nesting in the study area during the 2021 surveys, which were conducted outside the nesting season of approximately February 1 through September 15. Nesting was not observed for special-status birds documented during 2022 surveys that occurred during the nesting season.

Mammals

Desert kit fox (*Vulpes macrotis arsipus*), a CFGC protected species, was not directly observed during the 2021 or 2022 surveys, but one active kit fox den was observed within the study area in 2021 surveys, one active kit fox den was observed in the study area during the April 2022 rare plant surveys, and one active and two inactive dens were observed in the study area during habitat and aquatic resources surveys in September and October 2022. The desert kit fox observations are located within both Proposed Project subtransmission line components.

American badger (*Taxidea taxus*), a CDFW SSC, was not observed within the study area. However, suitable habitat including creosote scrub vegetation with friable soils and a suitable prey base (including small mammals) is present within the study area. In addition, there are three CNDDDB records from 2014 and 2015 that are approximately 6 miles west of the study area.

Mohave ground squirrel (*Xerospermophilus mohavensis*), a state threatened, BLM S, and DRECP Focus species, was not observed within the study area during the 2021 or 2022 surveys. Aardvark Biological Services, LLC, conducted protocol surveys for SCE between April and June in 2020 and 2021 within the parcel containing the Cal City Substation and a portion of the parcel to the south. These surveys did not detect Mohave ground squirrels. No further trapping was conducted for the Proposed Project. However, suitable desert scrub habitat was identified throughout the Proposed Project study area, and there are multiple CNDDDB records that are within 5 miles of the study area within the past 25 years.

Table 5.4-8 Special-status Wildlife Habitat in the Study Area

Species	Medium to High Quality Habitat (acres) ¹
Mojave Desert Tortoise	4,301
Burrowing Owl	5,239
California Horned Lark	2,757
Loggerhead Shrike	762
LeConte's Thrasher	759
American Badger	4,897
Desert Kit Fox	5,227
Mohave Ground Squirrel	4,810

¹ Includes historical SCE Ivanpah-Control Project habitat data for Mojave desert tortoise, Mohave ground squirrel, burrowing owl, and desert kit fox mapped without distinguishing habitat quality, that is assumed to be medium to high quality habitat

5.4.1.6 Critical Habitat

Under the FESA, the USFWS is required to designate critical habitat for specific geographic area(s) that contains features essential to the survival and recovery of threatened or endangered species (16 U.S.C. § 1533 [a][3]). Designated critical habitat includes occupied and unoccupied sites for feeding, roosting, cover, shelter, breeding and rearing, and movement or migration and must be managed to protect existing environmental resources tied to the survival and recovery of the listed species.

Critical habitat for one species, Mojave desert tortoise, is located along the eastern boundary of the Proposed Project alignment. The Proposed Project alignment coincides with critical habitat at the intersection of U.S. 395 and Twenty Mule Team Parkway in the northeast portion of the study area, and near Kramer Junction in the southeast. The study area contains approximately 322.4 acres of critical habitat in the approximately 518,000-acre Fremont- Kramer Recovery Unit (USFWS 2021a) (Figure 5.4-4). The USFWS has defined the specific physical and biological features of Mojave desert tortoise critical habitat as:

- sufficient space to support viable populations within each of the recovery units and to provide for movement, dispersal, and gene flow;
- sufficient quality and quantity of forage species and the proper soil conditions to provide for the growth of these species;
- suitable substrates for burrowing, nesting, and overwintering; burrows, caliche caves, and other shelter sites; sufficient vegetation for shelter from temperature extremes and predators; and
- habitat protected from disturbance and human-caused mortality.

No other critical habitat is located within 5 miles of the Proposed Project alignment.

5.4.1.7 Native Wildlife Corridors and Nursery Sites

5.4.1.7.1 Wildlife Corridors

Native wildlife corridors that provide habitat connectivity across a broader geographic area are critical to survival and reproduction for many plant and wildlife species. Similar terrain, vegetation types, water courses, mountain tops and ridgelines, and other natural features provide suitable contiguous habitat for passage from one area to another for food, water, and reproduction. CEQA guidelines require disclosure of proposed modifications to wildlife corridors and associated mitigation for significant impacts to this important biological resource.

Scrub vegetation communities in the study area provide connectivity to other larger stretches of similar habitat. These provide potential local migration corridors for birds, mammals, and reptiles. Near the study area, mountain ranges and passes under state Highway 58 also provide corridors for wildlife movement. The Pacific Flyway, a major north-south corridor for migratory birds, intersects the study area and habitat in the Proposed Project site may provide foraging and/or shelter habitats for migrating birds that move through the California desert ecosystem in spring and fall.

A network of wildlife linkages identified in the DRECP LUPA are adjacent to the Proposed Project alignment. In addition, the Proposed Project is located near several designated conservation areas. The Desert Tortoise Research Natural Area of Critical Environmental Concern (ACEC), which overlaps a small portion of the northwest corner of the study area, and Western Rand Mountains ACEC, which is located northwest of the study area, were specifically established by BLM to create and protect wildlife linkages to other conservation and wilderness areas (BLM 2016). The northwestern and eastern extents of the study area are also adjacent to and overlap a small part of the Fremont-Kramer ACEC, which includes essential wildlife movement corridors that link habitats in the Western Rand Mountains and Fremont Valley to the Cuddleback Lake area and to both the Golden Valley and Grass Valley Wildernesses (BLM 2016) (Figure 5.4-5).

The study area also contains potential habitat corridors that may connect Mohave ground squirrel core areas and known populations described in the report *Current Status of the Mohave Ground Squirrel* (Leitner 2008). In suggesting these areas may have suitable habitat for movement, the report also noted a lack of data to confirm they are used by Mohave ground squirrel. The areas extend northwest from roughly northeast of the community of North Edwards to east of the City of California City, and from EAFB south of Boron north along U.S. 395 to the El Paso Mountains over 15 miles northwest of the study area.

5.4.1.7.2 Nursery Sites

No regional or local native wildlife nursery sites are known to exist within 5 miles of the study area.

5.4.1.8 Biological Resource Management Areas

There is no adopted habitat conservation plan (HCP) or natural community conservation plan (NCCP) within the Proposed Project alignment, and no known approved local, regional, or state habitat conservation plans covering the Proposed Project alignment.

5.4.2 Regulatory Setting

Federal, state, and local regulations were reviewed for applicability to the Proposed Project.

5.4.2.1 Federal

5.4.2.1.1 Endangered Species Act (16 U.S.C. § 1531 et seq.)

The Endangered Species Act of 1973 (FESA) provides for the protection of plant and animal species listed by the federal government as “Endangered” or “Threatened”, and “the ecosystems upon which they depend.” An “Endangered” species is one that is “in danger of extinction” throughout all or a significant portion of its range. A “Threatened” species is one that is “likely to become endangered” within the foreseeable future.

Pursuant to Section 9 of the FESA, it is unlawful for any person to “take” a federally listed species. “Take,” as defined by the FESA, “means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” This can also include the modification of a species’ habitat. For plants, this statute governs removing, possessing, maliciously damaging, or destroying any listed plant on federal land and removing, cutting, digging up, damaging, or destroying any listed plant on nonfederal land in knowing violation of state law (16 U.S.C. § 1538(c)).

5.4.2.1.2 Migratory Bird Treaty Act (16 U.S.C. §§ 703 – 712)

The Migratory Bird Treaty Act of 1918 (MBTA) protects species of native, non-game, migratory birds. Specific provisions in the statute include a federal prohibition, except as allowed under specific conditions, to: “pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird, included in the terms of this Convention ... for the protection of migratory birds ... or any part, nest, or egg of any such bird.” (16 U.S.C. § 703)

5.4.2.1.3 Bald and Golden Eagle Protection Act (16 U.S.C § 668)

The Bald and Golden Eagle Protection Act of 1940 (BGEPA) provides for the protection of bald and golden eagles. The BGEPA establishes criminal penalties for persons who “take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof.” The BGEPA defines “take” as “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb.”

5.4.2.1.4 California Desert Conservation Area Plan

The California Desert Conservation Area (CDCA) Plan is a comprehensive, long-range plan for the management, use, development, and protection of lands within the CDCA, and it is required as part of the Federal Land Policy and Management Act of 1976 (FLPMA) and implemented by the Bureau of Land Management (BLM). The CDCA Plan defines rare, threatened, and endangered plants as those listed as endangered by the FESA; endangered or rare by CESA; or candidates for endangered or threatened listing by the USFWS. Rare, threatened, and endangered species are managed in accordance with applicable laws and regulations. These plants are also protected through consideration in all BLM site-specific environmental impact analysis to ensure that any action authorized by the BLM does not jeopardize listed plants or habitats supporting listed plants. The CDCA Plan stabilizes and improves populations of listed plants through management and recovery plans developed and implemented cooperatively with the USFWS and CDFW. The CDCA Plan also prohibits the harvesting of plants that are listed as rare, threatened, or endangered. As part of Phase I of the DRECP, the BLM adopted an amendment to the CDCA Plan in September 2016—the LUPA to the CDCA Plan and Bishop Resource Management Plan, which is discussed further below.

5.4.2.1.5 Desert Renewable Energy Conservation Plan

The Desert Renewable Energy Conservation Plan (DRECP) is a collaborative effort between the California Energy Commission (CEC), CDFW, BLM, and USFWS to advance federal and state natural resource conservation goals and other federal land management goals; meet the requirements of the FESA, CESA, Natural Community Conservation Planning Act, and FLPMA; and facilitate the timely and streamlined

permitting of renewable energy projects in the Mojave and Colorado/Sonoran desert regions of Southern California. The DRECP covers approximately 22.5 million acres in the desert regions of Imperial, Inyo, Kern, Los Angeles, Riverside, San Bernardino, and San Diego Counties. The DRECP is being prepared in two phases. Phase I consisted of the BLM LUPA to the CDCA Plan and Bishop Resource Management Plan. Phase II will consist of adopting a General Conservation Plan for approximately 5.5 million acres of non-federal land and a Conceptual Plan-Wide Natural Community Conservation Plan (NCCP) that encompasses the entire DRECP plan area.

5.4.2.1.6 Bureau of Land Management Land Use Plan Amendment

The BLM LUPA establishes management direction for the permitting of renewable energy and transmission development on approximately 10 million acres of BLM-managed lands in the DRECP area. The BLM LUPA amends the CDCA Plan and the Bishop Resource Management Plans. The purpose of the LUPA is to conserve biological, environmental, cultural, recreation, scenic, and visual resources; respond to federal renewable energy goals and policies, including state-level renewable energy targets; and comply with the FLPMA. The BLM LUPA prescribes conservation management actions (CMAs).

5.4.2.1.7 Clean Water Act of 1972

Enacted in 1972, the federal Clean Water Act of 1972 (CWA; 33 U.S.C. § 1251 et seq.) and subsequent amendments outline the basic protocol for regulating discharges of pollutants to waters of the U.S. It is the primary federal law applicable to water quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. Enforced by the USEPA, it was enacted "... to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." The CWA authorizes states to adopt water quality standards and includes programs addressing both point and non-point pollution sources.

The CWA also established the established the National Pollutant Discharge Elimination System (NPDES) and provides the USEPA the authority to implement pollution control programs, such as setting wastewater standards for industry and water quality standards for surface waters (see below for a discussion of the NPDES program). In California, programs and regulatory authority under the CWA have been delegated by USEPA to the State Water Resources Control Board (SWRCB) and its nine RWQCBs.

Under Section 402 of the CWA, a discharge of pollutants to navigable waters is prohibited unless the discharge complies with an NPDES permit. The SWRCB and RWQCBs have also developed numeric and narrative water quality criteria to protect beneficial uses of state waters and waterways. Beneficial uses in the CSP Project Area include water supply, groundwater recharge, aquatic habitat, wildlife habitat, and recreation.

5.4.2.1.8 Section 401 – Water Quality Certification

Section 401 of the CWA specifies that, for any activity that may result in a discharge into waters of the U.S., the SWRCB or applicable RWQCB must certify that the discharge will comply with state water quality standards, including beneficial uses (23 CCR § 3830, et seq). Under California's policy of no net loss of wetlands, the SWRCB and RWQCBs require mitigation for dredge and fill impacts to wetlands and waterways.

Dredge and fill activities in wetlands and waterways that impact waters of the U.S. would require a Federal Section 404 permit from the USACE. These permits trigger the requirement to obtain a Section 401 certification, which must be obtained prior to issuance of a Section 404 permit.

5.4.2.1.9 Section 404 – Permitting for Dredge and Fill Activities in Wetlands and Waters of the U.S.

The USACE is responsible for issuing permits under CWA Section 404 for placement of fill or dredged material in waters of the U.S. and jurisdictional wetlands. Waters of the U.S. refers to oceans, bays, rivers, streams (including non-perennial streams with a defined bed and bank), lakes, ponds, and seasonal and perennial wetlands.

Project proponents must obtain a permit from the USACE for all discharges of fill or dredged material before proceeding with a proposed activity. The USACE may issue either an individual permit or a general permit. General permits are preauthorized at the regional or national level and are issued to cover activities expected to result in only minimal adverse environmental effects (e.g., LA District Regional General Permit No. 63 for Repair and Protection Activities in Emergency Situations). Nationwide Permits (NWP) are a type of general permit issued to cover activities that the USACE has determined to have minimal adverse effects, such as routine maintenance (e.g., Nationwide Permit 3) or utility line activities (e.g., Nationwide Permit 12). Each NWP specifies particular conditions that must be implemented by the permittee.

5.4.2.2 State

5.4.2.2.1 California Fish and Game Code §§ 1600-1617, Lake and Streambed Alteration Agreement

If a project includes alteration of the bed, banks, or channel of a stream, or the adjacent riparian vegetation, then a Lake and Streambed Alteration Agreement (LSAA) may be required from CDFW. CFGC sections 1600-1616 regulate activities that could alter the flow, bed, banks, channel, or associated riparian areas of a river, stream, or lake – all considered “waters of the state”. The law requires any person, state, or local government agency or public utility to notify CDFW before beginning an activity that would substantially modify a river, stream, or lake.

5.4.2.2.2 California Endangered Species Act (CFGC § 2050-2100)

The CESA generally parallels the provisions of the FESA, and states that “all native species of fishes, amphibians, reptiles, birds, mammals, invertebrates, and plants, 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 or preserved.” The CDFW administers the CESA and has committed itself to work with all interested persons, agencies, and organizations to protect and preserve such special-status resources and their habitats.

Under the CESA, “Endangered” is defined as “a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range;” and “Threatened” is defined as “a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts.” “Take” is defined as “to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill” an individual of a species, but the definition does not include “harm” or “harass,” as the FESA does.

Consistent with the CESA, CDFW has established lists of endangered, threatened, and candidate species that may or may not also be included on a FESA list. Pursuant to CFGC section 2080.1, CESA allows for

incidental take permits (ITP) to otherwise lawful development projects that could result in the take of a state listed Threatened or Endangered species. The application for an incidental take permit under CFGC section 2080.1(b) has a number of requirements including identification of minimization measures to reduce the potential for take and how take of listed species will be mitigated. CESA emphasizes early consultation to avoid potential impacts on rare, endangered, and threatened species and to develop appropriate mitigation planning to offset project-caused losses of listed species.

5.4.2.2.3 California Code of Regulations Title 14 Section 460

The California Code of Regulations Title 14, section 460 stipulates that certain furbearers, including desert kit fox, may not be taken at any time.

5.4.2.2.4 Native Plant Protection Act

The Native Plant Protection Act (NPPA) identifies the types of plant species eligible for state listing. Eligible species include those identified with CRPR of 1A, 1B, and 2, which meet the definitions of sections 1901, Chapter 10 (NPPA) or sections 2062 and 2067 (CESA) of the CFGC.

Section 1913(b) of the NPPA states “the performance by a public agency or publicly or privately owned public utility of its obligation to provide service to the public, shall not be restricted by this chapter because of the presence of rare or endangered plants.”

5.4.2.2.5 California Fish and Game Code §§ 3511, 4700, 5050, and 5515

CFGC sections 3511, 4700, 5050, and 5515 govern the protection of bird, mammal, reptile, amphibian, and fish species identified as “fully protected.” Fully protected animals may not be harmed, taken, or possessed and CDFW may not issue take authorization for fully protected species. The classification of “Fully Protected” was the state’s initial effort to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, amphibians and reptiles, birds, and mammals. Most of the species on these lists have subsequently been listed under the FESA and/or CESA; white-tailed kite (*Elanus leucurus*), golden eagle, trumpeter swan (*Cygnus buccinator*), northern elephant seal (*Mirounga angustirostris*), and ring-tailed cat (*Bassariscus astutus*) are the exceptions. The white-tailed kite and the golden eagle are tracked in the CNDDDB; the trumpeter swan, northern elephant seal, and ring-tailed cat are not.

5.4.2.2.6 California Fish and Game Code §§ 3500-3516, and 3800

CFGC section 3513 furthers the intent of the MBTA by prohibiting any take or possession of birds in California that are designated by the MBTA as migratory non-game birds, except as allowed by federal rules and regulations promulgated pursuant to the MBTA. In addition, CFGC sections 3503, 3503.5, 3511, and 3800 further protect nesting birds and their parts, including passerine birds, raptors, and state “fully protected” birds. These regulations protect almost all native nesting birds, not just special-status birds.

5.4.2.2.7 California Public Resources Code §§ 4292 and 4293

Section 4292 directs the owner, controller, operator, or maintainer of electrical transmission lines in mountainous land, forest-covered land, brush-covered land, or grass-covered land to 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 pole or tower; and section 4293 requires the same to maintain a clearance of 4 feet from any line which is operating at 2,400 or more volts, but less than 72,000 volts.

5.4.2.2.8 California Public Utilities Commissions, GO 95, Rule 35, Vegetation Management

Rule 35 mandates that certain vegetation management activities be performed in order to establish necessary and reasonable clearances, and establishes minimum clearances between line conductors and vegetation that under normal conditions shall be maintained. These requirements apply to all overhead electrical supply and communication facilities covered by this GO, including facilities on lands owned and maintained by California state and local agencies.

5.4.2.2.9 Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act of 1967 (California Water Code § 13000 et seq.) requires the SWRCB and the nine RWQCBs to adopt water quality criteria to protect waters of the state. These criteria include the identification of beneficial uses, narrative and numerical water quality standards, and implementation procedures. Individual water quality control plans are prepared for each RWQCB. These plans set implementation policies, goals, and water management practices in accordance with the Porter-Cologne Water Quality Control Act. Waste discharge requirements and waivers are mechanisms used by the RWQCBs/SWRCB to control discharges and protect water quality.

The SWRCB adopted a State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (Procedures), for inclusion in the forthcoming Water Quality Control Plan for Inland Surface Waters and Enclosed Bays and Estuaries and Ocean Waters of California. The Procedures consist of four major elements: 1) a wetland definition; 2) a framework for determining if a feature that meets the wetland definition is a water of the state; 3) wetland delineation procedures; and 4) procedures for the submittal, review and approval of applications for Water Quality Certifications and Waste Discharge Requirements for dredge or fill activities.

The final rules and policy were approved by the Office of Administrative Law on August 28, 2019 and will become effective May 28, 2020. Therefore, although the features on the site may be federally non-jurisdictional, the SWRCB, through the Lahontan RWQCB will likely require permitting for fill to waters of the state.

5.4.2.2.10 California Native Plant Society

The California Native Plant Society (CNPS) is a private plant conservation organization dedicated to the monitoring and protection of sensitive species in California. CNPS has compiled an inventory comprising information focusing on geographic distribution and qualitative characterization of Rare, Threatened, or Endangered vascular plant species of California.

Sensitive species that occur or potentially could occur within the study area are based on one or more of the following: (1) the direct observation of the species during one of the biological surveys; (2) the study area is within known distribution of a species and contains appropriate habitat; and (3) there is an accurate CNDDDB record within 5 miles of the study area no more than 25 years old.

5.4.2.3 *Local*

The California Public Utilities Commission (CPUC) has sole and exclusive state jurisdiction over the siting and design of the Proposed Project. Pursuant to CPUC General Order 131-D (G.O. 131-D), Section XIV.B:

“Local jurisdictions acting pursuant to local authority are preempted from regulating electric power line projects, distribution lines, substations, or electric facilities constructed by public utilities subject to the CPUC’s jurisdiction. However, in locating such projects, the public utilities shall consult with local agencies regarding land use matters.”

Consequently, public utilities are directed to consider local regulations and consult with local agencies, but the county and cities’ regulations are not applicable as the county and cities do not have jurisdiction over the Proposed Project. Accordingly, the following discussion of local land use regulations is provided for informational purposes only.

5.4.2.3.1 **Kern County General Plan**

The Land Use, Open Space, and Conservation Element of the Kern County General Plan contains policies relating to the conservation, development, and utilization of natural resources including water, soils, wildlife, minerals, and other natural resources (Kern County 2009).

Project-applicable policies within the Conservation Element include:

- Policy 27 Threatened or endangered plant and wildlife species should be protected in accordance with state and federal laws.
- Policy 28 County should work closely with state and federal agencies to assure that discretionary projects avoid or minimize impacts to fish, wildlife, and botanical resources.
- Policy 29 The County will seek cooperative efforts with local, state, and federal agencies to protect listed threatened and endangered plant and wildlife species through the use of conservation plans and other methods promoting management and conservation of habitat lands.
- Policy 32 Riparian areas will be managed in accordance with United States Army Corps of Engineers, and the California Department of Fish and Game rules and regulations to enhance the drainage, flood control, biological, recreational, and other beneficial uses while acknowledging existing land use patterns.

5.4.2.3.2 **San Bernardino Countywide Policy Plan**

The Natural Resources Element of the San Bernardino Countywide Policy Plan (San Bernardino County 2020) contains policies and guidance that are designed to protect and conserve environmental resources in San Bernardino County. The purpose of this element is to establish policies that preserve and enhance natural resources and to provide guidance on coordination for managing and conserving watersheds, wildlife habitat areas and corridors, and open space areas within the County. The element also provides guidance on the location and distribution of new development to protect natural resources. The Natural Resources Element includes the protection and preservation of natural resources including agricultural/grazing lands, watersheds, minerals, native plants and wildlife, and plant and wildlife habitat areas.

Project-applicable policies within the Natural Resources Element include:

- Policy NR-5.1 Coordinated habitat planning. We participate in landscape-scale habitat conservation planning and coordinate with existing or proposed habitat conservation and natural resource management plans for private and public lands to increase certainty for both the conservation of species, habitats, wildlife corridors, and other important biological resources and functions; and for land development and infrastructure permitting.
- Policy NR-5.2 Capacity for resource protection and management. We coordinate with public and nongovernmental agencies to seek funding and other resources to protect, restore, and maintain open space, habitat, and wildlife corridors for threatened, endangered, and other sensitive species.
- Policy NR-5.7 Development review, entitlement, and mitigation. We comply with state and federal regulations regarding protected species of animals and vegetation through the development review, entitlement, and environmental clearance processes.
- Policy NR-5.8 Invasive species. We require the use of non-invasive plant species with new development and encourage the management of existing invasive plant species that degrade ecological function.

5.4.2.3.3 San Bernardino County Code of Ordinances

The following San Bernardino County Ordinances pertain to the protection of biological resources:

- Chapter 88.01: Plant Protection and Management
 - § 88.01.040 Regulated Trees and Plants
 - A regulated tree or plant shall be any of the trees or plants identified in Section 88.01.060 (c), Section 88.01.070 (b), or Section 88.01.080 (b).
 - A Tree or Plant Removal Permit shall be required for the removal of regulated trees and plants.
- § 88.01.060 Desert Native Plant Protection
 - c) *Regulated Desert Native Plants*. The following desert native plants or any part of them, except the fruit, shall not be removed except under a Tree or Plant Removal Permit in compliance with § 88.01.050.
 - The following desert native plants with stems two inches or greater in diameter or six feet or greater in height:
 - *Dalea spinosa* (smoketree)
 - All species of the genus *Prosopis* (mesquites)
 - All species of the family Agavaceae (century plants, nolinias, yuccas).
 - Creosote Rings, ten feet or greater in diameter
 - All Joshua trees
 - Any part of any of the following species, whether living or dead:
 - *Olneya tesota* (desert ironwood)

- All species of the genus *Prosopis* (mesquites)
- All species of the genus *Cercidium* (palos verdes)
- § 88.01.070 Mountain Forest and Valley Tree Conservation
 - b) *Regulated Trees*. The following trees shall only be removed with an approved Tree or Plant Removal Permit issues in compliance with § 88.01.050.
 - Native Trees: A living, native tree with a six inch or greater stem diameter or 19 inches in circumference measured four and one-half feet above natural grade level.
 - Palm Trees: Three or more palm trees in linear plantings, which are 50 feet or greater in length with established windrows or parkway plantings, shall be considered to be heritage trees and shall be subject to the provisions of this Chapter regarding native trees.
- § 88.01.080 Riparian Plant Conservation: The provisions of this Section shall apply to all riparian areas located on private land in all zones within the unincorporated areas of the County and to riparian areas on public land owned by the County.
 - b) *Regulated Riparian Plants*. The removal of vegetation within 200 feet of the bank of a stream, or in an area indicated as a protected riparian area on an overlay map or Specific Plan, shall require approval of a Tree or Plant Removal Permit in compliance with § 88.01.050.

5.4.2.3.4 City of California City General Plan

The Open Space and Conservation Element of the City of California City General Plan contains goals, policies, and implementation measures that aim to preserve and protect conservation resources that are unique to the City of California City environs (City of California City 2009). These natural resources include water, floodplains, mineral resources, air quality, sensitive biological resources, and historical and cultural resources.

Project-applicable policies within the Conservation Element include:

- Protect sensitive vegetation and wildlife species, in accordance with state and federal laws and regulations, and to provide for maintenance of supportive habitat for such species in balance with the needs of humans.
- Maintain and promote the retention of natural setting and use of native or adaptable vegetation.
- Encourage the preservation of Joshua trees, known wildflower displays, or other biologically sensitive flora determined during biological surveys.

5.4.2.4 Habitat Conservation Plan

There are no Habitat Conservation Plans relevant to the Proposed Project.

5.4.3 Impact Questions

5.4.3.1 Biological Resources Impact Questions

The thresholds of significance for assessing impacts come from the CEQA Environmental Checklist. For biological resources, the CEQA Checklist asks, 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 in local or regional plans, policies, or regulations,

or by the California Department of Fish and Wildlife (CDFW) or United States Fish and Wildlife Service (USFWS)?

- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFW or USFWS?
- Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, and coastal) through direct removal, filling, hydrological interruption, or other means?
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridor, or impede the use of native wildlife nursery sites?
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?
- Conflict with the provisions of an adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan (NCCP), or other approved local, regional, or state habitat conservation plan?

5.4.3.2 Additional CEQA Impact Questions

There is one CPUC-identified additional CEQA impact question:

- Would the project create a substantial collision or electrocution risk for birds or bats?

5.4.4 Impact Analysis

5.4.4.1 Biological Resources Methodology

5.4.4.1.1 Vegetation Mapping

Natural and semi-natural vegetation community classification was based on the systems provided in the online database of *A Manual of California Vegetation, Second Edition* (Sawyer et al. 2009, CNPS 2021b, 2022b). Vegetation classifications were assigned, where applicable, at the two finest levels - alliance and association. Classifications were modified as appropriate to reflect the existing site conditions. All vegetation communities were categorized to the alliance level; communities were further categorized to the association level when necessary to determine whether any CDFW sensitive natural communities were present (CDFW 2021d, 2022a).

Natural communities designated as sensitive by CDFW, based on NatureServe's (2012) methodologies to rank communities at both the global (G) and state (S) levels, resulting in a rank ranging from 1 (very rare and threatened) to 5 (demonstrably secure). Natural communities with ranks of S1-S3 are considered sensitive natural communities (CDFW 2021d, 2022a)

The Jepson Manual: Vascular Plants of California, Second Edition and online Jepson eFlora were used for plant identification and nomenclature (Baldwin et al. 2012; Jepson Flora Project 2021, 2022).

Vegetation community mapping was conducted during September, October, and December 2021. Mapped *Ambrosia dumosa* Alliance locations were revisited and reclassified where needed April 11 through 16, 2022. Additional field mapping and desktop analysis was completed on September 27 and 28, October 26 and 27, and November 8, 2022 in the expanded areas. The study area overlaps with several SCE projects for which vegetation community data were already collected and recorded in ArcGIS Online (AGOL). In addition, SCE's AGOL database documents vegetation community data imported from external sources for

the DRECP area. These data were cross-referenced in the field during the fall 2021 mapping effort, and communities were updated as needed based on current field conditions. Detailed survey methodology is provided in Appendix C.

5.4.4.1.2 Aquatic Resources Delineation

This reconnaissance-level aquatic resources delineation was intended to support Proposed Project design and maximize avoidance and minimization of impacts on jurisdictional waters, as Proposed Project design is currently in development. It is anticipated that a formal jurisdictional delineation would be conducted when more advanced Proposed Project design data is available. The study area was surveyed for potential wetlands and non-wetland aquatic resources, including streams and ephemeral drainages, that exhibited an ordinary high-water mark (OHWM) and would constitute waters of the U.S. and/or state. Biologists recorded general site characteristics, vegetation communities, soils, and hydrology associated with aquatic features. Current federal and state policies, methods, and guidelines were used to identify and delineate potential jurisdictional waters and are described below. For a more detailed description of the applicable jurisdictional regulations, see Section 4.6 in the BRTR (PEA Appendix C). Since the reconnaissance-level aquatic resources delineation was not intended to be a formal jurisdictional delineation, the Arid West Ephemeral and Intermittent Stream OHWM Datasheet and Arid West Region Wetland Determination Data Forms were not completed. An aquatic resource Figureset is in Appendix J of the BRTR (PEA Appendix C).

5.4.4.1.3 Habitat Assessment

5.4.4.1.4 Special-status Plants

The rare plant surveys were floristic in nature (i.e., all plants encountered were identified to the lowest taxonomic level necessary to determine rarity) and generally followed the CNPS Botanical Survey Guidelines (CNPS 2001) and the Protocols for Surveying and Evaluating Impacts to Special-status Native Plant Populations and Natural Communities (CDFW 2018), but excluded certain elements such as Combined Vegetation Rapid Assessment and Relevé Field Form submittal, and plant voucher collection. No regulatory agency coordination or agency communication protocols were required for these surveys. Data were collected via hand-held, sub-meter, global positioning system units, photographs, and daily reports.

After conducting reference site checks to confirm rare plant species bloom timing on March 8, 13, and 17, surveys for rare plants were conducted between March 24 and April 16, 2022, across the full length of the Proposed Project alignment. Additional habitat assessment and rare plant surveys on September 27 and 28, October 26 and 27, 2022, and a desktop analysis on November 8, 2022, were completed in expanded areas. Surveys were conducted by walking systematic transect lines at 50-foot spacing between botanists. Predetermined transects were visible as layers on in-hand GIS mapping units. The surveyed area included the Proposed Project footprint plus a 250-foot buffer on either side. Access to the portion of the Proposed Project alignment that traversed through EAFB was surveyed on April 7 and 8, 2022. The detailed survey methodology is provided in the Rare Plant Survey Report in Appendix D of the BRTR (PEA Appendix C).

5.4.4.1.5 Special-status Wildlife

In the field, biologists evaluated habitat suitability and quality for sensitive wildlife species with potential to occur in the study area and documented the location of special-status species incidentally observed. Potential habitat for sensitive wildlife species was documented in field data. Polygons representing varying

levels of habitat quality and inaccessible areas were later digitized and quantified using GIS. Habitat was mapped for sensitive species that would potentially require protocol-level surveys in the future, including Mojave desert tortoise, burrowing owl, and Mohave ground squirrel in Figureset 5.4-3. Habitat for these three species mapped for the IC Project, and special-status species observations from other SCE projects, are also included in Figureset 5.4-3. Habitat was not mapped or quantified for special-status species without suitable nesting habitat in the study area (e.g., golden eagle foraging habitat). Representative site photographs of species' habitat were taken throughout the study area and are included in Appendix C of the BRTR (PEA Appendix C).

Habitat quality was categorized as “medium- to high-quality” or “low-quality to unsuitable” based on vegetation density, plant species composition, and disturbance level. Medium- to high-quality habitat consisted of pristine desert scrub with little to no disturbance. Low-quality to unsuitable habitats were heavily disturbed, developed, and/or lacked connectivity to surrounding suitable habitat.

5.4.4.2 Biological Resources Impact Analysis

5.4.4.2.1 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 in local or regional plans, policies, or regulations, or by the CDFW or USFWS?

Construction

Less than Significant Impact with Mitigation. Potential impacts to special-status plant and wildlife species may include temporary loss of habitat associated with ground-disturbing activities. Permanent loss of habitat would result from the installation of new subtransmission facilities, new or improved access roads, permanent O&M structure pads, and expansion of the Cal City Substation footprint. These temporary and permanent impacts may include other direct and indirect impacts than direct loss of habitat as described below.

The following subsections describe the impact analyses for special-status plant and wildlife species and critical habitat. SCE would implement applicant-proposed measures (APMs) that would reduce impacts to special-status species. Details on APMs are provided in Section 5.4.5.

Special-status Plant Species. A total of three special-status plant species were observed in the Proposed Project study area:

- Pink funnel lily in the proposed Kramer-Cal City 115 kV Subtransmission Line
- Mojave spineflower in the proposed Kramer-Cal City and Cal City-Edwards-Holgate 115 kV Subtransmission Lines south of Sequoia Boulevard
- Western Joshua trees in the proposed Cal City-Edwards-Holgate 115 kV Subtransmission Line and two individuals along the proposed Kramer-Cal City 115 kV Subtransmission Line just north of Kramer Junction.

These species could occur in proposed work areas.

- Barstow woolly sunflower was not observed in the Proposed Project study area during 2021 or 2022 surveys, or during surveys for other SCE projects; however, medium- and high-quality habitat was mapped on both Proposed Project subtransmission line components, including approximately 43.58

acres within potential temporary impact areas and approximately 7.57 acres within potential permanent impact areas (temporary and permanent disturbance areas are shown in PEA Appendix A).

- Desert cymopterus was not observed in the Proposed Project study area, but 10 individuals were observed along the existing Kramer-Holgate 115 kV Subtransmission Line. Nine individuals were observed during surveys conducted for the IC Project in 2017 (approximately 2.7 and 3.4 miles from the Proposed Project study area), and one was observed during rare plant surveys conducted for the Proposed Project in 2022 approximately 0.5 mile from the Proposed Project study area. Medium- and high-quality habitat for desert cymopterus was mapped on both Proposed Project subtransmission line components in areas with deep, sandy soils; approximately 563.27 acres in potential temporary impact areas and approximately 164.01 acres in potential permanent impact areas. Habitat mapped for Barstow woolly sunflower and desert cymopterus is shown in Appendix D – Rare Plant Survey Report in the BRTR (PEA Appendix C). Desert cymopterus occurrences are shown in the vegetation communities maps in Appendix H of the BRTR.

Construction activities, including grading, vegetation clearing and grubbing, earth-moving, and vehicle traffic may result in the direct crushing or burial of individual plants, and may cause erosion and/or sedimentation that may alter the existing habitat for these species. Construction-related traffic may create dust that adheres to leaves and interferes with photosynthesis and plant reproduction. Topsoil impacted from grading may contain seeds, bulbs, nutrients, and mycorrhizae that special-status plant species may utilize for survival and for maintaining sustainable colonies in an area. Incidental introductions of invasive non-native weeds because of construction activities have the potential to reduce habitat quality in the immediate area and beyond through direct competition and occupation of prime germination sites. Higher percent cover of non-native plants, especially invasive grasses, may also facilitate fires in the area.

New, permanent facilities including subtransmission facilities, the expanded area of the Cal City substation, new or improved access roads, and permanent O&M structure pads may impact special-status plants directly and would remove suitable habitat.

Except for western Joshua trees, the special-status plant species observed in the Proposed Project study area are herbaceous perennials. Barstow woolly sunflower, which has potential to occur, is an herbaceous annual. These herbaceous species pass the dry season as seeds or as dormant plants with no above-ground green foliage and underground storage organs. Soil-disturbance activities may disturb the existing seed bank of special-status and other native plants, along with bulbs, corms, rhizomes, and other soil storage organs.

Four western Joshua trees, a Candidate state-threatened species, occur within areas that would be temporarily disturbed by the Proposed Project; two western Joshua trees are within a proposed guard site, and two are within the limits of grading near the Holgate Switchyard. By implementing APM BIO-BOT-2: Special-status Perennial Plants and Other Species, which includes pre-construction surveys and buffers to avoid trees and their seeds and seedbanks as agreed to by CDFW, the Proposed Project would avoid impacts to western Joshua tree where feasible. If impacts cannot be avoided, per APM BIO-BOT-2, SCE would obtain a Section 2081 ITP from CDFW if the species is CESA listed or remains a candidate for listing at the time of construction. Compliance with the ITP conditions would reduce impacts to western Joshua tree to a less than significant level.

Mojave spineflower, a CRPR 4.2 species considered moderately threatened in California, occurs in two proposed staging areas, an estimated 60,000 individuals in Staging Area 1-2 and an estimated 1,500 individuals in Staging Area 1-7 (staging areas shown in PEA Appendix A). Two occurrences of an estimated 200 plants and 10,000 plants overlap both potential temporary impact areas, including a guard

site, a construction work area, and grading, and potential permanent impact areas where new access roads and access road improvements are proposed. Approximately 3.27 percent of mapped occurrences (7.57 acres of 231.79 total acres mapped) may be permanently impacted by the Proposed Project, and approximately 18.80 percent of mapped occurrences (43.58 acres of 231.79 total mapped acres) may be temporarily impacted by the Proposed Project. Overall, direct impacts to this species from the Proposed Project would likely be negligible relative to the total extent of the species' occurrence, which would include other occurrences that area likely present in the extensive adjacent areas not surveyed. Implementation of APM BIO-GEN-1: Pre-construction Biological Clearance Survey and Monitoring, which includes pre-construction biological surveys and flagging boundaries of areas supporting native vegetation and special-status native species for avoidance, when feasible, would further reduce any impacts to this species to a less than significant level.

To avoid and minimize potential impacts to special-status herbaceous plants, individuals and colonies of these species would be flagged and avoided, when feasible, and APM BIO-BOT-1: Special-status Herbaceous Plants would be implemented, which includes pre-construction surveys and establishment of 25-foot avoidance buffers based on previously-conducted focused surveys and pre-construction survey results; and if impacts to rare plants cannot be avoided, restoration and mitigation according to an SCE-prepared Habitat Restoration Plan (HRP). To avoid and minimize potential impacts to special-status plant species from construction activities such as native vegetation clearing and grubbing, grading, and earth-moving, SCE would implement APM BIO-GEN-1: Pre-construction Biological Clearance Survey and Monitoring, which includes pre-construction biological surveys and flagging boundaries of areas supporting native vegetation and special-status native species for avoidance, when feasible. SCE would also implement APM EVN-GEN-1 WEAP: Worker's Environmental Awareness Training to ensure contractor understanding and implementation of these protective measures.

To reduce competition from noxious and invasive weeds, which may crowd out special-status plant species, SCE would develop and implement an Invasive Plant Management Plan (IPMP) as described in APM BIO-RES-2: Develop Invasive Plant Management Plan. If populations or individuals of special-status plants cannot be avoided, SCE would implement restoration activities as described in APM BIO-RES-1: Develop Habitat Restoration Plan (HRP). The HRP would include provisions to restore special-status plant species removed during Cal City Project construction activities, along with suitable habitat for the species.

With the implementation of these APMs, impacts to special-status plants would be less than significant.

Special-status Wildlife Species. A total of eight special-status wildlife species were observed within the Proposed Project study area (see Table 5.4-7 and Figureset 5.4-3), and thus have the potential to occur within the Proposed Project disturbance footprint.

Potential impacts on special-status wildlife species could occur during grading, vegetation clearing and grubbing, gravel placement, and installation of new facilities. Vehicle traffic may result in the direct crushing or burial of ground-dwelling wildlife and their burrows and dens. Increased noise, artificial light, and increased human presence may restrict individuals from accessing foraging areas or may alter site conditions and reduce the overall quality of habitat available. The Proposed Project would introduce permanent facilities including subtransmission facilities, new or improved access roads, permanent O&M structure pads, and expansion of the Cal City Substation footprint.

Reptiles. One special-status reptile was observed within the Proposed Project study area: the Mojave desert tortoise. The desert tortoise observations are located throughout the Proposed Project alignment. Observations of one desert tortoise carcass, a burrow in good (Class 2) condition, and a deteriorated (Class 5) burrow, occur within potential temporary impact areas including a staging area and grading areas.

Observations of one good (Class 2) burrow and one live desert tortoise occur within potential permanent impact areas consisting of a proposed new access road and associated grading. Several temporary construction work areas, permanent new access roads and grading, and new, permanent drainage structures near Kramer Junction and along Twenty Mule Team Parkway and U.S. 395 are located within designated critical habitat for Mohave desert tortoise (Fremont-Kramer Recovery Unit, Figure 5.4-4). Approximately 496.71 acres of mapped medium- to high-quality habitat overlap potential temporary impact acres, and approximately 257.92 acres overlap potential permanent impact areas.

Potential impacts to Mojave desert tortoise may result from ground-disturbing activities, including vehicle or equipment strikes, individuals falling into excavation areas, reduction of refugia habitats, and by accidental crushing or burying of active burrows by construction vehicles and activities. Ground-disturbing activities have the potential to increase colonization of weedy species and reduce native vegetation cover. Incidental introductions of invasive non-native weeds have the potential to reduce habitat quality in the immediate area and beyond through direct competition and occupation of prime germination sites for suitable food plant species. Human activities and food waste may also pose threats to Mojave desert tortoise by attracting opportunistic predators such as ravens, coyotes, and feral dogs to construction work areas. The watering of access roads and construction work areas for dust mitigation can result in ponding, which can attract reptiles into areas where they may be more susceptible to direct impacts.

Although within the USFWS Fremont-Kramer Critical Habitat Recovery Unit boundary, the areas near Kramer Junction where potential temporary and permanent impact areas would occur currently support industrial development, parking lots, and staging areas, and lack the physical and biological features of both desert tortoise critical habitat specifically, and suitable habitat generally. Overall, impacts to Mojave desert tortoise critical habitat would be small (32.66 acres of temporary impacts and 13.64 acres of permanent impacts) relative to the extent of the Fremont-Kramer Recovery Unit. Work within these areas therefore would not cause the local population of desert tortoise to become unviable or preclude movement, dispersal, or gene flow within the population; nor would it substantially reduce the availability of forage species, suitable substrates and vegetation for burrowing and shelter, or habitat protected from disturbance and human-caused mortality within the critical habitat Recovery Unit.

Potential impacts to Mojave desert tortoise and critical habitat during construction would be temporary and intermittent in nature (lasting only as long as construction work at a given site) and would be limited in their potential geographic scope.

New, permanent facilities including new subtransmission facilities, new or improved access roads, permanent O&M structure pads, and expansion of the Cal City Substation footprint would result in the permanent removal of medium- and high-quality habitat for Mojave desert tortoise. The quantity of habitat removed, likely supporting one or a few individuals, would be low relative to the extent of medium- to high-quality habitat mapped throughout the Proposed Project study area (157.92 acres permanently impacted of 4,300 total acres, or 3.67 percent of mapped habitat, subject to potential permanent impacts), and there is likely additional suitable habitat in areas not surveyed. A substantial portion of permanent disturbance associated with the Proposed Project would occur along proposed new or heavily-improved access roads, which would be located parallel and proximate to existing paved and unpaved roads in the area. These existing roads currently facilitate the spread of invasive plant species that degrade habitat, promote human disturbance of burrows and other refugia, lead to mortality from vehicles, and cause general tortoise avoidance or reduced use of areas near roads. Because new permanent disturbance associated with proposed new or heavily-improved access roads would be concentrated in these areas near existing roads, the overall impact of such proposed roads would be reduced.

To avoid and minimize potential impacts to Mojave desert tortoise from Proposed Project activities such as native vegetation clearing, grubbing, grading, and gravel placement, SCE would implement APM BIO-GEN-1: Pre-construction Biological Clearance Survey and Monitoring, which includes pre-construction biological surveys and flagging boundaries of areas supporting native vegetation and special-status reptiles for avoidance, when feasible. SCE would also implement APM EVN-GEN-1 WEAP: Workers Environmental Awareness Training Program to ensure contractor understanding and implementation of these protective measures. Further, SCE would implement APM BIO-HERP-1: Desert Tortoise, which includes pre-construction surveys, and construction monitoring to avoid impacts to Mojave desert tortoise; and for areas and construction activities where avoidance is not possible, obtaining necessary permits, such as an ITP from CDFW or other agency authorizations for lands under their jurisdiction.

To reduce impacts to designated critical habitat and other suitable habitat for Mojave desert tortoise resulting from introduction of noxious and invasive weeds which may reduce habitat quality for sensitive reptile species, SCE would develop and implement an IPMP as described in APM BIO-RES-2: Develop Invasive Plant Management Plan. If impacts to Mojave desert tortoise habitat cannot be avoided, SCE would implement restoration activities as described in APM BIO-RES-1: Develop and implement an HRP. The HRP would include provisions to restore suitable habitat for Mojave desert tortoise if such habitat is removed during Proposed Project work activities. The measures outlined in these APMs would serve to avoid and minimize potential impacts to the Mojave desert tortoise. With the implementation of these avoidance measures and APMs, impacts to special-status reptiles would be less than significant.

Birds. Six special-status bird species were observed within the Proposed Project study area, and thus have the potential to occur in construction work areas. Cooper’s hawk, a CDFW Watch List species, was observed soaring over the study area during the October 2021 vegetation community mapping and habitat assessment surveys. Suitable nesting habitat of riparian growths of deciduous trees are absent from the study area, but suitable foraging habitat is present.

Burrowing owl, a CDFW Species of Special Concern, BLM Sensitive Species, DRECP Focus Species, and a USFWS Bird of Conservation Concern, was observed within the Proposed Project study area. Two non-breeding burrowing owls and five potentially active wintering burrowing owl burrows were observed during the October 2021 vegetation community mapping and habitat assessment surveys. Three active burrows were observed in the study area during rare plant surveys in March 2022. Two inactive burrows were observed in the study area during habitat and aquatic resources surveys in September 2022. The burrowing owl observations are located within the study area of the proposed Cal City-Edwards-Holgate 115 kV Subtransmission Line alignment and proposed Kramer-Cal City 115 kV Subtransmission Line alignment of the Proposed Project. The study area contains suitable nesting, migration, and wintering habitats.

California horned lark, a CDFW Watch List species, was also observed within the study area during the October 2021 surveys. These observations were recorded outside of the species breeding season. Suitable nesting habitat is present within the study area in both Proposed Project subtransmission line components.

Several observations of prairie falcon, a CDFW Watch List and USFWS Bird of Conservation Concern, were recorded within the study area in October 2021, outside of the species breeding season. This species was also observed during rare plant surveys in April 2022, during the breeding season. One individual was observed during habitat assessment surveys in October 2022, outside the breeding season. Suitable sheltered cliff ledges required for nesting are absent from the study area, but suitable foraging habitat is present in both Proposed Project subtransmission line components.

Loggerhead shrike, a CDFW Species of Special Concern and USFWS Bird of Conservation Concern, was observed throughout the study area during vegetation community mapping and habitat assessment surveys in October 2021 and September and October 2022, and during rare plant surveys in April 2022. Suitable nesting habitat in the form of densely foliated shrubs is present in both Proposed Project subtransmission line components.

LeConte's thrasher, a USFWS Bird of Conservation Concern, was observed in the study area during the October 2021 and April 2022 surveys. Suitable desert scrub nesting habitat is present throughout both Proposed Project subtransmission line components.

Potential foraging habitat is also present for golden eagles, a CDFW Fully Protected and Watch List Species, BLM Sensitive Species, DRECP Focus Species, and USFWS Bird of Conservation Concern, in both Proposed Project subtransmission line alignments. No golden eagles were observed during the 2021 or 2022 surveys. Potential nesting and foraging habitat are also present for several avian species that were not observed but are protected under the MBTA and CFGC 3503.5.

Proposed Project construction work activities would potentially impact special-status birds, their nests, and foraging habitats. Potential impacts may result from vegetation clearing and ground disturbance within nesting habitat, as well as accidental crushing or burying of ground nests or active burrows by construction vehicles. An increase in vehicle traffic, noise at work sites, and human presence could result in an interruption of normal bird nesting behaviors or nest abandonment. Proposed Project activities may potentially impact the quality of foraging habitat for raptors, passerines, and other special-status bird species that use habitats within the study area. These potential impacts to nesting and special-status bird species during construction would be temporary and intermittent in nature (lasting only as long as construction work at a given site) and would be limited in their potential geographic scope.

The Proposed Project would introduce, permanently, new subtransmission facilities, new or improved access roads, permanent O&M structure pads, and expansion of the Cal City Substation footprint. New poles and subtransmission lines could result in a risk of collisions, line strikes or electrocution to special-status and non-special-status migratory birds in the future. The Cal City Substation would permanently remove medium-quality habitat for burrowing owl and California horned lark and high-quality habitat for LeConte's thrasher and loggerhead shrike. New or improved access roads and permanent O&M structure pads would also remove medium- to high-quality habitat within the study area for these species. As described above for Mojave desert tortoise, the impacts from the new roads would occur within the existing direct and indirect impact area around existing roads and would therefore be reduced.

The quantity of habitat removed, likely supporting one or a few individuals, would be low relative to the extent of medium- to high-quality habitat mapped throughout the study area, and would result in a less than significant impact to these species. To avoid potential line strikes or electrocution to birds, the Proposed Project subtransmission facilities would be designed consistent with the Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006 (Avian Power Line Interaction Committee [APLIC] 2006) where feasible. Subtransmission facilities would also be evaluated for potential collision reduction devices in accordance with Reducing Avian Collisions with Power Lines: The State of the Art in 2012 (Avian Power Line Interaction Committee 2012). Design consistency with APLIC would reduce any collision or electrocution impacts to a less than significant level.

SCE complies with the MBTA and CFGC section 3503.5. To ensure compliance and to avoid and minimize potential impacts to special-status bird species from construction activities, SCE would implement APM EVN-GEN-1 WEAP: Workers Environmental Awareness Training Program, to ensure contractor understanding and implementation of these protective measures. SCE would develop a Nesting Bird

Management Plan per APM BIO-AVI-2. The survey, avoidance, and adaptive management measures in the Plan would reduce impacts to nesting birds within the study area. Avoidance and minimization measures for the burrowing owl are provided in APM BIO-AVI-3 and include a pre-construction survey, preparation of a burrowing owl management plan, and conducting protocol-level surveys for burrowing owls. In addition, mitigation strategies such as restoration of suitable avian habitat are addressed in APM BIO-RES-1: Develop and Implement HRP, and reduction of weed competition with important plant species in APM BIO-RES-2: Develop IPMP. With the implementation of these APMs, impacts to special-status birds would be less than significant.

Mammals. One active desert kit fox den, a CFGC protected species, was observed within the study area during habitat assessment surveys in October 2021. Three additional active kit fox dens were observed in the study area during rare plant surveys in April 2022. One active and two inactive dens were observed in the study area during habitat and aquatic resources surveys in September and October 2022. The desert kit fox observations are located within both Proposed Project subtransmission line alignments.

Suitable habitat for American badger, a CDFW Species of Special Concern, is present in the study area throughout both Proposed Project segments. There are three CNDDDB records within 6 miles of the study area from the past 25 years (CDFW 2021a, 2022b).

Suitable habitat is also present for Mohave ground squirrel, a state threatened species, BLM Sensitive Species, and DRECP Focus Species throughout both Proposed Project subtransmission line components. Since protocol surveys were not conducted in areas other than those surveyed by Aardvark Biological Services, LLC, it is assumed Mohave ground squirrel occurs within suitable habitat; also, Mohave ground squirrel could potentially occupy the surveyed areas by the time of construction. There are multiple CNDDDB records within 5 miles of the study area from the past 25 years (CDFW 2021a, 2022b).

Potential impacts to special-status mammal species may result from ground disturbing activities that can include vehicle or equipment strikes, individuals falling into excavation areas, disruption of migration pathways, reduction of refugia habitats, and accidental crushing or burying of active burrows by construction vehicles and activities. Ground-disturbing activities have the potential to increase colonization of weed species and reduce native vegetation. Incidental introductions of invasive non-native weeds have the potential to reduce habitat quality in the immediate area and beyond through direct competition and occupation of prime germination sites of prime forage species. Potential impacts to special-status mammal species during construction of the Proposed Project would be temporary and intermittent in nature and would be limited in their potential geographic scope.

Permanent impacts from the new subtransmission facilities, expanded area of the Cal City Substation, and access roads would remove medium- and high-quality habitat for special-status species. The quantity of habitat removed by the subtransmission facilities and substation expansion, likely supporting one or a few individuals, would be low relative to the extent of medium- to high-quality habitat mapped throughout the study area, and would result in a less than significant impact to these species.

The proposed access road would remove medium- to high-quality habitat for American badger, desert kit fox, and Mohave ground squirrel within the study area. As described above, the impacts from the new road would occur within the impacted areas around existing roads and would therefore be less than significant.

To generally avoid and minimize potential impacts to special-status mammals during construction, SCE would implement APM BIO-GEN-1: Pre-construction Biological Clearance Survey and Monitoring, which includes pre-construction biological surveys and flagging boundaries of areas supporting native vegetation and special-status mammal burrows, watering holes, and other habitat for avoidance, when feasible. SCE

would also implement APM ENV-GEN-1 WEAP: to ensure contractor understanding and implementation of these protective measures. Mitigation strategies addressed in APM BIO-RES-1: Develop and Implement HRP and APM BIO-RES-2: Develop IPMP would reduce weed competition with essential native forage species for mammals. Implementation of these APMs would reduce direct and indirect impacts to all mammals.

To minimize impacts to Mohave ground squirrel, SCE would implement measures contained in APM BIO-MAM-1, which includes obtaining an ITP for Mohave ground squirrel through CDFW. SCE would collaborate with CDFW to develop construction minimization and habitat conservation measures during the ITP consultation that may include, but are not limited to, preconstruction surveys, construction monitoring, exclusion fencing, and development of a relocation plan.

With the implementation of these APMs, impacts to special-status mammals would be less than significant.

Operation

Less than Significant Impact. As presented in Chapter 3, the Proposed Project includes constructing subtransmission lines between existing substations in the vicinity of the City of California City, EAFB, and U.S. 395 where many overhead power lines currently exist. O&M activities associated with the Proposed Project would be similar to those currently performed by SCE for existing facilities, including, but not limited to, repairing conductors, washing or replacing insulators, repairing or replacing other hardware components, repairing or replacing poles and towers, tree trimming, brush and weed control, and access road maintenance. O&M would also include routine inspections and emergency repair within substations and throughout rights-of-way (ROWs), which would require the use of vehicles and equipment. SCE inspects subtransmission overhead facilities in a manner consistent with CPUC G.O. 165, which requires observation a minimum of once per year, but inspection typically occurs more frequently to ensure system reliability. Following construction of the Proposed Project, O&M activities would consist of monthly and annual inspections, as well as equipment testing and maintenance for new and expanded facilities. SCE currently performs O&M activities for the existing substations and their associated source lines and infrastructure. Therefore, it is likely that the Proposed Project would result in a nominal increase in O&M activities, such as increased maintenance and inspection trips. However, O&M activities would occur in existing or new rights-of-way (ROWs) and would be periodic but infrequent.

Vehicles used for O&M activities could result in the direct crushing of individual special-status plants or disruption of photosynthesis from traffic-related dust; for special-status wildlife, impacts could include potential vehicle or equipment strikes. Tree trimming, brush and weed control could result in bird nest disruption or destruction. Pole or tower replacement could result in special-status mammals or reptiles falling into excavation areas. Incidental introduction of invasive non-native plant species or contamination from spills resulting from O&M activities has the potential to reduce habitat quality for both special-status plants and wildlife species. To avoid impacts to special-status species, SCE would implement existing Best Management Practices (BMPs) for O&M including, but not limited to, minimizing work area, crew check for bird nests, rare plants, and injured/trapped wildlife, spill release/prevention, weed maintenance and prevention, and dust control. Given the periodic but infrequent nature of these continuing operations, and implementation of BMPs, this impact would be less than significant.

5.4.4.2.2 Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFW or USFWS?

Construction

Less than Significant Impact with Mitigation. Potential impacts on riparian habitat or other sensitive natural communities may include temporary and permanent loss of habitat associated with ground-disturbing activities and may also include other direct and indirect impacts. Potential temporary impacts include areas where vegetation communities overlap with proposed temporary work areas along the proposed alignments and access roads, helicopter landing zones, guard structures, conductor/cable splicing areas, cable/conductor pull-and-tension/stringing sites, staging areas, distribution pole removal work areas, and Cal City Substation expansion temporary construction work areas that are known at this time and are not currently disturbed. Potential permanent impacts include areas where vegetation communities overlap with the permanent footprint associated with proposed Cal City Substation expansion, new or improved access roads, individual poles/structures installed along subtransmission alignments, and permanent O&M structure pads that are known at this time and not currently disturbed.

Five sensitive natural communities were observed within the study area, covering approximately 949.02 acres. Of the five sensitive natural communities, four overlap proposed temporary construction work areas with helicopter landing zones, guard structures, conductor/cable splicing areas, cable/conductor pull-and-tension/stringing sites, and staging areas that are known at this time and are not currently disturbed. Anticipated impacts to sensitive vegetation as a result of the construction activities are anticipated to primarily be temporary and total approximately 86.68 acres, as shown in Table 5.4-9. Permanent impacts include potential pole installation in areas not currently disturbed and new or heavily-improved unpaved access roads along the Proposed Project alignment and total approximately 32.46 acres.

Table 5.4-9 Potential Impacts to Sensitive Natural Communities

Vegetation Alliance	Total Area Mapped on Proposed Project (acres)	Area Mapped within Anticipated Work Areas with Temporary Impacts (acres)¹	Area Mapped within Anticipated Work Areas with Permanent Impacts (acres)	California States Rarity Ranking
Upland shrubland alliances (all alliances and their association are sensitive unless a sensitive association is included within a non-sensitive alliance)				
Nevada Joint Fir-Cooper's Goldenbush Association (Nevada Joint Fir-Anderson's Boxthorn-Spiny Hop Sage Scrub Shrubland Alliance)	11.97	0.0	0.0	G3G4S3S4,
Nevada Joint Fir-Anderson's Boxthorn Provisional Association (Nevada Joint Fir-Anderson's Boxthorn-Spiny Hop Sage Scrub Shrubland Alliance)	24.79	3.63	1.20	Unranked, Sensitive

Vegetation Alliance	Total Area Mapped on Proposed Project (acres)	Area Mapped within Anticipated Work Areas with Temporary Impacts (acres)¹	Area Mapped within Anticipated Work Areas with Permanent Impacts (acres)	California States Rarity Ranking
Spinescale Scrub Shrubland Alliance	710.90	66.87	24.45	Unranked, Sensitive
White Bursage Scrub Shrubland Association (White Bursage Scrub Shrubland Alliance)	130.14	10.26	3.49	Unranked, Sensitive
Winterfat Scrubland Shrubland Alliance	71.23	5.92	3.32	G4S3, all associations are sensitive
Total Acres Sensitive Native Vegetation	949.02	86.68	32.46	

¹ Potential temporary impact acreages include areas where features overlap with proposed temporary work areas along the proposed alignments and access roads, helicopter landing zones, guard structures, conductor/cable splicing areas, cable/conductor pull-and-tension/stringing sites, staging areas, distribution pole removal work areas, and Cal City Substation expansion temporary construction work areas that are known at this time and are not currently disturbed

² Potential permanent impact acreages include areas where features overlap with the permanent footprint associated with proposed Cal City Substation expansion, new or improved access roads, individual poles/structures installed along subtransmission alignments, and permanent O&M structure pads that are known at this time and not currently disturbed.

Construction activities in temporary work areas, including grading, vegetation clearing, excavating, earth-moving, rehabilitation of existing roads, establishment of staging areas and vehicle traffic may result in the direct crushing or burial of individual plants in sensitive natural communities, along with erosion and/or sedimentation that may alter the existing habitat. Construction-related traffic may create dust that adheres to leaves and interferes with photosynthesis and plant reproduction. Topsoil impacted from grading may contain seeds, bulbs, nutrients and mycorrhizae that plant species may utilize for survival and for maintaining sustainable colonies in an area. Incidental introduction of invasive non-native plant species as a result of construction activities has the potential to reduce habitat quality in the construction area and surrounding the Proposed Project area through direct competition and occupation of prime generation sites. Higher non-native plant cover, especially invasive grass species, may facilitate fires in the area. New, permanent facilities including subtransmission facilities and a new, unpaved access road in the Proposed Project ROW may impact sensitive natural communities directly.

To avoid and minimize potential impacts to sensitive natural communities from construction activities such as native vegetation clearing and grubbing, grading, and earth-moving, SCE would implement APM BIO-GEN-1: Pre-construction Biological Clearance Survey and Monitoring, which includes pre-construction biological surveys and flagging boundaries of areas supporting native vegetation and sensitive natural communities for avoidance, when feasible, as well as APM ENV-GEN-1 WEAP: Worker's Environmental Awareness Training, to ensure contractor understanding and implementation of these protective measures. SCE would also implement two measures that focus on avoiding and minimizing potential impacts to special-status herbaceous species, shrubs, trees, and cacti, which may be important components of natural communities in Proposed Project work areas: APM BIO-BOT-01: Special-status Herbaceous Plants and APM BIO-BOT-02: Special-status Tree/Shrubs/Cactus. In addition, mitigation strategies such as special-status plant species restoration are addressed in APM BIO-RES-1: Develop Habitat Restoration and Revegetation Plan and reduction of weed competition with special-status plant species in APM BIO-RES-2: Develop Invasive Plant Management Plan. Implementation of APM WET-1: Avoid and/or Minimize

Impacts to Waters and Wetlands, would ensure minimization of impacts to special-status natural communities occurring in CDFW jurisdictional areas.

With the implementation of these APMs, impacts to sensitive natural communities would be less than significant.

Operation

Less than Significant Impact. As previously described, O&M activities associated with the Proposed Project would be similar to those currently performed by SCE for existing substations and their associated lines and infrastructure, including vegetation management required by California Public Resources Code sections 4292 and 4293 and CPUC G.O. 95 Rule 35, Vegetation Management. It is likely that the Proposed Project would result in a nominal increase in O&M activities, such as increased maintenance and inspection trips. However, even with an increase in O&M activities, these activities would occur on existing or new ROW.

Vehicles used for O&M activities could result in the direct crushing of individual plants in sensitive natural communities or disruption of photosynthesis from traffic-related dust; for special-status wildlife, impacts could include potential vehicle or equipment strikes. Tree trimming, brush and weed control could result in bird nest disruption or destruction. Pole or tower replacement could result in special-status mammals or reptiles falling into excavation areas. To prevent incidental introduction of invasive non-native plant species or contamination from spills, SCE would implement existing BMPs for O&M including, but not limited to, minimizing work area, spill release/prevention, weed maintenance and prevention, and dust control. Given the periodic but infrequent nature of these continuing operations, and implementation of BMPs, this impact would be less than significant.

5.4.4.2.3 Would the project have a substantial adverse effect on state or federally protected wetlands and waters, as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, and coastal) through direct removal, filling, hydrological interruption, or other means?

Construction

Less than Significant Impact with Mitigation. SCE would site structures and locate and orient construction work areas to the maximum extent possible to avoid state jurisdictional waters. There are no federally protected waters or wetlands within the study area. All state-jurisdictional features in the Proposed Project area are interior draining, with no connection to federal waters. Temporary impacts within vegetated and unvegetated jurisdictional features include overland travel, equipment staging, material laydown, foot traffic, structure replacement and temporary work areas. Construction activities within these areas include vegetation removal, minor grading and gravel placement, and material laydown. Permanent impacts include the footprint of the expanded Cal City Substation, new or improved access roads, individual poles/structures installed along subtransmission alignments, and permanent O&M structure pads that are known at this time and not currently disturbed.

The extent of temporary and permanent impacts to jurisdictional areas known at this time is presented in Table 5.4-10. Impacts to jurisdictional areas are subject to change. Final impact calculations would be included during permit coordination with appropriate state jurisdictional agency permit approximately one to two years prior to construction activities.

Table 5.4-10 Jurisdictional Waters Potential Temporary and Permanent Impacts

Feature	Temporary Impacts (acres) ¹	Permanent Impacts (acres) ²
RWQCB Waters of the State	0.80	0.38
CDFW 1602	3.00	1.42
Jurisdiction to be Determined (playas)	12.32	0.13
Total ³	16.12	1.93

¹ Potential temporary impact acreages include areas where features overlap with proposed temporary work areas along the proposed alignments and access roads, helicopter landing zones, guard structures, conductor/cable splicing areas, cable/conductor pull-and-tension/stringing sites, staging areas, distribution pole removal work areas, and Cal City Substation expansion temporary construction work areas that are known at this time and are not currently disturbed.

² Potential permanent impact acreages include areas where features overlap with the permanent footprint associated with proposed Cal City Substation expansion, new or improved access roads, individual poles/structures installed along subtransmission alignments, and permanent O&M structure pads that are known at this time and not currently disturbed.

³ Acreages estimated in GIS

At locations where overland travel methods are implemented in vegetated jurisdictional features, revegetation of temporarily disturbed overland travel routes would be unnecessary because overland travel methods would preserve the root mass of existing woody vegetation to allow crown resprouting to occur. Where more activities than overland travel are planned, temporarily disturbed areas would be restored in-place to pre-construction contours by implementing topsoil salvage and replacement (which allows natural recruitment reseeding), and revegetation where necessary. Recontouring would be implemented to restore preexisting hydrological function to the system and topsoil would be salvaged to allow for the naturally occurring seed bank to reestablish.

SCE would obtain all necessary permits and authorizations, including a Waste Discharge Requirement permit from RWQCB and a Section 1602 Streambed Alteration Agreement from CDFW, prior to construction. SCE would comply with all conditions of approval identified in permits and authorizations. Further, SCE would develop and implement one or more Proposed Project-specific Storm Water Pollution Prevention Plans SWPPP(s) that would include BMPs to prevent erosion and sedimentation into wetlands and streams and would protect water quality during construction. Compliance with such typical conditions is reflected in the measures contained in APM WET-1; through implementation of this APM, SCE would avoid or minimize impacts to all state jurisdictional waters and riparian habit by siting activities outside these areas, implementing appropriate BMPs, mitigating for permanent impacts, and performing restoration for temporary impacts. With the implementation of APM WET-1, implementation of the Proposed Project-specific SWPPP, and compliance with permits and authorizations issued for the Proposed Project, impacts on jurisdictional waters would be less than significant.

Operation

Less than Significant Impact. As previously described, O&M activities associated with the Proposed Project would be similar to those currently performed by SCE for existing substations and their associated lines and infrastructure. It is likely that the Proposed Project would result in a nominal increase in O&M activities, such as increased maintenance and inspection trips. However, even with an increase in O&M activities, these activities would occur on existing or new ROWs and would not impact wetlands. O&M activities typically do not impact water quality or result in discharges to waters, as ground disturbing activities are not usually required for O&M. However, if ground disturbance would be necessary, BMPs would be implemented to protect resources from any sediment discharges and affected areas would be restored to pre-disturbance conditions. With the implementation of BMPs and the restoration of affected areas to pre-disturbance conditions, O&M activities are not expected to result in the impact of state protected waters and drainages. In addition, if it is necessary to conduct any work within a channel or to

remove riparian vegetation, the work would require approval from the RWQCB or CDFW as well as adherence to any permit conditions associated with that approval. Therefore, impacts would be less than significant.

5.4.4.2.4 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 corridor, or impede the use of native wildlife nursery sites?

Construction

Less Than Significant Impact. The Proposed Project would temporarily introduce construction activities into the environment that would affect only small, geographically dispersed areas at any one time. This may result in temporarily altered movement paths for individual wildlife but would not likely create substantial barriers to wildlife movement. In addition, native wildlife nursery sites are not known to occur within the study area. Overall, impacts related to the movement of wildlife, migratory wildlife corridors, or native wildlife nursery sites area less than significant.

Operation

Less than Significant Impact. Proposed permanent new subtransmission facilities and the expansion of the Cal City Substation may interfere with the movement of individual animals but would not create significant barriers to the movement of wildlife species. The proposed expansion of the Cal City Substation is near a developed, residential area and does not provide an optimal wildlife migration corridor compared to the expansive, undeveloped areas to the north. The proposed new access road would be within the existing direct and indirect impact area surrounding existing roads; any additional impact to wildlife movement from the new road is likely to be minimal. Due to their small cross-sections, proposed new subtransmission structures themselves would not create barriers to the movement of any native or migratory wildlife species. Similarly, subtransmission structures would not impede wildlife use of corridors established by the DRECP ACECs that overlap small parts of the Proposed Project study area (Figure 5.4-5). Likewise, proposed new subtransmission structures would not create barriers in potential movement corridors for Mohave ground squirrel referenced in Section 5.4.1.7.1 that may cross portions of the study area as suggested by Leitner (2008). New poles and lines, however, could result in a risk of collisions for birds, interfering with the movement of individuals or flocks.

To avoid impacts to avian movement from new subtransmission lines, all subtransmission facilities for the Proposed Project would be designed to follow the intent of Suggested Practices for Avian Protection on Power Lines: the State of the Art in 2006 (APLIC 2006). Further, all subtransmission facilities would be evaluated for potential collision risk and, where determined to be high risk, lines would be marked with collision reduction devices in accordance with Reducing Avian Collisions with Power Lines: The State of the Art in 2012 (APLIC 2012), thus reducing potential impacts to avian movement to a less than significant level.

As previously described, O&M activities associated with the Proposed Project would be similar to those currently performed by SCE for existing substations and their associated lines and infrastructure. It is likely that the Proposed Project would result in a nominal increase in O&M activities, such as increased maintenance and inspection trips. However, even with an increase in O&M activities, these activities would occur on existing or new ROWs. Given the periodic but infrequent nature of these continuing operations, potential impacts to wildlife movement or established corridors would be less than significant.

5.4.4.2.5 Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Construction

Less than Significant Impact with Mitigation. As presented in Sections 5.4.2.3.1 through 5.4.3.4 above, the San Bernardino Countywide Policy Plan, San Bernardino County Code of Ordinances, Kern County General Plan, and City of California City General Plan all contain policies intended to protect biological resources, including sensitive natural communities, special-status species, riparian habitat and wetlands, wildlife corridors, and to protect against the spread or introduction of noxious weed species. Implementation of the APMs described in Section 5.4.5.1, including BIO-GEN-1: Pre-construction biological clearance surveys and monitoring, ENV-GEN-1 WEAP: Worker’s Environmental Awareness Training Program, BIO-AVI-2: Nesting Bird Management Plan, BIO-AVI-3: Burrowing Owl, BIO-HERP-1: Desert Tortoise, BIO-MAM-1: Mohave Ground Squirrel, BIO-MAM-2: Desert Kit Fox, BIO-RES-1: Develop and Implement Habitat Restoration Plan (HRP), BIO-RES-2: Develop Invasive Plant Management Plan, BIO-BOT-1: Special-status Herbaceous Plants, BIO-BOT-2: Special-status Perennial Plants and Other Species, and WET-1: Avoid and/or Minimize Impacts to Jurisdictional Waters, Wetlands, and Riparian Habitats, would ensure the protection of the resources identified in the Plans and Code of Ordinances, or the minimization of impacts to said resources, and thus less than significant impacts would be realized under this criterion.

Operation

No Impact. As previously described, O&M activities associated with the Proposed Project would be similar to those currently performed by SCE for existing substations and their associated lines and infrastructure. It is likely that the Proposed Project would result in a nominal increase in O&M activities, such as increased maintenance and inspection trips. However, even with an increase in O&M activities, these activities would occur on existing or new ROWs and would not conflict with local ordinances or policies related to the protection of biological resources, therefore, there would be no impact.

5.4.4.2.6 Would the project conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or state habitat conservation plan?

Construction and Operation

No Impact. There are no adopted HCPs or NCCPs within the study area, and no known approved local, regional, or state habitat conservation plans covering the Proposed Project alignment. Therefore, there would be no impacts under this criterion.

5.4.4.2.7 Would the project create a substantial collision or electrocution risk for birds or bats?

Construction

Less than Significant Impact. Special-status and non-special-status bird species addressed in Sections 5.4.4.1.3.2 and 5.4.4.2.1 occur within the study area. Special-status bat species do not occur within the study area, but non-special-status bat species roosting outside the study area may forage within it.

The Proposed Project would introduce into the environment, temporarily, construction equipment that, by its presence and use, could present a collision risk for birds or bats. Because construction equipment is large, solid, generally non-static, and highly visible, and does not include exposed, live currents, collision or electrocution risk for birds or bats from such equipment is anticipated to be very low; therefore, a less than significant impact would occur under this criterion.

Operation

Less than Significant Impact. The Proposed Project includes the introduction of permanent new poles and subtransmission lines, and new structures at the Cal City substation. These structures could result in a risk of collisions or electrocution to birds or bats in the future.

All subtransmission facilities for the Proposed Project would be designed to follow the intent of Suggested Practices for Avian Protection on Power Lines: the State of the Art in 2006 (APLIC 2006). Further, all subtransmission facilities would be evaluated for potential collision risk and, where determined to be high risk, lines would be marked with collision reduction devices in accordance with Reducing Avian Collisions with Power Lines: The State of the Art in 2012 (APLIC 2012). Design consistency with APLIC would reduce any collision or electrocution impacts to a less than significant level.

As previously described, O&M activities associated with the Proposed Project would be similar to those currently performed by SCE for existing substations and their associated lines and infrastructure. It is likely that the Proposed Project would result in a nominal increase in O&M activities, such as increased maintenance and inspection trips. However, even with an increase in O&M activities, these activities would occur on existing or new ROWs. Given the periodic but infrequent nature of these continuing operations, this impact would be less than significant.

5.4.4.3 *Quantify Habitat Impacts*

Habitat impacts for known disturbance areas are quantified for the Proposed Project alignment and are presented in Table 5.4-2 in Section 5.4.1.3. Additional disturbance areas are anticipated as the Proposed Project design is completed.

5.4.4.4 *Special-status Species Impacts*

Impacts to special-status species are addressed in Section 5.4.4.2.1 above.

5.4.4.5 *Wetland Impacts*

Impacts to RWQCB and CDFW jurisdictional waters are addressed in Section 5.4.4.2.3 above.

5.4.4.6 *Avian Impacts*

Impacts to avian species are addressed in the impact analysis above.

5.4.5 *CPUC Draft Environmental Measures*

There are no CPUC Draft Environmental Measures identified for Biological Resources.

5.4.5.1 *Applicant Proposed Measures*

The following APMs would be implemented to reduce biological resources impacts associated with the Proposed Project:

BIO-GEN-1: Pre-construction biological clearance surveys and monitoring. Pre-construction clearance surveys will be performed by a qualified biologist (i.e., a biologist with the requisite education and experience to address specific resources), which may be chosen from a previously approved CPUC approved biologist, to avoid or minimize impacts on special-status plants and wildlife species, habitat, nesting birds and other sensitive biological resources in areas with the potential for resources to be present. Sensitive resources identified during the clearance survey will be either:

- flagged for avoidance;
- moved to outside impact areas;
- avoided by implementing procedures to avoid impacts to individuals while impacting habitat (e.g., burrows, dens, etc.);
- or documented based on permit authorizations.

Specific details on the pre-construction survey requirements may be found within measures for each individual species.

Where special-status species (e.g., reptiles, birds, mammals, and bat roosts) or unique resources (defined by regulations and local conservation plans) are known to occur and there is a potential for significant impacts, qualified biologists will monitor construction activities to ensure that impacts to special-status species, sensitive vegetation types, wildlife habitat, and unique resources are avoided and minimized.

ENV-GEN-1 WEAP: Worker’s Environmental Awareness Training Program. All workers on the Proposed Project site shall be required to attend a Worker’s Environmental Awareness Training Program (WEAP). Training shall inform all construction personnel of the resource protection and avoidance measures as well as procedures to be followed upon the discovery of environmental resources. The WEAP training will include, at a minimum, the following topics so crews will understand their obligations:

- ESA boundaries
- Housekeeping (Trash and equipment cleaning)
- Safety
- Work stoppage
- Communication Protocol
- Consequences of non-compliance

BIO-AVI-2: Nesting Bird Management Plan. SCE shall prepare a Nesting Bird Management Plan (NBMP) in coordination with the CPUC, Bureau of Land Management (BLM), CDFW, and USFWS. The NBMP shall describe methods to minimize potential Proposed Project effects to nesting birds and avoid any potential for unauthorized take. Proposed Project-related disturbance including construction and pre-construction activities shall not proceed within 300 feet of active nests of common bird species or 500 feet of active nests of raptors or special-status bird species (except for golden eagle as described in APM BIO-AVI-4) until approval of the NBMP by the CPUC and BLM in consultation with the CDFW and USFWS.

NBMP Content. The NBMP shall include: (1) definitions of default nest avoidance buffers for each species or group of species, depending on characteristics and conservation status for each species; (2) a notification procedure for buffer distance reductions should they become necessary; (3) a rigorous monitoring protocol, including qualifications of monitors, monitoring schedule, and field methods, to ensure that any Proposed Project-related effects to nesting birds will be minimized; and (4) a protocol for documenting and reporting any inadvertent contact or effects to birds or nests. The paragraphs below describe the NBMP requirements in further detail.

Background. The NBMP shall include the following:

1. A summary of applicable state and federal laws and regulations, including definition of what constitutes a nest or active nest under state and federal law.
2. A procedure for amendment of the NBMP, should there be changes in applicable state or federal regulations.
3. A list of bird species potentially nesting on or near the ROW or other work areas, indicating approximate nesting seasons, nesting habitat, typical nest locations (e.g., ground, vegetation, structures, etc.), tolerance to disturbance (if known) and any conservation status for each species. This section will also note any species that do not require avoidance measures (e.g., rock pigeons).
4. A list of the types of Proposed Project construction activities that may occur during nesting season, with a short description of the noise and physical disturbance resulting from each activity.
5. Clearing of any vegetation, site preparation in open or barren areas, or other Proposed Project-related activities that may adversely affect breeding birds shall be scheduled outside the nesting season, as feasible.

Pre-construction nest surveys

Pre-construction nest surveys will be conducted prior to any construction activities scheduled during the breeding period. For the Proposed Project, the breeding period will be defined as January 1 through August 31. The NBMP shall describe the proposed field methods, survey timing, and qualifications of field biologists. Field biologist qualifications will be subject to review by the CPUC and BLM. The avian biologists conducting the surveys shall be experienced bird surveyors and familiar with standard nest-locating techniques such as those described in Martin and Guepel (1993). Nest surveys will focus on visual searches for nest locations and observations of bird activities and movement to detect nesting activity (e.g., carrying nest materials or food, territorial displays, courtship behavior). Surveys shall be conducted in accordance with the following guidelines.

1. Surveys shall cover all potential nesting habitat within the ROW or other work areas within 500 feet of these areas for raptors and 300 feet for non-raptors.
2. Pre-construction surveys shall be conducted for each work area, no longer than 10 days prior to the start of construction activity. On the first day of construction at any given site, a qualified Avian Biologist will perform a pre-construction “sweep” to identify any bird nests or other resources that may have appeared since the 10-day survey.
3. SCE shall provide the CPUC and BLM a report describing the findings of the pre-construction nest surveys, including the time, date, and duration of the survey; identity of the surveyor(s); a list of species observed; and electronic data identifying nest locations and the boundaries of buffer zones. The electronic data set will be updated following each preconstruction nest survey throughout the nesting season. The format and contents of this report will be described in the draft NBMP and will be subject to review and approval by the CPUC and BLM.

Nest Buffers and Acceptable Activities

The NBMP shall specify measures to delineate buffers on the work site, to consist of clearly visible marking and signage. Buffer locations shall be communicated to the construction contractor and shall remain in effect until formally discontinued (when each nest is no longer active). In addition, the NBMP shall specify measures to ensure the buffers are observed, including a direct communication and decision protocol to stop work within buffer areas. In some cases, active nests may be found while work is underway. Therefore, the NBMP shall include a protocol for stopping ongoing work within the buffer area, securing the work site, and removing personnel and equipment from the buffer.

The NBMP shall describe proposed measures to avoid take or adverse effects to nests, such as buffer distances from active nests. These measures shall be based on the specific nature of the bird species and conservation status, and other pertinent factors. The NBMP will identify bird species (or groups of species) that are relatively tolerant or intolerant of human activities and specify smaller or larger buffer distances as appropriate for each species. If no information is available to specify a buffer distance for a species, then the NBMP shall specify 300 feet as a standard buffer distance, and 500 feet for raptors and special-status species. Nest management for listed threatened or endangered species will be prescribed in a USFWS Biological Opinion, CDFW Incidental Take Permit, or both. All applicable avoidance measures, including buffer distances, must be continued until nest monitoring (below) confirms that the nestlings have fledged and dispersed, or the nest is no longer active. For each special-status species potentially nesting within or near Proposed Project work areas, the NBMP shall specify applicable buffers and any additional nest protection measures, specialty monitoring, or restrictions on work activities, if needed.

The NBMP shall identify acceptable work activities within nest buffers (e.g., pedestrian access for inspection or BMP repair) including conditions and restrictions, and any monitoring required. The NBMP shall include pictorial representation showing buffer distances for ground buffers, vertical helicopter buffers, and horizontal helicopter buffers for nests near the ground and nests in towers.

Nest Buffer Modification or Reduction

At times, SCE or its contractor may propose buffer distances different from those approved in the NBMP. Buffer adjustments shall be reviewed and recommended by a qualified avian biologist, who has been approved by the CPUC and BLM in consultation with the CDFW and USFWS. The NBMP shall provide a procedure and timing requirements for notifying the CPUC, BLM, CDFW, and USFWS of any planned adjustments to nest buffers. Separate and distinct procedures will be provided for special-status birds. The NBMP will list the information to be included in buffer reduction notifications in a standardized format.

Nest deterrents

The NBMP shall describe any proposed measures or deterrents to prevent or reduce bird nesting activity on Proposed 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. In the event that an active nest is located on Proposed Project facilities, materials or equipment, SCE will avoid disturbance or use of the facilities, materials or equipment (e.g., by red-tag) until the nest is no longer active.

Communication

The NBMP shall specify the responsibilities of construction monitors in regards to nests and nest issues, and specify a direct communication protocol to ensure that nest information and potential adverse impacts to nesting birds can be promptly communicated from nest monitors to construction monitors, so that any needed actions can be taken immediately.

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. For example, chick fences may be used to prevent them from entering work areas and access roads. Finally, the NBMP will specify a procedure for removal of inactive nests, including verification that the nest is inactive and a notification/approval and approval process prior to removal.

Monitoring

SCE shall be responsible for monitoring the implementation, conformance, and efficacy of the avoidance measures (above). The NBMP shall include specific monitoring measures to track any active bird nest within or adjacent to Proposed Project work areas, bird nesting activity, Proposed Project-related disturbance, and outcome of each nest. For nests with reduced buffers, SCE shall monitor each nest until nestlings have fledged and dispersed or until the nest becomes inactive. Nests with default buffers do not require further monitoring once construction work is completed in the area. New nests discovered after work completion in an area will not require monitoring. In addition, monitoring shall include pre-construction surveys, daily sweeps of work areas and equipment, and any special monitoring requirements for particular activities (tree trimming, vegetation removal, etc.) or particular species (noise monitoring, etc.). Nest monitoring shall continue throughout the breeding season during each year of the Proposed Project's construction activities.

Reporting

Throughout the construction phase of the Proposed Project, nest locations, Proposed Project activities in the vicinity of nests (including helicopter traces), and any adjustments to buffer areas shall be updated and available to CPUC monitors on a daily basis in the Field Reporting Environmental Database (FRED). All buffer reduction notifications and prompt notifications of nest-related non-compliance and corrective actions will be made via email to CPUC monitors. 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, SCE will submit an annual NBMP report to the CPUC, BLM, CDFW, and USFWS.

Implementation locations: Project-wide

BIO-AVI-3: Burrowing Owl

Pre-construction survey. A pre-construction, focused burrowing owl survey will be conducted no more than 30 days prior to initial start of construction within habitat to determine if any occupied burrows are present. If occupied burrows are found, adequate buffers shall be established around burrows. Adequate buffers will be determined by a Project Avian Biologist based upon field conditions and resource agency guidelines for wintering burrows and breeding season burrows.

Prepare Burrowing Owl Management Plan. SCE will develop a Burrowing Owl Management Plan for the Proposed Project. The Plan will include information related to:

1. assessment of burrow suitability;

2. replacement burrows;
3. methods for relocation;
4. monitoring and reporting;
5. implementation locations.

Conduct surveys and avoidance for burrowing owl.

Burrowing owl surveys shall be conducted in accordance with the most current CDFW guidelines (CDFG, 2012; or updated guidelines as they become available). SCE shall take measures to avoid impacts to any active burrowing owl burrow within or adjacent to a work area. The default buffer for a burrowing owl burrow is 300 feet for ground construction, and 300 feet horizontal and 200 feet vertical for helicopter construction. The Nesting Bird Management Plan will specify a procedure for adjusting this buffer, if needed. Binocular surveys may be substituted for protocol field surveys on private lands adjacent to the Proposed Project site only when SCE has made reasonable attempts to obtain permission to enter the property for survey work but was unable to obtain such permission.

If active burrowing owl burrows are located within Proposed Project work areas, SCE may passively relocate the owls, by preparing and implementing a Burrowing Owl Passive Relocation Plan, as described below. SCE shall prepare a draft Burrowing Owl Passive Relocation Plan for review and approval by CPUC and BLM in consultation with CDFW and USFWS prior to the start of any ground-disturbing activities. No passive relocation of burrowing owls shall be permitted during breeding season, unless a qualified biologist verifies through noninvasive methods that an occupied burrow is not occupied by a mated pair, and only upon authorization by CDFW. The Plan shall include, but not be limited to, the following elements:

Assessment of Suitable Burrow Availability. The Plan shall include an inventory of existing, suitable, and unoccupied burrow sites within 300 feet of the affected Proposed Project work site. Suitable burrows will include inactive desert kit fox, ground squirrel, or desert tortoise burrows that are deep enough to provide suitable burrowing owl nesting sites, as determined by a qualified biologist. If two or more suitable and unoccupied burrows are present in the area for each burrowing owl that will be passively relocated, then no replacement burrows will need to be built.

Replacement Burrows. For each burrowing owl that will be passively relocated, if fewer than two suitable unoccupied burrows are available within 300 feet of the affected Proposed Project work site, then SCE shall construct at least two replacement burrows within 300 feet of the affected Proposed Project work site, or in suitable locations within ¼ mile when suitable locations within 300 feet are not available. Burrow replacement sites shall be in areas of suitable habitat for burrowing owl nesting, and subject to minimal human disturbance and access. The Plan shall describe measures to ensure that burrow installation or improvements would not affect sensitive species habitat or any burrowing owls already present in the relocation area. The Plan shall provide guidelines for creation or enhancement of at least two natural or artificial burrows for each active burrow within the Proposed Project disturbance area, including a discussion of timing of burrow improvements, specific location of burrow installation, and burrow design. Design of the artificial burrows shall be consistent with CDFW guidelines (CDFG, 2012; or more current guidance as it becomes available) and shall be approved by the CPUC, BLM, CDFW, and USFWS.

Methods. Provide detailed methods and guidance for passive relocation of burrowing owls, outside the breeding season. An occupied burrow may not be disturbed during the nesting season (generally, but not limited to, February 1 to August 31), unless a qualified biologist determines, by non-invasive methods, that it is not occupied by a mated pair. Passive relocation will include installation of one-way doors on burrow

entrances that will let owls out of the burrow but will not let them back in. Once owls have been passively relocated, burrows will be carefully excavated by hand and collapsed by, or under the direct supervision, of a qualified biologist.

Monitoring and Reporting. Describe monitoring and management of the replacement burrow site(s), and provide a reporting plan. The objective shall be to manage the relocation area for the benefit of burrowing owls, with the specific goal of maintaining the functionality of the burrows for a minimum of two years. Monitoring reports shall be available to the CPUC and BLM on a weekly basis.

Implementation locations: Project-wide

BIO-HERP-1: Desert Tortoise

Pre-construction surveys/Construction monitoring. Prior to initial ground-disturbing activities, a biological monitor under the supervision of a USFWS- or CDFW-approved biologist—with experience monitoring and handling desert tortoise—will conduct a pre-activity survey in all work areas within potential desert tortoise habitat, plus an approximately 100-foot buffer. All desert tortoise burrows within the pre-activity survey area (including desert tortoise pallets) will be prominently flagged at that time so that they may be avoided during work activities.

An approved biologist will be onsite to monitor vegetation removal and grading and provide regular inspections of all other construction activities within desert tortoise habitat. The approved biologist will have the authority to halt all non-emergency actions (as soon as safely possible) that may result in harm to the desert tortoise and will assist in the overall implementation of APMs for the tortoise.

In the event a desert tortoise is encountered in the work area, all work will cease, and the approved biologist will be contacted. Work will not commence until the animal has voluntarily moved to a safe distance away from the work area. If it does not move on its own within 15 minutes, an authorized biologist may remove and relocate the animal to a safe location if authorized under existing permit conditions. No tortoise will be handled except under authorization from the USFWS and CDFW. Encounters with desert tortoise will be documented and provided to the appropriate wildlife resource agencies. In the event a dead or injured desert tortoise is observed, the approved biologist will be responsible for notifying SCE's Herpetologist and reporting the incident to the wildlife resource agencies.

Avoid and minimize impacts. All Proposed Project activities located within areas identified as desert tortoise habitat shall implement the following avoidance and minimization measures:

1. **Under Vehicle Checks.** Desert tortoises commonly seek shade during the hottest times of the day. Employees working within the geographic range of this species will be required to check under their equipment or vehicles before they are moved. If desert tortoises are encountered, the vehicle will not be moved until the tortoise has voluntarily moved away from the equipment or vehicle.
2. **Disposal of Trash.** Trash and food items will be contained in closed containers and removed daily to reduce attractiveness to opportunistic predators, such as common ravens (*Corvus corax*), coyotes (*Canis latrans*), and feral dogs (*Canis lupus familiaris*).
3. **Pets Prohibited.** Employees will not bring pets or other animals to the Proposed Project area, unless the animal is ADA compliant.
4. **Vehicle Travel.** During construction-related activities, motor vehicles will be limited to maintained roads, designated routes, and areas identified as being permanently or temporarily affected by construction within the Proposed Project footprint. Motor vehicle speeds will not exceed 15 miles per

hour on Proposed Project-specific construction routes and temporary work areas within habitat for desert tortoise.

5. Trapped Animal Prevention. All auger holes, trenches, pits, or other steep-sided excavations that may pose a hazard to desert tortoise will be either constructed with escape ramps (earthen or wooden) or securely covered when unattended to prevent entrapping animals. At the start and end of each workday, and just before backfilling, all excavations will be inspected for trapped animals. If found, trapped animals will be removed by the qualified biologist and relocated to outside the Proposed Project footprint, as required in all applicable permits or habitat conservation plans.

Coordinate with agencies. SCE will obtain take coverage and consult with the USFWS, CDFW, and/or land management agencies. In addition to obtaining the necessary permits and authorizations, which may include conducting protocol surveys as required by the agencies, the Proposed Project will be included in SCE's programmatic raven management plan upon completion of construction to minimize the effects of raven predation on desert tortoises as a result of SCE infrastructure.

BIO-MAM-1: Mohave Ground Squirrel

Coordinate with CDFW. SCE intends to apply for a state Incidental Take Permit (ITP) for Mohave ground squirrel through the California Department of Fish and Wildlife (CDFW). In collaboration with CDFW, SCE will develop construction minimization measures and habitat conservation measures during the 2081 (b) ITP consultation.

Permit conditions that will be implemented include, but are not limited to:

1. Relocation plan. An MGS relocation plan will be developed by SCE and approved by CDFW prior to the beginning of Proposed Project activities in identified MGS habitat. The relocation plan will include, but not be limited to, survey methods, timing, burrow excavation methods and implementation area, release locations, and identification of wildlife rehabilitation or veterinary facilities for injured animals. The designated biologist will be responsible for the capture, handling, and relocation of MGS.
2. Designated biologist. A qualified MGS biologist authorized by CDFW to handle MGS will be on-site or available for a same day response when Proposed Project activities occur in identified MGS habitat.
3. Biological monitors. Qualified biological monitors will monitor all construction activities in occupied habitat and areas adjacent to occupied habitat. The qualified biologist will have the authority to stop all activities with the potential to impact MGS. The qualified biologist will immediately contact the designated biologist for guidance in the event MGS are encountered. Work will not resume in that area until appropriate measures have been implemented.
4. Pre-construction surveys. Prior to initial ground-disturbing activities, a qualified MGS biologist will conduct pre-construction surveys within identified MGS habitat areas. The preconstruction surveys will identify MGS individuals or burrows for avoidance.
5. Burrow avoidance. A qualified biologist will demarcate [e.g., flagging, signage, fencing, construction maps, etc.] avoidance areas around MGS burrows as needed to prevent impacts.
6. Exclusion Fencing. Temporary Exclusion Fencing may be used to avoid MGS burrows or exclude MGS from work areas when necessary. The designated biologist will oversee exclusion fencing installation to ensure there are no impacts to MGS. The integrity of the exclusion fencing will be checked regularly and repaired as needed.
7. Vehicle Travel. During construction-related activities, motor vehicles will be limited to maintained roads, designated routes, and areas identified as being permanently or temporarily affected by construction within the Proposed Project footprint. Motor vehicle speeds along Proposed Project

specific construction routes and temporary work areas within MGS habitat will not exceed 15 miles per hour.

8. Trapped animal prevention. All auger holes, trenches, pits, or other steep-sided excavations that may pose a hazard to MGS will be either constructed with escape ramps (earthen or wooden) or securely covered when unattended to prevent entrapping animals. At the start and end of each workday, and just before backfilling, all excavations will be inspected for trapped animals. Any MGS found will be allowed to escape unimpeded. If an MGS is trapped and does not leave on its own, the designated biologist will move the animal according to the ITP conditions.
9. Cover Materials. All pipes or other construction materials or supplies shall be covered or capped in storage or laydown areas at the end of each workday to prevent entrapping animals. No pipes or tubing of sizes or inside diameters ranging from 3 to 10 inches shall be left open either temporarily or permanently. All pipes or other construction materials shall be inspected for wildlife prior to moving or installing. If present, MGS will be allowed to leave on their own accord or will be removed by the designated biologist according to the ITP conditions.
10. Trash disposal. Trash and food items will be contained in closed containers and removed daily to reduce attracting predators.
11. Pets Prohibited. Employees will not bring pets or other animals to the Proposed Project area, unless the animal is ADA compliant.

BIO-MAM-2: Desert Kit Fox

Preconstruction surveys. Surveys for desert kit fox shall be conducted within 14 days prior to the start of construction. The survey area shall include the Proposed Project disturbance areas plus a 300-foot buffer during the breeding season (February 1 through April 30) and a 100-foot buffer outside the breeding season. Potentially occupied burrows in Proposed Project disturbance areas and the survey buffer shall be mapped and Qualified Biologist(s) shall utilize tracking stations and/or wildlife cameras to determine whether the burrows are occupied. If a burrow is determined to be occupied by desert kit fox or other special-status mammal species during the breeding season, the burrow shall be demarcated with a 300-foot buffer. If a burrow is determined to be occupied outside the breeding season it shall be demarcated with a 100-foot buffer. Burrows determined to be unoccupied shall be demarcated with a 50-foot buffer. If occupied burrows are found in Proposed Project disturbance areas and cannot be avoided, Qualified Biologist(s) shall passively relocate the occupying animals through the use of one-way doors at burrow entrances that allow the animals to leave on their own. Once vacant, burrows shall be excavated by hand and collapsed. Passive relocation will be avoided from February 1 through April 30 and shall not occur while young are in the burrow and still dependent upon their parents. The CDFW shall be consulted prior to any relocation of desert kit fox during the breeding season. Additionally, the following measure will be implemented to minimize the likelihood of distemper transmission:

- Any documented kit fox mortality shall be reported to the CDFW within 24 hours of identification. If a dead kit fox is observed, it shall be retained and protected from scavengers until the CDFW determines if the collection of necropsy samples is justified.

BIO-RES-1: Develop and Implement Habitat Restoration Plan (HRP)

Temporary impacts to regulated species' habitats, plant species, and vegetation communities shall be restored. Regulated species and vegetation communities include all species designated as threatened, endangered or rare, sensitive, or of concern by resource or land agencies. Species and vegetation communities that require restoration will be determined by the resource agencies through the permitting process.

Temporary impacts to all other categories of land such as private lands or disturbed areas (e.g., agricultural lands, existing roads, OHV trails, grazing areas, trash/dump site, etc.) shall only be subject to the requirements of the Storm Water Pollution Prevention Plan (SWPPP) and the Invasive Plant Management Plan (IPMP, APM BIO-RES-2). No additional goals, objectives, or success criteria regarding habitat condition are required for these sites.

SCE shall develop and implement a Habitat Restoration Plan (HRP). SCE will consult with appropriate agencies during development of the HRP and implement the HRP in conjunction with applicable permit conditions and mitigation measures. The HRP shall be submitted to the CPUC and BLM for review and approval prior to the start of construction. Invasive plant management will be performed in conjunction with the HRP per the Invasive Plant Management Plan (BIO-RES-2).

Habitat Restoration Plan

For all restoration sites, the HRP shall include:

1. Restoration goals and objectives based on vegetation type and jurisdictional status of each site.
2. Quantitative restoration success criteria.
3. Implementation details as applicable. Details may include topsoil stockpiling and handling, postconstruction site preparation, soil decompaction and recontouring, planting and seeding palettes to include only native, locally sourced materials with confirmed ability to produce from suppliers, fall or other suitable season-season planting or seeding dates.
4. Maintenance details, which may include weeding, irrigation, or hand-watering schedule and equipment, and erosion control.
5. Monitoring and Reporting, specifying monitoring schedule and data collection methods throughout establishment of vegetation with key indicators of successful or unsuccessful progress, and quantitative criteria values to objectively determine success or failure at the conclusion of the monitoring period.
6. Adaptive management procedures such as reseeding, re-planting, drainage repairs, adjustments to irrigation schedule, and repair or remediation of sites to meet success criteria on schedule.

For species and vegetation communities with permit requirements including wetlands and riparian habitats, the goal of the HRP will be to restore plant species, habitat values, or vegetation communities. For restoration sites, the goals, objectives, and success criteria specified in the HRP will include native species cover and species richness compatible with the specific vegetation and habitat type.

If an unforeseen catastrophic event (e.g., flood, fire, or other event beyond SCE control) damages a restoration site within the monitoring period, SCE will assess adjacent areas to adjust maintenance activities and success standards in coordination with the agencies. In all areas, seed and/or potted nursery stock of locally native species will be used. The list of plants observed during botanical surveys of the Proposed Project area will be used as a guide to site-specific plant selection, additional appropriate species may be included.

Monitoring of the restoration sites will continue annually until HRP success criteria are achieved. SCE will be responsible for implementing adaptive management as needed.

For all restoration areas, SCE will provide annual reports to the CPUC and BLM to verify the total vegetation acreage subject to restoration, areas that have been completed, and areas still outstanding. The annual reports will also include a summary of the restoration and adaptive management activities for the

previous year, success criteria progress and completion, and any adjustments to planned activities, for the upcoming year.

BIO-RES-2: Develop Invasive Plant Management Plan. SCE shall prepare and implement an Invasive Plant Management Plan (IPMP). This plan shall include measures designed to avoid the introduction and spread of new nonnative invasive plant species (invasive plants) and minimize the spread of existing invasive plants resulting from Proposed Project activities. The IPMP must meet the BLM’s requirements for NEPA disclosure and analysis if herbicide use is proposed for the Proposed Project. The IPMP shall be submitted to the CPUC and BLM for review and approval prior to the start of construction.

For the purpose of the IPMP, invasive plants shall include plants that (1) are invasive and rated high or moderate for negative ecological impact in the California Invasive Plant Inventory Database (Cal-IPC, 2006), or (2) aid and promote the spread of wildfires (such as *Bromus tectorum* (cheatgrass), *Brassica tournefortii* (Sahara mustard), and *Bromus madritensis* spp. *rubens* (red brome)) or (3) are identified by the BLM as special concern. The IPMP will be implemented throughout Proposed Project pre-construction, construction, and restoration phases.

Invasive Plant Management Plan.

The IPMP will include the information defined in the following sections:

Assessment. An assessment of the Proposed Project’s potential to cause spread or the introduction of invasive plants into new areas, or to introduce new invasive plants into the ROW. This section will list known and potential invasive plants occurring on the ROW and in the Proposed Project region and identify threat rankings and potential for Proposed Project-related occurrence or spread for each species. This section will identify control goals (e.g., eradication, suppression, or containment) for invasive plants of concern with potential to occur on the ROW.

Pre-construction invasive plant inventory. SCE shall inventory all invasive plants of concern in areas (both within and outside the ROW) subject to Proposed Project-related vegetation removal/disturbance, “drive and crush,” and ground-disturbing activity. The invasive plants inventory area shall also include vehicle and equipment access routes within the ROW and all Proposed Project staging and storage yards. Invasive plants of concern shall be mapped by area of occurrence and percent cover. The map will be updated with new occurrences at least once a year.

Pre-construction invasive plants treatment. Invasive plant infestations identified in the pre-construction invasive plants inventory shall be evaluated to identify potential for Proposed Project-related spread and potential benefits (if any) of pre-construction treatment. Pre-construction treatment will consider the specific invasive plants, potential seed banks, or other issues. The IPMP will identify any infestations to be controlled or eradicated prior to Proposed Project construction. Control and follow-up monitoring of pre-construction invasive plants treatment sites will follow methods identified in appropriate sections of the IPMP.

Prevention. The IPMP will specify methods to minimize potential transport of new invasive plant seeds onto the ROW, or from one section of the ROW to another. The ROW may be divided into “weed zones,” based on invasive plants of concern in the ROW. The IPMP will specify inspection procedures for construction equipment entering the Proposed Project area. Vehicles and equipment may be inspected and cleaned at entry points to specified sections of the ROW, and before leaving work sites where invasive plants of concern must be contained locally. Off road onstruction equipment shall be inspected to ensure it is free of any dirt or mud that could contain invasive plant seeds, roots, or rhizomes,

and the tracks, outriggers, tires, and undercarriage will be carefully washed, with special attention being paid 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 will be frequently entering and exiting the site will be inspected and washed on an as-needed basis. Tools such as chainsaws, hand clippers, pruners, etc., shall be cleaned of dirt and mud before entering Proposed Project work areas.

All vehicles will be washed off-site when possible. If off-site washing is infeasible, on-site cleaning stations (including air washing) will be set up at specified locations to clean equipment before it enters the work area. Wash stations will be located away from native habitat or special-status species occurrences. Wastewater from cleaning stations will not be allowed to run off the cleaning station site. When vehicles and equipment are washed, a daily log must be kept stating the location, date and time, types of equipment, methods used, and personnel present. The log shall contain the signature of the responsible crewmember. Written or electronic logs shall be available to the BLM and CPUC monitors on request.

Erosion control materials (e.g., straw bales) must be certified free of invasive plant seed (“weed-free”) before they are brought onto the site. The IPMP must prohibit on-site storage or disposal of mulch or green waste that may contain invasive plant material. Mulch or green waste will be removed from the site in a covered vehicle to prevent seed dispersal and transported to a licensed landfill or composting facility.

The IPMP will specify guidelines for any soil, gravel, mulch, or fill material to be imported into the Proposed Project area, transported from site to site within the Proposed Project area, or transported from the Proposed Project area to an off-site location, to prevent the introduction or spread of invasive plants to or from the Proposed Project area.

Monitoring. The IPMP shall specify methods to survey for invasive plants of concern during pre-construction, construction, and restoration phases; and shall specify qualifications of specialists responsible for invasive plant monitoring and identification. It must include a monitoring schedule to ensure timely detection and immediate control of new invasive plant infestations to prevent further spread. Surveying and monitoring for invasive plant infestations shall occur at least two times per year, to coincide with the early detection period for early season and late season invasive plants. The monitoring section shall also describe methods for post-eradication monitoring to evaluate success of control efforts and any need for follow-up control.

Control. The IPMP must specify manual and chemical invasive plant control methods to be employed. The IPMP shall include only invasive plant control measures with a demonstrated record of success for target invasive plants, based on the best available information. The plan shall describe proposed methods for promptly scheduling and implementing control activity when any Proposed Project-related invasive plant infestation is located (e.g., located on a Proposed Project disturbance site), to ensure effective and timely invasive plant control. Invasive plant infestations must be controlled or eradicated as soon as possible upon discovery, and before they go to seed, or when appropriate with the goal to prevent further spread. All proposed invasive plant control methods must minimize disturbance to native vegetation, limit ingress and egress to defined routes, and avoid damage to any environmentally sensitive areas (ESAs) identified within or adjacent to the ROW. New infestations by invasive plants of concern will be treated at a minimum of once annually until eradication, suppression, or containment goals are met. Invasive plant occurrences can be considered eradicated when no new seedlings or resprouts are observed for three consecutive years, or a single season where new seedlings or resprouts are observed in reference populations but not at the control site. Invasive plant control efforts may cease when eradication is complete.

Manual control shall specify well-timed removal of invasive plants or their seed heads with hand tools; seed heads and plants must be disposed of in accordance with guidelines from the Kern County and San Bernardino County Agricultural Commissioners if such guidelines are available.

The chemical control section must include specific and detailed plans for any herbicide use. It must 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, consistent with BLM's Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States (BLM, 2007) and National Invasive Species Management Plan (NISC, 2008). All herbicide applications will follow U.S. Environmental Protection Agency label instructions and will be in accordance with federal, state, and local laws and regulations. Only state and BLM-approved herbicides may be used. Herbicide treatment will be implemented by a Licensed Qualified Applicator. Herbicides shall be applied in accordance with product labels and applicator licenses. Herbicides shall not be applied during or within 24 hours of high confidence predicted rain. Only water-safe herbicides shall be used in riparian areas or within channels (engineered or not) where they could run off into downstream areas. Herbicides shall not be applied in high wind conditions.

Reporting schedule and contents. The IPMP shall specify reporting schedule and contents of each report.

BIO-BOT-1: Special-status Herbaceous Plants. SCE shall avoid, minimize or mitigate impacts to any state or federally listed or California Rare Plant Rank (CRPR) 1 or 2 herbaceous plants that may be located on the Proposed Project disturbance areas or surrounding buffer areas.

Pre-construction survey. Pre-construction clearance surveys in areas where special-status plant species potentially occur will be performed by a qualified biologist (i.e., a biologist with the requisite education and experience to address specific resources), which may be chosen from a previously approved CPUC approved biologist, to avoid or minimize impacts on special-status plants. Disturbance free buffers for herbaceous species shall be 25-ft from the individual and/or occurrence boundary. These buffers shall be established from the previously conducted focused surveys and preconstruction survey results. If a smaller buffer is required, SCE shall develop and implement site-specific monitoring plan to minimize direct impacts to the species. The plan will be submitted to the CPUC for review and approval.

In the event of a discovery of previously undescribed species, the boundary of the occurrence (defined by CNDDB as all individuals within a ¼ mile of each other) will be flagged, avoided, and monitored as discussed above and the CPUC, CDFW, and/or USFWS will be notified.

Focused Survey. For construction areas where special-status plant species potentially occur and focused surveys have not occurred, focused surveys will take place prior to construction. Focused surveys will be conducted consistent with methodology described in the Proposed Project Biological Technical Report.

Restoration and Mitigation

SCE will implement the following activities; other conflicting permit conditions will supersede the activities below.

1. **Coordinate with Agencies.** Agencies shall approve any impacts to special-status plants. Impacts in excess of 10% of any occurrence, or other percentage required by agency regulations on lands under their jurisdiction, shall be restored or mitigated.
2. **Habitat Restoration and Revegetation.** A Habitat Restoration Plan (HRP) shall address topsoil, plant or propagules salvage, and restoration. A Habitat Mitigation and Management Plan (HMMP) shall address mitigation. Approval of the HRP by appropriate agencies is required before impacts to special-

status plant occurrences are allowed. A draft HMMP will be submitted to the appropriate agencies prior to impacts to special-status plants. For more information see APM BIO-RES-1.

3. **Salvage.** If required by agency regulations on lands under their jurisdiction, SCE shall consult with a qualified restoration ecologist or horticulturist regarding the feasibility and likely success of salvage efforts for each species. If salvage is feasible, based on prior success with similar species, SCE shall include salvage methods in the HRP. For special-status plants, the goal shall be to preserve existing populations or establish new populations. The HRP will include at minimum: (a) species and locations of plants identified for salvage; (b) criteria for determining whether a species is appropriate for salvage; (c) the appropriate season for salvage; (d) equipment and methods for collection, transport, and re-planting plants or propagules, to retain intact soil conditions and maximize success; (e) details regarding storage of plants or propagules for each species; (f) location of the proposed recipient site, and detailed site preparation and plant introduction techniques, as applicable; (g) a description of the irrigation, and other maintenance activities, as applicable; (h) success criteria, including specific timeframe for survivorship of each species; and (i) a detailed monitoring program, commensurate with the HRP goals. Invasive plant control for special-status plants will be addressed in the Invasive Plant Management Plan (IPMP, APM BIO-RES-2).
4. **Off-site compensation.** Where restoration is not feasible, SCE shall provide compensation lands consisting of habitat occupied by the impacted CRPR 1 or 2 ranked plant occurrences at a 1:1 ratio of acreage for any occupied habitat affected by the Proposed Project. Occupied habitat will be calculated on the Proposed Project site and on the compensation lands as including each special-status plant occurrence. If compensation is selected as a means of mitigating special-status plant impacts, it may be accomplished by purchasing credit in an established mitigation bank, acquiring conservation easements, or direct purchase and preservation of compensation lands. Compensation for these impacts may be “nested” or “layered” with compensation for habitat loss.

Agency Coordination

Annual construction monitoring reports shall be submitted to the CPUC and BLM. Reports shall include, but not be limited to, number of plants impacted, details of plants or propagules 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. After construction, salvage status will be described in the HRP annual report.

In the event of an unexpected discovery of a new species or previously undocumented occurrence, the same steps will be used as discussed above. In addition, when there is an unexpected discovery of a new species, the CPUC and CDFW and/or BLM will be notified.

BIO-BOT-2: Special-status Perennial Plants and Other Species. SCE shall avoid, minimize or mitigate impacts to western Joshua tree (*Yucca brevifolia* var. *brevifolia*).

Pre-construction survey. Pre-construction surveys will be conducted by a qualified specialist to identify any western Joshua trees in the Proposed Project area. Where western Joshua trees are known to occur, all work shall occur outside an appropriate buffer to avoid individual western Joshua trees, seeds, and seedbank as agreed to by CDFW. If impacts that would result in take cannot be avoided, SCE will obtain a Section 2081(b) ITP from CDFW if the species is CESA listed or a candidate for listing, and will implement additional measures pursuant to the ITP. Buffer reductions may occur with the implementation of appropriate ITP measures. A qualified botanist/arborist monitor, with the authority to halt work, shall be present whenever work occurs within reduced buffers for Joshua tree as required by CDFW.

Compensatory Restoration

If an ITP for western Joshua tree is obtained, then compensation for impacts to western Joshua tree will be addressed through the permit conditions.

WET-1: Avoid and/or Minimize Impacts to Jurisdictional Waters, Wetlands, and Riparian Habitats.

The Proposed Project shall avoid and/or minimize impacts to all state jurisdictional waters, wetlands, and riparian habitat that occur within the Proposed Project area where feasible. All grading, fill, staging of equipment, infrastructure construction or removal, and all other construction activities shall be designed, sited, and conducted outside of state and federally jurisdictional waters, wetlands, and riparian habitat.

The implementation of appropriate Best Management Practices (BMPs) (e.g., silt fencing, straw wattles, secondary containment, avoiding fueling within 100 feet of jurisdictional waters, etc.) shall be utilized to ensure that indirect impacts to jurisdictional waters, wetlands, and riparian areas are avoided or minimized. BMPs are also necessary to reduce the risk of an unintended release of sediment or other material into jurisdictional waters. New and upgraded roadways shall use at-grade type stream crossings unless installation or repair of culverts is required. Stockpiled and bermed sediment will be redistributed or removed from the site so as not to alter flows. New poles shall be sited outside stream channels.

If permanent impacts to waters, wetlands, and riparian habitats are unavoidable, they shall be mitigated at a minimum of a 1:1 ratio, or at a ratio determined by the applicable Resource Agencies (i.e., U.S. Army Corps of Engineers, the State Water Resources Control Board/Regional Water Quality Control Boards, and California Department of Fish and Wildlife). Temporary impacts to jurisdictional waters shall be returned to pre-existing contours upon completion of the work.

5.4.6 Alternatives

For an evaluation of Proposed Project alternatives, see Chapter 6, Comparison of Alternatives.

5.5 Cultural Resources

This section describes the cultural resources in the vicinity of the Cal City Substation 115 kV Upgrade Project (Proposed Project), as well as the potential impacts that may result from construction and operation of the Proposed Project. See Section 5.18, Tribal Cultural Resources, for information related to cultural resources potentially of importance to California Native American tribes.

Cultural resources are defined as any object or specific location of past human activity, occupation, or use that is identifiable through historical documentation, inventory, or oral evidence. Cultural resources can be separated into three categories: archaeological, built environment, and traditional cultural resources. Traditional Cultural Resources are described in Section 5.18, Tribal Cultural Resources. Archaeological resources include both prehistoric and historic remains of human activity. Prehistoric resources can include lithic scatters, ceramic scatters, quarries, habitation sites, temporary camps/rock rings, ceremonial sites, and trails. Historic-era resources are typically those that are 50 years or older. Historic archaeological resources can consist of structural remains (e.g., concrete foundations), historic objects (e.g., bottles and cans), features (e.g., refuse deposits or scatters), and sites (e.g., resources that contain one or more of the aforementioned categories). Built environment resources range from historic buildings to canals, historic roads and trails, bridges, ditches, cemeteries, and electrical infrastructure, such as transmission lines, substations, and generating facilities.

This section is based on information obtained primarily through a literature review completed in support of a Cultural Resources Technical Report (CRTR) and the Historic-Era Built Environment Report (HBER), currently under review by the Bureau of Land Management (BLM). Once the CRTR and HBER have been reviewed and approved by BLM they will be provided to the CPUC. The results of the records search and survey will identify historical and archaeological resources in the Proposed Project area and determine their eligibility for the National Register of Historic Places (NRHP), and/or California Register of Historic Resources (CRHR). The results of the records search and survey will be considered during the final design and engineering of the Proposed Project to minimize impacts on cultural resources during construction.

5.5.1 Environmental Setting

The Proposed Project is located in Kern County and San Bernardino County in the Mojave Desert region of California on federal, state, private, and municipal land. These lands include unincorporated areas of Kern County and San Bernardino County, City of California City, Edwards Air Force Base (EAFB) controlled by the Department of Defense (DoD), and public lands under the jurisdiction of the BLM and the California Department of Fish and Wildlife (CDFW). Approximately 90 percent of the Proposed Project is located within undeveloped open areas, with the remaining 10 percent located within developed areas (including the City of California City).

The Area of Potential Effects (APE) is the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties. Determination of the APE is influenced by the project's setting, the scale and nature of the undertaking, and the different kinds of effects that may result from the undertaking (36 CFR 800.16[d]). The Area of Potential Impacts (API) is the commensurate California Environmental Quality Act (CEQA)-level equivalent and is effectively similar in implementation. For the purpose of this assessment, the APE and API are identical and will collectively be referred to as the "APE" within this assessment. The APE is defined to identify resources in the area that have potential for historic significance, that should be evaluated for eligibility for the National Register of Historic Places (NRHP), and that may be directly or indirectly affected by the undertaking, in compliance with 36 CFR 800.16(d).

The APE for the Proposed Project includes the entire survey footprint, which consists of approximately 4,532 acres. This area includes approximately 70 miles of Proposed Project routes and 19 miles of alternate routes which include a 100-foot corridor plus a 100-foot buffer (100 feet on each side), approximately 33 miles of proposed access road routes, and approximately 220 acres of proposed laydown yards. However, the buffer varied along 6.5 miles of an alternate route from the Cal City Substation to Sequoia Boulevard. This was due to two proposed subtransmission lines being in a parallel or double circuit for this portion of the Proposed Project. Since the two subtransmission lines would run together, the survey buffer expanded to a 200-foot corridor plus a 100-foot buffer (100 feet on each side). While the APE includes areas along both the Proposed Project and Sequoia Boulevard Alternative, only impacts associated with the Proposed Project are analyzed in this section. Impacts associated with the Sequoia Boulevard Alternative are described in Chapter 6, Comparison of Alternatives.

5.5.1.1 Cultural Resources Reports

This section is based on information obtained primarily through a literature review completed in support of the CRTR and the HBER, currently under review by the BLM.

5.5.1.2 Cultural Resources Summary

5.5.1.2.1 Physical Setting

The APE is located in the Mojave Desert within the City California City and surrounding portions of unincorporated Kern and San Bernardino counties, and EAFB. The APE is situated at elevations ranging from approximately 2,300 to 3,050 feet above mean sea level (AMSL). Native plants within the APE would have included yuccas, Joshua trees, and cholla, with various other species of plant located in the Mojave Desert depending on elevation (National Park Service 2020). The APE consists generally of cholla, Joshua trees, creosote brush scrub, allscale scrub, and fourwing brush scrub.

The APE is in the western Mojave Desert within an area of broad alluvial plain generally known as the Antelope Valley. The nearest mountain range is the Rand Mountains, which lie approximately 5 miles north of the area and the southern edge of the Sierra Nevada, which lie approximately 7 miles northwest of the APE. Cache Creek is a northward-flowing ephemeral creek (dry during most of the year) that passes through the westernmost part of the APE. Numerous small, unnamed dry washes are found throughout the APE.

The majority of the APE is covered by Quaternary alluvial sediments and Mesozoic felsic plutonic rock (Dibblee and Minch 2008a, b, c, d, e). Per Amoroso and Miller (2012), most of the alluvial sediments in the APE are composed of grus, a sediment type produced by the weathering of felsic plutonic rocks. In certain areas, several other sediment types occur as well. Playa sediments occur in the southwestern part of the APE. Most of these playas have not flooded since the Pleistocene, but small areas are considered ‘active’ playas (defined by Amoroso and Miller 2012 as being flooded within the past few decades).

5.5.1.2.1 Prehistoric Background

Several chronological sequences have been proposed by archaeologists to describe cultural change in Southern California (Jones and Klar 2007, Moratto 2004). Sutton et al. (2007) devised an updated Mojave Desert culture history, dividing it into four temporal periods: Pleistocene, Early Holocene, Middle Holocene, and Late Holocene. Here, we use a modified version of Sutton et al.’s (2007) Mojave Desert chronology that incorporates updated dates and information regarding the Terminal Pleistocene and Early Holocene Periods (i.e., Grayson 2011; Rosencrance 2019; Smith et al. 2020).

Terminal Pleistocene Period (ca. 14,000 to 11,600 cal BP)¹

The climate of the Terminal Pleistocene Period in the Mojave Desert is generally characterized as being much cooler and wetter than the periods that followed (Sutton et al. 2007). During this time, the Mojave Desert featured several pluvial lakes (Grayson 2011). Although pluvial lakes vary in size, depth, and productivity, many lakes in the region likely fostered shallow marshes and wetlands along their shores. These lacustrine wetland environments often contained a wide variety of plant (e.g., cattail, tule) and animal resources (e.g., waterfowl, fish, deer/antelope). Vegetation in the Mojave Desert was also much different during the Terminal Pleistocene than it is today. Shadscale communities dominated the valley floors and Utah Juniper grew thousands of feet lower in elevation than they do today (Grayson 2011). Common plants seen today, such as creosote bush, brittlebrush, and rabbitbrush, would not arrive in the region for hundreds to thousands of years following the end of the period (ca. 11,600 cal BP [Grayson 2011]).

To date, there are no securely dated archaeological sites attributed to the Terminal Pleistocene Period (Rosencrance 2019; Smith et al. 2020) in the Mojave Desert or southern Great Basin. However, it is possible that groups associated with the Western Stemmed Tradition (WST) and Clovis technological complexes did occupy the region during this time. The WST is a Paleoindian Technological complex found across the Intermountain West and California that is characterized by the use of large stemmed and lanceolate projectile points, a mobile hunter-gatherer settlement-subsistence system, and a broad diet often dominated by lacustrine resources (Reaux 2020). Campbell and Campbell (1937) discovered the first WST points on the shores of Pleistocene Lake Mojave and suggested that they dated to the Terminal Pleistocene; however, they lacked a means to reliably date the sites at the time. Although, there are no currently well-dated Terminal Pleistocene WST sites in the Mojave Desert or southern Great Basin, recent discoveries at the Paisley Caves, Oregon, and Cooper's Ferry, Idaho, indicate that WST groups have been in the Desert West since at least 14,000 cal BP; making it the oldest technological complex in North America (Davis et al. 2019; Jenkins et al. 2012; Smith et al. 2020). Current evidence suggests that WST groups may not have occupied the Mojave Desert region until the Early Holocene period (Rosencrance 2019).

Fluted lanceolate points, often attributed to the Clovis Paleoindian Complex, have also been found in the Mojave Desert and southern Great Basin (Grayson 2011). The Clovis Complex, once thought to be the oldest Paleoindian technological complex in the Americas (Jenkins et al. 2012), is generally defined by the presence of fluted lanceolate concave-based bifaces and the use of blades derived from prepared cores (Justice 2002). Clovis groups are often described as being highly mobile, megafauna hunting specialist based on their large toolstone conveyance patterns and the relatively common occurrence of Pleistocene megafauna kill sites associated with Clovis material (Grayson 2011). However, this was likely not the case in the Mojave Desert and Great Basin given the general lack of Pleistocene megafauna that occupied the desert region due to limited grassland availability (Grayson 2016). Instead, Clovis points in the Mojave Desert and Great Basin tend to be found along the shores of relict Pluvial Lakes and/or drainages that fed Pluvial Lakes, often times overlapping with WST sites. It is likely that groups using fluted point technology practiced a similar wetland focused lifestyle as WST groups. Unfortunately, no well-stratified or dated Clovis sites exist in the Mojave Desert and Great Basin and little else is known about their existence in the Desert West or their relationship to the WST. Some researchers believe that fluted point groups in the Great Basin and California may have arrived sometime during the late Paleoindian period (i.e., the Early Holocene) given the age and dominance of the WST in the region and differences in the morphology of

¹ The term "cal BP" is an abbreviation for "calibrated years before the present" or "calendar years before the present". Because the present changes every year, archaeologists, by convention, use the year 1950 as their reference. For example, 2000 B.P. is the equivalent of 50 B.C. (Crow Canyon Archaeological Center 2022).

fluted points in the west compared to traditional Clovis points found in the eastern United States (Rosencrance 2019; Smith et al. 2020).

Early Holocene Period (ca.11,600 to 8,000 cal BP)

The Pleistocene-Holocene transition began at approximately 11,600 cal BP following the termination of the Younger Dryas climatic event. The onset of the Early Holocene Period was marked by warmer temperatures, reduced precipitation, and the eventual desiccation of many of the region's Pleistocene pluvial lakes. During this period, we see a shift to more modern vegetation distributions with the arrivals of white bursage and creosote bush and the retreat of Utah Juniper to higher elevations (Grayson 2011). Although very few dated sites exist for this period, both fluted and WST technologies are associated with the Early Holocene in the Mojave Desert and southern Great Basin. WST sites, sometimes associated with the Lake Mojave Complex (Sutton et al., 2007), are the most common Early Holocene archaeological tradition in the region. These sites are often found near relict pluvial lake shores and generally contain the Lake Mojave and Silver Lake type WST points (Rosencrance 2019). Other Lake Mojave Complex tools include bifaces, steep-edged unifaces, crescents, the occasional cobble-core tool, and, infrequently, ground stone implements (Justice 2002). Based on large toolstone conveyance zones, small site sizes, and the lack of evidence for long-term occupations (e.g., house features, middens), researchers believe WST groups in the region continued to practice a highly mobile, wetland focused settlement-subsistence strategy (Basgall and Hall 2005; Grayson 2011) during this period.

Unlike the Terminal Pleistocene Period, a small number of sites have been securely dated to the Early Holocene in the Mojave Desert region. For example, the Roger's Ridge Site contained Lake Mojave WST points associated with a date range of 11,095-10,200 cal BP (Jenkins 1991) and the Awl Site possessed Parman and Silver Lake WST points dating between 10,125-8,655 cal BP (Basgall and Hall 1993). Finally, the China Lake Site contains both WST and fluted points argued to date to the Terminal Pleistocene and Early Holocene periods (Sutton 2007); however, these dates are associated with relict landforms and cannot be directly associated with those artifacts or occupations (Rosencrance 2019).

Middle Holocene Period (9,000 to 5,000 cal BP)

The Middle Holocene climate was generally more arid than periods before and after, but experienced multiple oscillations between wetter and drier conditions throughout the period. The nearly complete desiccation of the Early Holocene lakes and marshes required the region's inhabitants to rely on streams and springs for water, likely resulting in lower occupational densities (Aikens 1978, Cleland and Spaulding 1992, Sutton 1996, Warren 1984). Average temperatures and aridity increased, peaking between 8000 and 6000 cal BP. Settlement patterns appear to change during this time, including a shift to upland settings where reliable waters could still be found. The onset of the Middle Holocene Period also saw dramatic shifts in the archaeological record with the gradual replacement of WST spear point technology by dart points of the Pinto Complex, marking the onset of the Early Archaic period (Grayson 2011).

The Pinto Complex was defined by Campbell and Campbell (1935) based on their work at the Pinto Basin site, but it has a wider distribution throughout the Mojave Desert than previous complexes. During the latter part of the Early Holocene, archaeological data indicate that the Pinto Complex overlaps the WST Lake Mojave Complex (Sutton et al., 2007). The Pinto Complex reflects shifts in subsistence patterns and adaptation to the shrinking of the Pleistocene lakes, including a greater emphasis on the exploitation of plants, with the continued pursuit of artiodactyls and smaller game. The broad distribution of this complex implies a high degree of mobility. The hallmarks of the Pinto Complex tool assemblage include concave base and bifurcate base projectile points with strong basal ears and more gradual shoulders (Jenkins 1991).

Other diagnostic artifacts of this complex include domed and keeled scrapers, large and small leaf-shaped bifaces, core/cobble tools, large metates and milling slabs, and shaped and unshaped handstones.

Near the end of the Middle Holocene, approximately 5000-4000 cal BP, the climate became increasingly hotter and more arid. Very few sites date to this time period, suggesting that populations were very low. It is possible that some areas were abandoned during this increasing hot and dry period (Sutton et al. 2007).

Late Holocene Period (5,000 cal BP to European Contact)

The climate of the Late Holocene was similar to current conditions: cooler and more mesic than the middle Holocene, but not as cool and moist as the Terminal Pleistocene or Early Holocene. The climate remained highly variable with periods that included the Mojave lakes refilling to levels of earlier high stands, contrasted with at least two major droughts, circa 1124 to 904 cal BP, and circa 807 to 660 cal BP (Stine 1994). A cooler and wetter period occurred between 550 and 100 cal BP (Cleland and Spaulding 1992). These climatic changes at the onset of the late Holocene once again resulted in modified subsistence strategies and a number of new cultural complexes developed during this time including the: Middle Archaic Complex, Gypsum Complex, Rose Spring Complex/Late Archaic Period, and the Late Prehistoric Complex (or period).

Dart-point size projectile points such as Elko and Humboldt series points appear in the region during the early-Late Holocene and are often attributed to the Middle Archaic cultural complex found across the Great Basin region (Grayson 2011). This period saw a boom in population densities and shift towards a more residentially stable lifestyle that included an increased reliance on low-ranked plant resources and a dramatic rise in the use of groundstone implements such as manos and metates (Grayson 2011). Around 4000 cal BP, the Gypsum Complex emerged in the Mojave Desert region. Gypsum Complex sites are generally characterized by small stemmed and leaf-shaped points, rectangular-based knives, flake scrapers, drills, and occasionally, large scraper planes, choppers, and hammerstones (Warren 1984). Other artifacts found at Gypsum Complex sites include split-twig animal figurines, Olivella shell beads, and *Haliotis* spp. beads and ornaments, which are indicative of trade with people from the Southern California coast and southern Great Basin.

By 1750 cal BP, a slightly cooler climate further increased population growth as seen by the higher frequency of Late Archaic archaeological sites found throughout the region. The Rose Spring Complex dominated the Late Archaic period and was present from approximately 1815 to 915 cal BP, with regional temporal variations known as the Saratoga Springs, Haiwee, or Amargosa periods (Sutton 1996, Sutton et al. 2007). The smaller Rose Spring projectile points replaced the dart-size points of previous complexes and marked the introduction of the bow and arrow (Yohe 1998). The bow and arrow provided its user a way to rapidly fire multiple projectiles during hunting or warfare and from a position of relative security compared to the atlatl or spear. Bedrock milling features supplement portable milling stones in villages and ancillary sites within the California deserts.

The Late Prehistoric period (circa 900–250 cal BP) corresponds to the introduction of ceramic artifacts in the Mojave Desert region as well as replacement of Rose Spring projectile points with even smaller Desert Side-notched points and Cottonwood series arrow points. The use of the mortar and pestle became more widespread during this period and evidence of food storage facilities becomes increasingly common in the archaeological record. In the central Mojave Desert, the Mojave River became a primary focus of occupation, and trade networks increased along the Mojave River and over the San Gabriel Mountains (Sutton 1996). Archaeological evidence left by highly mobile hunter-gatherers in the Mojave Desert during

the Late Prehistoric period is typified by sparse scatters of flaked stone, groundstone, and ceramic artifacts and features such as hearths, rock rings, and trails.

5.5.1.2.2 Ethnographic Background

The APE is within a transitional zone that was occupied by multiple cultural groups including the Serrano, Kitanemuk and Tataviam (cf., Bean and Smith 1978; Blackburn and Bean 1978; Kroeber 1925; Sutton 1988). All of these groups are better associated with portions of the surrounding mountains—Serrano to the northeast, Kitanemuk to the northwest, Tataviam to the southwest—but all of them likely visited the Antelope Valley floor as part of their resource exploitation strategies. Ethnographic boundaries in the Mojave Desert are loosely defined, owing to the highly mobile nature of desert settlement and resource extraction strategies, as well as the variety of interpretations presented by previous researchers. The following sections provide brief overviews of the three groups likely to have ethnographically used the APE.

Serrano

The Serrano occupied an area in and around the San Bernardino Mountains between approximately 450 and 3,350 meters (1,500-11,000 feet) above mean sea level. Their territory extended west of the Cajon Pass, east past Twentynine Palms, north of Victorville, and south to Yucaipa Valley. The Serrano language is part of the Serran division of a branch of the Takic family of the Uto-Aztecan linguistic stock (Mithun 2001:539, 543). The two Serran languages, Kitanemuk and Serrano, are closely related. Kitanemuk lands were northwest of Serrano lands. Serrano was spoken originally by a relatively small group located within the San Bernardino and Sierra Madre mountains, and the term “Serrano” has come to be ethnically defined as the name of the people in the San Bernardino Mountains (Kroeber 1925:611). The Vanyume, who lived along the Mojave River and associated Mojave Desert areas and are also referred to as the Desert Serrano, spoke either a dialect of Serrano or a closely related language (Mithun 2001:543). Year-round habitation tended to be located on the desert floor, at the base of the mountains, and up into the foothills, with all habitation areas requiring year-round water sources (Bean and Smith 1978).

Most Serrano lived in small villages located near water sources (Bean and Smith 1978:571). Houses measuring 12 to 14 feet in diameter were domed and constructed of willow branches and tule thatching; they were occupied by a single extended family. Many of the villages had a ceremonial house, used both as a religious center and the residence of the lineage leaders. Additional structures within a village might include granaries and a large circular subterranean sweathouse. The sweathouses were typically built along streams or pools. A village was usually composed of at least two lineages. The Serrano were organized loosely along patrilineal lines and associated themselves with one of two exogamous moieties or “clans”—the Wahiyam (coyote) or the Tukum (wildcat) moiety.

The subsistence economy of the Serrano was one of hunting and collecting plant goods, with occasional fishing (Bean and Smith 1978:571). They hunted large and small animals, including mountain sheep, deer, antelope, rabbits, small rodents, and various birds, particularly quail. Plant staples consisted of seeds; acorn nuts of the black oak; piñon nuts; bulbs and tubers; and shoots, blooms, and roots of various plants, including yucca, berries, barrel cacti, and mesquite. The Serrano used fire as a management tool to increase yields of specific plants, particularly chía.

Trade and exchange were an important aspect of the Serrano economy. Those living in the lower-elevation, desert floor villages traded foodstuffs with people living in the foothill villages who had access to a different variety of edible resources. In addition to inter-village trade, ritualized communal food procurement events,

such as rabbit and deer hunts and piñon, acorn, and mesquite nut-gathering events, integrated the economy and helped distribute resources that were available in different ecozones.

Contact between Serrano and Europeans was relatively minimal prior to the early 1800s. As early as 1790, however, Serrano began to be drawn into mission life (Bean and Vane 2002). More Serrano were relocated to Mission San Gabriel in 1811 after a failed indigenous attack on that mission. Most of the remaining western Serrano were moved to an asistencia built near Redlands in 1819 (Bean and Smith 1978:573).

A smallpox epidemic in the 1860s killed many indigenous Southern Californians, including many Serrano (Bean and Vane 2002). Oral history accounts of a massacre in the 1860s at Twentynine Palms may have been part of a larger American military campaign that lasted 32 days (Bean and Vane 2002:10). Surviving Serrano sought shelter at Morongo with their Cahuilla neighbors; Morongo later became a reservation (Bean and Vane 2002). Other survivors followed the Serrano leader, Santos Manuel, down from the mountains and toward the valley floors and eventually settled what later became the San Manuel Band of Mission Indians Reservation, formally established in 1891.

Both the San Manuel Band of Mission Indians and the Morongo Band of Mission Indians are federally recognized tribes and include Serrano. People of both tribes participate in cultural programs to revitalize traditional languages, knowledge, and practices.

Kitanemuk

The Kitanemuk are one of the least-understood ethnographic groups in California, despite being considered by researchers as the primary aboriginal inhabitants of Antelope Valley (Sutton 1988). Kitanemuk territory extended from the Tehachapi Mountains at the northwestern edge of the Antelope Valley southeast to beyond Rosamond Lake, although their populations were most dense in the mountains at the southern end of the San Joaquin Valley (Blackburn and Bean 1978:564; Kroeber 1925:611). The Kitanemuk were primarily mountain dwellers who lived in semi-permanent village sites that functioned as year-round base camps; during the late winter and early spring, expeditions ventured onto the desert floor in pursuit of available seasonal resources (Sutton 1980).

Kroeber (1925:611) noted that the Kitanemuk were a subdivision of the Serrano, and thus spoke a language of the Takic family that was similar to dialects spoken by groups living as far south and east as Yucca Valley and Twentynine Palms. Although some aspects of Kitanemuk social organization are similar to those of other Takic speaking groups, Blackburn and Bean (1978:564) argue that Kitanemuk ritual, mythology, and shamanism were most strongly shaped by their neighbors to the north (Kawaiisu and Tubatulabal) and west (Chumash). The Kitanemuk appear to have enjoyed particularly strong trade ties with coastal and inland Chumash groups (Blackburn and Bean 1978:564; Kroeber 1925:613). Modern-day descendants of the Kitanemuk live at the Tule River Reservation, Porterville, and Tejon Ranch (Four Directions Institute 2007).

Tataviam

Like the Kitanemuk, the Tataviam were not well documented by early ethnographers. However, researchers today generally agree that the Tataviam spoke a Uto-Aztecan language, most likely a Takic language (Hudson 1982). Tataviam territory included the upper Santa Clara River from Piru Creek eastward, extending over the Sawmill Mountains to the southwest edge of the Antelope Valley (King and Blackburn 1978). Their territory was bounded on the west and north by various Chumash groups; on the south by the Tongva (Gabrielino and Fernandño, though some Tataviam were also identified as Fernandño because of their association with Mission San Fernando); and to the east by the Kitanemuk and Serrano.

Exogamous marriage was common, with Tataviam intermarrying with Tongva, Chumash, and Kitanemuk neighbors (King and Blackburn 1978). King and Blackburn (1978) hypothesize that the Tataviam relied on yucca as a food source more than their neighbors because of the predominance of large south-facing slopes within their territory. Additional food resources included acorns, sage seeds, berries, small mammals, and deer. Settlement size ranged from 10 to 200 persons, with small settlements often ancillary to large villages. Archaeological evidence from Bower’s Cave—located between Newhall and Piru—combined with ethnographic evidence suggest their ritual organization was similar to both the Chumash and Gabrielino, whose lifestyles were distinct from one another. By 1810, the Tataviam were almost completely “missionized” through baptism at Mission San Fernando.

5.5.1.2.3 Historic Background

Post-European contact history for the state of California is divided generally into three periods: the Spanish Period (1769 to 1822), the Mexican Period (1822 to 1848), and the American Period (1848 to present). The following provides a general discussion of the periods of history of California following European contact and the historical development of communities in the project vicinity.

Historic Periods

SPANISH PERIOD (1769 TO 1822)

In 1542, Juan Rodriguez Cabrillo led the first European expedition to observe what is now called Southern California. For more than 200 years, Cabrillo and other Spanish, Portuguese, British, and Russian explorers sailed the Alta (upper) California coast and made limited inland expeditions, but they did not establish permanent settlements (Bean 1968, Rolle 2003).

Gaspar de Portolá and Franciscan Father Junípero Serra established the first Spanish settlement in Alta California at Mission San Diego de Alcalá in 1769. This was the first of 21 missions erected by the Spanish between 1769 and 1823. While Spanish missions were established in San Bernardino County, Native Americans in the region were influenced by other Native Americans migrating to the area, driven from their homelands by encroachment of the Spanish.

During this period, Spain also deeded ranchos to prominent citizens and soldiers, though very few in comparison to the following Mexican Period. To manage and expand herds of cattle on these large ranchos, colonists enlisted the labor of the surrounding Native American population (Engelhardt 1927). The missions were responsible for administrating the local people as well as converting the population to Christianity (Dietler et al. 2015). Inevitably, this increased local population density and contact with diseases brought by Europeans greatly reduced the Native American population (McCawley 1996). Native American populations in San Bernardino County were less affected by the missions. However, in some cases, individuals were taken from their tribes to be educated at one of the missions before being sent back (Morgan 1914).

The first known Spanish explorers to enter the Mojave Desert were a group of soldiers led by Pedro Fages in 1772. In 1776, Friar Francisco Garcés, traveled through the area coming from the Colorado River (Hoover et al. 2002:321). Friar Garcés traveled as far as the Pacific coast along an ancient trade route, known as the Mojave Trail, and he named the Mojave River Arroyo de los Mártires (Stream of the Martyrs). The river was later named Rio de las Animas (River of Souls) by Fr. Joaquín Pasqual Nuez, who accompanied the 1819 expedition of Lt. Gabriel Moraga.

MEXICAN PERIOD (1822 TO 1848)

The Mexican period commenced when news of the success of the Mexican Revolution (1810-1821) against the Spanish crown reached California in 1822. This period saw extensive interior land grant development as well as exploration west of the Sierra Nevada mountains by American fur trappers. The California missions declined in power and were ultimately secularized in 1834. The hallmark of the Mexican period was large ranchos deeded to prominent Mexican citizens, frequently soldiers, by the governor. These ranchos became important economic and social centers. However, no ranchos were claimed in the arid Mojave Desert. Rancho San Bernardino, situated in the southwestern corner of San Bernardino County, was the closest land grant to the APE, located approximately 120 kilometers (75 miles) to the south. Governor Pío Pico and his predecessors made more than 600 rancho grants between 1833 and 1846, putting most of the state's lands into private ownership for the first time (Gumprecht 1999). During the Mexican period, trappers and explorers from the eastern United States repeatedly journeyed westward. Jedidiah Strong Smith, one of these early American adventurers, traveled through the Mojave Desert in 1826 and 1827 and nicknamed the Mojave River the "Inconstant River" because of its frequent disappearance beneath the ground surface.

AMERICAN PERIOD (1848 – PRESENT)

The American Period officially began with the signing of the Treaty of Guadalupe Hidalgo in 1848, in which the United States agreed to pay Mexico \$15 million for the conquered territory, including California, Nevada, Utah, and parts of Colorado, Arizona, New Mexico, and Wyoming. In 1850, California was admitted to the Union as the 31st state.

The discovery of gold in Northern California in 1848 led to the California Gold Rush and subsequent farming and city/town development in the northern/central portions of California. Southern California remained dominated by cattle ranches in the early American Period, though droughts and increasing population resulted in ranching being increasingly supplanted by farming and more urban professions through the late nineteenth century. By 1853, the population of California exceeded 300,000. Thousands of settlers and immigrants continued to immigrate into the state, particularly after the completion of the transcontinental railroad in 1869.

During the Gold Rush, thousands of people traveled the Mojave River Trail from points east, attempting to reach the fabled goldfields of California. Captain John C. Frémont called the Mojave River Trail the Old Spanish Trail until he met a group of Native Americans northeast of Victorville who told Frémont they had lived along the Mojave River and the mountains to the north and traded with other indigenous peoples in the region along the Mojave River Trail (Frémont 1845:260).

TRANSPORTATION (1883-1964)

Early transportation in the region consisted of dirt trails, including Twenty Mule Team Trail and the Midland Trail, which were early mule and wagon trails that supported the mining industry (Pratt 2009). By the 1880s, transportation development in the area became more robust as a result of the construction of the Southern Pacific Company railroad line that extended the rails east to west from Needles to Mojave, California. Later renamed the Santa Fe Railroad, the introduction of the rail line brought along workers and travelers, forming the depot and surrounding small town of Kramer (Pratt 2009). U.S. Route 395 was officially introduced in the 1930s, creating a larger north to south thoroughfare for interstate travel through the region, but did not greatly impact local development. The construction of SR 58 during the mid-century spurred increased development, most notably forming a small town at the junction of 395 and 58 named

Kramer Junction (Pratt 2009). State Route 14 and its earlier forms supported travel to the region from Los Angeles for various activities including Hollywood movie production and automobile racing in the desert landscape (Earle et al 1998). R 14 and 58 provided the closest freeway access to the City of California City, which was developed in the early 1960s.

MINING (1840S-1970S)

Much of the early settlements in the APE existed as small mining towns. Common materials being mined included gold, silver, and other minerals such as borate. Mining began in the region in the 1840s due to the California Gold Rush, which drew tens of thousands across the country in search of gold. Within little more than half a decade, California’s surface gold was depleted, and many miners who started out as private enterprisers were forced to go work for larger mining companies. Gold was still mined, but at lower rates (History 2021). However, a renaissance of development focused on mining occurred in the early 1910s when a massive deposit of borax was found. Mining at the site began in the 1920s with the establishment of multiple large companies that drew workers from across the country, with many hailing from the depressed dust bowl region. This increased the population of the nearby town, Amargo, which was later renamed Boron in acknowledgement of the mine. Boron continued to expand and develop over time to meet the demands of the mine workers and their families, gaining infrastructure, civic buildings, and residences. The town of Boron capped out at around 2,000 residents, where it remains today, continuing to be the largest supplier of borate in the world (Pratt 2009).

MILITARY (1933-1980S)

Military presence in the region began in the 1930s with the opening of the Muroc Lake and Gunnery Range in 1933 which would eventually become the Edwards Air Force Base. The first decade of Edwards Air Force Base focused on the east side of the dry lakebed and brought about development of a small camp. By 1940, the range encompassed an area of over 150,000 acres, and the homebase was moved to the west side of the lake, to rely on the infrastructure of the adjacent town, Muroc, and allow more room for growth (Earle et al 1998). As detailed in the HBER, the onset of World War II sparked even greater development at the base and throughout the town; The population rose from 150 enlisted men in 1941, to 6,300 by the end of 1942, and construction of everything from radio buildings and hangars to barracks and mess halls ensued. As detailed in the HBER, the war and the rapid growth also prompted the installation of a North Base at the north end of the lakebed, which bled out into residential development slightly further north, into a town known as North Edwards. The late 1940s and early 1950s saw further development at the site after implementation of a Master Plan, which included not only military buildings and infrastructure, but community development including housing, schools, and a shopping center. As detailed in the HBER, this would create a main base and move other functions to the North Base and a South Base. The base also saw growth throughout the Cold War, as it took on efforts of space race developments, testing, and technologies. Over the decades, the bases would continue to grow and impact development in Edwards (Edwards Air Force Base 2009). As stated in the HBER, the base population reached 7,000 by mid-1950s. It has tapered off to around 2,500 in present day, but still remains a major U.S. Air Force Base.

Community Histories

MOJAVE

Mojave is an unincorporated community located in Kern County in the northwestern portion of the Antelope Valley. The hot and arid conditions of the Mojave Desert during the historic period provided for only sparse settlement and occupation of the Antelope Valley until means of securing water and transportation could

be obtained. The community of Mojave was established in 1876 when the Southern Pacific Railroad planned for a town on its path between Los Angeles and San Francisco. In 1894, gold was discovered on Soledad Mountain and other nearby locations. Borax mines also played a role in Mojave's history. Between 1844 and 1889, wagons hauled borax between mines in Death Valley and the railroad in Mojave. Cement production began in 1908 to provide cement for the historical Los Angeles Aqueduct (Visit Mojave 2022).

Several small airports were built in Mojave. In 1942, a Naval Air Station was built on the east side of town. During World War II and the Korean Conflict, this air station trained thousands of Navy and Marine pilots for combat before Kern County obtained the title to the airport in 1961. The Mojave Air and Space Port has since become home to the National Test Pilot School and more than 60 companies involved in industrial to advanced aerospace design. The Mojave Air and Space Port was also the first to launch a non-governmental rocket ship to space (Visit Mojave 2022).

Mining, cement production, and aviation remain integral parts of the Mojave economy. Mojave continues to be known for providing hospitality to those traveling between Los Angeles and the Eastern Sierra and between Bakersfield and Las Vegas.

CITY OF CALIFORNIA CITY

The City of California City is located in Kern County in the northern portion of the Antelope Valley, approximately 19 kilometers (12 miles) northwest of EAFB. Despite a population of less than 15,000, City of California City spans over 527 square kilometers (204 square miles), making it the third-largest land area of any city in California. Its vastness is the result of the erstwhile aspirations of Nat Mendelsohn, a Columbia University sociology instructor turned real-estate developer, who purchased 82,000 acres of vacant Mojave Desert land in 1958 (Anton 2010). Buoyed by a strong post-war economy, Mendelsohn was convinced that he could capitalize on a growing California population by providing them with the state's next metropolis – a city he speculated could rival Los Angeles.

By the early 1960s, Mendelsohn had organized his promised city into a sprawling grid system, complete with 298 square kilometers (185 square miles) of mostly unpaved roads, a 26-acre artificial lake, lots for housing, and electrical and water lines. However, only 175 homes had been built, and for most investors the allure of Mendohlson's imagined oasis quickly waned. Eventually realizing its isolation was too much of an impediment to population growth, Mendohlson sold his shares in 1969 and left town for other investment opportunities in Texas (Anton 2010).

Although not at the scale of what its founder envisioned, the population of the City of California City has risen steadily in the last 30 years, growing from roughly 3,200 to over 14,000. Most current residents are employed at EAFB or at the City of California City Correctional Facility.

BORON

Boron is a census-designated place in the County of Kern, California, and is most famous for its extensive colemanite (a borax ore) deposits used in the production of boron and boric acid. In 1925, one of the largest deposits of borax was discovered and led to the establishment of the world's largest boron mine (Shumway et al. 1980). This mine is still in existence today, supplying nearly half the world's boron, and employs nearly 800 people.

KRAMER

Kramer is an unincorporated community located 38 miles east of Mojave in San Bernardino County. It is located 4 miles east of Boron, just over the Kern County line, and is 2 miles west of Kramer Junction, where SR 58 and U.S. Route 395 intersect. Kramer was established in 1882 as a section camp along a Southern Pacific Company railroad line that ran from Mojave to Needles, California. It contained a depot, section house, toolshed, and housing for crew members building the railroad. Kramer was named for Meritz Kramer, a German emigrant and landowner. In August 1884, the Santa Fe Railway purchased the line from the Southern Pacific and expanded it north to nearby Johannesburg, later removing the lines in the 1930s when the northern mines near Randsburg no longer flourished. A post office was established in Kramer in 1896 but was discontinued in 1918. The main commercial building in town housed both a grocery store and hotel. A school was established in 1915. Kramer originally shipped out the borate ore that was mined in nearby Boron in the early 20th century before the depot operation permanently moved to Boron in the 1930s. While Kramer amassed a small population, it lacked its own natural resources such as water and agriculture, so supplies had to be imported via the railroad. Some small gold mines in Kramer were successful, however the lack of resources and the expansion of Boron eventually brought the town to an end.

KRAMER JUNCTION

Kramer Junction is an unincorporated community located 2 miles east of Kramer in San Bernardino County and marks the intersection of SR 58 and US Route 395. Also known as the Four Corners, the area was originally purchased and divided by two men, James Darr and Robert Caillier. Darr was a mechanic who owned a local garage, and Caillier was in the military and stationed at the nearby Muroc Army Base, which later became the Edwards Air Force Base. In 1949, the government purchased much of the land in the area, including Darr's garage and the base. Darr used these funds to purchase the land that would become Kramer Junction, and he and Caillier divided and developed the property. From the mid-20th century onward, the four-corner junction became a resting stop for travelers on their way to and from major California cities including Los Angeles, Bishop, and Mammoth. Darr, Caillier, and their families maintained a gas station, restaurant, café, and hotel. In the 1950s through the 1980s, developments just outside Kramer Junction included a solar plant, radio tower, and military housing for the 750th Radar Squadron. The town and intersection remain a major thoroughfare and resting spot for travelers to the present day.

EDWARDS AIR FORCE BASE

EAFB is made up Rogers Lake, a dried lakebed, and what was the original settlement located to the west, called Muroc. Muroc was named for its founders, the Corum family, with Muroc being their last name spelled backwards. They arrived in the region between 1906 to 1916 as homesteaders and developed a small community that grew to include a train station, post office, and small population. Through the 1920s, the popularity of Muroc grew as both a filming location due to its proximity to Los Angeles, and as an automobile raceway, due to the flat and hard lakebed landscape. The Army Air Corps became interested in the land by the 1930s and began development of the Muroc Lake and Gunnery Range in 1933. By the 1940s, the main operation was re-situated from the east side of the lake to the west side of the lake, closer to Muroc. Construction began at what is now known as the South Base, and introduced a water system, roads, runways, range targets and ordnance buildings.

The beginning of World War II rapidly affected the Muroc base and in 1942, it was briefly renamed the Muroc Army Air Base (AAB) before being redesignated the Muroc Army Airfield (AAF) in 1943. Its population grew quickly during this time, resulting in the construction of barracks, administration buildings,

hangars, mess halls, recreation facilities, and other facilities in the mid-to-late 1940s. To the north of Rogers Lake, closer to where present day North Edwards is situated, the Army Air Forces opened the Muroc Flight Test Base in 1942, which would later become known as North Base. The base was renamed EAFB in 1949 after the pilot Glen Edwards, and soon after the name of the town changed to Edwards as well. In 1952, a Master Plan for the base and its continued growth was approved and implemented, which resulted in additional rapid development to meet a variety of military needs. Over the next several decades, the site would also be used for landing of the space shuttle and accommodated 54 total shuttle missions. For its military and space contributions, the Rogers Lake was listed on the National Register of Historic Places in October 1985 and designated a National Historic Landmark in 1985.

NORTH EDWARDS

North Edwards, formerly known as North Muroc, is a census designated place in Kern County located 7 miles northeast of EAFB. It began as a small settlement outside the town of Muroc, which became Edwards. North Edwards developed in 1955 in response to the rapid growth of Edwards Air Force Base during World War II to meet housing needs for soldiers, their families, and civilian employees. A developer began building single-family homes alongside streets branching out from Clay Mine Road, which would become the town's main thoroughfare. The area was officially named North Edwards in 1958, and by 1960 had over 1,000 residents. In 1958 a Chamber of Commerce was formed for the town to oversee any future development, and a shopping center was erected in 1959. Small businesses and churches operated in the town center throughout the 1960s and the post office was established in 1961. Today North Edwards continues to serve as a residential community, primarily for employees of the mines in Boron and EAFB.

5.5.1.2.4 Cultural Resources Methods

Archaeological Methods

Rincon Consultants, Inc. conducted a Phase 1 cultural resources study which included a records search, pedestrian survey, and preparation of the CRTR, for the Proposed Project. At the time of this writing, the CRTR is under review by the BLM (Rincon Consultants, Inc. 2021). The study included a cultural resources records search, a Class III intensive pedestrian survey of the direct APE for the Proposed Project, and a survey report. The direct APE for archeological resources for the Proposed Project is approximately 2,992 acres and situated along approximately 69.5 miles (112 kilometers) of the Proposed Project alignment in Kern and San Bernardino County.

RECORDS SEARCH METHODS

SCE entered into a California Historic Resource Information System (CHRIS) subscription with the Southern San Joaquin Valley Information Center (SSJVIC) located at California State University, Bakersfield on June 26, 2017. The subscription area encompasses the entire geographic boundaries of Fresno, Kern, Kings, Madera, and Tulare counties, is updated every six months, and includes the following datasets:

- **Resources.** Records in PDF format and boundaries in GIS format for non-archaeological resources (historical built environment), isolates, archaeological sites, and archaeological and historic districts
- **Reports.** Boundaries in GIS format
- **Resources and Reports.** Database spreadsheet with resources attributes and bibliographic information

Under the terms of the subscription, SCE’s CHRIS Access and Use Agreement, and the California Office of Historic Preservation’s (OHP) Electronic Data Subscription Standard, SCE is permitted to perform internal record searches using their internal ArcGIS Online (AGOL) system subscription datasets and share said data with authorized and allowable users. This is an OHP-approved records search for the purposes of pre-field research and project planning.

On April 29, 2021, Rincon Consultants, Inc. conducted a records search of the APE with a 0.5-mile (0.8-kilometer) radius buffer using SCE’s AGOL system. This records search was based on data obtained from the CHRIS records at the SSJVIC. Rincon Consultants, Inc. reviewed these sources to determine if any previously recorded resources or cultural resources studies are present within the APE.

SCE entered the same agreement with the South-Central Coastal Information Center (SCCIC) located at California State University, Fullerton; however, at this time, the subscription area only encompasses the entire geographic boundaries of Los Angeles, Orange, and Ventura counties (including island data), and not San Bernardino County. As a result, Rincon Consultants, Inc. commissioned a records search through the SCCIC for the portion of the APE that is within San Bernardino County on July 27, 2021. The purpose of the records search was to identify previously recorded cultural resources, as well as previously conducted cultural resources studies within the portion of the APE that is located within San Bernardino County and a 0.5-mile radius surrounding it. Rincon Consultants, Inc. also reviewed the National Register of Historic Places (NRHP), the California Register of Historical Resources (CRHR), the California Historical Landmarks list, and the Built Environment Resources Directory (BERD). Additionally, Rincon Consultants, Inc. reviewed the Archaeological Determination of Eligibility (ADOE) list.

NATIVE AMERICAN CONSULTATION

California Public Resources Code (PRC) section 5097.91 established the Native American Heritage Commission (NAHC), the duties of which include taking inventory of places of religious or social significance to Native Americans and identifying known graves and cemeteries of Native Americans on private lands. PRC section 5097.98 specifies a protocol to be followed when the NAHC is notified of a discovery of Native American human remains from a county coroner.

The NAHC was contacted on July 27, 2021, requesting a search of its Sacred Lands File (SLF) for the Proposed Project area. A search of the SLF was completed for the Proposed Project on August 24, 2021, with positive results and the NAHC provided a list of 24 contacts. The contacts from the SLF search are provided in Appendix E. The CPUC will also perform additional NAHC and tribal outreach activities at a later date. Formal consultation under section 106 of the National Historic Preservation Act (NHPA) will be conducted by the BLM, Ridgecrest Field Office, serving as the lead federal agency for the Proposed Project. Consultation under Assembly Bill (AB) 52 will be conducted by the California Public Utilities Commission (CPUC), serving as the California Environmental Quality Act (CEQA) lead state agency.

ARCHIVAL RESEARCH

Rincon Consultants, Inc. completed additional background and archival research in support of the CRTR in April 2022. A variety of primary and secondary source materials were consulted. Sources included, but were not limited to historical maps, aerial photographs, and written histories of the area. The following sources were utilized to develop an understanding of the APE and its context:

- Historical aerial photographs accessed via Nationwide Environmental Title Research (NETR) Online
- Historical United States Geological Survey (USGS) topographic maps

FIELD SURVEY

The intensive pedestrian survey of the APE, as defined at the time of fieldwork, was conducted over 11, ten-day rotations from October 2021 to April 2022. The APE was surveyed using transect intervals spaced 10 to 15 meters apart. While the majority of the APE could be surveyed with standard transects, three portions of the APE were unable to be surveyed due to a fence blocking access to these locations. However, the survey team was able to perform a reconnaissance survey of these areas.

Rincon Consultants, Inc. used Juniper Geode Global Navigation Satellite System (GNSS) Receiver antennas and ArcGIS Collector software during the survey in order to keep track of APE limits and transect spacing, as well as to document archaeological sites and isolates. The archaeologists examined exposed ground surface for artifacts (e.g., flaked stone tools, tool-making debris, stone milling tools, ceramics, fire-affected rock [FAR]), ecofacts (marine shell and bone), soil discoloration that might indicate the presence of a cultural midden, soil depressions, and features indicative of the former presence of structures or buildings (e.g., standing exterior walls, postholes, foundations) or historic debris (e.g., metal, glass, ceramics). Ground disturbances such as burrows and other areas of exposed ground surface were visually inspected. All new and previously recorded resources within the APE were documented, photographed, and recorded on Department of Parks and Recreation (DPR) 523 forms. For the purpose of the survey, prehistoric sites within the APE that intersect BLM Ridgecrest Field Office jurisdiction were defined as an area containing an artifact density of ten or more objects within a 10 meter by 10 meter area, unless in a region with special and explicit justification for a lower-density designation (e.g., prehistoric tools that require special analyses such as fluted points). Prehistoric sites were also defined as an area containing significant features (e.g., milling slicks, bedrock mortars, burned rock midden, rock art, or rock shelters), a resource that contains midden or the potential for subsurface materials, and/or where human remains were present. A prehistoric isolated find was defined as any resource that does not meet the above density or special contents definitions.

For the purpose of the survey, prehistoric sites within the APE that intersect BLM Barstow Field Office jurisdiction, EAFB lands, state lands, and private lands were defined as a collection of four or more artifacts that are spatially discrete from any other artifacts by a minimum distance of 15 meters. A prehistoric site was also defined as a collection of any quantity of features associated with an artifact or a collection of four or more artifacts that are spatially discrete from any other artifacts by a minimum distance of 15 meters. A prehistoric site was also defined as a resource with human remains present. A prehistoric isolated find was defined as one to three artifacts that were spatially discrete from any other artifacts by a minimum distance of 15 meters or a single artifact broken into two or more pieces (e.g., broken prehistoric ceramic vessel) as long as no other artifacts or features are associated within 15 meters of the artifact are present. An isolated feature was defined as a single undatable feature unassociated with other features or artifact scatters by a minimum distance of 15 meters.

For the purpose of this survey, historic sites were defined in several ways. Multiple artifact classes were defined as at least two classes of historic-era artifacts (e.g., cans, glass, scrap metal, structural remains, ceramics) within a ten square meter area. Significant historic-period sites were defined as one or more historic-era features (e.g., a foundation, road, mine, privy, etc.). Significant sites did not include simple mining features such as shallow adits, broken piles of rock, cairns, prospect pits, and prospect trenches that have no artifacts or context associated with them. Such features were considered isolated finds that were not NRHP-eligible sites. Historic-period sites were also defined as a resource in which human remains are present.

Historic sites of dense assemblages within the APE were defined as three objects of any artifact class (e.g., cans, glass fragments, ceramic fragments, milled wood, mining equipment, etc.), including assemblages consisting entirely of one artifact class in a ten square meter area.

Sites were defined as multicomponent if they contained sufficient prehistoric and historic-era materials to be classified as a site of both types using the above-described criteria for their respective regions. For example, if a site contained historic-era features and a concentration of prehistoric artifacts that exceeded density thresholds listed above, it was classified as a multicomponent site.

Site boundaries were defined when over 30 meters of open space separated cultural material. All previously recorded sites within the APE were revisited and updated as warranted.

Historic-era Built Environment Methods

Preparation of the HBER was guided by a definition of the historic-era built environment utilized for similar infrastructure projects. Maintaining the established definition ensures methodological continuity with other SCE projects. For the purposes of the HBER, the built environment includes buildings, structures, bridges, dams, canals, aqueducts, railroads, ditches and irrigation systems, electric power conveyance facilities, and paved or unpaved roads and highways. The methodological approach entailed completion of three main tasks – desk and field survey, research, and reporting.

DESK SURVEY

The HBER utilized the results of the CHRIS records search results provided by Rincon Consultants, Inc. to assess which previously recorded built environment resources required updated or new evaluation for historical significance; imagery from the SCE Photographs and Negatives Collection accessed online via the Huntington Digital Library; historical newspapers covering the Kern and San Bernardino County areas; and Sanborn Fire Insurance Company maps, which are available on the Los Angeles Public Library website.

In advance of the field survey effort, South Environmental reviewed historic topographic maps of the APE available from USGS topoView for various years for Boron (1954, 1973, 2021, 2015, 2018, 2021), EAFB and North Edwards (1937, 1942, 1947, 1956, 1973, 1982, 1992, 2012, 2015, 2018, 2021, 2022), Kramer (1937, 1942, 1947, 1956), Kramer Junction (1947, 1956, 1973, 2012, 2015, 2018, 2021) and City of California City (1973, 2012, 2015, 2018, 2021). Historic aerial photographs of the APE were available from NETR Online for the years 1952, 1972, 1984, 1985, 1986, 1994, 2005, 2009, 2010, 2012, 2014, 2016, and 2018 and from the University of California, Santa Barbara, FrameFinder Maps for the years 1934, 1938, 1952, 1953, 1962, 1989, 1994, and 1995.

FIELD SURVEY

The built environment Survey of the APE, as defined at the time of fieldwork, was conducted over two days on May 3, 2022, and May 4, 2022, by Principal Architectural Historian, Samantha Murray, M.A., and Architectural Historian, Laura Carias, M.A., of South Environmental. The survey entailed documenting all applicable built environment resources over 45 years old within the APE with notes and photographs, specifically noting character-defining features, spatial relationships, paths of circulation, and any observed alterations.

5.5.1.2.5 Cultural Resources Results

Records Search and Field Survey

The results for the archaeological records search and field survey are included in the CRTR, which is currently under review by the BLM. The results of the records search and survey will identify historic period and archaeological resources in the APE and determine their NRHP and/or CRHR eligibility. The results of the records search and survey will be considered during the final design and engineering of the Proposed Project to minimize impacts on cultural resources during construction.

Historic Period Resources

The results for the Built Environment desk survey and field survey are included in the HBER, which is currently under review by the BLM. The results of the desk survey and field survey will identify historical resources in the APE and determine their NRHP and/or CRHR eligibility. The results of the records search and survey will be considered during the final design and engineering of the Proposed Project to minimize impacts on cultural resources during construction.

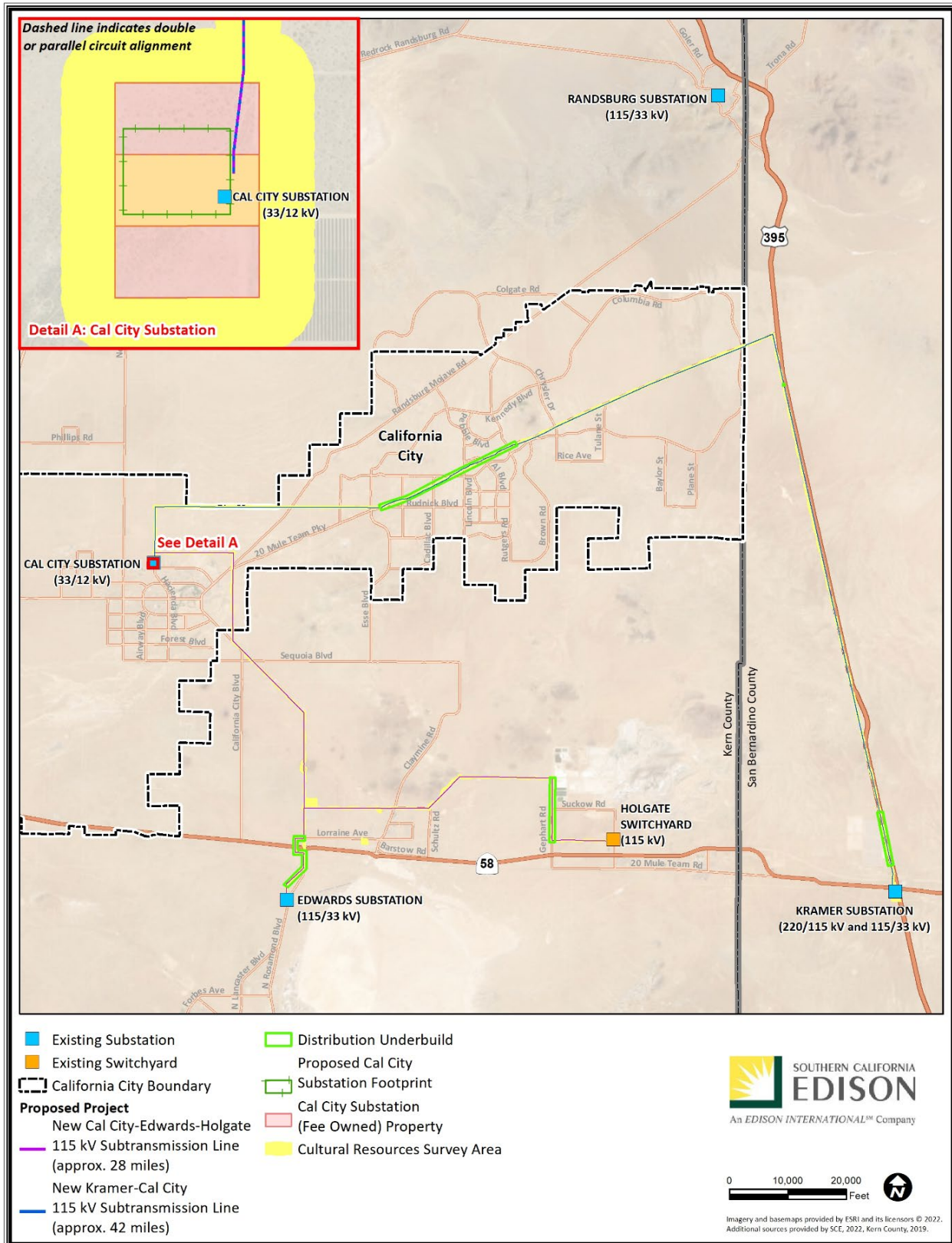
5.5.1.2.6 Cultural Resource Survey Boundaries

The APE is defined as the Proposed Project footprint and alignment with a 100-foot buffer, which consists of approximately 4,532 acres. This area includes approximately 70 miles of Proposed Project alignment, approximately 33 miles of existing access road routes, and approximately 220 acres of potential laydown yards.

Figure 5.5-1 illustrates the boundaries of the cultural resources surveys performed along the Proposed Project alignment.

Confidential GIS data for the resource locations and boundaries will be provided separately under confidential cover, pending the completion of BLM's review of the CRTR and HBER.

Figure 5.5-1 Cultural Resources Survey Boundary



5.5.2 Regulatory Setting

Federal, state, and local regulations were reviewed for applicability to the Proposed Project.

5.5.2.1 Federal

5.5.2.1.1 Section 106 of the National Historic Preservation Act

Section 106 of the NHPA requires federal agencies to consult with the Advisory Council on Historic Preservation (ACHP) to take into account the effects of their undertakings on historic properties. The section 106 process involves identification of significant historic resources within an APE; determination if the undertaking will cause an adverse effect on historic resources; and resolution of those adverse effects through execution of a Memorandum of Agreement.” 36 CFR part 800 defines how federal agencies meet these responsibilities. 36 CFR 800.5(a) describes the process for evaluating a project’s adverse effects on cultural resources. An adverse effect is found when a federal undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property’s location, design, setting, materials, workmanship, feeling, or association. Examples of adverse effects are provided in 36 CFR 800(a)(2) and include, but are not limited to:

- Physical destruction of or damage to all or part of the property;
- Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the Secretary’s Standards for the Treatment of Historic Properties (36 CFR part 68) and applicable guidelines;
- Removal of the property from its historic location;
- Change of the character of the property’s use or of physical features within the property’s setting that contribute to its historic significance;
- Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property’s significant historic features;
- Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and
- Transfer, lease, or sale of property out of federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property’s historic significance.

5.5.2.1.2 National Register of Historic Places

Authorized by section 101 of the NHPA, the NRHP is the nation’s official list of cultural resources worthy of preservation. The NRHP recognizes the quality of significance in American, state, and local history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects. Pursuant to 36 CFR 60.4, a property is eligible for listing in the NRHP if it meets one or more of the following criteria:

Criterion A: Are associated with events that have made a significant contribution to the broad patterns of our history

Criterion B: Are associated with the lives of persons significant in our past

Criterion C: Embody the distinctive characteristics of a type, period, or method of installation, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction

Criterion D: Have yielded, or may be likely to yield, information important in prehistory or history

In addition to meeting at least one of the above designation criteria, resources must also retain integrity. The National Park Service recognizes seven aspects or qualities that, considered together, define historic integrity. To retain integrity, a property must possess several, if not all, of these seven qualities, defined in the following manner:

Location: The place where the historic property was constructed or the place where the historic event occurred

Design: The combination of elements that create the form, plan, space, structure, and style of a property

Setting: The physical environment of a historic property

Materials: Materials are the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property

Workmanship: The physical evidence of the crafts of a particular culture or people during any given period in history or prehistory

Feeling: A property's expression of the aesthetic or historic sense of a particular period of time

Association: The direct link between an important historic event or person and a historic property

Certain properties are generally considered ineligible for listing in the NRHP, including cemeteries, birthplaces, graves of historical figures, properties owned by religious institutions, relocated structures, or commemorative properties. Additionally, a property must be at least 50 years of age to be eligible for listing in the NRHP. The National Park Service states that 50 years is the general estimate of the time needed to develop the necessary historical perspective to evaluate significance (National Park Service 1997:41). Properties that are less than 50 years old must be determined to have "exceptional importance" to be considered eligible for NRHP listing.

5.5.2.1.3 Archaeological Resources Protection Act

The Archeological Resources Protection Act (ARPA) of 1979 provides for the protection of archaeological resources more than 100 years old and which occur on federally owned or controlled lands. The statute makes it unlawful to excavate and remove items of archaeological interest from federal lands without a permit, and it defines the process for obtaining such a permit from the responsible federal agency. This process includes a 30-day notification to interested persons, including Indian tribes, by the agency to receive comments regarding the intended issuing of a permit. The law establishes a process for prosecuting persons who illegally remove archaeological materials from lands subject to ARPA. The law also provides for curation of archaeological artifacts, ecofacts, notes, records, photographs, and other items associated with collections made on federal lands. Standards for curation are provided for in regulations at 36 CFR 79.

5.5.2.1.4 Native American Graves Protection and Repatriation Act

The Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 provides a process for museums and federal agencies to return certain Native American “cultural items” (i.e., human remains, funerary objects, sacred objects, and objects of cultural patrimony) to lineal descendants, culturally affiliated Indian tribes (i.e., tribes recognized by the Secretary of the Interior), and Native Hawaiian organizations, if the legitimate cultural affiliation of the cultural items can be determined according to the law. Museums, as defined under the statute, are required to inventory cultural items in their possession and determine which items can be repatriated to the appropriate party. Cultural items intentionally or unintentionally excavated and removed from federal lands may be subject to NAGPRA.

5.5.2.2 State

5.5.2.2.1 California Environmental Quality Act

The CEQA Statute (PRC section 21000 *et seq.*) and the CEQA Guidelines (14 CCR sections 15000 *et seq.*) direct lead agencies to determine whether cultural resources are “historically significant” resources. CEQA requires that potential project impacts to cultural resources be assessed and requires mitigation if significant (or “unique”) cultural resources would be affected (PRC section 21083.2 [a-1] and CEQA Guidelines Appendix G). Generally, a cultural resource is considered “historically significant” if the resource is 45 years old or older; possesses integrity of location, design, setting, materials, workmanship, feeling, and association; and meets the requirements for listing on the CRHR under any one of the following criteria:

- 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 in 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; or,
- 4) Has yielded, or may be likely to yield, information important in prehistory or history (14 CCR 15064.5[a][3]).

The statutes and guidelines specify how cultural resources are to be managed in the context of projects, such as the Proposed Project. Archival and field surveys must be conducted and identified cultural resources must be inventoried and evaluated in prescribed ways. Prehistoric and historical archaeological resources as well as historic built environment resources deemed “historically significant” must be considered in project planning and development. Resources eligible for listing on the CRHR are referred to as “historical resources.”

If a Lead Agency determines that an archaeological site is a historical resource, the provisions of PRC section 21084.1 and CEQA Guidelines (14 CCR) section 15064.5 would apply. If an archaeological site does not meet the CEQA Guidelines criteria for a historical resource, the site is to be treated in accordance with the provisions of PRC section 21083 regarding unique archaeological resources. The CEQA Guidelines note that if a resource is neither a unique archaeological resource nor a historical resource, the effects of a project on that resource shall not be considered a significant effect on the environment (CEQA Guidelines section 15064[c][4]).

5.5.2.2.2 California Register of Historical Resources

Cultural resources include archaeological and historic objects, sites and districts, historic buildings and structures, and sites and resources of concern to local Native Americans and other ethnic groups. Cultural resources that meet the criteria of eligibility to the CRHR are termed “historic resources.” Archaeological resources that do not meet CRHR criteria also may be evaluated as “unique”; impacts to such resources could be considered significant, as described below.

A site meets the criteria for inclusion on the CRHR if:

- a) It is associated with events that have made a significant contribution to the broad patterns of California’s History and Cultural Heritage
- b) It is associated with the life or lives of a person or people important to California’s past
- c) It 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
- d) It has yielded, or may be likely to yield, information important to prehistory or history

A resource eligible for the CRHR must meet one of the criteria of significance described above and retain enough of its historic character or appearance (integrity) to be recognizable as a historical resource and to convey the reason for its significance. It is possible that a historic resource may not retain sufficient integrity to meet the criteria for listing in the National Register, but it may still be eligible for listing in the California Register.

The CRHR automatically includes the following:

- California properties listed on the National Register and those formally Determined Eligible for the National Register
- California Registered Historical Landmarks from No. 770 onward
- Those California Points of Historical Interest that have been evaluated by the Office of Historic Preservation (OHP) and have been recommended to the State Historical Commission for inclusion on the California Register

Other resources that may be nominated to the CRHR include:

- Historical resources with a significance rating of Category 3 through 5
- Individual historical resources
- Historical resources contributing to historic districts
- Historical resources designated or listed as local landmarks, or designated under any local ordinance, such as an historic preservation overlay zone

Impacts to “unique archaeological resources” also are considered under CEQA, as described under PRC 21083.2. A unique archaeological resource under CEQA is described in Section 5.5.2.2.1, California Environmental Quality Act.

5.5.2.2.3 California Assembly Bill 52 of 2014

As of July 1, 2015, Assembly Bill (AB) 52 was enacted and expands CEQA by defining a new resource category, “tribal cultural resources”. AB 52 establishes, “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” (PRC section 21084.2). It further states the CEQA lead agency shall establish measures to avoid impacts that would alter the significant characteristics of a tribal cultural resource, when feasible (PRC section 21084.3).

PRC section 21074 (a)(1)(A) and (B) define tribal cultural resources as “sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe” and that meets at least one of the following criteria, as summarized in CEQA Guidelines Appendix G:

- 1) Listed or eligible for listing in the CRHR, or in a local register of historical resources as defined in PRC section 5020.1(k)
- 2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC section 5024.1. In applying these criteria, the lead agency shall consider the significance of the resource to a California Native American tribe.

AB 52 also establishes a formal consultation process with California Native American tribes that must be completed before a CEQA document can be certified. Under AB 52, lead agencies are required to “begin consultation with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project.” California Native American tribes to be included in the process are those that have requested notice of projects proposed within the jurisdiction of the lead agency.

5.5.2.2.4 California Health and Safety Code

Section 7050.5 of the California Health and Safety Code states that in the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the remains are discovered has determined if the remains are subject to the coroner’s authority. If the human remains are of Native American origin, the coroner must notify the NAHC within 24 hours of this identification.

5.5.2.2.5 California Public Resources Code § 5097.98

Section 5097.98 of the PRC states that the NAHC, upon notification of the discovery of Native American human remains pursuant to Health and Safety Code section 7050.5, shall immediately notify those persons (i.e., the Most Likely Descendant [MLD]) that it believes to be descended from the deceased. With permission of the landowner or a designated representative, the MLD may inspect the remains and any associated cultural materials and make recommendations for treatment or disposition of the remains and associated grave goods. The MLD shall provide recommendations or preferences for treatment of the remains and associated cultural materials within 48 hours of being granted access to the site.

5.5.2.3 Local

The CPUC has sole and exclusive state jurisdiction over the siting and design of the Proposed Project. Pursuant to CPUC General Order 131-D (GO 131-D), Section XIV.B:

“Local jurisdictions acting pursuant to local authority are preempted from regulating electric power line projects, distribution lines, substations, or electric facilities constructed by public utilities subject to the CPUC’s jurisdiction. However, in locating such projects, the public utilities shall consult with local agencies regarding land use matters.”

Consequently, public utilities are directed to consider local regulations and consult with local agencies, but the county and cities' regulations are not applicable as the county and cities do not have jurisdiction over the Proposed Project. Accordingly, the following discussion of local land use regulations is provided for informational purposes only.

5.5.2.3.1 Kern County General Plan

The General Provisions of the Kern County General Plan contain the following policy related to Cultural Resources (Kern County 2009):

Policy 25 The County will promote the preservation of cultural and historic resources, which provide ties with the past and constitute a heritage value to residents and visitors.

5.5.2.3.2 San Bernardino County Municipal Code

The Cultural Resources Preservation (CP) Overlay established by §§ 82.01.020 (Land Use Plan and Land Use Zoning Districts) and 82.01.030 (Overlays) is intended to provide for the identification and preservation of important archaeological and historical resources (San Bernardino County 2007). This is necessary because:

- (a) Many of the resources are unique and non-renewable; and
- (b) The preservation of cultural resources provides a greater knowledge of County history, thus promoting County identity and conserving historic and scientific amenities for the benefit of future generations.

The CP Overlay may be applied to areas where archaeological and historic sites that warrant preservation are known or are likely to be present. Specific identification of known cultural resources is indicated by listing in one or more of the following inventories:

- (a) California Archaeological Inventory;
- (b) California Historic Resources Inventory;
- (c) California Historical Landmarks;
- (d) California Points of Historic Interest; and/or
- (e) National Register of Historic Places.

5.5.2.3.3 San Bernardino Countywide Policy Plan

The Cultural Resources Element of the San Bernardino Countywide Policy Plan includes the following goals and policies pertaining to cultural resources (San Bernardino County 2020) that are relevant to the Proposed Project:

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 Prehistoric 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-2.3 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.
- 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 and organizations.

5.5.2.3.4 City of California City General Plan

The City of California City General Plan includes goals and policies regarding cultural resources. As defined in the Open Space and Conservation Element, open space includes land retained for the preservation of areas with known or potential historical or cultural value (City of California City 2009). The Open Space

and Conservation Element contains the following goal and policy pertaining to cultural resources and relevant to the Proposed Project:

GOAL Promote conservation of historical and cultural resources

Policy Preserve historical and cultural resources which may exist and are of significant value to the community now and in the future.

5.5.2.3.5 City of California City Municipal Code

As defined in the City of California City Municipal Code section 8-11.03, "historic structure" means any structure that is:

- 1) Listed individually in the NRHP (a listing maintained by the U.S. Department of Interior) or preliminarily determined by the U.S. Secretary of the Interior as meeting the requirements for individual listing on the national register;
- 2) Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district;
- 3) Individually listed on a state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of Interior; or
- 4) Individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either by an approved state program as determined by the secretary of the interior or directly by the Secretary of the Interior in states without approved programs.

5.5.3 Impact Questions

5.5.3.1 Cultural Resources Impact Questions

The thresholds of significance for assessing impacts come from the CEQA Environmental Checklist. For cultural resources, the CEQA Checklist asks, would the project:

- Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?
- Cause a substantial adverse change in the significance of an archeological resource pursuant to Section 15064.5?
- Disturb any human remains, including those interred outside of dedicated cemeteries?

5.5.3.2 Additional CEQA Impact Questions

There are no CPUC-identified additional CEQA impact questions.

5.5.4 Impact Analysis

5.5.4.1 Cultural Resources Methodology

The impact analysis is based on information obtained primarily through a literature review completed in support of a CRTR, currently under review by the BLM, and as described in section 5.5.1.2.4, Cultural Resources Methods.

CEQA guidelines specify that a “substantial adverse change in the significance of an historical resource means 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” (CEQA Guidelines section 15064.5). Material impairment occurs when a project alters in an adverse manner or demolishes “those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion” or eligibility for inclusion in the NRHP, CRHR, or local register. In addition, pursuant to CEQA Guidelines section 15126.2, the “direct and indirect significant effects of the project on the environment shall be clearly identified and described, giving due consideration to both the short-term and long-term effects.”

The following guides and requirements are of particular relevance to this study’s analysis of indirect impacts to historic resources. Pursuant to CEQA Guidelines (section 15378), study of a project under CEQA requires consideration of “the whole of an action, which has the potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment.” CEQA Guidelines (section 15064[d]) further defines direct and indirect impacts as follows:

- A direct physical change in the environment is a physical change in the environment which is caused by and immediately related to the project.
- An indirect physical change in the environment is a physical change in the environment which is not immediately related to the project, but which is caused indirectly by the project. If a direct physical change in the environment in turn causes another change in the environment, then the other change is an indirect physical change in the environment.
- An indirect physical change is to be considered only if that change is a reasonably foreseeable impact which may be caused by the project.

5.5.4.2 Cultural Resources Impact Analysis

5.5.4.2.1 Would the project cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?

Construction

No Determination. The Proposed Project includes an expansion of the Cal City Substation and modification of the Holgate Switchyard and Kramer and Edwards substations; replacement of and installation of new subtransmission structures and conductor/cable; and rehabilitation of existing access roads and construction of new access roads. The results of the HBER are pending and currently under review by the BLM. Therefore, it cannot be determined at this time if structures to be modified or replaced are eligible for listing under the NRHP, CRHR, or local listing. As a result, no determination has been made.

Operation

No Determination. The results of the HBER are pending and currently under review by the BLM. Therefore, it cannot be determined at this time if structures to be modified or replaced are eligible for listing under the NRHP, CRHR, or local listing. As a result, no determination has been made.

5.5.4.2.2 Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

Construction

No Determination. Construction activities associated with the Proposed Project would occur within existing or new rights-of-ways (ROWs), within existing substations, or within franchise areas. Construction activities requiring ground disturbance could potentially disturb buried cultural deposits or archaeological sites in the APE. Ground-disturbing activities would include, but not be limited to, installation of new subtransmission structures, installation of underground fiber optic cable, and modification and expansion of existing substations.

Prior to construction, SCE would implement Applicant Proposed Measure (APM) CUL-1, which includes the preparation and implementation of a Cultural Resource Management Plan (CRMP). The primary objectives of the CRMP would be the management, avoidance, and/or minimization of potential significant impacts to cultural resources. The CRMP would require the demarcation of all Environmentally Sensitive Areas (ESAs) with proper signage prior to construction. Signage would include protective fencing, flagging, or other markers to protect ESAs from inadvertent trespass during construction within 50 feet of ground-disturbing activities. The CRMP would specify monitoring requirements for the identification of cultural resources during construction and would outline procedures to implement during the inadvertent discovery of cultural resources. The CRMP would also specify roles and responsibilities of jurisdictional agencies for the long-term management of identified cultural resources in the APE. All potentially NRHP-eligible or archaeologically sensitive sites identified during records searches and field surveys would be evaluated to determine eligibility for listing under the NRHP and/or the CRHR. All potentially archaeologically sensitive sites within the APE would be considered ESAs and avoided pursuant to APM CUL-2.

Pursuant to APM CUL-2, SCE would perform cultural resource surveys prior to construction for any Proposed Project areas that were not previously surveyed, which may include new or modified staging areas, pull sites, or other work areas. Cultural resources discovered during these surveys would be subject to the mitigation measures and requirements specified in the CRMP. Prior to construction, SCE would implement APM CUL-3, which involves a worker environmental awareness program (WEAP) to train construction personnel by a qualified archaeologist regarding the recognition of possible buried cultural resources (i.e., prehistoric and/or historical artifacts, objects, or features) during construction. The WEAP would provide construction personnel with instruction on compliance with APMs and mitigation measures developed after pre-construction surveys. Additional objectives of the WEAP include instruction on the roles of cultural resource monitors and the appropriate treatment of ESAs. Further, SCE would deploy qualified archaeological monitors to conduct construction monitoring, pursuant to requirements specified in APM CUL-4.

The results of the CRTR are pending and currently under review by the BLM. Therefore, it cannot be determined at this time if significant archaeological resources are present and would be affected by Proposed Project construction. As a result, no determination has been made.

Operation

No Determination. As previously described, O&M activities associated with the Proposed Project would be similar to those currently performed by SCE for existing substations and their associated source lines and infrastructure. Following construction of the Proposed Project, O&M activities would consist of

monthly and annual inspections, as well as equipment testing and maintenance for new and expanded facilities.

While the Proposed Project would result in a nominal increase in O&M activities, such as increased maintenance and inspection trips, O&M activities may impact archaeological resources if O&M activities take place in undisturbed areas, areas that were not included in the field surveys, or in areas with undiscovered archaeological resources. As detailed in Chapter 3.8.4.1, Existing and Proposed Maintenance Programs, O&M activities in undisturbed areas may include repairs done to existing facilities, such as repairing or replacing existing poles and towers. Some pull-and-tension/stringing and pulling site locations could be in previously undisturbed areas and at times, conductors could be passed through existing vegetation on route to their destination. Some tower or pole locations and/or lay down areas could be in previously undisturbed areas and could result in ground and/or vegetation disturbance, though attempts would be made to utilize previously disturbed areas to the greatest extent possible. In some cases, towers and poles do not have existing access roads and are accessed on foot, by helicopter, or by creating temporary access areas.

Pursuant to APM CUL-2, SCE shall perform cultural resource surveys for any portion of the Proposed Project APE not yet surveyed (e.g., new or modified staging areas, pull sites, or other work areas). APM CUL-1 would be implemented, which includes the preparation and implementation of a CRMP. The primary objectives of the CRMP would be the management, avoidance, and/or minimization of potential significant impacts to cultural resources. In the event of an unanticipated discovery, the CRMP details procedures for temporarily halting construction, defining work stoppage zones, notifying stakeholders (e.g., agencies, Native Americans, utilities), and assessing NRHP and/or CRHR eligibility in the event unanticipated discoveries are encountered during construction. Cultural resources discovered during these surveys would be subject to the mitigation measures and requirements specified in the CRMP. Prior to construction, SCE would implement APM CUL-3, which involve a WEAP to train construction personnel by a qualified archaeologist regarding the recognition of possible buried cultural resources (i.e., prehistoric and/or historical artifacts, objects, or features) during construction. The WEAP would provide construction personnel with instruction on compliance with APMs and mitigation measures developed after pre-construction surveys. Additional objectives of the WEAP include instruction on the roles of cultural resource monitors and the appropriate treatment of ESAs. Further, SCE would deploy qualified archaeological monitors to conduct construction monitoring, pursuant to requirements specified in APM CUL-4.

The results of the CRTR are pending and currently under review by the BLM. Therefore, it cannot be determined at this time if significant archaeological resources are present and would be affected by Proposed Project operation. As a result, no determination has been made.

5.5.4.2.3 Would the project disturb any human remains, including those interred outside of dedicated cemeteries?

Construction

Less than Significant Impact with Mitigation. The cultural resources survey did not identify pre-historic human remains along the Proposed Project alignment. It is not always possible to predict where human remains, including Native American human remains that might occur outside of formal cemeteries, may occur. Therefore, it is possible that human remains could be uncovered during ground-disturbing activities. However, implementation of the WEAP under APM CUL-3 would help workers identify potential human

remains and establish procedures for stopping work and notifying SCE's cultural resource staff and construction supervisors in the event that human remains are detected.

As described in APM CUL-5 if human remains are inadvertently discovered during construction activities, all work in the vicinity of the find would cease within a 200-foot radius of the remains, and the area would be secured and protected to ensure that no additional disturbance occurs. The county coroner would then be contacted in accordance with CEQA Guidelines section 15064.5(e), AB 2641, PRC sections 15064.5(e) and 15064.5(d), and California Health and Safety Code (HSC) section 7050.5. The coroner would have two working days to examine the remains after being notified. If the coroner determines that the remains are Native American (i.e., not subject to the coroner's authority) and located on private or state land, the coroner would have 24 hours to notify the NAHC of the determination.

Under PRC section 5097.98, the NAHC would be required to identify a Most Likely Descendant (MLD), notify that person, and request that they inspect the remains and make recommendations for treatment and/or disposition. The MLD would have 48 hours after being granted site access to inspect the find and make recommendations for treatment of the human remains. Work would be suspended in the area of the find until the MLD and landowner confer on the mitigation and treatment of the human remains. However, the human remains and associated burial items would be reburied, with appropriate dignity, on the property in a location not subject to further subsurface disturbance if one of the following occurs:

- The NAHC is unable to identify an MLD.
- The MLD identified fails to make a recommendation.
- The recommendation of the MLD is rejected and the mediation provided in PRC section 5097.94(k) fails to provide measures acceptable to the landowner.

This procedure would ensure that the remains are treated in accordance with section 15064.5(d) and (e) of the CEQA Guidelines, HSC section 7050.5, and PRC sections 5097.98 and 5097.99.

As described in Section 5.5.2, Regulatory Setting, cultural resources intentionally or unintentionally excavated and removed from federal lands may be subject to NAGPRA if the resources are confirmed to be of Native American origin. As outlined in APM CUL-5, in the event that Native American items are inadvertently discovered on federal lands, NAGPRA requires that the responsible federal agency must be immediately notified by telephone and in writing. Following the receipt of the written notification, the federal agency must certify the receipt of it within three days. The activity that resulted in the discovery must be stopped immediately after discovery and may not resume until 30 days after the applicable federal agency certifies the receipt of the notification. The federal agency would also be responsible for taking immediate steps, if necessary, to further secure and protect the remains and/or items that were discovered. During this process, the federal agency would notify any MLDs or applicable Native American tribes of the discovery, obtain written confirmation of the notification, and initiate consultation, if necessary. Following consultation, the federal agency would prepare, approve, and sign a written NAGPRA Plan of Action (43 CFR 10.3 and 10.5), which would specify the treatment, care, and handling of the discovered remains and cultural resources.

SCE would comply with the applicable regulations to ensure the protection of human remains and burial sites during construction. With implementation of APMs CUL-3 and CUL-5, impacts to human remains during construction would be reduced to less than significant levels.

Operation

Less than Significant Impact with Mitigation. As previously described, O&M activities associated with the Proposed Project would be similar to those currently performed by SCE for existing substations and their associated lines and infrastructure. It is likely that the Proposed Project would result in a nominal increase in O&M activities, such as increased maintenance and inspection trips. Ground disturbance during O&M activities could occur in previously disturbed or potentially undisturbed but previously surveyed areas. However, O&M activities within existing or new ROWs would have a low potential to encounter human remains if any are present. If human remains are discovered during O&M activities of the Project, work would stop, the APMs previously outlined would be implemented, and the remains would be treated in accordance with applicable laws. Therefore, any potential impacts would be less than significant with mitigation.

5.5.4.3 Human Remains

The potential for encountering human remains or grave goods during the construction of the Proposed Project is low. The procedures that would be used if human remains are encountered are described in Section 5.5.4.2.3 above and in APMs CUL-1 and CUL-5.

5.5.4.4 Resource Avoidance

The avoidance procedures that would be implemented to avoid known resources are described in APMs CUL-1, CUL-2, and CUL-3.

5.5.5 CPUC Draft Environmental Measures

There is one CPUC Draft Environmental Measure related to cultural resources: “Human Remains (Construction and Maintenance).” As described in Section 5.5.4.2.3, impacts to human remains would be less than significant with compliance with existing regulations and adherence to APM CUL-5. Further, compliance with existing regulations and APMs CUL-1, CUL-2, CUL-3, and CUL-4 would reduce potential impacts. No additional CPUC Draft Environmental Measures are required.

5.5.5.1 Applicant Proposed Measures

The following APMs would be implemented to reduce cultural resources impacts associated with the Proposed Project:

- **CUL-1: Develop a Cultural Resource Management Plan (CRMP).** SCE shall prepare and submit for approval a Cultural Resource Management Plan (CRMP) to guide all cultural resource management activities during Proposed Project construction. Management of cultural resources shall follow all applicable federal and state standards and guidelines for the management of historic properties/historical resources. The CRMP shall be submitted to CPUC and BLM for review and approval at least 90 days prior to the start of construction. The CRMP shall be prepared by a qualified archaeologist who meets the Secretary of Interior’s standards for archaeology and include, but not be limited to, the following sections:
 - **Cultural Resource Management Plan:** The CRMP shall define and map all known NRHP- and CRHR-eligible properties in or within 100 feet (30.5 meters) of the Proposed Project APE/API. A cultural resources protection plan shall be included that details how NRHP- and CRHR-eligible properties will be avoided and protected during construction. Measures shall include, at a minimum, designation and marking of Environmentally Sensitive Areas (ESAs), archaeological

- monitoring, personnel training, and reporting. The plan shall also detail which avoidance measures will be used, where and when they will be implemented, and how avoidance measures and enforcement of ESAs will be coordinated with construction personnel.
- **Cultural Resource Monitoring and Field Reporting:** The CRMP shall detail procedures for archaeological monitoring and Tribal participation, define the reporting matrix, and establish criteria for when the monitoring effort should increase or decrease if monitoring results indicate that a change is warranted. The CRMP shall also include guidelines for monitoring in areas of high sensitivity for the discovery of buried NRHP- and/or CRHR-eligible cultural resources, burials, cremations, tribal cultural resources, or sacred sites.
 - **Unanticipated Discovery Protocol:** The CRMP shall detail procedures for temporarily halting construction, defining work stoppage zones, notifying stakeholders (e.g., agencies, Native Americans, utilities), and assessing NRHP and/or CRHR eligibility in the event unanticipated discoveries are encountered during construction. It shall include methods, timelines for assessing NRHP and/or CRHR eligibility, formulating mitigation plans, and implementing treatment. Mitigation and treatment plans for unanticipated discoveries shall be reviewed by tribal stakeholders and approved by CPUC prior to implementation.
 - **Data Analysis and Reporting:** The CRMP shall detail methods for data analysis in a regional context, reporting of results within one year of completion of field studies, curation of artifacts and data (maps, field notes, archival materials, recordings, reports, photographs, and analysts' data) at a facility that is approved by CPUC and dissemination of reports to appropriate repositories.
- **CUL-2: Avoid Environmentally Sensitive Areas (ESA).** SCE shall perform cultural resource surveys for any portion of the Proposed Project APE not yet surveyed (e.g., new or modified staging areas, pull sites, or other work areas). Cultural resources discovered during surveys will be subject to APM CUL-1 (Develop CRMP). Where operationally feasible, all NRHP- and CRHR-eligible resources shall be protected from direct project impacts by project redesign (i.e., relocation of the line, ancillary facilities, or temporary facilities or work areas). In addition, all historic properties/historical resources shall be avoided by all project construction, operation and maintenance, and restoration activities, where feasible. Avoidance measures shall include, but not be limited to, fencing off ESAs for the duration of the Proposed Project or as outlined in the CRMP.
 - **CUL-3: Train Construction Personnel.** Prior to initiating construction, all construction personnel shall be trained by a qualified archaeologist regarding the recognition of possible buried cultural resources (i.e., prehistoric and/or historical artifacts, objects, or features) and paleontological resources (i.e., fossils), and protection of these resources during construction. Training shall also inform all construction personnel of the procedures to be followed upon the discovery of cultural materials. All personnel shall be instructed that unauthorized removal or collection of artifacts is a violation of federal and state laws. Any excavation contract (or contracts for other activities that may have subsurface soil impacts) shall include clauses that require construction personnel to attend a Worker's Environmental Awareness Training Program (WEAP). The WEAP will include the Proposed Project's potential for the post-discovery review of archaeological deposits, how to operate adjacent to and avoid all ESAs, and procedures to treat post-discovery reviews.
 - **CUL-4: Conduct Construction Monitoring.** Archaeological monitoring shall occur as outlined in the CRMP. Archaeological monitoring shall be conducted by a qualified archaeologist familiar with the types of historic and prehistoric resources that could occur within the Proposed Project areas. The qualifications of the principal archaeologist and monitors shall be approved by the CPUC and BLM. Monitoring reports shall be submitted to the CPUC on a monthly basis. A Tribal Participant may be required at culturally sensitive locations in consultation with the CPUC and/or as outlined in the CRMP.
 - **CUL-5: Properly Treat Human Remains.** SCE shall follow all federal and state laws, statutes, and regulations that govern the treatment of human remains. All work in the vicinity of a find will cease

within a 200-foot radius of the remains, the area will be protected to ensure that no additional disturbance occurs. Should inadvertent discovery of human remains be made on federal lands, the federal agency and County Coroner (California Health and Safety Code 7050.5(b)) shall be notified 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). If the remains are not on federal land, the County Coroner and CPUC shall be notified immediately and the remains shall be treated in accordance with Health and Safety Code section 7050.5, CEQA Guidelines section 15064.5(e), and Public Resources Code section 5097.98. SCE shall assist and support the BLM and DoD as appropriate in all required NAGPRA and Section 106 actions, government to-government consultations with Native Americans, agencies, and consulting parties as requested by the BLM, DoD, or CDFW. SCE shall comply with and implement all required actions and studies that result from such consultations.

5.5.6 Alternatives

For an evaluation of Proposed Project alternatives, see Chapter 6, Comparison of Alternatives.

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5.6 Energy

This section describes the energy-consumption attributes of the Cal City Substation 115 kV Upgrade Project (Proposed Project), as well as an assessment of impacts that have the potential to occur during construction and operation of the Proposed Project.

Research for this analysis involved a review of the following resources:

- California Energy Commission (CEC) California Energy Consumption Database
- California Department of Tax and Fee Administration (CDTFA) fuel taxes statistics and reports
- Local agency planning documents

5.6.1 Environmental Setting

The Proposed Project is located in Kern County and San Bernardino County in the Mojave Desert region of California on federal, state, private, and municipal land. These lands include unincorporated areas of Kern County and San Bernardino County, City of California City, Edwards Air Force Base (EAFB) controlled by the Department of Defense, and public lands under the jurisdiction of the Bureau of Land Management and the California Department of Fish and Wildlife. Approximately 90 percent of the Proposed Project is located within undeveloped open areas, with the remaining 10 percent located within developed areas (including the City of California City). The environmental setting section describes the energy use and production in the Proposed Project area.

5.6.1.1 Existing Energy Use

Station lights and power equipment at the substations associated with the Proposed Project represent the only existing consumption of electricity associated with the Proposed Project. Substation operation consumes approximately 4.5 amperes of electricity under typical operating conditions. Fuels consumed during operation and maintenance (O&M) activities of these existing facilities represent the only other existing energy use associated with the Proposed Project. Line losses are not considered a use of energy, but rather a loss of energy. The subsections that follow describe existing energy use in and around the Proposed Project. Fuel and energy use associated with the construction phase of the Proposed Project is described in Section 5.6.4.4.

5.6.1.1.1 Electricity Consumption

Table 5.6-1 shows electricity consumption by sector in the Southern California Edison Company (SCE) service area based on the latest available data from the CEC. As shown, SCE delivered approximately 83.5 billion kilowatt-hours (kWh) in 2020.

Table 5.6-1 Electricity Consumption within SCE’s Service Territory in 2020

Electricity Consumption (Millions of kWh)							
Agricultural and Water Pump	Commercial Building	Commercial Other	Industry	Mining and Construction	Residential	Streetlight	Total
3,112	28,800	4,449	12,450	1,822	32,475	426	83,533

Source: CEC 2022a

As summarized in Table 5.6-2, approximately 15 billion kWh and 16 billion kWh of electricity were consumed in Kern and San Bernardino counties, respectively, in 2020.

Table 5.6-2 Electricity Consumption by County in 2020

County	Electricity Consumption (Millions of kWh)		
	Residential Use	Non-Residential Use	Total
Kern	2,638	12,328	14,966
San Bernardino	6,103	9,866	15,969

Source: CEC 2022a

5.6.1.1.2 Gasoline, Diesel, and Jet Fuel Consumption

Gasoline is the most used transportation fuel in California, with 97 percent of all gasoline being consumed by light-duty cars, pickup trucks, and sport utility vehicles (CEC 2022b). Approximately 90 percent of gasoline sold in the state is petroleum-based, with the remaining 10 percent being ethanol-based. Diesel fuel represents 17 percent of total fuel sales and is the second-largest category of transportation fuel used in California. Nearly all heavy-duty trucks, delivery vehicles, buses, trains, ships, boats and barges, farm equipment, construction equipment, and heavy-duty military vehicles and equipment have diesel engines. In 2021, taxable gasoline sales (including aviation gasoline) in California accounted for approximately 13.8 billion gallons of gasoline, taxable diesel fuel sales accounted for approximately 3.1 billion gallons of diesel fuel, and taxable jet fuel sales accounted for approximately 187 million gallons of jet fuel (CDTFA 2022).

5.6.1.2 Electric Utility Operations

SCE is an investor-owned utility company that provides electricity services to more than 15 million people within a 50,000-square-mile service area of central, coastal, and Southern California. Customers also can obtain electricity from alternative providers (such as municipalities or Customer Choice Aggregators), as well as from distributed-generation resources (such as rooftop solar installations). In 2021, SCE sold a total of 62,685 million megawatt (MW) hours of electricity. Of this total, SCE owns approximately 3,260 MW of generating capacity. The remaining electrical power is purchased from other sources in and outside of California.

5.6.2 Regulatory Setting

Federal, state, and local regulations were reviewed for applicability to the Proposed Project. All applicable regulations have been listed and described in the following subsections.

5.6.2.1 Federal

5.6.2.1.1 National Energy Conservation Policy Act

The National Energy Conservation Policy Act (NECPA), 42 United States (U.S.) Code (USC) § 8201 *et seq.*, established energy-efficiency standards for consumer projects and includes a residential program for low-income weatherization assistance, grants, and loan guarantees for energy conservation in schools and hospitals, as well as energy efficiency standards for new construction. NECPA also established fuel economy standards for on-road motor vehicles in the U.S. The National Highway Traffic and Safety Administration, which is part of the U.S. Department of Transportation (USDOT), is responsible for establishing additional vehicle standards and revising existing standards under the NECPA. The USDOT is authorized to assess penalties for noncompliance.

5.6.2.1.2 National Energy Policy Act of 2005

The National Energy Policy Act of 2005, 42 USC § 13201 *et seq.*, sets equipment energy efficiency standards, seeks to reduce reliance on nonrenewable energy resources, and provides incentives to reduce current demand on these resources. This includes establishing programs to improve the reliability and efficiency of distributed energy resources and systems by integrating advanced energy technologies with grid connectivity.

5.6.2.1.3 Energy and Independence Security Act of 2007 and Corporate Average Fuel Economy Standards

The Energy and Independence Security Act of 2007, 42 USC § 17001, sets federal energy management requirements in several areas, including energy reduction goals for federal buildings, facility management and benchmarking, performance and standards for new buildings and major renovations, high-performance buildings, energy savings performance contracts, metering, energy-efficient product procurement, and reduction in petroleum use by methods including setting automobile efficiency standards and increases in alternative fuel use. This act also amends portions of the NECPA, as described previously.

5.6.2.2 State

5.6.2.2.1 Warren-Alquist Act

The 1975 Warren-Alquist Act, Public Resources Code § 25000 *et seq.*, established the California Energy Resources Conservation and Development Commission, now known as the CEC. The Warren-Alquist Act established a state policy to reduce wasteful, uneconomical, and unnecessary uses of energy.

5.6.2.2.2 State of California Integrated Energy Policy

Public Resources Code section 25301(a) requires the CEC to develop an Integrated Energy Policy Report (IEPR) at least every 2 years for electricity, natural gas, and transportation fuels. The current IEPR (2021 edition) calls for the state to assist in the decarbonization of buildings and the agricultural sector, ensuring electricity reliability in a changing climate, decarbonizing the state's gas systems, and improving electricity demand forecasting.

5.6.2.2.3 Senate Bill 100

Senate Bill 100, signed into law in September 2018, amends the California Renewables Portfolio Standard Program. The program requires the California Public Utilities Commission (CPUC) to establish a renewables portfolio standard requiring all retail sellers to 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 25 percent of retail sales by December 31, 2016; 33 percent by December 31, 2020; 40 percent by December 31, 2024; 50 percent by December 31, 2026; and 60 percent by December 31, 2030. The program additionally requires each local publicly owned electric utility to procure a minimum quantity of electricity products from eligible renewable energy resources to achieve the procurement requirements established by the program.

5.6.2.2.4 California Advanced Clean Cars Program/Zero Emission Vehicle Program

In January 2012, the California Air Resources Board (CARB) approved a new emissions-control program for vehicle model years 2017 through 2025. The program combines emissions controls with requirements

for greater numbers of zero-emission vehicles into a package of standards called the Advanced Clean Cars Program. The components of the Advanced Clean Cars Program include the Low-Emission Vehicle regulations that reduce criteria pollutants and greenhouse gas emissions from light- and medium-duty vehicles, and the Zero-Emission Vehicle (ZEV) regulations that require manufacturers to produce an increasing number of pure ZEVs (e.g., battery electric and fuel cell electric vehicles), with provisions to also produce plug-in hybrid electric vehicles in the 2018 through 2025 model years. In March 2017, CARB voted unanimously to continue with the vehicle greenhouse gas emission standards and the ZEV program for cars and light trucks sold in California past 2025.

5.6.2.2.5 CARB Heavy Duty Regulations

CARB’s Truck and Bus Regulation requires diesel trucks that operate in California to be upgraded to reduce emissions. It established a final deadline of January 1, 2023, to upgrade all trucks with 2010 model year engines or equivalent. In 2004, CARB adopted a fourth tier of increasingly stringent advanced after-treatment for new off-road compression-ignition engines, including those found in construction equipment. These “Tier 4” standards were phased in across product lines from 2008 through 2015. In 2007, CARB first approved the Off-Road Regulation that requires off-road fleets to reduce their emissions by retiring, replacing, or repowering older engines.

5.6.2.3 Local

The CPUC has sole and exclusive state jurisdiction over the siting and design of the Proposed Project. Pursuant to CPUC General Order (G.O.) 131-D, Section XIV.B:

“Local jurisdictions acting pursuant to local authority are preempted from regulating electric power line projects, distribution lines, substations, or electric facilities constructed by public utilities subject to the CPUC’s jurisdiction. However, in locating such projects, the public utilities shall consult with local agencies regarding land use matters.”

Consequently, public utilities are directed to consider local regulations and consult with local agencies, but the counties’ and city’s regulations are not applicable as the counties and city do not have jurisdiction over the Proposed Project. Accordingly, the following discussion of local land use regulations is provided for informational purposes only.

5.6.2.3.1 Kern County General Plan

The Energy Element of the Kern County General Plan contains goals, policies, and implementation measures that address renewable energy development in the county; none are relevant or applicable to the Proposed Project.

5.6.2.3.2 San Bernardino Countywide Policy Plan

The Renewable Energy and Conservation Element of the San Bernardino Countywide Policy Plan is intended to ensure efficient consumption of energy and water, reduce greenhouse gas emissions, pursue the benefits of renewable energy, and responsibly manage its impacts on the environment, communities, and economy. The element contains goals, objectives, policies, and implementation strategies; none are applicable or relevant to the Proposed Project.

5.6.2.3.3 City of California City General Plan

The Open Space and Conservation Element of the City of California City General Plan contains goals, policies, and implementation measures that address renewable energy development and energy efficiency measures in the city; none are relevant or applicable to the Proposed Project.

5.6.3 Impact Questions

5.6.3.1 Energy Impact Questions

The thresholds of significance for assessing impacts come from the California Environmental Quality Act (CEQA) Environmental Checklist. For Energy, the CEQA Checklist asks, would the Proposed Project:

- Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?
- Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

5.6.3.2 Additional CEQA Impact Questions

The CPUC has identified one additional CEQA impact question:

- Would the project add capacity for the purpose of serving a nonrenewable energy resource?

5.6.4 Impact Analysis

5.6.4.1 Energy Methodology

Impacts to energy within the Proposed Project area were determined by comparing the anticipated fuel consumption from construction and O&M phases of the Proposed Project to current fuel use within the Proposed Project area. These consumption estimates were generated using emission inventories from the CARB Emission Factor (EMFAC) model, fuel efficiency data from the U.S. Environmental Protection Agency's (EPA's) *Exhaust and Crankcase Emission Factors for Nonroad Compression-Ignition Engines in MOVES3.0.2*, and the Swiss Federal Office of Civil Aviation (FOCA) *Guidance on the Determination of Helicopter Emissions* as documented in Appendix B.

5.6.4.2 Energy Impact Analysis

5.6.4.2.1 Would the project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Construction

Less than Significant Impact. The Proposed Project's consumption of energy resources during construction is necessary to meet existing and planned electrical demand in the Electrical Needs Area. Construction of the Proposed Project would require consumption of fuel to power construction vehicles, equipment, and helicopters, as summarized in Table 5.6-3. However, Proposed Project construction activities would represent less than 0.006 percent of total fuel consumption in the state. In addition, construction would be short-term and temporary. As a result, impacts would be less than significant. In order to reduce potential impacts from noise during the construction phase of the Proposed Project, SCE

would also implement Applicant-Proposed Measure (APM) NOI-1. This measure would require all vehicles to minimize idling time to the extent practical, which would reduce fuel consumption. While this APM is not required to ensure energy emissions are less than significant, it would help to further reduce this impact.

Table 5.6-3 Construction Fuel Consumption

Primary Equipment Description	Gasoline (gallons)	Diesel (gallons)	Jet A (gallons)
Worker Vehicles	164,993	0	0
Construction Vehicles	38,892	103,341	0
Construction Equipment	0	574,680	0
Helicopter and Support	0	2,897	115,896
TOTALS	203,885	680,918	115,896

Operations

Less than Significant Impact. As presented in Chapter 3, the Proposed Project includes constructing subtransmission lines between existing substations in the vicinity of the City of California City, EAFB, and U.S. 395 where many overhead power lines currently exist. Additionally, the Proposed Project includes upgrades at existing substations and a switchyard and an expansion of the Cal City Substation. O&M activities associated with the Proposed Project would be similar to those currently performed by SCE for existing facilities, including, but not limited to, repairing conductors, washing or replacing insulators, repairing or replacing other hardware components, repairing or replacing poles and towers, tree trimming, brush and weed control, and access road maintenance. O&M would also include routine inspections and emergency repair within substations and throughout rights-of-way, which would require the use of vehicles and equipment. SCE inspects subtransmission overhead facilities in a manner consistent with CPUC G.O. 165, which requires observation a minimum of once per year, but inspection typically occurs more frequently to ensure system reliability. Following construction of the Proposed Project, O&M activities would consist of monthly and annual inspections, as well as equipment testing and maintenance for new and expanded facilities. SCE currently performs O&M activities for the existing substations and their associated source lines and infrastructure. Overall, the Proposed Project would result in a nominal increase in O&M activities, such as increased maintenance and inspection trips. It is anticipated that the increase in O&M activities would require approximately 230 gallons of diesel fuel annually, as summarized in Appendix B. This represents a minor incremental increase in the total energy that is presently consumed on other existing SCE facilities in the Proposed Project area. As a result, impacts would be less than significant.

5.6.4.2.2 Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Construction

No Impact. The Proposed Project entails constructing new subtransmission lines, expanding one existing substation, and modifying three existing substations and a switchyard within their existing fence lines. Portions of the new subtransmission line alignments are located directly adjacent to existing overhead power lines and/or roadways. The Proposed Project is not designed to facilitate or encourage renewable energy project development, and, because it was designed to avoid known future developments and routed along existing infrastructure to the extent practical, it would not impede the development of renewable energy projects. As stated previously in Section 5.6.2, none of the local plans that address energy efficiency

are applicable to the Proposed Project. Therefore, construction of the Proposed Project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency, and no impact would occur.

Operations

No Impact. As previously described, O&M activities associated with the Proposed Project would be similar to those currently performed by SCE for existing substations and their associated lines and infrastructure. Additionally, there would be upgrades at existing substations and a switchyard and an expansion of the Cal City Substation. The Proposed Project would result in a nominal increase in O&M activities, such as increased maintenance and inspection trips. As stated previously in Section 5.6.2, none of the local plans that address energy efficiency are applicable to the Proposed Project. Therefore, O&M of the Proposed Project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency, and no impact would occur.

5.6.4.2.3 Would the project add capacity for the purpose of serving a nonrenewable energy resource?

Construction

No Impact. Serving a nonrenewable energy resource is not a purpose of the Proposed Project; therefore, no impact would occur.

Operations

No Impact. Serving a nonrenewable energy resource is not a purpose of the Proposed Project; therefore, no impact would occur.

5.6.4.3 Nonrenewable Energy

The Proposed Project's new subtransmission lines would connect existing SCE substations and a switchyard and provide additional capacity to the subtransmission line network served from SCE's Kramer 220/115 kV and 115/33 kV Substation. Within the Kramer 115 kV Subtransmission System, all of the 115 kV facilities are connected electrically; thus, any project which increases capacity also increases the capacity of the overall 115 kV subtransmission system. With the exception of any sections of 115 kV lines that may provide dedicated service to a single customer, all of the 115 kV lines share the power flow within the system; and thus, that power flow is not specific to renewable or non-renewable energy projects.

5.6.4.4 Fuels and Energy Use

5.6.4.4.1 Total Energy Requirements of the Proposed Project by Fuel Type and End Use

Table 5.6-3 provides an estimate of the volume of fuels (i.e., gasoline, diesel, and Jet A) that would be used during construction of the Proposed Project.

As discussed previously, O&M activities associated with the Proposed Project would be similar to those currently performed by SCE for existing facilities. It is anticipated that regular O&M activities would use approximately 230 gallons of diesel fuel annually. Therefore, operation of the Proposed Project would result in an incremental increase in consumption of fuels above the volumes currently consumed.

5.6.4.4.2 Energy Conservation Equipment and Design Features

The Proposed Project includes neither equipment nor design features with a primary or sole purpose of energy conservation.

5.6.4.4.3 Energy Supplies That Would Serve the Project

Proposed Project construction would not require any new energy supplies. As described in Chapter 3, power would be supplied to staging areas from existing local distribution lines, as needed. If local distribution lines are not available, temporary power may be provided from a diesel-powered generator. All other energy required for the construction phase would be obtained from existing energy purveyors. As described previously, Proposed Project operation would result in an incremental increase in diesel fuel as a result of the new subtransmission lines and expanded and modified substations and a switchyard.

As related to existing renewable and non-renewable energy, the Proposed Project involves connecting existing SCE substations with new subtransmission lines, expanding an existing SCE substation, and modifying three existing SCE substations and a switchyard. The Proposed Project would not and is not intended to interconnect any new sources of renewable or non-renewable energy.

5.6.5 CPUC Draft Environmental Measures

There are no CPUC Draft Environmental Measures identified for energy.

5.6.5.1 Applicant-Proposed Measures

5.6.5.1.1 Energy APMs

No APMs specific to energy have been developed to reduce an impact that has been identified in Section 5.6.3.

5.6.5.1.2 Cross-Referenced APMs

The following APM would be implemented to reduce energy impacts associated with the Proposed Project:

NOI-1: SCE shall employ the following noise-control techniques, at a minimum, to reduce construction noise exposure at noise-sensitive receptors during construction:

- Construction activities shall be confined to daytime, weekday and weekend hours established by the San Bernardino County, Kern County, and the City of California City. In the event construction is required beyond those hours, SCE will notify the appropriate local agency or agencies regarding the description of the work, location, and anticipated construction hours.
- Construction equipment shall use noise reduction features (e.g., mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer.
- Stationary noise sources (e.g., generators, pumps) and staging areas shall be shielded by an enclosure, temporary sound walls, acoustic blankets, or other barrier where noise levels are above 80 dBA at sensitive receptor locations. Heights and specifications of noise barriers will be designed to reduce construction noise to below 80 dBA (FTA, 2006).
- Construction traffic and helicopter flight shall be routed away from residences and schools.
- Unnecessary construction vehicle use and idling time shall be minimized. If a vehicle is not required for use immediately or continuously for construction activities, its engine shall be shut off.

5.6.6 Alternatives

For an evaluation of Proposed Project alternatives, see Chapter 6, Comparison of Alternatives.

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5.7 Geology, Soils, and Paleontological Resources

This section describes the geological, soils, and paleontological resources in the vicinity of the Cal City Substation 115 kV Upgrade Project (Proposed Project), as well as potential impacts that may result from construction and operation of the Proposed Project.

Research for this analysis involved a review of the following resources:

- California Department of Conservation’s (DOC) reported California landslides map
- Local agency planning documents
- Natural Resources Conservation Service’s (NRCS) Soil Survey Geographic Database
- State Water Resource Control Board’s (SWRCB) Revised Universal Soil Loss Equation (RUSLE) K-Values information
- United States Bureau of Reclamation’s (USBR) Characteristics and Problems of Collapsible Soil information
- United States Department of Agriculture’s (USDA) Understanding Soil Risks and Hazards Using Soil Survey to Identify Areas with Risks and Hazards to Human Life and Property document
- USDA Web Soil Survey resource
- USDA Wind Erodibility Groups information
- United States Geological Survey’s (USGS) Fault type online resource
- USGS Modeling Soil Moisture in the Mojave Desert resource
- USGS U.S. Quaternary Faults online map
- Geotechnical Solutions Inc. Cal City Substation Expansion Geotechnical Investigation Report (“Cal City Substation Geotechnical Report”)

The discussion of paleontological resources contained within this section is based on information obtained through a desktop review of geologic maps, literature, and a fossil locality search of the Natural History Museum of Los Angeles County to identify the paleontological sensitivity of the geologic units crossed by the Proposed Project.

5.7.1 Environmental Setting

The Proposed Project is located in Kern County and San Bernardino County in the Mojave Desert region of California on federal, state, private, and municipal land. These lands include unincorporated areas of Kern County and San Bernardino County, City of California City, Edwards Air Force Base (EAFB) controlled by the Department of Defense, and public lands under the jurisdiction of the Bureau of Land Management (BLM) and the California Department of Fish and Wildlife. Approximately 90 percent of the Proposed Project is located within undeveloped open areas, with the remaining 10 percent located within developed areas (including the City of California City). The following subsections describe the existing geologic setting in the Proposed Project area.

5.7.1.1 Regional and Local Geologic Setting

The Proposed Project is located in the Mojave Desert. The Mojave Desert is one of the 11 major geomorphic provinces in California (California Geological Survey (CGS) 2002) and is defined as a region of unique topography and geology that is distinguished from other regions based on its landforms and geologic

history. The Mojave Desert Province is a “broad interior region of isolated mountain ranges separated by expanses of desert plains” (CGS 2002) that is effectively wedged to the west between the Sierra Nevada Range (by the Garlock fault) and the Transverse Range (by the San Andreas fault). The western Mojave Desert acts as a sediment catch from three geomorphic provinces: Basin and Range, Sierra Nevada, and Transverse Ranges. By the early Miocene or late Oligocene, an erosional surface rising eastward from the Garlock-San Andreas convergence (at the western end of the Mojave Desert) had developed, and depression of the region began. Depression resulted in the Mojave Desert province becoming an internal drainage area, with deposits of Miocene, Pliocene and Pleistocene sediments accumulating in local basins. Igneous rocks, such as basalt, tuff (ashfall), and volcanic mudflows from the Miocene to Pleistocene are also found in the Mojave Desert. Repeated glacial advance and retreat during the Pleistocene created numerous lakes, which provided conditions for the preservation of fossils. The modern, intermittently flooded playa lakes found in the Mojave Desert are smaller remnants of these Pleistocene lakes.

5.7.1.1.1 Physiography

The principal mountain and valley areas crossed by the Proposed Project are described below. The boundaries between these areas are not sharply defined, and the descriptions are general. The Proposed Project is within the Mojave Desert and is bordered by the Rand Mountains to the north and the Tehachapi Mountains to the west. The southwestern section of the proposed Cal City-Edwards-Holgate 115 kV Subtransmission Line, generally south of Sequoia Boulevard and west of Holgate Switchyard, is located within the Antelope Valley.

Mojave Desert

The Mojave Desert is an arid region in southeastern California and parts of Nevada, Arizona, and Utah. The desert occupies more than 25,000 square miles, ranging from below sea level to over 5,000 feet (1,524 m) in elevation (USGS 2008). The Mojave Desert is a Cenozoic feature, assumed to have been formed during the Oligocene Epoch (about 40 million years ago) from movement along the San Andreas and Garlock Faults. The broad alluvial basins that dominate the region were formed by eroded materials from the adjacent mountain ranges.

Antelope Valley

The southwestern section of the proposed Cal City-Edwards-Holgate 115 kV Subtransmission Line—generally south of Sequoia Boulevard and west of Holgate Switchyard—is within the Antelope Valley. The Antelope Valley is a 2,400-square-mile high desert straddling northern Los Angeles County and southern Kern County. The Antelope Valley represents a large topographic and groundwater basin in the western part of the Mojave Desert in Southern California. It is an undrained, closed basin that allows no outflow to other external bodies of water. The region occupies part of a structural depression that has been downfaulted between the Garlock, Cottonwood-Rosamond, and San Andreas Fault Zones. Consolidated rocks that yield virtually no water underlie the basin and crop out in the highlands that surround the basin. They consist of igneous and metamorphic rocks of pre-Tertiary age that are overlain by indurated continental rocks of Tertiary age interbedded with lava flows.

5.7.1.2 *Seismic Hazards*

5.7.1.2.1 **Faults and Seismicity**

The time in which a fault was last known to have slipped, referred to as age, is directly linked to how active a fault is considered to be. The state of California considers a fault to be active if the fault is well-defined and if there is evidence of surface displacement along the fault during the Holocene epoch (i.e., within the past 11,000 years). In addition, potentially active faults are those that have demonstrated activity within the Quaternary period (i.e., approximately the past 1.6 million years). Fault type is defined by the angle of the fault with respect to the surface and the direction of slip. Faults which move horizontally are known as strike-slip faults and are classified as either right-lateral or left-lateral. Faults which show both dip-slip and strike-slip motion are known as oblique-slip faults. A normal fault is a fault in which the block above the fault has moved downward relative to the block below (USGS 2022b).

Table 5.7-1 includes mapped faults within 10 miles of the Proposed Project alignment, including fault type, fault and section length, slip rate, and maximum estimated moment magnitude. The fault locations are shown on Figure 5.7-1. As shown in Figure 5.7-1, two late Quaternary faults—the Lenwood-Lockhart Fault and the Helendale-South Lockhart Fault—cross the Proposed Project alignment. The Proposed Project is not located in and does not cross any Holocene fault zones. The closest Holocene fault to the Proposed Project is the Garlock fault. The Garlock fault is 160 miles in length and runs north to west of the Proposed Project alignment. At its closest point to the Proposed Project the Garlock Fault is approximately 8 miles to the northwest of the proposed Kramer-Cal City 115 kV Subtransmission Line.

5.7.1.2.2 **Surface Fault Rupture**

The state of California has established “Alquist-Priolo Special Studies Zones” in areas where Holocene faults pose a risk of surface displacement. The Alquist-Priolo Earthquake Fault Zoning Act of 1972 regulates construction and development of buildings intended for human occupancy to avoid rupture hazards from surface faults. This act does not specifically regulate substations and power lines, but it does aid in defining areas where fault rupture is most likely to occur. The Proposed Project is not within an Alquist-Priolo Special Studies Zone. Therefore, there is no potential for surface rupture at the site due to fault plane displacement during the design life of the Proposed Project (Geotechnical Solutions Inc. 2022; Appendix P).

5.7.1.2.3 **Seismic Ground Shaking**

Several factors influence how ground motion interacts with structures, making the impact hazard of ground shaking difficult to predict. Seismic waves propagating through the earth’s crust are responsible for the ground vibrations normally felt during an earthquake. Seismic waves can vibrate in any direction and at different frequencies, depending on the frequency content of the earthquake, its rupture mechanism, the distance from the seismic epicenter, and the path and material through which the waves are propagating. Ground shaking due to nearby and distant earthquakes should be anticipated during the life of the Proposed Project. Faults in the vicinity of Proposed Project are listed in Table 5.7-1.

An earthquake is commonly described by the amount of energy released, which has traditionally been quantified using the Richter scale. However, seismologists have recently begun using a Moment Magnitude scale because it provides a more accurate measurement of a major earthquake’s size. Specifically, the Moment Magnitude is based on the measurement of maximum motion recorded by a seismograph. The Moment Magnitude and Richter scales are almost identical for earthquakes of less than magnitude 7.0.

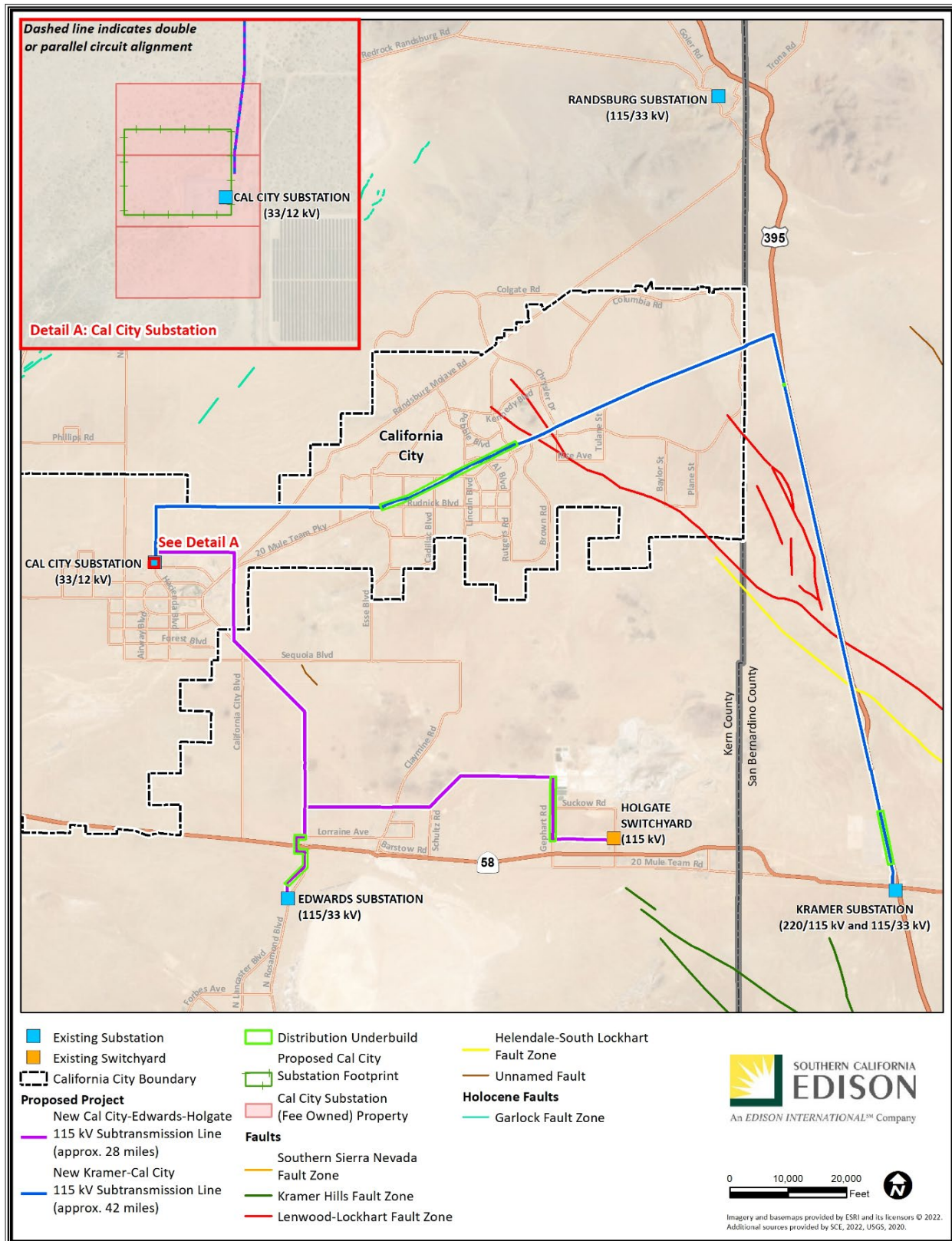
Moment Magnitude scale readings are slightly greater than a corresponding Richter scale reading for earthquakes with magnitudes greater than 7.0. Table 5.7-1 shows Maximum Moment Magnitude for faults within 10 miles of the Proposed Project.

Table 5.7-1 Faults Located within 10 Miles of Proposed Project

Fault Zone	Fault Name	Fault Type	Fault Section	Age of Last Know Slip	Slip Rate (mm/yr)	Maximum Monument Magnitude	Approximate Distance to Proposed Project Alignment (miles)	Nearest Proposed Project Component
Lenwood - Lockhart Fault	Lockhart fault	Right-lateral strike-slip	Lockhart section	Late Quaternary (0.5-1.0 million years)	0-1	7.3	Crosses Alignment	Kramer-Cal City
Helendale-South Lockhart fault zone	South Lockhart fault	Right-lateral strike-slip	South Lockhart section	Latest Quaternary (1.6 Million years)	0-1	7.0	Crosses Alignment	Kramer-Cal City
Garlock fault zone	Unnamed ground fractures	fault, certain	Western Garlock section	N/A	N/A	N/A	9 miles	Kramer-Cal City
Garlock fault zone	Garlock fault, South Branch	fault, certain	Western Garlock section	Holocene (last 11,000 years)	N/A	N/A	8 miles	Kramer-Cal City
Kramer Hills fault zone	Spring fault	Right-lateral strike-slip	None	Late Quaternary (0.5-1.0 million years)	0-1	N/A	6 miles	Kramer-Cal City
Kramer Hills fault zone	Kramer Hills fault	oblique right-lateral normal	None	Late Quaternary (0.5-1.0 million years)	0-1	N/A	3 miles	Kramer-Cal City

Source: USGS 2022a, DOC 2022a, City of California City 2009, DOC 2016, SCEDC 2022
N/A = not available, mm/yr = millimeters per year

Figure 5.7-1 Faults Located in the Vicinity of the Proposed Project



5.7.1.2.4 Liquefaction

Liquefaction occurs where strong ground motions produce a rise in pore-water pressures that in turn causes granular material to briefly lose strength and liquefy. This can lead to settlement, lateral spreading, and damage to structures, even in areas of flat topography. Ground motions can potentially trigger liquefaction in areas of unconsolidated granular sediment and shallow groundwater. The risk of liquefaction is highest in areas with high predicted ground motions, unconsolidated sediments, and shallow groundwater.

Parts of Kern County and San Bernardino County may be subject to liquefaction during seismic event due to high groundwater. The Proposed Project is not mapped within a known liquefaction zone on the California State Geoportal, CGS Seismic Hazards Program Liquefaction Zones map (California State Geoportal 2022).

5.7.1.2.5 Slope Instability

Landslides typically occur on moderate-to-steep slopes when masses of rock or earth move down a slope. Landslides can be caused by natural events (e.g., rainfall, earthquakes, and soil erosion) or human activities (e.g., grading) that can result in unstable fill slopes or excessive cuts. Important factors that affect slope stability include the steepness of the slope and the strength of rock or soil materials. Topography in the area consists of gently sloping alluvial plains with a series of steep rock buttes and several arroyos. No records of major historical landslides were found along the Proposed Project alignment. The closest historical landslide was approximately 45 miles to the northwest (DOC 2022b). Landslide susceptibility is shown on a scale of zero to 10, with zero representing land that has a very low susceptibility to landslides and 10 being land with the highest risk of landslides. Less than five percent of the total Proposed Project alignment would cross over land with a landslide susceptibility greater than five. Figure 5.7-2 shows the landslide susceptibility in the Proposed Project area.

5.7.1.2.6 Soil Erosion

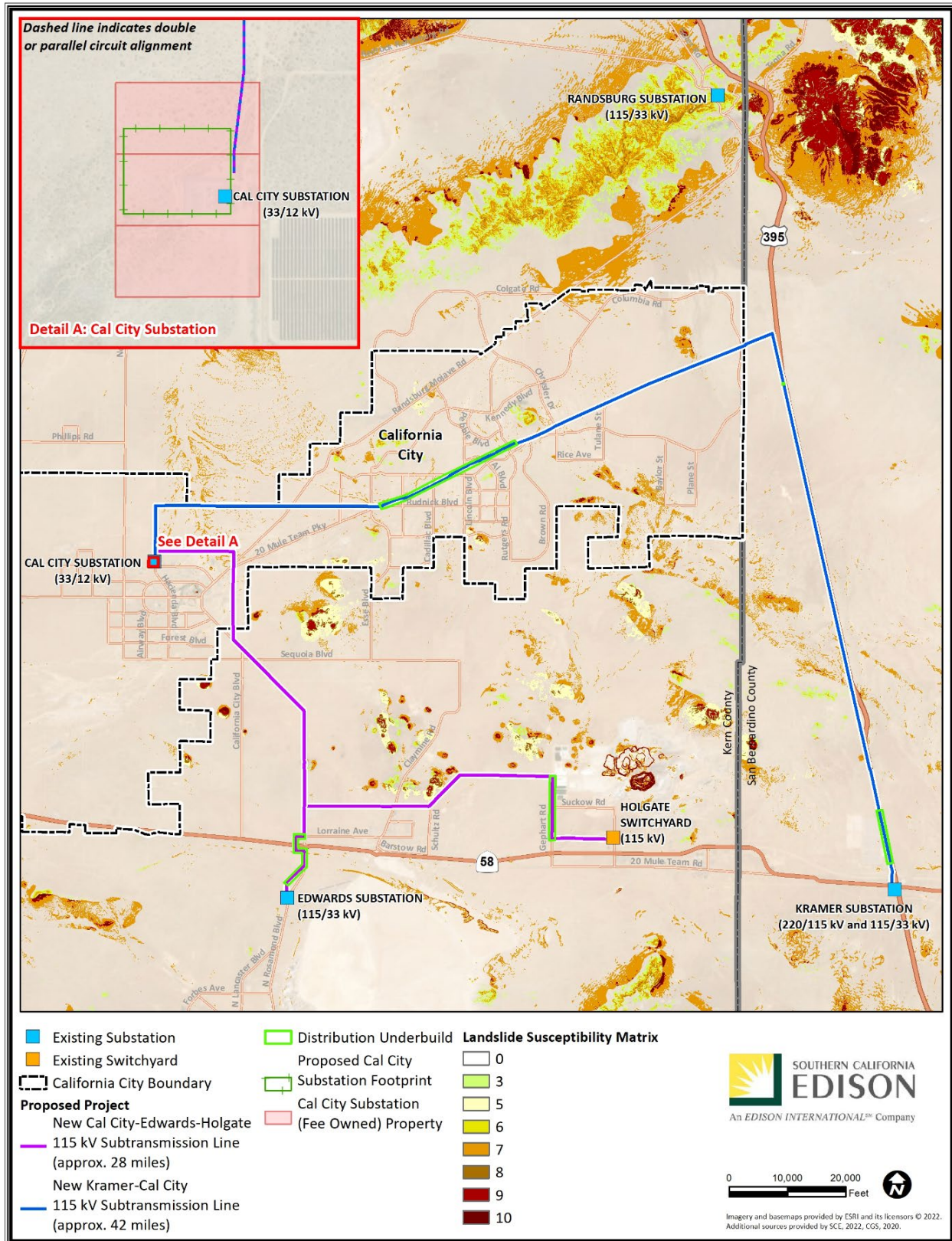
The USDA has developed a rating, known as the “erodibility factor” or “K-factor,” to evaluate the susceptibility of soils to erosion by water. The soil-erodibility factor (K) represents: (1) the susceptibility of soil or surface material to erosion, (2) the transportability of the sediment, and (3) the amount and rate of runoff given a particular rainfall input, as measured under a standard condition (SWRCB 2017). K-factor ratings are numbered 0.0 through 0.65, with 0.0 - 0.25 being considered low, 0.25 – 0.45 being moderate and 0.45 - 0.65 being high.

The soils along the Proposed Project alignment typically have low to moderate K-factor ratings and fall between 0.11 to 0.35.

Wind erosion is similarly most prevalent in silty and fine sandy soils with sparse vegetation. Dust storms associated with wind erosion are identified as a hazard in Kern County (Kern County 2012). Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion. Wind erodibility is rated on a scale of 0 to 310, with 0 being soils that are not susceptible to wind erosion due to coarse fragments or wetness and 310 being soils that are made up of very fine sand, fine sand, sand, or coarse sand that are highly susceptible to wind erosion (USDA 2002). Sands of different textures vary from 160 to 310 but are often found together, so it is assumed that soils made up of these groups will be somewhere within 160 to 310 range (USDA 2002).

Soils found along the Proposed Project alignment typically have medium to high wind erodibility ratings, with the majority of soils along the Proposed Project alignment having a wind erodibility rating of 86.

Figure 5.7-2 Landslide Susceptibility in the Vicinity of the Proposed Project



5.7.1.2.7 Collapsible Soils

Collapsible soils are defined by the USBR as any unsaturated soil that goes through a radical rearrangement of particles and great decrease in volume upon wetting, additional loading, or both (USBR 1992). Collapse occurs as water enters the pores between the individual sand and silt grains and weakens the “bonding” of the clays or other binding agents. Overburden or applied weight causes soil particles to slide across one another (shear), filling voids and resulting in a reduction in the overall volume of the soil (USDA 2004). Soils susceptible to collapse typically contain a large amount of void space, low bulk density, geologically young age, clay content of less than 30 percent, a large percentage of pore space, in the range of 40 to 60 percent. Local soils could be subject to collapse.

5.7.1.2.8 Expansive Soils

An expansive soil is any soil that is prone to large volume changes (shrinking and swelling) directly related to changing moisture conditions. The swelling capacity can cause heaving or lifting of structures whilst shrinkage can cause differential settlement. Linear extensibility percent is the linear expression of the volume difference of natural soil. The linear extensibility is considered to be higher in soils with high levels of clay, typically Hydrologic Group D (USDA 2022b). According to the Cal City Substation Geotechnical Report, soils at Cal City Substation are primarily granular with an expansion index of 7, which is considered very low (Geotechnical Solutions Inc. 2022; Appendix P). Linear extensibility percent has not been assessed in the remainder of the Proposed Project area, however there are soils classified as Hydrologic Group D throughout the Proposed Project area (see Table 5.7-2 in Section 5.7.1.4). Expansive soils could be present within the Proposed Project area.

5.7.1.2.9 Subsidence

Land subsidence is a type of ground failure that can be aggravated by ground shaking. It is most often caused by the withdrawal of large volumes of fluids from underground reservoirs, but it can also occur by the addition of surface water to certain types of soils. Subsidence has been previously recorded within San Bernardino County; however, no subsidence recordings within San Bernardino County have been reported in the vicinity of the Proposed Project. Kern County has four types of subsidence-prone areas, including tectonic subsidence, subsidence caused by the extraction of oil and gas, subsidence caused by withdrawal of groundwater, and subsidence caused by hydro-compaction of moisture (Kern County 2009). The Proposed Project is not located within these areas identified.

5.7.1.3 Geologic Units

The surficial geology of the region was mapped at a scale of 1:62,500 by Dibblee and Minch (2008a, b, c, d, e), who identified eight distinct geologic units underlying the Proposed Project:

- Quaternary young (Holocene) alluvium (Qa)
- Quaternary young (Holocene) loose sand (Qs)
- Quaternary young (Holocene) clay and silt (Qc)
- Quaternary young (Holocene) sand-covered clay and silt (Qcs)
- Quaternary old (Pleistocene) alluvium (Qoa)
- Miocene Saddleback Basalt (Tsb)
- Miocene Tropico Group (lower) granitic fanglomerate and sandstone (Tlf)
- Cretaceous or Jurassic quartz monzonite (qm)

Figure 5.7-3 shows the geologic units in the vicinity of the Proposed Project. Issues related to landslide risk are discussed above under Section 5.7.1.2.5 and issues related to soil instability and seismic hazards are discussed throughout Section 5.7.1.2.

5.7.1.4 Soils

The soil types occurring along the Proposed Project alignment, as mapped by the USDA Web Soil Survey (USDA 2022a), are listed in Table 5.7-2. The table also documents selected soil properties, including hydrologic group, wind erodibility, and slope percent. Maps of soils along the Proposed Project are included in Appendix K.

The hydrologic group classification is a measure of infiltration rate and runoff potential. Group A soils have the highest infiltration rates and lowest runoff potentials; they are typically coarse-grained and deep. Conversely, Group D soils have the lowest infiltration rates and highest runoff potential; they are typically fine-grained and shallow, or in areas with high water tables. Groups B and C are intermediate. Soils along the Proposed Project are classified as A, C, and D, with the most common of these being C.

Figure 5.7-3 Proposed Project Area Regional Geology

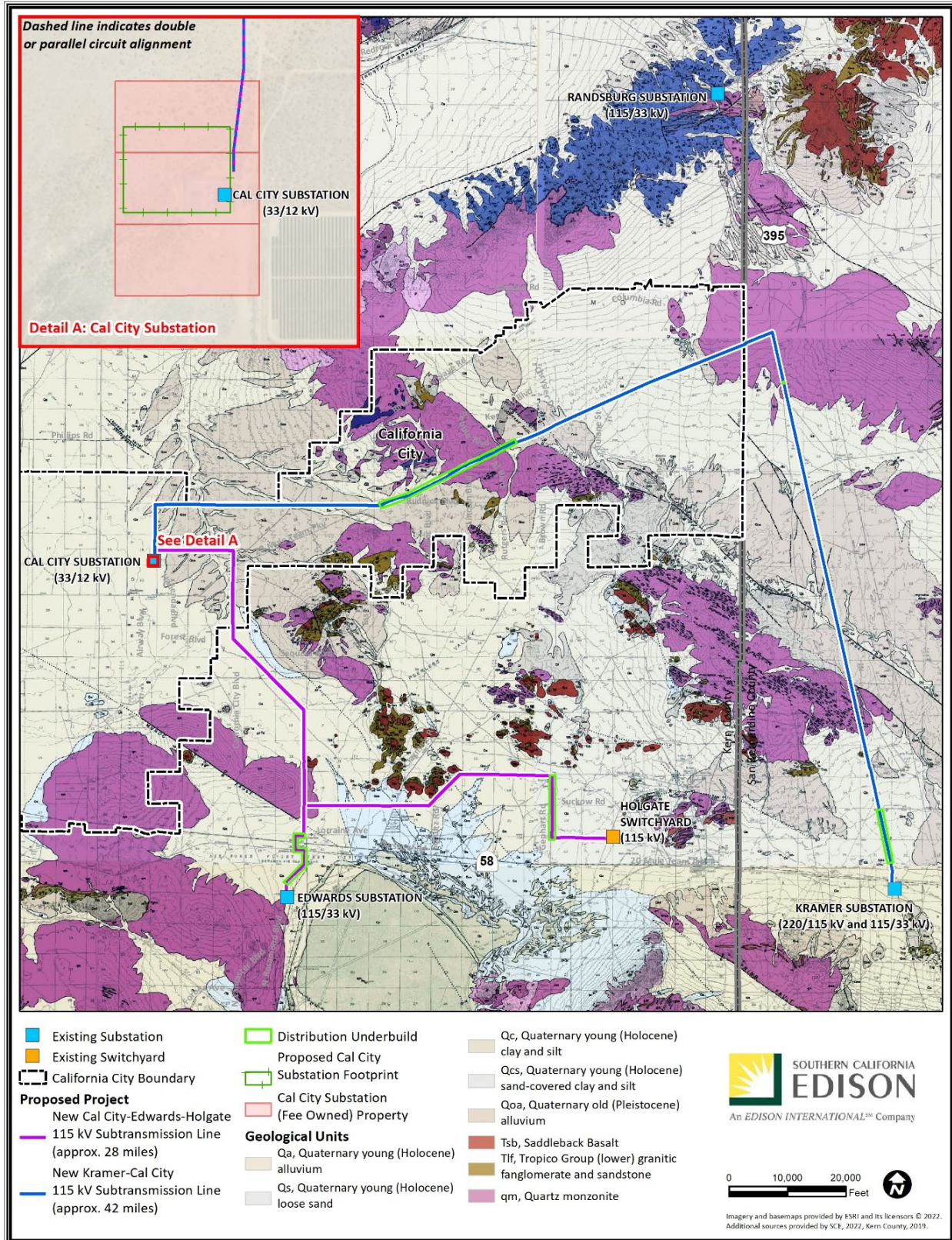


Table 5.7-2 Mapped Soil Units and Soil Properties

Alignment Map Unit Symbol	National Map Unit Symbol	Map Unit Name	Hydrologic Group	Wind Erodibility Index (T/Ac/Yr ¹)	Slope Percent	Stability Concerns ²
Kramer-Cal City 115 kV Subtransmission Line						
136	hhg8	Norob sandy loam	C	86	2-5	None
100	hkmf	Alko-Neuralia sandy loams	D	86	0-9	Potentially Expansive
104	hkmk	Arizo gravelly loamy sand	A	86	2-9	None
114	hkmw	Cajon loamy sand	A	86	0-5	None
151	hkp2	Muroc-Randsburg sandy loams	D	86	5-9	Potentially Expansive
154	hkp5	Neuralia sandy loam	C	86	2-5	None
167	hkpl	Randsburg sandy loam, 2 to 15 percent slopes	D	86	2-15	Potentially Expansive
185	hkq5	Torriorthents-Rock outcrop complex	None	0	50-75	None
113	hkmv	Cajon sand	A	160 - 310	5-15	Highly Erodible
137	hknm	Garlock loamy sand	C	86	2-9	None
Cal City-Edwards-Holgate 115 kV Subtransmission Line						
157	-	Pits	-	-	-	-
137	hhf3	Helendale loamy sand	A	134	0-2	None
100	hkmf	Alko-Neuralia sandy loams	D	86	0-9	None
114	hkmw	Cajon loamy sand	A	86	0-5	None
154	hkp5	Neuralia sandy loam	C	86	2-5	None
171	hkpq	Rosamond clay loam	C	86	0-2	None
137	hknm	Garlock loamy sand	C	86	2-9	None
116	hkmy	Cajon gravelly loamy sand	A	134	0-9	None
155	hkp6	Norob-Neuralia complex	C	160 - 310	0-5	Highly Erodible
167	hkpl	Randsburg sandy loam	D	86	2-15	Potentially Expansive
184	hkq4	Torrifluents-Cajon complex	A	134	0	None
185	hkq5	Torriorthents-Rock outcrop complex	None	0	50-75	None

USDA 2022a, NRCS 2002

¹ Mass in tons of soil moved per unit area (acre) per year² Stability concerns include soils that have properties prone to erosion, liquefaction, and differential settling

5.7.1.5 Paleontological Report

Paleontological resources, or fossils, are the evidence of once-living organisms preserved in the rock record. They include both the fossilized remains of ancient plants and animals and the traces thereof (e.g., trackways, imprints, burrows, etc.). Paleontological resources are not found in “soil” but are contained within the geologic deposits or bedrock that underlies the soil layer. Typically, fossils are greater than 5,000 years old (i.e., older than middle Holocene in age) and are typically preserved in sedimentary rocks. Although rare, fossils can also be preserved in volcanic rocks and low-grade metamorphic rocks under certain conditions (Society of Vertebrate Paleontology [SVP] 2010). Fossils occur in a non-continuous and often unpredictable distribution within some sedimentary units, and the potential for fossils to occur within sedimentary units depends on several factors. It is possible to evaluate the potential for geologic units to contain scientifically important paleontological resources, and therefore evaluate the potential for impacts to those resources and provide mitigation for paleontological resources if they are discovered during construction of a development project.

A Paleontological Resources Technical Report (PRTR) was prepared by Rincon Consultants, Inc. for the Proposed Project. The PRTR presents information on documented fossil collection localities within the Proposed Project area and a 300-foot buffer, a paleontological resource sensitivity analysis based on published geological mapping, and the resource sensitivity of each rock type with supporting detailed maps of the geologic units. Rincon Consultants, Inc. conducted a paleontological resources survey covering the majority of the Proposed Project area in support of the PRTR in November and December 2021. No paleontological resources were discovered during this survey. Subsequent to the original paleontological resources survey, additional project areas were added to the Proposed Project and an additional survey was conducted in January 2023. These newly added areas are underlain exclusively by geologic units that were already examined during the initial survey and no paleontological resources were discovered during the additional survey. A draft of the PRTR was submitted to the BLM in May 2022. Results from the surveys of the additional added areas of the Proposed Project were incorporated into an updated draft PRTR and resubmitted to the BLM. Once the PRTR has been reviewed and approved by BLM it will be provided to the CPUC. The following is a summary of the surficial geology and paleontological sensitivity of the geologic units within the Proposed Project area.

The surficial geology of the region was mapped at a scale of 1:62,500 by Dibblee and Minch (2008a, b, c, d, e), who identified 8 distinct geologic units underlying the Proposed Project, which are listed in Table 5.7-3. Paleontological sensitivity ratings of the geological formations were assigned based on the findings of the database and literature review, and on the potential effects to nonrenewable paleontological resources from Proposed Project construction following SVP (2010) guidelines.

Table 5.7-3 Geologic Units of Proposed Project Area

Geologic Unit	Rock Type	Paleontological Sensitivity (SVP 2010)
Quaternary young (Holocene) alluvium (Qa)	Alluvium	Low
Quaternary young (Holocene) loose sand (Qs)	Aeolian	Low
Quaternary young (Holocene) clay and silt (Qc)	Clay and Silt	Low
Quaternary young (Holocene) sand-covered clay and silt (Qcs)	Clay and Silt	Low
Quaternary old (Pleistocene) alluvium (Qoa)	Alluvium	High
Miocene Saddleback Basalt (Tsb)	Basalt	None
Miocene Tropico Group (lower) granitic fanglomerate and sandstone (Tlf)	Alluvium and Sandstone	High
Cretaceous or Jurassic quartz monzonite (qm)	Quartz Monzonite	None

A description of each unit found within the Proposed Project area is provided below.

5.7.1.5.1 Quaternary Young (Holocene) Alluvium (Qa)

Quaternary young (Holocene) alluvium makes up a significant part of the Project Area (Figure 5.7-3). Quaternary young (Holocene) alluvium consists of alluvial silt, sand, and gravel that is largely undeformed by tectonic activity and undissected by streams (Dibblee and Minch 2008a, b, c, d). Quaternary young alluvium is Holocene in age meaning that it is generally considered too young to preserve scientifically significant paleontological resources (SVP 2010). Quaternary young (Holocene) alluvium is assigned a low paleontological sensitivity. However, Holocene alluvium may grade into Pleistocene sediments, which are old enough to preserve scientifically paleontological resources, at unknown depths in the subsurface.

5.7.1.5.2 Quaternary Young (Holocene) Loose Sand (Qs)

Quaternary young (Holocene) loose sand is found in the southern part of the Project Area (Figure 5.7-3). Quaternary young (Holocene) loose sand consists of wind-blown sand that forms dunes or ground cover (Dibblee and Minch 2008c). Aeolian sediments have produced fossils in the Mojave Desert (Reynolds 2004), but Quaternary young (Holocene) loose sand is Holocene in age and generally considered too young to preserve scientifically significant paleontological resources (SVP 2010). Quaternary young (Holocene) loose sand is assigned a low paleontological sensitivity.

5.7.1.5.3 Quaternary Young (Holocene) Clay and Silt (Qc)

Quaternary young (Holocene) clay and silt is found in the southern part of the Project Area (Figure 5.7-3). Quaternary young (Holocene) clay and silt consists of clay and silt that represent mud flat or playa deposits (Dibblee and Minch 2008c). Quaternary young (Holocene) clay and silt surfaces may be flooded by playa lakes in times of heavy rainfall. Playa sediments are known to preserve fossils elsewhere in the Mojave Desert (Bell 2021, Jefferson 2003, 2010, PBDB 2021, UCMP 2021). However, Amoroso and Miller (2012) identify the area represented as Quaternary young (Holocene) clay and silt on the map of Dibblee and Minch (2008c) as an active playa meaning that it has been flooded within the past few decades; therefore, the surficial sediment is too young to preserve scientifically significant paleontological resources. Quaternary young (Holocene) clay and silt has low paleontological sensitivity.

5.7.1.5.4 Quaternary Young (Holocene) Sand-covered Clay and Silt (Qcs)

Quaternary young (Holocene) sand-covered clay and silt is found in the southern part of the Project Area (Figure 5.7-3). Quaternary young (Holocene) sand-covered clay and silt consists of clay and silt (that represent mud flat or playa deposits) that are partially covered with small piles of wind-blown sand (Dibblee and Minch 2008c). Amoroso and Miller (2012) identify much of the area mapped as Quaternary young (Holocene) sand-covered clay and silt in Figure 5.7-3 as ‘young playa fringe deposits.’ These authors argue that these surfaces represent shoreline deposits and dunes associated with playas that have not flooded within the past few centuries. Aeolian and playa shoreline deposits have produced fossils within the Mojave Desert (Jefferson 2003, PBDB 2021, Reynolds 2004, UCMP 2021), but Quaternary young (Holocene) sand-covered clay and silt is considered Holocene in age, which is too young to preserve scientifically significant paleontological resources. Quaternary young (Holocene) sand-covered clay and silt has low paleontological sensitivity.

5.7.1.5.5 Quaternary Old (Pleistocene) Alluvium (Qoa)

Quaternary old (Pleistocene) alluvium covers large sections of the Project Area (Figure 5.7-3). Quaternary old (Pleistocene) alluvium consists of poorly bedded alluvial gravel, sand, and silt that is primarily composed of granitic and volcanic clasts (Dibblee and Minch 2008a, b, c, d). Pleistocene alluvial deposits have produced vertebrate fossils throughout California including in the Mojave Desert and in Kern and San Bernardino Counties (Jefferson 2010, PBDB 2021, UCMP 2021). Quaternary old (Pleistocene) alluvium has high paleontological sensitivity.

5.7.1.5.6 Saddleback Basalt (Tsb)

The Saddleback Basalt comprises several small hills in and near the Project Area (Figure 5.7-3) and represents a Pliocene (possibly late Miocene) lava flow that is associated with the Tropico Group which includes many Cenozoic sedimentary and igneous units in the western Mojave Desert (Dibblee and Minch 2008c). The Saddleback Basalt is black, massive, and fine-grained. When weathered, Saddleback Basalt appears brownish black or maroon. Basalt forms by the cooling and solidifying of lava on Earth's surface, a process which would have destroyed any biological remains and not preserved them as fossils. Therefore, the Saddleback Basalt has no paleontological sensitivity.

5.7.1.5.7 Tropico Group (lower) Granitic Fanglomerate and Sandstone (Tlf)

The Tropico Group is a series of Cenozoic sedimentary and igneous rocks in the western Mojave Desert. Part of the Tropico Group consisting granitic fanglomerate and sandstone are found in the southeastern part of the Project Area (Figure 5.7-3). Tropico Group (lower) granitic fanglomerate and sandstone consists of gray, massive or poorly bedded, subrounded granitic clasts up to three feet in diameter (Dibblee and Minch 2008d). These clasts are embedded in a friable to hard arkosic sandstone. The NHMLA (Bell 2021) and UCMP (2021) contain records of significant vertebrate fossils from the Tropico Group, but neither specifies the lithology in which those fossils were found. Fanglomerates and sandstone have the potential to preserve fossils, so it is possible that Tropico Group (lower) granitic fanglomerate and sandstone may be fossiliferous. Tropico Group (lower) granitic fanglomerate and sandstone has high paleontological sensitivity.

5.7.1.5.8 Quartz monzonite (qm)

Quartz monzonite covers large portions of the Project Area (Figure 5.7-3). This plutonic rock is gray-white, massive, and medium to coarse-grained. It is composed largely of quartz, alkali feldspar, and plagioclase (Dibblee and Minch 2008a, b, c, d). Much of the alluvial sediments in the Project Area (Quaternary young (Holocene) alluvium, Quaternary old (Pleistocene) alluvium) derive from the composition of quartz monzonite. Within these areas of quartz monzonite, there are pegmatite dikes that are up to 10 feet wide, white, and very coarse-grained. Quartz monzonite is a plutonic rock meaning that it forms by the cooling of magma beneath Earth's surface. These conditions are not conducive to the preservation of fossils. Quartz monzonite has no paleontological sensitivity.

5.7.2 Regulatory Setting

Federal, state, and local regulations were reviewed for applicability to the Proposed Project.

5.7.2.1 Federal

5.7.2.1.1 National Earthquake Hazards Reduction Act of 1977

The National Earthquake Hazards Reduction Act of 1977 (Public Law 95-124) created the National Earthquake Hazards Reduction Program (NEHRP), establishing a long-term earthquake risk reduction program to better understand, predict, and mitigate risks associated with seismic events. Four federal agencies are responsible for coordinating activities under NEHRP: USGS; National Science Foundation (NSF); Federal Emergency Management Agency (FEMA); and National Institute of Standards and Technology (NIST). Since its inception, NEHRP has shifted its focus from earthquake prediction to hazard reduction. The current program objectives (FEMA 2021) are as follows:

Improve understanding of earthquake processes and impacts;

Develop cost-effective measures to reduce earthquake impacts on individuals, the built environment, and society-at-large; and

Improve the earthquake resilience of communities nationwide.

Implementation of NEHRP objectives is accomplished primarily through original research, publications, and recommendations and guidelines for state, regional, and local agencies in the development of plans and policies to promote safety and emergency planning.

5.7.2.1.2 Federal Land Policy and Management Act of 1976

The Federal Land Policy and Management Act (FLPMA) (43 USC 1701-1782) requires that public lands be managed in a manner that will protect the quality of their scientific values. Specifically, FLPMA was established as a public land policy to “provide for the management, protection, development, and enhancement of the public lands.” FLPMA requires federal agencies to manage public lands so that environmental, historic, archeological, and scientific resources are preserved and protected, where appropriate. Though FLPMA does not refer specifically to fossils, the law does protect scientific resources such as significant fossils, including vertebrate remains. FLPMA regulates the “use and development of public lands and resources through easements, licenses, and permits.” The law requires the public lands to be inventoried so that the data can be used to make informed land-use decisions, and requires permits for the use, occupancy, and development of the certain public lands, including the collection of significant fossils for scientific purposes (43 USC 1701 section 102, 302 [U.S. Department of the Interior et al. 2001]).

5.7.2.1.3 CFR Title 43

Under Title 43, CFR section 8365.1–5, the collection of scientific and paleontological resources, including vertebrate fossils, on federal land is prohibited. The collection of a “reasonable amount” of common invertebrate or plant fossils for noncommercial purposes is permissible (43 CFR 8365.1–5 [U.S. Government Printing Office 2014]). Archaeological and Paleontological Salvage (23 USC 305)

Statute 23 USC 305 amends the Antiquities Act of 1906. Specifically, it states:

“Funds authorized to be appropriated to carry out this title to the extent approved as necessary, by the highway department of any State, may be used for archaeological and paleontological salvage in that state in compliance with the Act entitled ‘An Act for the preservation of American Antiquities,’ approved June 8, 1906 (PL 59-209; 16 USC 431-433), and State laws where applicable.”

This statute allows funding for mitigation of paleontological resources recovered pursuant to federal aid highway projects, provided that "excavated objects and information are to be used for public purposes without private gain to any individual or organization" (Federal Register [FR] 46(19): 9570).

5.7.2.1.4 Paleontological Resources Preservation Act of 2009

The Paleontological Resources Preservation Act (PRPA) is part of the Omnibus Public Land Management Act of 2009 (PL 111-011 Subtitle D). This act directs the Secretary of the Interior or the Secretary of Agriculture to manage and protect paleontological resources on federal land and to develop plans for inventorying, monitoring, and deriving the scientific and educational use of such resources. It prohibits the removal of paleontological resources from federal land without a permit issued under this act, establishes penalties for violation of this act, and creates a program to increase public awareness about these resources. A paleontological resource use permit is required to collect paleontological resources of scientific interest. The act requires that paleontological resources collected under a permit remain United States property, preserved for the public in an approved repository, and available for scientific research and public education. The act also requires that the nature and location of paleontological resources on public lands remain confidential as a means of protecting the resources from theft and vandalism. Section 6301 of the PRPA and Departmental Proposed Rule at 43 CFR Part 49 define a paleontological resource as:

“Any fossilized remains, traces, or imprints of organisms, preserved in or on the earth’s crust, that are of paleontological interest and that provide information about the history of life on earth, except that the term does not include— (A) any materials associated with an archaeological resource... (B) any cultural item... (3) Resources determined in writing by the authorized officer to lack paleontological interest or not provide information about the history of life on earth, based on scientific and other management considerations.”

Consistent with the definition of a paleontological resource under the PRPA, those paleontological resources that lack scientific interest (e.g., resources that are ubiquitous or do not provide information about the history of life on earth) are considered scientifically non-significant fossils.

5.7.2.1.5 Omnibus Public Lands Act

The Omnibus Public Lands Act (OPLA) directs the Secretaries of Interior and Agriculture to manage and protect paleontological resources on federal land using “scientific principles and expertise.” OPLA incorporates most of the recommendations of the report of the Secretary of the Interior titled “Assessment of Fossil Management on Federal and Indian Lands” (2000) to formulate a consistent paleontological resources management framework. In passing the OPLA, Congress officially recognized the scientific importance of paleontological resources on some federal lands by declaring that fossils from these lands are federal property that must be preserved and protected. Title VI, Subtitle D on Paleontological Resources Preservation (OPLA-PRP) codifies existing policies of federal agencies and provides the following:

- Uniform criminal and civil penalties for illegal sale and transport, and theft and vandalism of fossils from federal lands;
- Uniform minimum requirements for paleontological resource-use permit issuance (terms, conditions, and qualifications of applicants);
- Uniform definitions for “paleontological resources” and “casual collecting”; and
- Uniform requirements for curation of federal fossils in approved repositories.

Federal legislative protections for scientifically significant fossils applies to projects that take place on federal lands (with certain exceptions such as the Department of Defense), involve federal funding, require a federal permit, or involve crossing state lines. Since a portion of the Proposed Project area occurs on federal agency-managed lands, federal protections for paleontological resources for those areas apply under NEPA, FLPMA, and OPLA-PRP. All paleontological work on federal agency lands must be approved and coordinated by the federal agency. All fossils collected from federal agency lands must be housed in a federally approved paleontological repository. The paleontological repository would be determined following lead agency coordination and the issuance of applicable permits for the Proposed Project.

5.7.2.2 State

5.7.2.2.1 California Building Code

The Proposed Project is subject to the applicable sections of Title 24, Part 2 of the California Building Code (CBC), which is administered by the California Building Standards Commission. Under state law, all building standards must be centralized in Title 24 to be enforceable. The CBC contains necessary California amendments, which are based on American Society of Civil Engineers/Structural Engineering Institute (ASCE/SEI) Standards. The ASCE/SEI Standard provides requirements for general structural design and includes means for determining earthquake loads, as well as other loads for inclusion into building codes. The earthquake design requirements take into account the occupancy category of the structure, site class, soil classifications, and various seismic coefficients, which are used to determine a seismic design category (SDC) for a project. Once a project is categorized according to an SDC, design specifications can be determined. The provisions of the CBC apply to the construction, alteration, movement, replacement, and demolition of every building or structure—or any appurtenances connected or attached to such buildings or structures—throughout California.

5.7.2.2.2 Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was enacted by the state in 1972 to mitigate the hazards of surface faulting on structures planned for human occupancy and other critical structures. The state has established regulatory zones, known as earthquake fault zones, around the surface traces of active faults. Earthquake fault zone maps have been issued for use by government agencies to plan and review new construction projects. In addition to residential projects, structures planned for human occupancy that are associated with industrial and commercial projects are also a concern near the Alquist-Priolo earthquake fault zones.

5.7.2.2.3 California Public Utilities Commission General Order 95

California Public Utilities Commission (CPUC) General Order (G.O.) 95 Rules for Overhead Line Construction provides general standards for the design and construction of overhead electric transmission lines.

5.7.2.2.4 California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires that public agencies and private interests identify the potential environmental consequences of their projects on any object or site of significance to the scientific annals of California (Division I, California Public Resources Code [PRC] section 5020.1 [b]). Appendix G of the CEQA Guidelines provides an Environmental Checklist of questions that includes the following: “Would the project directly or indirectly destroy a unique paleontological resource or site?”

CEQA does not define “a unique paleontological resource or site.” However, the Society of Vertebrate Paleontology (SVP) has provided guidance specifically designed to support state and federal environmental review. The SVP broadly defines significant paleontological resources as follows (SVP 2010, page 11):

“Fossils and fossiliferous deposits consisting of identifiable vertebrate fossils, large or small, uncommon invertebrate, plant, and trace fossils, and other data that provide taphonomic, taxonomic, phylogenetic, paleoecologic, stratigraphic, and/or biochronologic information. Paleontological resources are considered to be older than recorded human history and/or older than middle Holocene (i.e., older than about 5,000 radiocarbon years).”

Significant paleontological resources are determined to be fossils or assemblages of fossils that are unique, unusual, rare, diagnostically important, or are common but have the potential to provide valuable scientific information for evaluating evolutionary patterns and processes, or which could improve our understanding of paleochronology, paleoecology, or depositional histories. New or unique specimens can provide new insights into evolutionary history; however, additional specimens of even well represented lineages can be equally important for studying evolutionary pattern and process, and evolutionary rates. Even unidentifiable material can provide useful data for dating geologic units if radiocarbon dating is possible. As such, common fossils (especially vertebrates) may be scientifically important, and therefore considered significant.

5.7.2.2.5 Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 (California PRC, Chapter 7.8, §2690-2699.6) directs the CGS to identify and map areas prone to liquefaction, earthquake induced landslides, and amplified ground shaking. The purpose of this program is to minimize the loss of life and property through the identification, evaluation, and mitigation of seismic hazards. Seismic Hazard Zone Maps that identify Zones of Required Investigation have been generated as a result of the program. Counties and cities are then required to use the Seismic Hazard Zone Maps in their land use planning and building permit processes. The Proposed Project is in an area that has not yet been mapped as part of the Seismic Hazards Mapping Act

5.7.2.2.6 California Public Resources Code (PRC) Section 5097.5

Section 5097.5 of the PRC states:

“No person shall knowingly and willfully excavate upon, or remove, destroy, injure, or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological, or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor.”

As used in this PRC section, “public lands” means lands owned by, or under the jurisdiction of, the state or any city, county, district, authority, or public corporation, or any agency thereof. Consequently, public agencies are required to comply with PRC 5097.5 for their own activities, including construction and maintenance, as well as for permit actions (e.g., encroachment permits) undertaken by others.

5.7.2.3 Local

The California Public Utilities Commission (CPUC) has sole and exclusive state jurisdiction over the siting and design of the Proposed Project. Pursuant to CPUC General Order (G.O.) 131-D, Section XIV.B:

“Local jurisdictions acting pursuant to local authority are preempted from regulating electric power line projects, distribution lines, substations, or electric facilities constructed by public utilities subject to the CPUC’s jurisdiction. However, in locating such projects, the public utilities shall consult with local agencies regarding land use matters.”

Consequently, public utilities are directed to consider local regulations and consult with local agencies, but the counties’ and city’s regulations are not applicable as the counties and city do not have jurisdiction over the Proposed Project. Accordingly, the following discussion of local land use regulations is provided for informational purposes only.

5.7.2.3.1 Kern County Municipal Code

Kern County Municipal Code section 17.28 sets forth guidance and regulations for grading and including rules and regulations to control excavation, grading and earthwork construction, including fills and embankments; establishes the administrative procedure for issuance of permits; and provides for approval of plans and inspection of grading construction. Under section 17.28.040 - Permits required, it is stated that no person shall do any grading or cause the same to be done without first having obtained a grading permit from the building official, unless specified as exempt. Excavations for utilities is considered exempt under section 17.28.040.

5.7.2.3.2 Kern County General Plan

The Land Use, Open Space, and Conservation Element of the Kern County General Plan contains the following goals and policies related to paleontological resources:

Section 1.10 General Provisions

Policy 25 The County will promote the preservation of cultural and historic resources which provide ties with the past and constitute a heritage value to residents and visitors.

Implementation Measure M of Section 1.10.3 states, “In areas of known paleontological resources, the County should address the preservation of these resources where feasible.”

The Safety Element of the Kern County General Plan contains the following goals and policies related to Geology and Soils:

Section 4.3

Policy 1 The County shall require development for human occupancy to be placed in a location away from an active earthquake fault in order to minimize safety concerns.

Section 4.5

Policy 1 Determine the liquefaction potential at sites in areas of shallow groundwater (Map Code 2.3) prior to discretionary development and determine specific mitigation to be incorporated into the foundation design, as necessary, to prevent or reduce damage from liquefaction in an earthquake.

Policy 2 Route major lifeline installations around potential areas of liquefaction or otherwise protect them against significant damage from liquefaction in an earthquake.

- Policy 3 Reduce potential for exposure of residential, commercial, and industrial development to hazards of landslide, land subsidence, liquefaction, and erosion.

5.7.2.3.3 San Bernardino County Municipal Code

San Bernardino County Municipal Code section 88.02 establishes uniform standards and processes for regulating development that disturbs the surface of lands with the intent of ensuring the conservation of soil, water, and other valuable natural resources, reducing erosion and maintain soil productivity, maintaining healthy environments and air quality, and guiding the planning and evaluation of proposed development. Under section 88.02.030 - Exempt Activities, it is stated that road construction and maintenance as well as installation of utilities in compliance with plans and procedures approved by the Director of Public Works; provided that adequate measures, consistent with the intent of this Chapter, have been taken to control erosion and the flow of sediment into lakes, streams, and drainage courses are exempt.

5.7.2.3.4 San Bernardino Countywide Policy Plan

The San Bernardino Countywide Policy Plan Hazards Element contains the following goal and policy related to Geology and Soils:

GOAL HZ-1 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 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. (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.

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 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.

The San Bernardino Countywide Policy Plan Cultural Resources Element contains the following goal and policy related to Paleontological 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-2.3 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.

5.7.2.3.5 City of California City General Plan

The City of California City General Plan contains the following goals and policies related to Geology and Soils:

GOALS Protect the health, safety, and welfare of the community from hazards related to seismic activity.

Minimize serious physical damage from geologic and seismic hazards to structures used for human occupancy and to critical facilities and structures where large numbers of people congregate.

Insure the continuity of vital services, functions, and facilities after a seismic event.

Policies Development shall be prohibited in areas where measures to correct identified geologic or seismic hazard are not feasible.

Structures designated for command control of emergency/disaster services shall be designed to withstand a “maximum probable seismic event” and to remain operational after a seismic event.

Structures utilized for emergency services, schools and future hospitals shall be designed to protect human life to the highest degree possible during a “maximum probable seismic event.”

Update building regulations and City Municipal Code requirements to prevent the community from being adversely affected by significant seismic disturbances.

Minimize the potential damage to structures and loss of life that could result from earthquakes.

Safety measures required by the Uniform Building Code for Seismic Zone 4 for construction of new buildings are hereby incorporated by reference.

5.7.3 Impact Questions

5.7.3.1 *Geology, Soils, and Paleontological Resources Impact Questions*

The thresholds of significance for assessing impacts come from the CEQA Environmental Checklist. For geology, soils, and paleontological resources, the CEQA Checklist asks, would the project:

- Directly or indirectly cause potential substantial adverse effects, including the risk of loss, or injury, or death involving: 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.); strong seismic ground shaking; seismic-related ground failure, including liquefaction; and landslides?
- Result in substantial soil erosion or the loss of topsoil?
- Be located on a geologic unit 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?
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?
- 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?
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

5.7.3.2 Additional CEQA Questions

There are no CPUC-identified additional CEQA impact questions.

5.7.4 Impact Analysis

5.7.4.1 Geology, Soils, and Paleontological Resources Methodology

Geology and soils impacts were evaluated based upon a desktop review of the NRCS Soil Survey Geographic Database and Web Soil Survey databases, SWRCB RUSLE K-Values publications, and online resources from the California DOC, USBR, USDA, USGS, and local planning documents to evaluate the potential for the Proposed Project to be subject to geologic and soil hazards. Results from a geotechnical investigation covering the Cal City Substation portion of the Proposed Project are also discussed; the Cal City Substation Geotechnical Report is included as Appendix P.

Impacts to paleontological resources were evaluated based on a desktop review of each geologic unit underlying the Proposed Project area. In addition, Rincon Consultants, Inc. conducted a paleontological resources survey and prepared a PRTR for the Proposed Project. A draft of the PRTR was submitted to the BLM in May 2022. Results from the upcoming surveys of the recently added areas of the Proposed Project will be incorporated into an updated draft PRTR and resubmitted to the BLM.

5.7.4.2 Geology, Soils, and Paleontological Resources Impact Analysis

5.7.4.2.1 Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: 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); strong seismic ground shaking; seismic-related ground failure, including liquefaction; and landslides?

Construction

Less than Significant Impact. The Proposed Project is not within a mapped Alquist-Priolo Earthquake Fault Zone or Division of Mines and Geology Special Publication 42. The new Kramer-Cal City 115 kV Subtransmission Line would cross the South Lockhart fault and is within the Helendale-South Lockhart fault zone and the Lenwood-Lockhart fault zone (DOC 2015). Both of these faults are Late Quaternary aged faults, meaning that they have demonstrated activity within the Late Quaternary period (i.e., approximately the past 1.6 million years). Quaternary aged faults are considered to have a relatively low potential for surface rupture. However, the active Garlock Fault is located approximately eight miles to the northwest of the Proposed Project alignment and the San Andreas Fault is located approximately 38 miles to the southwest. Given the nature of the Proposed Project, structures may be located by the previously mentioned faults but would not introduce habitable structures and, as such, would not pose substantial risk of loss, injury, or death as a result of potential fault rupture.

As the Proposed Project is located in an area with faults, it is susceptible to earthquake forces and seismic shaking. However, based on Map Sheet 48: Earthquake Shaking Potential for California (DOC 2016), the Proposed Project alignment is within an area classified as experiencing lower levels of shaking less frequently, in comparison to other areas of California. Furthermore, the subtransmission infrastructure involved would not be used for human occupancy and would be designed to be consistent with CPUC G.O. 95, which ensures adequate service and safety of persons engaged in the construction, maintenance, operation, or use of overhead electrical lines and to the public in general.

As a result, the Proposed Project would be able to withstand reasonably foreseeable seismic events. Incorporation of these standard engineering practices would ensure that people or structures would not be exposed to hazards associated with strong seismic ground shaking and impacts would be less than significant.

The Proposed Project is not mapped within a known liquefaction zone on the California State Geoportal, CGS Seismic Hazards Program Liquefaction Zones map (California State Geoportal 2022), and soils underlying Cal City Substation were determined to have no potential for liquefaction (Geotechnical Solutions Inc. 2022; Appendix P). However, soils elsewhere in the Proposed Project area could be subject to liquefaction.

Topography in the area consists of gently sloping alluvial plains with a series of steep rock buttes and several arroyos. As previously discussed, no records of major historical landslides were found along the Proposed Project alignment (DOC 2022b). As previously discussed in this section, the risks of landslides and other slope-related concerns are low to absent, as the Proposed Project alignment traverses relatively flat topography. Figure 5.7-2 shows landslide susceptibility on a scale of zero to 10, with zero representing land that has a very low susceptibility to landslides and 10 being land with the highest risk of landslides.

Less than five percent of the total Proposed Project alignment would cross over land with a landslide susceptibility greater than five. The risks of landslides and other slope-related concerns are low to absent, as the alignment would run across the relatively flat topography. Therefore, construction impacts related to landslides would be less than significant.

Furthermore, the Proposed Project would implement all recommendations from project-specific geotechnical investigation reports, which have been or will be prepared for the Proposed Project. Additionally, the Proposed Project would be designed to be consistent with design and engineering standards contained in CPUC G.O. 95. Overall, construction impacts related to rupture of a known earthquake fault, strong seismic ground shaking, seismic related-ground failure, liquefaction, and landslides would be less than significant.

Operation

Less Than Significant Impact. As presented in Chapter 3, the Proposed Project includes constructing subtransmission lines between existing substations in the vicinity of City of California City, EAFB, and U.S. 395 where many overhead power lines currently exist. Operation and maintenance (O&M) activities associated with the Proposed Project would be similar to those currently performed by SCE for existing facilities, including, but not limited to, repairing conductors, washing or replacing insulators, repairing or replacing other hardware components, repairing or replacing poles and towers, tree trimming, brush and weed control, and access road maintenance. O&M would also include routine inspections and emergency repair within substations and throughout rights-of-way (ROWs), which would require the use of vehicles and equipment. SCE inspects subtransmission overhead facilities in a manner consistent with CPUC G.O. 165, which requires observation a minimum of once per year, but inspection typically occurs more frequently to ensure system reliability. Following construction of the Proposed Project, O&M activities would consist of monthly and annual inspections, as well as equipment testing and maintenance for new and expanded facilities. SCE currently performs O&M activities for the existing substations and their associated source lines and infrastructure. While it is likely that the Proposed Project would result in a nominal increase in O&M activities, such as increased maintenance and inspection trips, O&M activities would not involve substantial ground disturbance or installation of new features that would expose people or structures to seismic hazards. As a result, impacts would be less than significant.

5.7.4.2.2 Would the project result in substantial soil erosion or the loss of topsoil?

Construction

Less Than Significant Impact. As described in Section 3.5.4.6, grading is anticipated along new access roads, at proposed O&M structure pads, and at the Cal City Substation. Detailed grading quantities for these Proposed Project components are summarized in Table 3-8 in Chapter 3, Proposed Project Description. Site preparation currently anticipated by the Proposed Project for staging areas and structure work areas is expected to include minor grading and/or grubbing as needed to provide a reasonably level and vegetation-free surface. All soil is anticipated to be balanced on-site. Given the relatively flat topography along most of the Proposed Project alignment, the Proposed Project is not anticipated to involve substantial amounts of grading or soil movement that would cause a substantial loss of topsoil. Ground-disturbing activities would expose soil to erosion by removing the vegetative cover and potentially compromising the soil structure. Rain and wind may potentially further detach soil particles and transport them off-site. SCE would apply for coverage under a General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, Order 2009-0009-DWQ as amended by Order 2010-0014-DWQ and any following versions applicable at the time of construction. This general permit requires submittal of a Notice

of Intent, preparation of project-specific stormwater pollution prevention plans (SWPPPs), and implementation of site-specific Best Management Practices (BMPs) to address material management, non-stormwater discharge, sediment discharge, and erosion control. Information based on the soil type, slope, and other on-site characteristics would be used to develop appropriate BMPs to ensure that erosion and sedimentation would be controlled during construction of the Proposed Project. As described in Section 5.10, Hydrology and Water Quality, SCE would comply with state stormwater regulations and the terms of ministerial grading permits from county jurisdictions (if such permits are necessary) to minimize soil erosion and resulting impacts on water quality.

With implementation of the SWPPP, which would include BMPs to control erosion and prevent off-site sedimentation, substantial soil erosion is not anticipated to occur. Impacts during construction would be less than significant.

Operation

No Impact. As previously described, O&M activities associated with the Proposed Project would be similar to those currently performed by SCE for existing substations and their associated lines and infrastructure. The Proposed Project would result in a nominal increase in O&M activities, such as increased maintenance and inspection trips. However, O&M activities would not result in substantial ground disturbing activities and would therefore not result in soil erosion or the loss of topsoil. No impact would occur.

5.7.4.2.3 Would the project be located on a geologic unit 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?

Construction

Less than Significant Impact. The Proposed Project would not cause any geologic unit or soil to become unstable. The Proposed Project would be located primarily on flat to gentle terrain that is not prone to landslides, as shown in Figure 5.7-2. Further, the construction activities would not affect the geologic unit, and thus potential effects from on- or off-site landslide are less than significant.

Ground subsidence related to decreasing groundwater levels have been observed in San Bernardino County; however, no subsidence recordings within San Bernardino County have been reported in the vicinity of the Proposed Project. Furthermore, the Proposed Project is not located within any subsidence-prone areas identified in the Kern County General Plan. The Proposed Project would not entail extensive dewatering, or extraction of oil and gas and thus would not result in subsidence.

Soils subject to collapse, liquefaction and lateral spreading may be locally present, therefore, the Proposed Project would implement all recommendations from project-specific geotechnical investigation reports. Additionally, the Proposed Project would be designed to be consistent with design and engineering standards contained in CPUC G.O. 95. Impacts associated with the risk of landslides, lateral spreading, subsidence, liquefaction, and collapse would be less than significant as geotechnical report recommendations would be incorporated into Proposed Project design.

Operation

No Impact. As previously described, O&M activities associated with the Proposed Project would be similar to those currently performed by SCE for existing substations and their associated lines and infrastructure. The Proposed Project would result in a nominal increase in O&M activities, such as increased maintenance

and inspection trips. However, these O&M activities would not involve ground disturbance or installation of features that would cause unstable soils or result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. No impact would occur.

5.7.4.2.4 Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

Construction

Less than Significant Impact. According to the Cal City Substation Geotechnical Report, soils at Cal City Substation are primarily granular with an expansion index of 7, which is considered “very low.” As such, mitigation of expansive soils at Cal City Substation is not anticipated (Geotechnical Solutions Inc. 2022; Appendix P). Some soil types along the Proposed Project’s subtransmission line alignments include those that could potentially be considered expansive, as they are classified as Hydrologic Group D. However, expansive soils along the proposed subtransmission lines are unlikely to pose a geotechnical problem because existing and new poles/structures would be direct buried to depths of 6 to 10 or buried with foundation depths of 20 to 50 feet (depending on pole type and location). Thus, the foundations structures for the Proposed Project would be buried below the shallow expansive soil and not be located on expansive soil, as defined in the Uniform Building Code (1994) as amended in the California Building Code (2013), creating substantial risks to life or property. Furthermore, the Proposed Project would implement all recommendations from project-specific geotechnical investigation reports. Therefore, this impact would be less than significant.

Operation

No Impact. As previously described, O&M activities associated with the Proposed Project would be similar to those currently performed by SCE for existing substations and their associated lines and infrastructure. The Proposed Project would result in a nominal increase in O&M activities, such as increased maintenance and inspection trips. However, O&M activities themselves do not involve substantial ground disturbance or installation of new features that would create risks to life or property related to expansive soils. No impact would occur.

5.7.4.2.5 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 wastewater?

Construction

No Impact. Construction of the Proposed Project would not involve use of a septic tank or alternative wastewater disposal system. Wastewater generated at portable toilets during construction would be disposed of off-site at appropriate facilities. No impact would occur.

Operation

No Impact. The Proposed Project does not include operation of a septic tank or alternative wastewater disposal system. No impact would occur.

5.7.4.2.6 Would the project directly or indirectly destroy a unique paleontological resource or site or unique geological feature?

Construction

Less Than Significant Impact with Mitigation. The general plans of the City of California City (2009), Kern County (2009), and San Bernardino County (2020), do not identify any unique geological features within the Proposed Project area. The Proposed Project alignment is generally flat and lacking features that could be considered unique geologic features. Therefore, the Proposed Project will have no significant impacts on unique geological features.

Ground disturbing construction activity in units of low or no paleontological sensitivity (i.e., Mesozoic quartz monzonite, Miocene Saddleback Basalt, Quaternary young [Holocene] alluvium, Quaternary young [Holocene] loose sand, Quaternary young [Holocene] clay and silt, and Quaternary young [Holocene] sand-covered clay and silt) are not expected to result in impacts to paleontological resources. A paleontological records search from the Natural History Museum of Los Angeles County uncovered no known fossil localities within the Proposed Project area (Bell 2021).

Construction related ground disturbing activity within geologic units of high paleontological sensitivity (i.e., Quaternary old [Pleistocene] alluvium, or Pliocene¹ sandstone and granitic fanglomerate of the Tropico Group) either at the surface or at depth beneath younger (i.e., Holocene) sediments may result in adverse direct impacts to unique paleontological resources. Pleistocene alluvial deposits and fanglomerate deposits and sandstone beds of the Tropico Group are located along the Proposed Project alignment and have a history of yielding significant fossils in Kern and San Bernardino Counties (Bell 2021, Jefferson 2010, PBDB 2021, UCMP 2021).

Direct adverse impacts on paleontological resources resulting from construction of the Proposed Project would be less than significant with implementation of APMs PAL-1, PAL-2, and PAL-3. These measures include preparation of a Paleontological Resources Monitoring and Mitigation Plan (PRMMP), construction monitoring, and procedures to implement if paleontological resources are encountered during construction. For the purposes of APM PAL-1, Holocene geologic units (Quaternary young [Holocene] alluvium, Quaternary young [Holocene] loose sand, Quaternary young [Holocene] clay and silt, and Quaternary young (Holocene) sand-covered clay and silt), should be treated as sediments of ‘unknown sensitivity’ and require part-time monitoring because although these units are likely too young (i.e., less than 5,000 years old) at the surface to preserve paleontological resources, they will become old enough to preserve such resources at an unknown depth in the subsurface.

The Proposed Project would not result in indirect impacts on paleontological resources during construction since it would not increase public access (potentially leading to increased illegal fossil collecting or vandalism) with implementation of APMs PAL-1, PAL-2, and PAL-3. This impact would be less than significant with mitigation.

Operation

No Impact. As previously described, O&M activities associated with the Proposed Project would be similar to those currently performed by SCE for existing substations and their associated lines and infrastructure. . The Proposed Project would result in a nominal increase in O&M activities, such as increased maintenance and inspection trips. However, O&M activities themselves do not involve substantial ground disturbance

¹ This geologic unit is Pliocene in age, but may extend further back into the Miocene.

or installation of new features that would result in damage to unique paleontological resources or sites. No impact would occur.

5.7.4.3 *Geotechnical Requirements*

A Geotechnical Report has been prepared for portion of the Proposed Project at Cal City Substation (Geotechnical Solutions Inc. 2022; Appendix P). SCE will prepare geotechnical reports for the remainder of the Proposed Project and design Proposed Project components to minimize the potential for landslides, lateral spreading, subsidence, liquefaction, or collapse. Measures that may be used to minimize impacts could include but are not limited to, construction of pile foundations, installation of support around pole bases, installation of flexible bus connections, and incorporation of slack in cables.

5.7.4.4 *Paleontological Resources*

Two formations in the Proposed Project area are conducive to fossil preservation: Quaternary older alluvium and Tropico Group (lower), granitic fanglomerate and sandstone.

Excavations in the Proposed Project area that impact Quaternary (Pleistocene) older alluvium or Miocene Tropico Group, granitic fanglomerate and sandstone deposits, either at the surface or at depth beneath previously disturbed sediments or Quaternary young (Holocene) alluvial deposits, Quaternary young (Holocene) loose sand, Quaternary young (Holocene) clay and silt, or Quaternary young (Holocene) sand-covered clay and silt, may result in adverse direct impacts on scientifically important paleontological resources.

5.7.5 *CPUC Draft Environmental Measures*

There are no CPUC Draft Environmental Measures identified for Geology, Soils, and Paleontological resources.

5.7.5.1 *Applicant Proposed Measures (APMs)*

The following APM(s) would be implemented to reduce paleontological resources impacts associated with the Proposed Project:

- **PAL-1: Develop Paleontological Resource Mitigation and Monitoring Plan.** SCE shall prepare a Paleontological Resources Mitigation and Monitoring Plan (PRMMP) to guide all paleontological management activities during project construction. The PRMMP shall be submitted to the CPUC and BLM for review and approval at least 90 days prior to the start of construction. The PRMMP shall be prepared by a qualified paleontologist, based on SVP (2010) guidelines, and meet all regulatory requirements. The qualified paleontologist shall have a Master's Degree or Ph.D. in paleontology, have local paleontology knowledge, and shall be familiar with paleontological procedures and techniques. The PRMMP will include, but not be limited to, the following sections:
 - Paleontological Resource Monitoring and Reporting: Detail monitoring procedures and methodologies, which shall require a qualified paleontological monitor for all construction-related ground disturbance that reach approximate depths for significant paleontological resources in sediments with a high paleontological sensitivity (i.e., Quaternary older alluvium and Tropico Group [lower], granitic fanglomerate and sandstone). Sediments with no (i.e., Saddleback Basalt and quartz monzonite) will not require monitoring. Paleontological monitors shall meet standard qualifications per the SVP (2010).

- Unanticipated Discovery Protocol: Detail procedures for temporarily halting construction, defining work stoppage zones, notifying stakeholders, and assessing the paleontological find for scientific significance. If indicators of potential microvertebrate fossils are found, screening of a test sample shall be carried out as outlined in SVP (2010).
- Data Analysis and Reporting: Detail methods for data recovery, analysis in a regional context, reporting of results within one year of completion of field studies, curation of all fossil specimens in an accredited museum repository approved by the CPUC and BLM and dissemination of reports to appropriate repositories.
- **PAL-2: Train Construction Personnel.** Prior to the initiation of construction, all construction personnel shall be trained, regarding the recognition of possible buried paleontological resources (i.e., fossils) and protection of all paleontological resources during construction. Training shall inform all construction personnel of the procedures to be followed upon the discovery of paleontological materials. All personnel shall be instructed that unauthorized removal or collection of fossils is a violation of Federal and state laws. Any excavation contract (or contracts for other activities that may have subsurface soil impacts) shall include clauses that require construction personnel to attend a Worker’s Environmental Awareness Training Program (WEAP). The WEAP will include the project’s potential for inadvertently exposing buried paleontological resources, how to operate adjacent to and avoid any potential Environmentally Sensitive Area, and procedures to treat unanticipated discoveries.
- **PAL-3: Conduct Paleontology Resources Construction Monitoring.** Paleontological monitoring shall be conducted by a qualified paleontologist familiar with the types of resources that could occur within the project area. Monitoring reports shall be submitted to the CPUC and BLM on a monthly basis.

5.7.6 Alternatives

For an evaluation of Proposed Project alternatives, see Chapter 6, Comparison of Alternatives.

5.8 Greenhouse Gas Emissions

This section describes the greenhouse gas (GHG) regulations that are applicable to electrical transmission projects and evaluates the potential impacts from construction and operation of the Cal City Substation 115 kV Upgrade Project (Proposed Project).

GHGs refer to gases that trap heat in the earth's atmosphere, causing a greenhouse effect. GHGs include, but are not limited to, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (SF₆). Atmospheric concentrations of CO₂ and CH₄—two directly emitted, long-lived GHGs—are currently well above the range of atmospheric concentrations that occurred over the last 650,000 years. According to the Intergovernmental Panel on Climate Change (IPCC), increased atmospheric levels of CO₂ are correlated with rising temperatures and concentrations of CO₂ have increased by 31 percent above pre-industrial levels since the year 1750. Climate models show that temperatures will probably increase by anywhere from 1.4 degrees Celsius (°C) to 5.8 °C by the year 2100 (IPCC 2007).

Global warming potential (GWP) estimates how much a given mass of a specific GHG contributes to climate change. The term enables comparison of the warming effects of different gases. GWP uses a relative scale that compares the warming effect of the gas in question with that of the same mass of CO₂. The CO₂ equivalent (CO₂e) is a measure used to compare the effect of emissions of various GHGs based on their GWP, when projected over a specified time period (generally 100 years). CO₂e is commonly expressed as metric tons of CO₂ equivalents (MTCO₂e). The CO₂e for a gas is obtained by multiplying the mass of the gas (in tons) by its GWP.

Research for this analysis involved a review of local air district guidelines and rulebooks.

5.8.1 Environmental Setting

The Proposed Project is located in Kern County and San Bernardino County in the Mojave Desert region of California on federal, state, private, and municipal land. These lands include unincorporated areas of Kern County and San Bernardino County, City of California City, Edwards Air Force Base (EAFB) controlled by the Department of Defense, and public lands under the jurisdiction of the Bureau of Land Management and the California Department of Fish and Wildlife. Approximately 90 percent of the Proposed Project is located within undeveloped open areas, with the remaining 10 percent located within developed areas (including the City of California City).

The Mojave Desert Air Basin (MDAB), which covers the entirety of the Proposed Project, contains approximately 27,300 square miles and includes eastern Kern County, northeast Los Angeles County, eastern Riverside County, and most of San Bernardino County. The MDAB is bounded by the Colorado River Valley to the south and east, and by mountains on its remaining sides. The MDAB covers most of California's high desert and is California's largest air basin. Within the MDAB, the Proposed Project is under the jurisdiction of the Eastern Kern Air Pollution Control District (EKAPCD) and the Mojave Desert Air Quality Management District (MDAQMD).

5.8.2 Regulatory Setting

Federal, state, and local regulations were reviewed for applicability to the Proposed Project.

5.8.2.1 Federal

5.8.2.1.1 Federal Mandatory Reporting of Greenhouse Gases (Section 40 Code of Federal Regulations [C.F.R.] Part 98)

The United States (U.S.) Environmental Protection Agency (USEPA) promulgated the Federal Mandatory Reporting of Greenhouse Gases rule in 2009 to require mandatory reporting of GHG from large GHG emissions sources in 31 source categories in the U.S. In general, the threshold for reporting is 25,000 metric tons or more of CO₂e. Reporting is at the facility level, except that certain suppliers of fossil fuels and industrial GHGs, along with vehicle and engine manufacturers, report at the corporate level. Facilities and suppliers began collecting data on January 1, 2010. Manufacturers of vehicles and engines outside of the light-duty sector began reporting CO₂ for model year 2011 and other GHGs in subsequent model years as part of existing USEPA certification programs.

Since 2012, the USEPA and 40 C.F.R. Part 98, Subpart DD also require the reporting of SF₆ emissions from certain electrical facilities. Southern California Edison Company (SCE) complies with these requirements. Furthermore, SCE has developed and implements SF₆ gas management guidelines as described in SCE's document entitled *An Asset Management Approach for EPA/CARB SF₆ Regulations*, dated April 2012. This document includes an overview of the tools and methods for complying with both the USEPA's Voluntary SF₆ Emission Reduction Partnership program and the California Air Resources Board's (CARB's) SF₆ Regulations. This guideline document identifies storage methods, disposal method alternatives, and recordkeeping requirements. Inventories are documented and annually reported to the USEPA and CARB.

5.8.2.2 State

5.8.2.2.1 Executive Order B-30-15

Executive Order B-30-15 establishes an interim GHG reduction target of 40 percent below 1990 levels and directs state agencies to take additional actions to prepare for the impacts of climate change. These actions are captured in the state's adaptation strategy, *Safeguarding California* (CARB 2018), which is to be updated every 3 years.

5.8.2.2.2 Executive Order B-55-18

Executive Order B-55-18 establishes a new statewide goal to “achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter.” The goal is in addition to the existing statewide targets of reducing GHG emissions.

5.8.2.2.3 Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32)

The Global Warming Solutions Act of 2006 (AB 32) charges the CARB with the responsibility of monitoring and regulating sources of GHG emissions in order to reduce GHGs. The CARB established a scoping plan in December 2008 for achieving reductions in GHG emissions and established and implemented regulations for reducing GHGs by the year 2020.

5.8.2.2.4 California Global Warming Solutions Act of 2006 (Senate Bill 32)

The California Global Warming Solutions Act of 2006 (Senate Bill 32) expands upon AB 32 to reduce GHG emissions. The bill requires the CARB to reduce GHG emissions to 40 percent below 1990 levels by

2030. This bill gives the CARB the authority to adopt regulations in order to achieve the maximum technology feasible to be the most cost-efficient way to reduce GHG emissions.

5.8.2.2.5 Climate Change Scoping Plan

The CARB’s Climate Change Scoping Plan was developed in response to Executive Order B-30-15 and SB 32. The plan establishes a path that will get California to its 2030 target.

5.8.2.2.6 California Mandatory Greenhouse Gas Reporting Regulation (17 California Code of Regulations §§ 95100 – 95133)

Pursuant to AB 32, the CARB adopted the California Mandatory Greenhouse Gas Reporting Regulation. The facilities that are required to annually report their GHG emissions include electricity-generating facilities, electricity retail providers and power marketers, oil refineries, hydrogen plants, cement plants, cogeneration facilities, and industrial sources that emit over 25,000 metric tons per year of CO₂ from stationary source combustion. In particular, retail providers of electricity are required to report fugitive emissions of SF₆ related to transmission and distribution systems, substations, and circuit breakers located in California that the retail provider or marketer is responsible for maintaining in proper working order.

5.8.2.2.7 Regulation for Reducing Sulfur Hexafluoride Emissions from Gas Insulated Switchgear (17 California Code of Regulations §§ 95350 – 95359)

SF₆ is a commonly used insulator in electric transmission and distribution equipment. Because of its high GWP, CARB adopted the Regulation for Reducing Sulfur Hexafluoride Emissions from Gas Insulated Switchgear in 2010. This regulation requires that gas-insulated switchgear owners not exceed the maximum annual SF₆ emission rate for active gas-insulated switchgear equipment and must establish and adhere to written procedures to track all gas containers as they are leaving and entering storage, calibrate and weigh all gas containers on a scale, establish and maintain a complete record of gas-insulated switchgear equipment inventory, and submit annual reports to the CARB Executive Officer for emissions that occurred during the previous calendar year.

In response to emerging technologies using lower or zero GWP insulators, the regulation was amended in 2021 and required emission rates for SF₆-insulated switchgear to not exceed 1 percent. The amended regulation also included a phase-out schedule for new SF₆-insulated equipment, coverage of other GHGs beyond SF₆ used in gas-insulated equipment, and other changes that enhance accuracy of emissions accounting and reporting.

5.8.2.2.8 Senate Bill 100

Senate Bill 100, signed into law in September 2018, amends the California Renewables Portfolio Standard (RPS) Program. The RPS Program requires the California Public Utilities Commission (CPUC) to establish a renewables portfolio standard requiring all retail sellers of electricity to 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 25 percent of retail sales by December 31, 2016; 33 percent by December 31, 2020; 44 percent by December 31, 2024; 52 percent by December 31, 2027; and 60 percent by December 31, 2030. Senate Bill 100 also establishes a state policy that eligible renewable energy resources and zero-carbon resources supply 100 percent of retail sales by 2045. Additionally, the RPS Program requires each local publicly owned electric utility to procure a minimum quantity of

electricity products from eligible renewable energy resources to achieve the procurement requirements established by the program.

5.8.2.3 Local

The CPUC has sole and exclusive jurisdiction over the siting and design of the Proposed Project. Pursuant to CPUC General Order (G.O.) 131-D, Section XIV.B:

“Local jurisdictions acting pursuant to local authority are preempted from regulating electric power line projects, distribution lines, substations, or electric facilities constructed by public utilities subject to the CPUC’s jurisdiction. However, in locating such projects, the public utilities shall consult with local agencies regarding land use matters.”

Consequently, public utilities are directed to consider local regulations and consult with local agencies, but the counties’ and city’s regulations are not applicable as the counties and city do not have jurisdiction over the Proposed Project. Accordingly, the following discussion of local land use regulations is provided for informational purposes only.

5.8.2.3.1 Eastern Kern Air Pollution Control District

The Eastern Kern Air Pollution Control District (EKAPCD) has adopted an addendum to the EKAPCD California Environmental Quality Act (CEQA) Guidelines, titled *Addendum to CEQA Guidelines Addressing GHG Emission Impacts for Stationary Source Projects When Serving as the Lead CEQA Agency* (EKAPCD 2012). This addendum establishes a significance threshold of 25,000 metric tons of CO₂e (MTCO₂e) per year.

5.8.2.3.2 Mojave Desert Air Quality Management District

The Mojave Desert Air Quality Management District’s (MDAQMD’s) CEQA Guidelines (MDAQMD 2020) include a significance threshold of 548,000 pounds per day and 100,000 tons, or 90,718.5 metric tons, per year of CO₂e. Because the Proposed Project’s construction phase would last more than 1 year, the annual threshold would be used to determine the significance of GHG emissions.

5.8.2.3.3 City of California City

The City of California City does not currently have any regulatory guidance related to GHG emissions.

5.8.3 Impact Questions

5.8.3.1 Greenhouse Gas Impact Questions

The thresholds of significance for assessing impacts come from the CEQA Environmental Checklist. For GHG emissions, the CEQA Checklist asks, would the project:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions?

5.8.3.2 *Additional CEQA Impact Questions*

There are no CPUC-identified additional CEQA impact questions.

5.8.4 **Impact Analysis**

5.8.4.1 *Greenhouse Gas Methodology*

Impacts from GHG emissions associated with the Proposed Project were determined by comparing the anticipated emissions from the construction and operation and maintenance (O&M) phases of the Proposed Project to applicable emissions thresholds established by the EKAPCD and MDAQMD. These emissions estimates were generated using the methods established in version 2022.1 of the California Emissions Estimator Model, CARB’s Emission Factor (EMFAC) model, and Swiss Federal Office of Civil Aviation (FOCA) *Guidance on the Determination of Helicopter Emissions* as documented in Appendix B.

In their *Field Guide to New CEQA Greenhouse Gas Thresholds and Climate Action Plan Targets for California* (Association for Environmental Professionals, 2016), the Association for Environmental Professionals (AEP) recommends methods for evaluating construction emissions in CEQA documents. One such method is to amortize construction emissions over the operational lifetime of a project. Following this approach, total construction emissions for all years of construction are identified, divided by the total years for the operation of the project, and combined with operational annual emissions to make a single significance determination. This approach has been utilized herein to allow combined construction and operation emissions to be compared to the annual thresholds established by the EKAPCD and MDAQMD, with a presumed operational life of 30 years.

5.8.4.2 *Greenhouse Gas Impact Analysis*

5.8.4.2.1 **Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?**

Construction and Operation

Less than Significant Impact. GHG emissions would be generated from the use of off-road construction equipment, on-road vehicles, and up to two helicopters.¹ The most common GHGs associated with fuel combustion are CO₂, CH₄, and N₂O. Over the construction period, approximately 9,517 MTCO₂e would be emitted.

As presented in Chapter 3, the Proposed Project includes constructing subtransmission lines between existing substations and a switchyard in the vicinity of the City of California City, EAFB, and U.S. 395 where many overhead power lines currently exist. O&M activities associated with the Proposed Project would be similar to those currently performed by SCE for existing facilities, including, but not limited to, repairing conductors, washing or replacing insulators, repairing or replacing other hardware components, repairing or replacing poles and towers, tree trimming, brush and weed control, and access road maintenance. O&M would also include routine inspections and emergency repair within the substations, and the switchyard, and throughout rights-of-way, which would require the use of vehicles and equipment. SCE inspects subtransmission overhead facilities in a manner consistent with CPUC G.O. 165, which requires observation a minimum of once per year, but inspection typically occurs more frequently to ensure

¹ For modeling purposes, it was assumed that one light-duty helicopter would be used during cable/conductor installation and one medium-duty helicopter would be used for structure installation.

system reliability. Following construction of the Proposed Project, O&M activities would consist of monthly and annual inspections, as well as equipment testing and maintenance for new and expanded facilities. SCE currently performs O&M activities for the existing substations and the switchyard and their associated source lines and infrastructure. Overall, the Proposed Project would result in a nominal increase in O&M activities, such as increased maintenance and inspection trips. Approximately 78 MTCO_{2e} would be emitted during annual O&M activities.

As summarized in Table 5.8-1, when construction emissions are amortized over 30 years and combined with the approximately 78 MTCO_{2e} emissions associated with operation, combined emissions would be well below the 25,000 MTCO_{2e} threshold of significance established by the EKAPCD addendum and the 90,719 MTCO_{2e} threshold of significance established by the MDAQMD.

Table 5.8-1 Annual GHG Emissions

Emissions Source	Emissions (MTCO _{2e})
Construction (amortized over 30 years)	317
O&M	78
Total	395
EKAPCD Threshold	25,000
MDAQMD Threshold	90,719
Thresholds Exceeded?	No

In order to reduce potential impacts to noise during the construction phase of the Proposed Project, SCE would implement Applicant-Proposed Measure (APM) NOI-1. This measure would require all vehicles to minimize idling time to the extent practical. While this APM is not required to ensure GHG emissions are below applicable thresholds, it would further reduce this less than significant impact. Therefore, the Proposed Project would not generate, either directly or indirectly, GHG emissions that would have a significant impact on the environment, and impacts would be less than significant.

5.8.4.2.2 Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Construction

No Impact. Construction of the Proposed Project would be consistent with applicable policies, plans, and regulations for reducing GHG emissions. The Proposed Project would incorporate best management practices and other standard SCE practices, such as reducing the idle time of construction vehicles, that are consistent with the requirements and intentions of the applicable federal and state plans, policies, and regulations identified in Section 5.8.2. Construction activities would not be expected to consume a substantial amount of energy that would result in a conflict with policies that serve to reduce GHG emissions through a reduction in energy consumption. When amortized over a 30-year period, GHG construction emissions would be approximately 395 MTCO_{2e} annually. These emissions would fall well below the EKAPCD and MDAQMD numerical thresholds of significance. Therefore, the Proposed Project would not conflict with any applicable plan, policy, or regulation, and no impact would occur.

Operation

No Impact. As previously described, O&M activities associated with the Proposed Project would be similar to those currently performed by SCE for existing substations and their associated lines and infrastructure. The Proposed Project would result in a nominal increase in O&M activities, such as increased maintenance

and inspection trips. The anticipated annual emissions from the change in regular O&M activities were estimated to be 78 MTCO_{2e} annually. These emissions would fall well below the EKAPCD and MDAQMD numerical thresholds of significance.

As described in Section 5.8.2.2.7, CARB has adopted regulations targeting the reduction of GHG emissions associated with the use of gas-insulated switchgear. SCE's SF₆ gas management guidelines require proper documentation and control of SF₆ inventories, whether in equipment or in cylinders. Inventories are documented on both a quarterly and yearly basis. SCE assumes that any SF₆ that is purchased and not used to fill new equipment is needed to replace SF₆ that has inadvertently leaked from equipment already in service. This assumption forms the basis for SCE's tracking and management of SF₆ emissions. Currently, SCE reports these emissions to the USEPA and CARB on an annual basis.

SCE has taken proactive steps in the effort to minimize GHG emissions since 1997. In 1997, SCE established an SF₆ Gas Resource Team to address issues pertaining to the environmental impacts of SF₆. The team developed the SF₆ gas management guidelines that allow for rapid location and repair of equipment leaking SF₆. In addition, SCE's parent organization, Edison International, joined the USEPA's voluntary SF₆ gas management program in 2001, committing SCE to join the national effort to minimize emissions of this GHG.

SCE has made a significant investment in not only improving its SF₆ management practices, but also in purchasing state-of-the-art gas-handling equipment that minimizes SF₆ leakage. The new equipment has improved sealing designs that virtually eliminate possible sources of leakage. SCE has also addressed SF₆ leakage from older equipment by performing repairs and replacing antiquated equipment through its infrastructure replacement program.

It is expected that the Proposed Project would have a minimal amount (approximately 75 MTCO_{2e} per year) of SF₆ leakage due to the installation of state-of-the-art equipment and SCE's SF₆ gas management practices. Pursuant to its existing practices, SCE would reduce potential GHG impacts resulting from operation of the Proposed Project to the greatest extent practicable.

Because SCE complies with CARB's regulations regarding the handling, storage, and reporting of SF₆, the Proposed Project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing emissions of GHGs. SCE also incorporates a significant number of clean diesel, electric, and hybrid-electric service vehicles into its fleet. In addition to meeting the CARB's emission standards for air quality criteria pollutants, SCE is aggressively lowering GHG emissions from SCE fleet operations. As a result, there would be no impact.

5.8.4.3 GHG Emissions

A quantitative assessment of GHG emissions is presented previously in Section 5.8.4.2. As addressed in Section 5.3, Air Quality, the results of the quantitative assessment are presented in Appendix B; all calculations, presented in Microsoft Excel format, are provided to the CPUC under separate cover. A discussion of programs in place to reduced GHG emissions on a system-wide level is provided in Section 5.8.4.2.2.

5.8.5 CPUC Draft Environmental Measures

The Proposed Project would result in less than significant impacts related to GHG; as such, no additional measures are required to reduce a potentially significant impact and no CPUC Draft Environmental Measures have been identified.

5.8.5.1 Applicant-Proposed Measures

5.8.5.1.1 Greenhouse Gas APMs

No APMs specific to GHG have been developed to reduce an impact that has been identified in Section 5.8.4.

5.8.5.1.2 Cross-Referenced APMs

The following APMs would be implemented and would contribute to reducing GHG impacts associated with the Proposed Project:

NOI-1: SCE shall employ the following noise-control techniques, at a minimum, to reduce construction noise exposure at noise-sensitive receptors during construction:

- Construction activities shall be confined to daytime, weekday and weekend hours established by the San Bernardino County, Kern County, and the City of California City. In the event construction is required beyond those hours, SCE will notify the appropriate local agency or agencies regarding the description of the work, location, and anticipated construction hours.
- Construction equipment shall use noise reduction features (e.g., mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer.
- Stationary noise sources (e.g., generators, pumps) and staging areas shall be shielded by an enclosure, temporary sound walls, acoustic blankets, or other barrier where noise levels are above 80 dBA at sensitive receptor locations. Heights and specifications of noise barriers will be designed to reduce construction noise to below 80 dBA (FTA, 2006).
- Construction traffic and helicopter flight shall be routed away from residences and schools.
- Unnecessary construction vehicle use and idling time shall be minimized. If a vehicle is not required for use immediately or continuously for construction activities, its engine shall be shut off.

5.8.6 Alternatives

For an evaluation of Proposed Project alternatives, see Chapter 6, Comparison of Alternatives.