4.7 GEOLOGY AND SOILS

This section describes the geology and soils conditions in the Proposed Project vicinity, including seismic hazards, evaluates the type and significance of impacts that may occur as a result of the Proposed Project, and identifies measures to avoid or substantially lessen any impacts found to be potentially significant. In addition, existing laws and regulations relevant to geology and geologic hazards are described. In some cases, compliance with these existing laws and regulations would serve to reduce or avoid certain impacts that might otherwise occur with the implementation of the Proposed Project.

Baseline geologic, seismic, and soils information were collected from published and unpublished literature, Geographic Information System (GIS) data, and online sources for the Proposed Project and the surrounding area. Data sources included the following: geologic literature from the U.S. Geological Survey and California Geological Survey, geologic and soils GIS data, and online reference materials. All the sources used for the purposes of characterizing baseline conditions and conducting the analysis for this Proposed Project are referenced as appropriate. The literature review focused on the identification of specific geologic and seismic hazards with the Proposed Project site.

The study area was defined as the Proposed Project site and the area immediately adjacent to the Proposed Project with the following exception: the study area related to seismically induced ground shaking issues includes significant regional active and potentially active faults within 50 miles of the Proposed Project. The current condition and quality of these geology and soils resources was used as the baseline against which to compare potential impacts of the Proposed Project.

The Proposed Project is described in detail in Section 2, *Project Description*. The Environmental Impact Report (EIR) analysis of the Proposed Project is presented in three parts. The first two parts comprise the **Stagecoach Facilities** proposed by Aurora Solar, LLC and the third part includes the **SCE Calcite Facilities,** proposed by Southern California Edison (SCE). The analysis components are:

- The **Stagecoach Solar Generation Plant,** which would include the solar arrays and collector lines, ancillary project facilities, and the battery energy storage system (BESS), all located within the 3,570 acres of State-owned school lands managed by the CSLC
- The **Stagecoach Gen-tie Line** (located on State-owned lands, leased land, and purchased private land), which would run approximately 9.1 miles, connecting the Stagecoach Solar Generation Plant to the proposed SCE Calcite Facilities and the SCE electrical transmission system
- The **SCE Calcite Facilities,** which would be constructed, owned, and operated by SCE and would include a substation (referred to as the **SCE Calcite Substation**), a connection to distribution-level electric power, access roads, telecommunications facilities, and new transmission structures to interconnect with the existing transmission system

4.7.1 Environmental Setting

4.7.1.1 Regional Geologic Setting

The Stagecoach Facilities and SCE Calcite Facilities are proposed in the south-central portion of the Mojave Desert geomorphic province. The Mojave Desert geomorphic province, commonly referred to as the Mojave block, is a region of isolated mountain ranges separated by expanses of desert plains. The Mojave Desert province is wedge shaped, bounded on the north by the Garlock Fault and its extension to the east, the San Andreas fault and the Transverse Ranges on the west, the Colorado River and California-Nevada border on the east, and the San Gabriel Mountains, San Bernardino Mountains, and the San Andreas fault on the south. It has an interior enclosed drainage and many playas. The topography of the central portion of the Mojave area is dominated by the prominent northwest-southeast trending faults and generally northwest-southeast trending mountain ranges. The Mojave region exhibits a wide variety of geomorphic landforms, which represent the varying erosional, depositional, and tectonic processes the area is undergoing, including volcanic features such as basaltic flows and cones; erosional and depositional features such as pediments, alluvial fans, playas, badlands, desert pavement; and tectonic (faulting) features such as scarps, offset streams, and sags and sag ponds.

Basement rocks in the Mojave area consist predominantly of folded and faulted Mesozoic plutonic and metamorphic rocks and Tertiary non-marine and marine sedimentary and metasedimentary rocks, and volcanic rocks. The basement rock is overlain by Quaternary sedimentary rocks, with localized volcanic deposits.

Geology

The Proposed Project is underlain by Quaternary debris flow deposits, alluvial fan and valley deposits, and eolian and dune deposits, and Mesozoic porphyritic and granitic rocks (Dibblee 2008, CGS 2012). The location of these units in relation to the Stagecoach Facilities and SCE Calcite Facilities is shown on Figure 4.7-1 (Geologic Map of the Stagecoach and SCE Calcite Facilities Project Area). The general characteristics of these units are described below.

- Debris Flow Deposits. Deposits include mixed young alluvial fan and debris flow deposits of unconsolidated to well-consolidated sand, silt, and gravel overlying older alluvial fan debris flow deposits composed of poorly sorted bouldery deposits encased in sand and silt matrix (Phelps et al. 2012). Mapping of these units in the Proposed Project area is incomplete; mapped occurrences are located along the valley edges near the base of the Sidewinder and West Ord Mountains just to the south of the solar generation plant site.
- Active Alluvial Fan Deposits. Poorly to moderately sorted fine sand to boulders deposited by ephemeral streams that have actively received sediments within the last few decades. In the Proposed Project area deposits are primarily along

ephemeral drainages and channels and is intermixed with young alluvial fan and valley deposits. Narrow deposits of this unit are located crossing the solar generation plant site and the gen-tie route in several locations.

- Young Alluvial Fan and Valley Deposits. Unconsolidated clay, silt, sand, and gravel within and along the edges of the valley areas. This unit underlies the majority of the Stagecoach Solar Generation Plant site and the gen-tie line and the entirety of the SCE Calcite Facilities. It may include debris flow deposits at the base of Sidewinder Mountain and aeolian-alluvial mixed sand deposits on the south flank of Stoddard Ridge.
- Eolian and Dune Deposits. Unconsolidated to slightly consolidated, generally well-sorted windblown sand. It may occur as dunes or sheets of sand. In the Proposed Project area this unit overlies Quaternary alluvium and Mesozoic quartz monzonite. Unknown thicknesses and amounts of this unit occur near and within the northeastern part of the solar generation plant site
- Porphyritic Felsite. Part of the Porphyry Complex, which are metamorphosed porphyritic igneous rocks within surrounding granitic rocks. Porphyritic rocks display minerals in two distinct size populations in which one set of the crystals is much larger than the other. The porphyritic felsite consists of light colored aphanitic rock (texture with crystals too small to see) composed primarily of quartz and feldspar with phenocrysts (larger crystals) consisting primarily of feldspar. Occurs as large masses and dikes and is likely present beneath a shallow layer of alluvial fan deposits in the southwest corner of the solar generation plant site.
- Quartz Monzonite. Gray-white equigranular (equal size crystals) granitic rock that contains less quartz than feldspar. It is weakly coherent where weathered and underlies the northeast corner of the solar generation plant site and may also shallowly underlie eolian and dune deposits in this area.
- .Granite and Quartz Monzonite. Mixed light grey to tan granite and quartz monzonite intrusive rocks with fine to medium crystals, may have local phenocrysts. This unit is found near the southern edge of the solar generation plant site.

Physiography and Slope Stability

The Proposed Project is located in the North Lucerne Valley between Stoddard Ridge on the north and Sidewinder Mountain on the south. Elevation of the Proposed Project varies from approximately 3,200 to 3,600 feet above mean seal level (msl) within the solar generation plant. The lowest project elevation (2,900 feet) is at the southern end of the Stagecoach Gen-tie Line and within the SCE Calcite Facilities site, at the southern end of the North Lucerne Valley near Lucerne Lake.

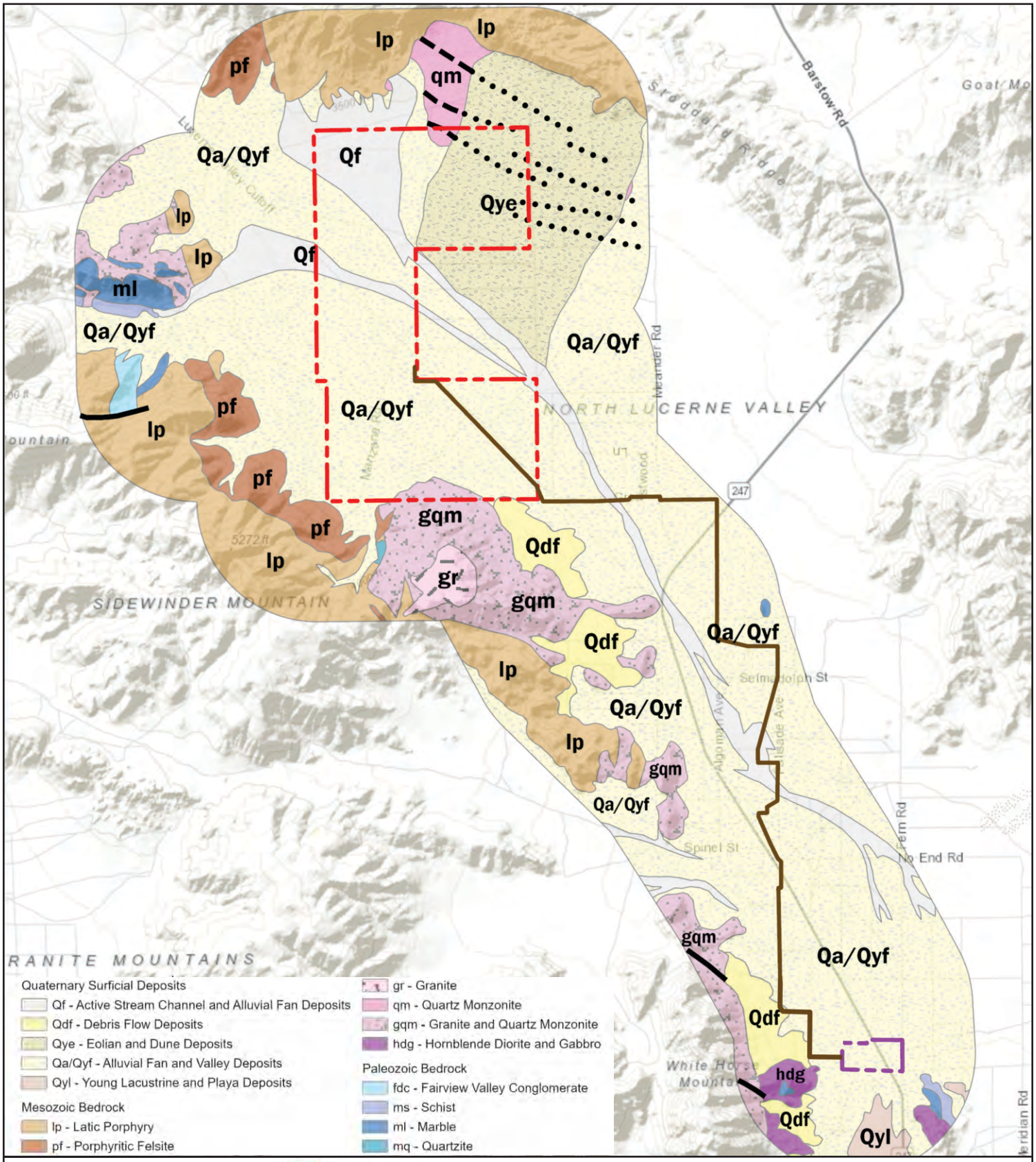


Figure 4.7-1
Geologic Map of Stagecoach and SCE Calcite Facilities Project Area

Important factors that affect the slope stability of an area include the steepness of the slope, the relative strength of the underlying rock material, and the thickness and cohesion of the overlying colluvium. The steeper the slope and/or the weaker the rock, the more likely the area is susceptible to landslides. The steeper the slope and the thicker the colluvium, the more likely the area is susceptible to debris flows. Another indication of unstable slopes is the presence of old or recent landslides or debris flows.

Most of the Proposed Project is located on gently sloping to flat terrain with some gently sloping hills and does not cross any large areas identified as existing landslide or landslide hazard. However, the solar generation plant is located near mapped mixed alluvial fan and debris flow deposits (CGS 2012, Phelps et al. 2012) that extend along a small portion of the southwestern boundary of the solar generation plant site. The San Bernardino County 2020 General Plan Liquefaction & Landslides Policy Map (Policy Map HZ-2) does not map any existing landslides in or near the Proposed Project area nor any County landslide hazard zones, the closest mapped landslide hazard zone is approximately 15 miles south of the Proposed Project and the closest mapped existing landslide is approximately 9 miles southwest of the Proposed Project (San Bernardino County 2020c).

Soils

The soils underlying the Proposed Project components reflect the underlying rock type, the extent of weathering of the rock, the degree of slope, and the degree of human modification. Potential hazards/impacts from soils include erosion, shrink-swell (expansive soils), corrosion, and compressibility. Soil mapping by the U.S. Department of Agriculture (USDA) National Resource Conservation Service (NRCS) was reviewed for information about unsuitable characteristics of surface and near-surface subsurface soil materials. GIS spatial and tabular data for the San Bernardino County, California, Mojave River Area SSURGO (Soil Survey Geographic database) soil survey (NRCS 2013) was reviewed. A summary of the significant characteristics of the soil units underlying the Stagecoach Facilities and SCE Calcite Facilities, listed in numerical not geographic order, are presented in Table 4.7-1. Figure 4.7-2 (Soils Map of the Stagecoach and SCE Calcite Facilities Project Area) shows the distribution of these soil associations within the Proposed Project area.

Potential soil erosion hazards vary depending on the use, conditions, and textures of the soils. The properties of soil that influence erosion by rainfall and runoff affect the infiltration capacity of a soil, as well as the resistance of a soil to detachment and being carried away by falling or flowing water. Soils on steeper slopes would be more susceptible to erosion due to the effects of increased surface flow (runoff) on slopes where there is little time for water to infiltrate before runoff occurs. Soils containing high percentages of fine sands and silt and that are low in density are generally the most erodible. As the clay and organic matter content of soils increases, the potential for erosion decreases. Clays act as a binder to soil particles, thus reducing the potential for erosion. Erosion potential, as mapped by the NRCS, of the soils underlying the Proposed Project varies from slight to very high for

wind and slight to moderate for water, as presented in Table 4.7-1. Several of the soils in the Proposed Project area contain high percentages of sand and are particularly susceptible to wind erosion. The San Bernardino County 2020 General Plan Wind Erosion Hazards Policy Map (Policy Map HZ-11) maps most of the Proposed Project as high wind erosion potential with some pockets of medium-high and medium wind erosion potential (San Bernardino County 2020c). The potential for water erosion hazard increases in areas with greater slope inclination.

Table 4.7-1. Soil Units Underlying the Project Site

Unit ID	Unit Name	Erosion Class		Expansion Potential (Shrink-Swell)	Corrosion Potential	
		Water	Wind		Uncoated Steel	Concrete
105	Bryman Loamy Fine Sand, 0 to 2 Percent Slopes	Moderate	Very High	Low	Moderate	Low
112	Cajon Sand, 0 to 2 Percent Slopes	Slight	Very High	Low	Low	Low
118	Cajon-Arizo Complex, 2 to 15 Percent Slopes	Sight to Moderate	Slight	Low	Low to Moderate	Low
131	Helendale Loamy Sand, 0 to 2 Percent Slopes	Moderate	High	Low	Moderate	Low
133	Helendale-Bryman Loamy Sands, 2% to 5% Slopes	Slight	High	Low	Moderate	Low
137	Kimberlina Loamy Fine Sand, Cool, 0 to 2 Percent Slopes	Moderate	High	Low	Moderate	Moderate
140	Lavic Loamy Fine Sand	Moderate	High	Low	High	Moderate
148	Mirage Sandy Loam, 2% to 5% Slopes	Slight	Slight	Moderate	High	High
158	Rock Outcrop–Lithic Torriorthents Complex, 15% to 50% Slopes	—	—	—	—	—
173	Wasco Sandy Loam, Cool, 0% to 2% Slopes	Slight	Moderate	Low	Moderate	Low

Source: NRCS 2013.

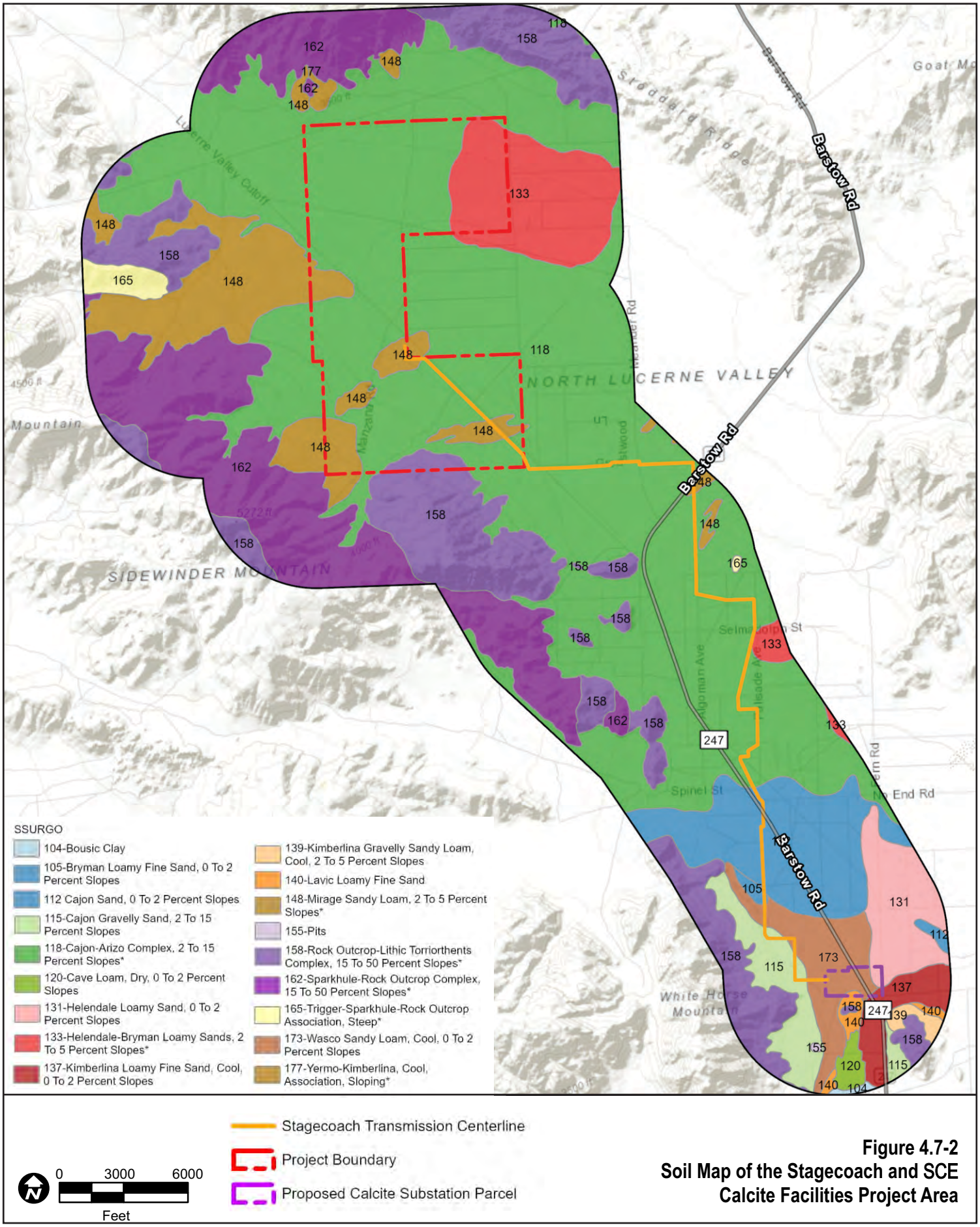


Figure 4.7-2
Soil Map of the Stagecoach and SCE Calcite Facilities Project Area

Desert pavement is a desert surface that is covered with closely packed, interlocking angular or rounded rock fragments of pebble and cobble size that typically protects the finer grained underlying material from erosion (NRCS 1986). Desert pavement forms where wind action and sheetwash over time have removed all smaller surface particles or where rock fragments have migrated upward through sediments to the surface. The rocks that make up desert pavement commonly are coated by desert varnish on their exposed surfaces. Desert varnish is the thin red to black coating found on exposed rock surfaces in arid regions. Varnish is composed of clay minerals, oxides, and hydroxides of manganese and/or iron. Both desert pavement and desert varnish take thousands of years to form. Desert pavement is sparsely vegetated and can also include cryptogamic crusts (biologic soils crusts).

Desert pavement is found on alluvial fans and piedmonts below mountains throughout the Mojave Desert. The NRCS soil descriptions of the mapped units underlying the Proposed Project area indicate that the Mirage Sandy Loam is identified as having a desert pavement that is typically found over 70 to 90 percent of its surface (NRCS 1986). The Mirage Sandy Loam occurs on dissected terraces and alluvial fan remnants, and in the Proposed Project vicinity is generally found east of Lucerne Valley Cutoff (see Figure 4.7-2).

Some soil types/features such as caliche layers, also known as hardpan or calcrete, can increase construction difficulties and may be used by burrowing animals such as desert tortoises to create stable burrows. Caliche is a general term that describes relatively shallow layer of secondary carbonate accumulation in unconsolidated sediments and soils under semiarid and arid climate conditions. Caliche is generally formed by the leaching of calcium carbonate from upper soil horizons by downward percolating water and reprecipitation of the carbonate in finer grained soil or sediment horizons. The soils in the Proposed Project area are not expected to contain caliche layers; the soils generally contain low to very low percentages of calcium carbonate and no restrictive layers are noted by the NRCS for the Proposed Project site soils (NRCS 2021). Expansive soils are characterized by their ability to undergo significant volume change (shrink and swell) due to variation in soil moisture content. Changes in soil moisture could result from a number of factors, including rainfall, landscape irrigation, utility leakage, and/or perched groundwater. Expansive soils are typically very fine grained with a high to very high percentage of clay. Soils with moderate to high shrink-swell potential would be classified as expansive soils. Most of the soils in the Proposed Project area are granular with high percentages of sand and have a low potential for expansion. However, several areas within the Proposed Project area are underlain by the Mirage Sandy Loam which has a moderate expansion potential (NRCS 2013).

Corrosivity of soils is generally related to the following key parameters: soil resistivity; presence of chlorides and sulfates; oxygen content; and pH. Typically, the most corrosive soils are those with the lowest pH and highest concentration of chlorides and sulfates.

High sulfate soils are corrosive to concrete and may prevent complete curing, reducing its strength considerably. Low pH and/or low resistivity soils could corrode buried or partially buried metal structures. The corrosion potential for the soils underlying Proposed Project is generally low to moderate for corrosion to uncoated steel and low for corrosion to concrete, with the exception of the Mirage Sandy Loam soils, which have a high potential for corrosion to both uncoated steel and concrete and the Lavic Loamy Fine Sand which has a high potential for corrosion to uncoated steel (Barr 2017, NRCS 2013).

Subsidence

Land subsidence can occur in valleys containing aquifer systems that are, in part, made up of fine-grained sediments and that have undergone extensive groundwater development (USGS 2003). As the groundwater is withdrawn, the pore-fluid pressure in the sediments decreases allowing the weight of the overlying sediment to permanently compact or compress the fine-grained units. This effect is most pronounced in younger, unconsolidated sediments. Land subsidence is generally characterized by a broad zone of deformation where differential settlements are small. Depth to groundwater underlying the Proposed Project area ranges from approximately 80 feet to greater than 200 feet below ground surface (bgs) (Dick and Kjos 2017). The shallowest water levels of about 80 feet bgs are found near the southern end of the gen-tie line and near the SCE Calcite Facilities.

Subsidence within the Mojave Desert area is found locally in the vicinity of dry lakebeds; Lucerne Lake, a dry lakebed is located just south of the southern end of the gen-tie line and the SCE Calcite Facilities. Land subsidence studies conducted by the U.S. Geological Survey (USGS) on the Mojave River and Morongo groundwater basins for the period of 2004 to 2009 indicate that subsidence has occurred at Lucerne Lake in areas just south of the Proposed Project (Solt and Sneed 2009). At Lucerne Lake the entire dry lakebed area is subsiding, with the subsidence likely a result of the compaction of the subsurface fine-grained paleo-lakebed sediments due to groundwater withdrawal in these areas (Solt and Sneed 2009). Two areas of land surface subsidence were noted in the vicinity of Lucerne Lake for the period of 2004 to 2009: 1.75 inches (approximately 0.28 in/yr.) measured near the western margin, and 2.76 inches (at approximately 0.5 in/yr.) located south of the current dry lake bed. The closest area of subsidence to the Proposed Project within the Lucerne Lake area is located along the northwestern margin of the lake, approximately 1 mile south of the end of the gen-tie line and the SCE Calcite Facilities. The area of maximum subsidence within the Lucerne Lake area is located approximately 4.8 miles south of the end of the gen-tie line and SCE Calcite Facilities.

Regional Seismic Setting

Seismicity of Southern California is dominated by the intersection of the north-northwest trending San Andreas Fault system and the east-west trending Transverse Ranges fault system. Both systems are responding to strain produced by the relative motions of the Pacific and North American Tectonic Plates. This strain is primarily relieved by right-lateral

strike-slip faulting on the San Andreas and related faults, left-lateral strike slip on the Garlock fault, and by vertical, reverse-slip or left-lateral strike-slip displacement on faults in the Transverse Ranges. The effects of this deformation include mountain building, basin development, and deformation of Quaternary marine terraces, widespread regional uplift, and generation of earthquakes. The Transverse Ranges and western San Bernardino County area are characterized by numerous geologically young faults. These faults can be classified as historically active, active, potentially active, or inactive, based on the following criteria (CGS 1999):

- Faults that have generated earthquakes accompanied by surface rupture during historic time (approximately the last 200 years) and faults that exhibit aseismic fault creep are defined as Historically Active
- Faults that show geologic evidence of movement within Holocene time (approximately the last 11,000 years) are defined as Active
- Faults that show geologic evidence of movement during the Quaternary time (approximately the last 1.6 million years) are defined as Potentially Active
- Faults that show direct geologic evidence of inactivity during all of Quaternary time or longer are classified as Inactive

Although it is difficult to quantify the probability that an earthquake will occur on a specific fault, this classification is based on the assumption that if a fault has moved during the Holocene epoch, it is likely to produce earthquakes in the future. Blind thrust faults do not intersect the ground surface, and thus they are not classified as active or potentially active in the same manner as faults that are present at the earth's surface. Blind thrust faults are seismogenic structures and thus the activity classification of these faults is predominantly based on historic earthquakes and microseismic activity along the fault.

Since periodic earthquakes accompanied by surface displacement can be expected to continue in the study area through the lifetime of the Proposed Project, the effects of strong ground shaking and fault rupture are of primary concern to safe and reliable operation of the proposed Stagecoach Facilities and the SCE Calcite Facilities.

The Proposed Project area will be subject to regional ground shaking associated with earthquakes on faults of the San Andreas, Garlock, Eastern California Shear Zone, and Transverse Ranges fault systems. Active faults of the San Andreas system and Eastern California Shear Zone are predominantly strike-slip faults accommodating translational movement. The Eastern California Shear Zone is a component of the Pacific-North America plate boundary and consists of active, predominantly strike-slip faults and deformation east of the San Andreas Fault Zone. The July 2019 Ridgecrest earthquake sequence, the 1999 Hector Mine earthquake, and the 1992 Landers earthquake are significant damaging earthquakes that occurred on faults of the Eastern California Shear Zone. Active reverse or thrust faults in the Transverse Ranges include blind thrust faults responsible for the 1987 Whittier Narrows Earthquake and 1994 Northridge Earthquake,

and the range-front faults responsible for uplift of the Santa Susana, San Gabriel, and San Bernardino Mountains. The Transverse Ranges fault system consists primarily of blind, reverse, and thrust faults accommodating tectonic compressional stresses in the region. Blind faults have no surface expression and have been located using subsurface geologic and geophysical methods. This combination of translational and compressional stresses gives rise to diffuse seismicity across the region.

Significant faults within the Proposed Project area are faults of the Eastern California Shear Zone (ECSZ) and the San Andreas fault zone. The ECSZ, located east of the San Andreas fault, extends from the southern Mojave Desert along the east side of the Sierra Nevada and into western Nevada. The ECSZ accommodates approximately 20 to 25 percent of relative plate motion between the Pacific and North America plates and is bounded on the east by the diffuse extensional deformation of the Basin and Range region and in the Mojave area by the San Andreas fault zone on the west. Local faults of the ECSZ include the Lenwood-Lockhart, the Helendale–South Lockhart, the Calico-Hidalgo fault zone, the Pisgah-Bullion fault zone, the Lavic Lake fault zone, Johnson Valley fault, and the Camp Rock–Emerson-Copper Mountain fault zone. The San Andreas fault zone is a 680-mile active right-lateral strike-slip complex of faults that has been responsible for many of the damaging earthquakes in southern California in historical times. The San Andreas fault zone is the longest active fault in California and represents the boundary between the Pacific and North American plates. Historically, both the ECSZ and the San Andreas fault zone have produced significant earthquakes that have caused surface rupture and damage in the project region.

Since periodic earthquakes accompanied by surface displacement can be expected to continue in the study area through the lifetime of the Proposed Project, the effects of strong ground shaking and fault rupture are of primary concern to safe operation of the Proposed Project. Active faults that represent a significant seismic threat to the Proposed Project are listed in Table 4.7-2. Data presented in this table include closest distance to Proposed Project components, estimated earthquake magnitude, and type of fault. Figure 4.7-3 (Faults in the Stagecoach and SCE Calcite Facilities Project Area) shows locations of significant active faults and historic earthquakes in the Proposed Project area and surrounding region.

Table 4.7-2. Significant Active and Potentially Active Faults in the Project Vicinity

Name	Closest Distance to Project (miles)[1]	Estimated Maximum Earthquake Magnitude[2]	Fault Type and Dip Direction[3]
Helendale–South Lockhart fault zone	4.9	7.4	Right Lateral Strike Slip, 90°
Lenwood-Lockhart fault zone	7.7	7.5	Right Lateral Strike Slip, 90°

Table 4.7-2. Significant Active and Potentially Active Faults in the Project Vicinity			
Name	**Closest Distance to Project (miles)[1]**	**Estimated Maximum Earthquake Magnitude[2]**	**Fault Type and Dip Direction[3]**
North Frontal thrust system, west	10.6	7.2	Reverse, 49°S
Johnson Valley fault	14.5	6.9	Right Lateral Strike Slip, 90°
Gravel Hills–Harper Lake fault	15.7	7.1	Right Lateral Strike Slip, 90°
Calico-Hidalgo fault zone	21.7	7.4	Right Lateral Strike Slip, 90°
Cleghorn fault	23.2	6.8	Left Lateral Strike Slip, 85-90°
So. Emerson–Copper Mountain fault zone	23.5	7.1	Right Lateral Strike Slip, 90°
South San Andreas fault zone Various rupture combinations of San Bernardino or Mojave sections alone, or in combination with other sections of the South San Andreas fault zone	31.3	6.9-8.0	Right Lateral Strike Slip, 90°
Pisgah-Bullion Mountain fault zone	32.1	7.3	Right Lateral Strike Slip, 90°
Lavic Lake (Hector Mine) fault zone	34.8	—	Right Lateral Strike Slip, 90°
San Jacinto fault zone San Bernardino Valley section alone or in combination with other San Jacinto fault zone segments	35.0	7.1-7.8	Right Lateral Strike Slip, 90°
Cucamonga fault	37.7	6.7	Thrust, 45°N

[1] Fault distances obtained from USGS 2008 National Seismic Hazard Maps – Fault Parameters website (USGS 2017c) and USGS GIS Quaternary fault data (USGS and CGS 2010).

[2] Maximum Earthquake Magnitude – the maximum earthquake that appears capable of occurring under the presently known tectonic framework, magnitude listed is “Ellsworth-B” magnitude from USGS OF08-1128 (Documentation for the 2008 Update of the U.S. National Seismic Hazard Maps) (USGS 2008) unless otherwise noted. Magnitude varies by rupture strategy, one or several segments of the fault rupturing in the same event.

[3] Fault parameters from the 2008 National Seismic Hazard Maps – Fault Parameters website (USGS 2017c).

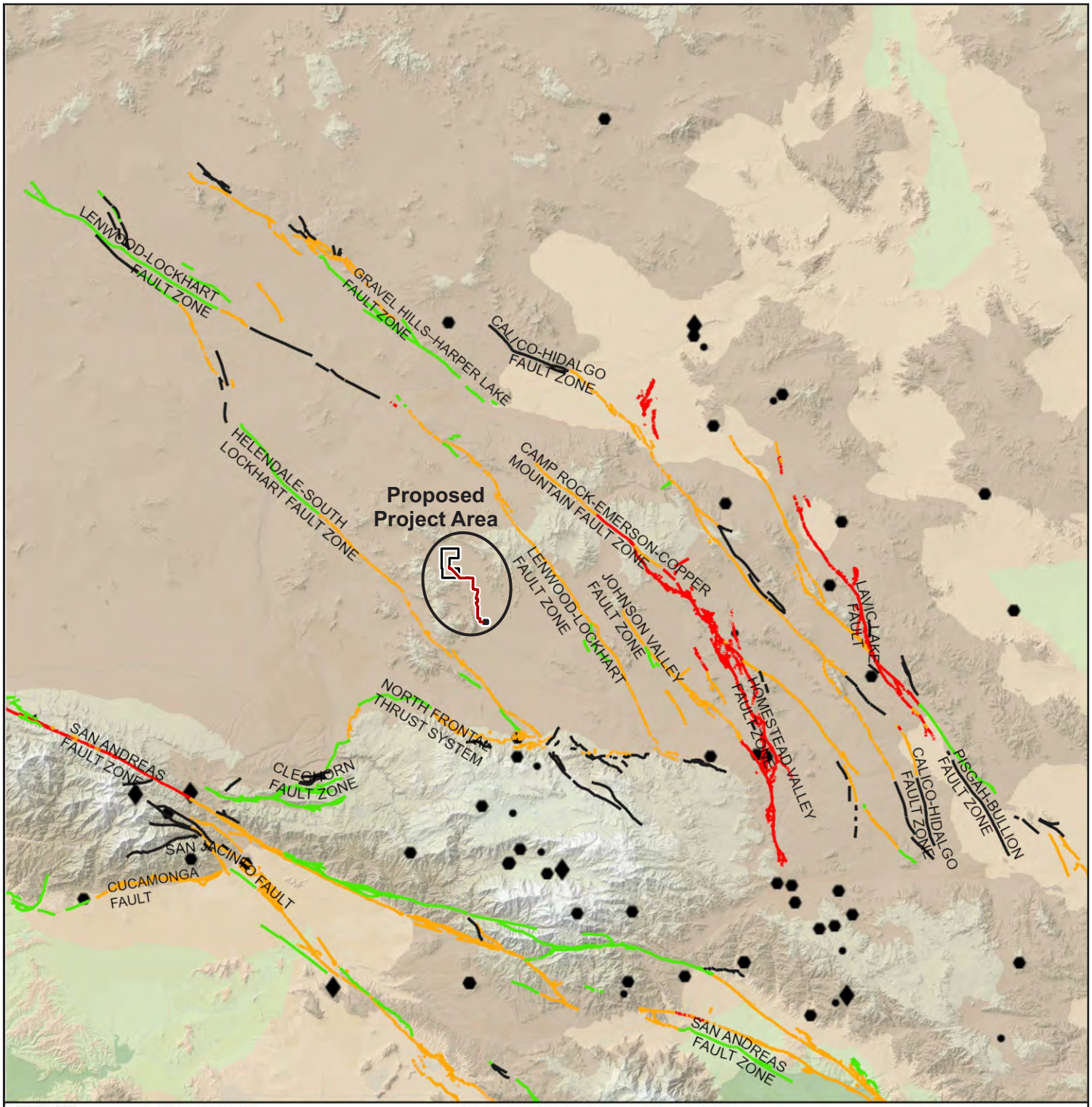


Figure 4.7-3
Faults in the Stagecoach and SCE Calcite Facilities Project Area

Fault Rupture

Fault rupture is the surface displacement that occurs when movement on a fault deep within the earth breaks through to the surface. Fault rupture and displacement almost always follows preexisting faults, which are zones of weakness; however, not all earthquakes result in surface rupture (i.e., earthquakes that occur on blind thrusts do not result in surface fault rupture). Rupture may occur suddenly during an earthquake or slowly in the form of fault creep. In addition to damage caused by ground shaking from an earthquake, fault rupture is damaging to buildings and other structures due to the differential displacement and deformation of the ground surface that occurs from the fault offset leading to damage or collapse structural failure of structures across this zone. Perhaps the most important single factor to be considered in the seismic design of electric transmission lines and underground cables crossing active faults is the amount and type of potential ground surface displacement.

Although there are several active and potentially active faults in the Proposed Project vicinity (see Table 4.7-2 and Figure 4.7-3, Faults in the Stagecoach and SCE Calcite Facilities Project Area), no known active or potentially active faults cross the Stagecoach Facilities or the SCE Calcite Facilities. The closest Alquist-Priolo zoned fault to the Proposed Project is the Helendale–South Lockhart fault zone, located approximately 5 miles southwest of the Proposed Project (CGS 2020a).

Strong Ground Shaking

An earthquake is classified by the amount of energy released, which historically was quantified using the Richter scale. Seismologists now use the Moment Magnitude (M) scale because it provides a more accurate measurement of the size of major and great earthquakes. For earthquakes of less than M 7.0, the Moment and Richter Magnitude scales are nearly identical. For earthquake magnitudes greater than M 7.0, readings on the Moment Magnitude scale are slightly greater than a corresponding Richter Magnitude.

The intensity of the seismic shaking, or strong ground motion, during an earthquake is dependent on the distance between the Proposed Project area and the epicenter of the earthquake, the magnitude of the earthquake, and the geologic conditions underlying and surrounding the Proposed Project area. Earthquakes occurring on faults closest to the Proposed Project area would most likely generate the largest ground motion.

The intensity of earthquake-induced ground motions can be described using ground accelerations, represented as a fraction of the acceleration of gravity (g). The California Geologic Survey (CGS) Probabilistic Seismic Hazards Ground Motion Interpolator website, using data from the CGS/USGS 2008 Probabilistic Seismic Hazard Assessment (PSHA) Maps was used to estimate peak ground accelerations (PGAs) for the Proposed Project (CGS 2020b). PSHA Maps depict peak ground accelerations with a 2 percent probability of exceedance in 50 years, which corresponds to a return interval of 2,475 years for a

maximum considered earthquake. Peak ground acceleration is the maximum acceleration experienced by a particle on the Earth's surface during the course of an earthquake, and the units of acceleration are most commonly measured in terms of fractions of g, the acceleration due to gravity (980 cm/sec2). Peak ground accelerations within the Proposed Project site range from about 0.55g to 0.60g, which corresponds to moderate ground shaking (CGS 2020b).

A review of historic earthquake activity from 1769 to 2017 indicates that nine earthquakes of magnitude M 6.0 or greater have occurred within 50 miles (80 kilometers) of the Proposed Project (CGS 2020b, NCEDC 2017). Some of these earthquakes had numerous aftershocks, with some measured greater than M 6.0, which resulted in further damage in the affected areas. This includes the M 7.3 Landers Earthquake, which had many large aftershocks, including the 6.5 Big Bear Earthquake (SCEDC 2017). A summary of the M 6.0 or greater earthquake events within 50 miles of the Proposed Project is presented in Table 4.7-3.

Table 4.7-3. Significant or Damaging Historic Earthquakes

Date	Earthquake Magnitude[1]	Earthquake Name or General Location	Fault Involved, if Known	Approximate Distance to Proposed Project (miles)
October 16, 1999	7.1	Hector Mine Earthquake	Lavic Lake (Hector) and Bullion	40
June 28, 1992	7.3	Landers Earthquake	Johnson Valley, Landers, Homestead Valley, Emerson, Camp Rock, and others	37.5
June 28, 1992	6.5	Big Bear Earthquake – aftershock of the Landers Earthquake	Unnamed fault	25.5
April 10, 1947	6.5	Manix Earthquake	Manix	35
July 23, 1923	6.2	North San Jacinto Fault Earthquake	San Jacinto	41
July 22, 1899	6.4	Cajon Pass Earthquake	Uncertain	35
July 29, 1894	6.2	Lytle Creek region	San Jacinto or San Andreas	39.5

Table 4.7-3. Significant or Damaging Historic Earthquakes				
Date	**Earthquake Magnitude[1]**	**Earthquake Name or General Location**	**Fault Involved, if Known**	**Approximate Distance to Proposed Project (miles)**
December 16, 1858	6.0	San Bernardino – aftershock of the Fort Tejon Earthquake	Uncertain	35
December 8, 1812	7.5	Wrightwood Earthquake	San Andreas	39.5

Source: SCEDC2017, CGS 2020c, and NCEDC 2017.

Notes: Magnitude is moment magnitude (M_W) for earthquakes after 1911. For earthquakes before 1911, magnitudes are estimated from observed shaking intensity. Earthquake magnitudes and locations before 1932 are estimated based on reports of damage and felt effects.

Liquefaction

Liquefaction is the phenomenon in which saturated granular sediments temporarily lose their shear strength during periods of earthquake-induced strong ground shaking. The susceptibility of a site to liquefaction is a function of the depth, density, and water content of the granular sediments and the magnitude and frequency of earthquakes in the surrounding region. Saturated, unconsolidated silts, sands, and silty sands within 50 feet of the ground surface are most susceptible to liquefaction (unconsolidated sediments with groundwater levels of 50 feet bgs or less). Liquefaction-related phenomena include lateral spreading, ground oscillation, flow failures, loss of bearing strength, subsidence, and buoyancy effects (Youd and Perkins 1978). In addition, densification of the soil resulting in vertical settlement of the ground can also occur.

In order to determine liquefaction susceptibility of a region, three major factors must be analyzed. These include: (a) the density and textural characteristics of the alluvial sediments; (b) the intensity and duration of ground shaking; and (c) the depth to groundwater. The young sedimentary deposits underlying the Proposed Project are not generally expected to be liquefiable due to deep groundwater levels in the Proposed Project area, generally greater than 100 feet bgs (Barr 2017, USGS 2017a). The igneous and metamorphic rocks in the Proposed Project area are not susceptible to liquefaction.

Seismic Slope Instability

Other forms of seismically induced ground failures that may affect the Proposed Project area include ground cracking, and seismically induced landslides. Landslides triggered by earthquakes have been a significant cause of earthquake damage; in Southern California, large earthquakes such as the 1971 San Fernando and 1994 Northridge earthquakes triggered landslides that were responsible for destroying or damaging numerous structures,

blocking major transportation corridors, and damaging life-line infrastructure. Areas that are most susceptible to earthquake-induced landslides are steep slopes in poorly cemented or highly fractured rocks, areas underlain by loose, weak soils, and areas on or adjacent to existing landslide deposits. No areas of landslide susceptibility are indicated in the Proposed Project area on the County of San Bernardino Liquefaction & Landslides Policy Map (Policy Map HZ-2) (San Bernardino County 2020c).

4.7.1.2 Environmental Setting of the Stagecoach Solar Generation Plant

The Stagecoach Solar Generation Plant is located on a gently sloping alluvial fan comprised primarily of young alluvial fan and valley deposits, narrow active alluvial fan deposits, and areas of eolian and dune deposits overlying alluvial fan deposits and quartz monzonite (Figure 4.7-1, Geologic Map of the Stagecoach and SCE Calcite Facilities Project Area), described in Section 4.7.1.1. An area mapped as mixed alluvial fan and debris flow deposits (CGS 2012) is located along the base of the hills along and adjacent to a small portion of the southern boundary of the Proposed Project site; however, this unit is approximately 0.4 miles south of the closest proposed solar generation plant. The closest mapped existing landslide, identified on the San Bernardino County Liquefaction & Landslides Policy Map (Policy Map HZ-2), is approximately 9 miles southwest of the Proposed Project and the closest mapped County landslide hazard zone is approximately 15 miles south of the Proposed Project (San Bernardino County 2020c).

Soil units underlying the Stagecoach Solar Generation Plant include the gravelly surface of the alluvial fan deposits (Cajon-Arizo Complex), and smaller areas of loamy sands (Helendale-Bryman Loamy Sands and Mirage Sandy Loam; see Table 4.7-1 and Figure 4.7-2, Soils Map of the Stagecoach and SCE Calcite Facilities Project Area). Erosion potential of these soil units, as identified by the NRCS, range from slight to high for both wind and water. Desert pavement, which protects soil from erosion, may be present in the southern and eastern portions of the Stagecoach Solar Generation Plant underlain by the Mirage Sandy Loam.

The San Bernardino County 2020 General Plan Wind Erosion Hazards Policy Map (Policy Map HZ-11) maps most of the solar generation plant site as high wind erosion potential with some pockets of medium-high wind erosion potential (San Bernardino County 2020c).

Corrosion potential of these soil units is low for concrete and ranges from low to moderate for uncoated steel, except for the Mirage Sandy Loam which has corrosion potential of high for both concrete and uncoated steel.

The Stagecoach Solar Generation Plant is not located in a subsidence area.

4.7.1.3 Environmental Setting of the Stagecoach Gen-tie Line

The Stagecoach Gen-tie Line crosses young alluvial fan and valley deposits and narrow active alluvial fan deposits along the gently sloping valley floor of North Lucerne Valley.

Two small areas of the gen-tie line cross the valley floor near units mapped as debris flow deposits (mixed alluvium and debris flow deposits (CGS 2012)) along the eastern margin of the Sidewinder and White Horse Mountains. The gen-tie line is approximately 0.2 miles northeast of mapped debris flow deposits where it enters the Stagecoach Solar Generation Plant site and approximately 0.1 miles east of debris flow deposits near the southern end and north of the SCE Calcite Facilities (Figure 4.7-1, Geologic Map of the Stagecoach and SCE Calcite Facilities Project Area). The County of San Bernardino 2020 General Plan Liquefaction & Landslides Policy Map (Policy Map HZ-2) does not map any existing landslides, nor any landslide hazard zones across or near the gen-tie line (San Bernardino County 2020c).

The underlying soil is predominantly the gravelly alluvial fan surface of the Cajon-Arizo Complex; there are several small areas of Mirage Sandy Loam underlying the northern end of the line and the southern 2 miles of the alignment is underlain by Bryman Loamy Fine Sand and Wasco Sandy Loam (Figure 4.7-2, Soils Map of the Stagecoach and SCE Calcite Facilities Project Area). Erosion potential of these soil units, as identified by the NRCS, ranges from slight to very high for wind and slight to moderate for water (Table 4.7-1). Desert pavement, which protects soil from erosion, may be present in the small areas along Stagecoach Gen-tie Line route underlain by the Mirage Sandy Loam.

The San Bernardino County 2020 General Plan Wind Erosion Hazards Policy Map (Policy Map HZ-11) maps most of the Stagecoach Gen-tie Line route as high wind erosion potential with medium wind erosion potential at the southern end (San Bernardino County 2020c).

The Mirage Sandy Loam is highly corrosive to both concrete and steel and both the Bryman and Wasco soils are moderately corrosive to steel.

The southern end of the gen-tie line is located approximately 1 mile north of active subsidence occurring at Lucerne Lake.

4.7.1.4 Environmental Setting of the SCE Calcite Facilities

The SCE Calcite Facilities site is underlain by young alluvial fan and valley deposits (Figure 4.7-1, Geologic Map of the Stagecoach and SCE Calcite Facilities Project Area). Mixed alluvium and debris flow deposits (CGS 2012) are mapped about 0.25 miles west of the SCE Calcite Facilities along the eastern margin of White Horse Mountain (Figure 4.7-1, Geologic Map of the Stagecoach and SCE Calcite Facilities Project Area). The County of San Bernardino 2020 General Plan Liquefaction & Landslides Policy Map (Policy Map HZ-2) maps the closest existing landslides and landslide hazard zones approximately 9 miles southwest and 15 miles south, respectively, from the SCE Calcite Facilities (San Bernardino County 2020c).

Soils units underlying the SCE Calcite Facilities are loamy sands and sandy loams of the Helendale Loamy Sand, Kimberlina Loamy Fine Sand, Lavic Loamy Fine Sand, and

Wasco Sandy Loam (Figure 4.7-2, Soils Map of the Stagecoach and SCE Calcite Facilities Project Area). These soils have low expansion potential.

Erosion potential of the soils underlying the substation site range from slight to moderate for water and moderate to high for erosion by wind. The San Bernardino County 2020 Policy Plan (the County's General Plan) presents a Wind Erosion Hazards Policy Map (Policy Map HZ-11) that shows most of the SCE Calcite Facilities as medium wind erosion potential (San Bernardino County 2020c).

Potentially corrosive soils underlie the project site, ranging from moderate to high for potential to corrode uncoated steel and low to moderate for concrete (Table 4.7-1).

The proposed SCE Calcite Facilities would be located approximately 1 mile north of active subsidence at Lucerne Lake.

4.7.2 Regulatory Setting

The primary federal and state laws, regulations, and policies that pertain to the Proposed Project are summarized in Appendix A. Construction and operation of the Proposed Project is subject to policies and regulations contained within the San Bernardino County (County) Code of Ordinances, Countywide General Plan, and the Local Agency Management Program (LAMP) for Onsite Wastewater Treatment Systems (OWTS). Local policies that pertain to the Proposed Project related to geology, soils, and seismic issues are summarized below.

San Bernardino Countywide Plan: 2020 County Policy Plan

The 2020 County Policy Plan serves as the County's General Plan. It contains goals and policies related to geology, soils, and seismic hazards within several elements. The following County goals and associated policies are relevant to geology, soils, and seismic hazards for the Proposed Project.

Goal NR-1 Air Quality. Air quality that promotes health and wellness of residents in San Bernardino County through improvements in locally-generated emissions.

- ***Policy NR-1.6 Fugitive dust emissions.*** *We coordinate with air quality management districts on requirements for dust control plans, revegetation, and soil compaction to prevent fugitive dust emissions.*

Goal NR-2 Water Quality. Clean and safe water for human consumption and the natural environment.

- ***Policy NR-2.5 Stormwater discharge****. We ensure compliance with the County's Municipal Stormwater NPDES (National Pollutant Discharge Elimination System) Permit by requiring new development and significant redevelopment to protect the quality of water and drainage systems through site design, source controls, stormwater treatment, runoff reduction measures, best management practices,*

low impact development strategies, and technological advances. For existing development, we monitor businesses and coordinate with municipalities.

Goal HZ-1 Natural Environmental Hazards. Minimized risk of injury, loss of life, property damage, and economic and social disruption caused by natural environmental hazards and adaptation to potential changes in climate.

- ***Policy HZ-1.2 New development in environmental hazard areas.*** *We require all new development to be located outside of the environmental hazard areas listed below. For any lot or parcel that does not have sufficient buildable area outside of such hazard areas, we require adequate mitigation, including designs that allow occupants to shelter in place and to have sufficient time to evacuate during times of extreme weather and natural disasters.*
  - *Flood: 100-year flood zone, dam/basin inundation area*
  - *Geologic: Alquist Priolo earthquake fault zone; County-identified fault zone; rockfall/debris-flow hazard area, medium or high liquefaction area (low to high and localized), existing and County-identified landslide area, moderate to high landslide susceptibility area)*
  - *Fire: high or very high fire hazard severity zone*
- ***Policy HZ-1.6 Critical and essential facility location.*** *We require new critical and essential facilities to be located outside of hazard areas, whenever feasible.*
- ***Policy HZ-1.7 Underground utilities.*** *We require that underground utilities be designed to withstand seismic forces, accommodate ground settlement, and hardened to fire risk.*
- ***Policy HZ-1.8 Wind erosion hazards.*** *We require new development in medium-high or high wind erosion hazard areas to minimize the effects of wind-blown soil through building and site design features such as fencing, surface treatment or pavement, attenuation or wind 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.*

San Bernardino County Code of Ordinances

The San Bernardino County Code of Ordinances (San Bernardino County Code) presents regulations to protect the public's health, safety, and quality of life. The San Bernardino County Code of Ordinances contains rules and regulations that govern water sources and systems and waste management in Title 3, Division 3, Environmental Health; building regulations in Title 6, Division 3, Building Regulations; and grading and dust and erosion control in Title 8, Division 3, Countywide Development Standards, and Division 8, Resource Management and Conservation. The San Bernardino County Building Regulations are

based on the California Building Code. San Bernardino County Land Use Services Department, Division of Code Enforcement administers programs designed to protect the public's safety, welfare, and property value through enforcement of San Bernardino County ordinances and State/Federal laws relating to land use, zoning, housing, public nuisances and vehicle abatement within the unincorporated areas of the County.

Local Agency Management Program

The County requires a builder to either connect to an available sewer system, or if no sewer system is available, to construct an OWTS, also known as a septic system. The County has developed the LAMP for OWTS, which provides siting evaluation standards, siting requirements, and design standards. Oversight of OWTS installation and maintenance is a multiple agency effort involving Land Use Services Department, Building and Safety Division for issuing permits and reviewing plans; Land Use Services Department, Code Enforcement Division is responsible for investigating complaints, enforcing permit requirements, repairs, and reporting requirements; Department of Public Health, Division of Environmental Health Services (DEHS) which is responsible for issuing permits for alternative treatment systems, reviewing percolation reports, and reviewing supplemental treatment and/or alternative dispersal proposals for new and replacement septic systems for commercial projects. The County requires that qualified professional, as designated by the LAMP, must conduct a percolation test to determine the soil's absorption rate and design the OWTS. DEHS reviews all percolation reports to evaluate the testing methods, calculations, and determined design rate.

4.7.3 Significance Criteria

Impacts related to Geology and Soils are considered significant if the Proposed Project would:

- Expose people or structures to potential risk of loss or injury where there is high potential for earthquake-related ground rupture in the vicinity of major fault crossings
- Result in substantial adverse effects from seismically induced ground shaking or seismically induced ground failures such as landslides or liquefaction-related phenomena
- Result in triggering or acceleration of geologic processes, such as landslides or substantial soil erosion
- Expose people or structures to potential risk of loss or injury where expansive soils or other unsuitable soils are present
- Expose people or structures to injury or damage involving slope failures on existing unstable slopes

- 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

4.7.4 Environmental Impact Analysis and Mitigation

The impacts of the Stagecoach Solar Generation Plant are presented in Section 4.7.4.1, and impacts from the Stagecoach Gen-tie Line and SCE Calcite Facilities are analyzed in Sections 4.7.4.2 and 4.7.4.3, respectively. Only Impact GEO-5, related to soil erosion, would affect the construction phase. All other impacts addressed in this section relate only to the operation and maintenance (O&M) phase of the Proposed Project.

4.7.4.1 Impacts of the Stagecoach Solar Generation Plant

Impact GEO-1: Damage or injury from fault rupture.

Surface fault rupture of active or potentially active faults crossing project components could damage structures and/or injure people at the solar generation plant. **(No Impact)**

Impact Discussion

Operation and Maintenance. Fault rupture is the surface displacement that occurs when movement on a fault within the earth breaks through to the surface. Fault rupture and displacement almost always follow preexisting faults, which are zones of weakness. The Proposed Project is proposed in a seismically active region of Southern California in close proximity to faults of the San Andreas, Garlock, Eastern California Shear Zone, and Transverse Ranges fault systems. The significant faults in the Proposed Project area are faults of the Eastern California Shear Zone and the San Andreas fault zones. No known active, potentially active, or Alquist-Priolo zoned faults cross or are in the immediate vicinity of the proposed solar generation plant site. The closest active fault is the Alquist-Priolo zoned Helendale–South Lockhart fault zone, located approximately 4.9 miles southwest of the Proposed Project. Therefore, there is no impact related to surface fault rupture at the Proposed Project site.

Mitigation Measures

No mitigation would be required.

Impact GEO-2: Strong earthquake-induced ground shaking could result in damage to project structures and/or injury to people.

Large local or regional earthquakes could result in strong ground shaking at the solar generation plant, causing damage to Proposed Project structures, which in turn could potentially cause injury to workers. **(Less than Significant)**

Impact Discussion

Operation and Maintenance. Moderate ground shaking should be expected in the event of an earthquake on local and regional faults in the Proposed Project vicinity, with estimated peak ground acceleration ranging from about 0.50 to 0.60 g for a 2 percent probability of exceedance in 50 years. The Proposed Project would be subject to ground shaking from a large earthquake on any of the major faults in the region. While the shaking would be less severe from an earthquake that originates farther from the Proposed Project, the effects from nearby or regional earthquakes could be damaging to Proposed Project structures. It is likely that solar generation plant would be subjected to at least one moderate or larger earthquake occurring close enough to produce moderate ground shaking with peak ground acceleration of 0.5 to 0.6 g.

Seismically induced ground shaking would not be affected by, nor would it affect construction of the solar generation plant. While project components such as the solar panels could be damaged by seismically induced ground shaking, potential damage to the components from seismic events would likely be easily repaired and would not pose a significant hazard of loss, injury, or death to workers or the public. The proposed O&M building would house up to 10 employees that could be injured in the event of building failure during seismically induced ground shaking. While the potential for seismically induced ground shaking in the Proposed Project area during project operation is unavoidable, the O&M, BESS, and substation structures would be designed per all applicable local and State seismic design criteria. Design of these structures to all appropriated seismic design criteria reduces the potential for loss, injury, or death of workers or the public to less than significant.

Seismically induced ground shaking would not affect the removal of project components from the Proposed Project site during decommissioning. No mitigation would be required.

Mitigation Measures

No mitigation would be required.

Impact GEO-3: Project structures could be damaged by seismically induced liquefaction phenomena.

Liquefaction phenomena caused by large local or regional earthquakes could damage solar generation plant structures, which in turn could potentially cause injury to workers. **(Less than Significant)**

Impact Discussion

Operation and Maintenance. Liquefaction is the phenomenon in which saturated granular sediments temporarily lose their shear strength during periods of earthquake-induced strong ground shaking and typically occurs in areas of saturated, unconsolidated silts,

sands, and silty sands within 50 feet of the ground surface. Liquefaction-related phenomena include lateral spreading, ground oscillation, flow failures, loss of bearing strength, subsidence, and buoyancy effects. In addition, densification of the soil resulting in vertical settlement of the ground can also occur. This phenomenon can result in damage to infrastructure, including foundations. Although the proposed solar generation plant site is primarily underlain by young unconsolidated sediments (CGS 2012), liquefaction-related phenomena are unlikely to occur at the site as it has deep groundwater levels (greater than 100 feet bgs) (Barr 2017, USGS 2017a) and is likely to experience only moderate ground shaking. Additionally, all Proposed Project structures would be designed in compliance with all local and State building codes. Therefore, the potential for damage to Proposed Project structures or injury to workers due to liquefaction-related phenomena is less than significant.

Mitigation Measures

No mitigation would be required.

Impact GEO-4: Seismically induced landslides or slope failures could damage project structures or expose workers to injury.

Landslides or other slope failures could be triggered by large local or regional earthquakes resulting in damage to Proposed Project structures and in turn cause injury to workers. **(Less than Significant)**

Impact Discussion

Operation and Maintenance. The solar generation plant is proposed on gently sloping to flat alluvial fan surfaces with some gently sloping hills and are not located in an area considered susceptible to landslides. Although mixed debris flow alluvial fan units have been mapped in the general vicinity of the solar generation plant, the closest mapped debris flow unit is 0.4 miles south of Proposed Project components on gently sloping hills. The San Bernardino County 2020 General Plan Liquefaction & Landslides Policy Map (Policy Map HZ-2) does not map any existing landslides in or near the Proposed Project area or any landslide hazard zones, the nearest are located 9 and 15 miles southwest and south of the Proposed Project, respectively (San Bernardino County 2020c). The Proposed Project site is likely to experience only moderate seismically induced ground shaking. The County Safety Background Report (San Bernardino County 2018b) indicates that in the desert areas of the County landslides are generally less of a concern due to the low annual rainfall, and any slope failures that would occur during an earthquake would likely be localized rock falls and debris flows. Because of the low annual rainfall, flat to low sloping topography, distance from existing slope failures, and the expected moderate level of ground shaking, the solar generation plant site is unlikely to be subject to seismically induced slope failures. In the event minor slope failures were triggered in the hills near the Proposed Project boundaries, based on Proposed Project configurations and boundaries

they would occur in areas outside of the Proposed Project or in areas within the Proposed Project boundaries with no Proposed Project components. The impact would be less than significant.

Mitigation Measures

No mitigation would be required.

Impact GEO-5: Construction and operation of the Project could trigger or accelerate soil erosion.

Excavation and grading for solar generation plant components and access roads could loosen soil and trigger or accelerate erosion. **(Less than Significant with Mitigation)**

Impact Discussion

Construction. Removal of vegetation, and excavation and grading for the solar arrays, equipment pads, foundations, underground conduits and vaults, access roads, and work areas could loosen soil and accelerate erosion. Erosion by wind and water could occur in areas where the soil is loosened by construction activities. The soils in the solar generation plant area generally contain high percentages of sand and may be susceptible to wind and water erosion. Soils containing high percentages of fine sands and silt and that are low in density, are generally the most erodible. Erosion potential of the soils, as mapped by the NRCS, throughout the solar generation plant site due to wind and water (sheet and rill erosion) ranges from slight to high. The San Bernardino County 2020 General Plan Wind Erosion Hazards Policy Map (Policy Map HZ-11) maps most of the solar generation plant site as high wind erosion potential with some pockets of medium-high wind erosion potential (San Bernardino County 2020c).

Current regulations would require that the Proposed Project obtain a NPDES General Permit for Storm Water Discharges Associated with Construction Activity, under the Clean Water Act regulations, because construction would disturb a surface area greater than one acre. Compliance with the NPDES would require that the applicant prepare and submit a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP would require development and implementation of Best Management Practices (BMPs) to identify and control water-driven erosion. Compliance with the SWPPP would reduce the potential for water-driven erosion to less than significant.

The control of wind-driven erosion that causes blowing dust would be governed by Mojave Desert Air Quality Management District (MDAQMD) fugitive dust rules, which would require stringent dust control measures. These requirements would be supplemented by Mitigation Measure (MM) AQ-1 (Develop Fugitive Dust Control Plan, Section 4.2, *Air Quality*). In combination, these measures would reduce the potential for construction triggered wind erosion to less than significant levels.

The Proposed Project area contains soils that commonly have desert pavement, a unique geologic feature that typically takes thousands of years to form which helps prevent erosion of the underlying finer sediments. Desert pavement would be disturbed by Proposed Project grading and result in an increase in erosion by wind and water. In addition to compliance with the SWPPP, implementation of MMs GEO-5 (Prepare Desert Pavement Assessment), AQ-1 (Develop Fugitive Dust Control Plan, Section 4.2, *Air Quality*), BIO-1c (Minimize Impact and Protect Identified Vegetation and Habitat), BIO-1e (Revegetation), and BIO-1g (Compensate for Loss of Natural Habitat) would be required to reduce impacts due to disturbance of desert pavement that would result in triggering or accelerating soil erosion. In combination, these measures would reduce the potential for construction triggered or accelerated wind and water erosion to less than significant levels.

Operation and Maintenance. O&M of the solar generation plant would not require any significant ground disturbance. Therefore, significant soil erosion would not be triggered or accelerated due to Proposed Project operation. Impacts from soil erosion would be less than significant during Proposed Project operation.

Decommissioning of the solar generation plant is described in Section 2.5, *Project Description* (Stagecoach Facilities Closure, Decommissioning, Reclamation, and Restoration). The Applicant has committed that this process would include removal of all project components at the solar generation plant site, which would require ground disturbance to remove components that are in the ground such as equipment and building pads/foundations, solar array supports, and buried electrical cables. Similar NPDES regulations would likely apply for decommissioning, requiring a SWPPP and associated BMPs to limit the potential for water-driven erosion during decommissioning activities. Additionally, implementation of MM AQ-1a would reduce the potential for wind-driven erosion during decommissioning activities. Therefore, impacts from soil erosion would be less than significant due to the Proposed Project decommissioning.

Mitigation Measures

MM GEO-5: Prepare Desert Pavement Assessment. The Applicant shall complete a site-specific desert pavement assessment, prepared by a qualified geologist or other qualified specialist. The assessment shall identify and map desert pavement within and adjacent to project construction impact areas. Based on the mapping, the plan shall include options for avoidance, minimized disturbance of, and/or protection of desert pavement, to the extent feasible. These design changes shall be incorporated into the Project design. The desert pavement assessment and any modifications to the Project design based on the assessment shall be submitted to the CSLC for review and approval at least 60 days prior to start of construction.

MM AQ-1a: Fugitive Dust Control (Section 4.2, *Air Quality*)

MM BIO-1c: Minimize Impact and Protect Identified Vegetation and Habitat (Section 4.3, *Biological Resources*)

MM BIO-1e: Revegetation (Section 4.3, *Biological Resources*)

MM BIO-1g: Compensate for Loss of Natural Habitat (Section 4.3, *Biological Resources*)

Impact GEO-6: Slope failures, such as landslides, could be triggered by project construction.

Excavation and grading for solar generation plant components along and near slopes and previously mapped landslides could trigger slope failures. **(Less than Significant)**

Impact Discussion

Operation and Maintenance. The slope stability of an area is influenced by the steepness of the slope, the relative strength of the underlying rock material, and the thickness and cohesion of the overlying colluvium and alluvium. The steeper the slope and/or the less strong the rock, the more likely the area is susceptible to landslides. The steeper the slope and the thicker the colluvium, the more likely the area is susceptible to debris flows. An indication of unstable slopes is the presence of old or recent landslides or debris flows. Most of the Stagecoach Solar Generation Plant would be located on gently sloping to flat terrain, with some portion of the Proposed Project site located on gently sloping alluvial fan. The Proposed Project site area does not include any areas identified as existing landslide or landslide hazard. Although mixed debris flow and alluvial fan deposits have been mapped at the base of the hills near the southern boundary of the solar generation plant (CGS 2012), these deposits are located approximately 0.4 miles south of Proposed Project components and would not be disturbed by Proposed Project construction.

The San Bernardino County 2020 General Plan Liquefaction & Landslides Policy Map (Policy Map HZ-2) does not map any existing landslides in or adjacent to the solar generation plant, and no landslide hazard zones have been defined within 15 miles (San Bernardino County 2020c). No mapped landslides or known unstable slopes exist within the Proposed Project site or near to areas of proposed ground disturbance for construction of Proposed Project components. The Proposed Project would adhere to geotechnical and design recommendations regarding slope stability and approved grading plans. Therefore, the risk of construction-triggered slope failures is minimal within the solar generation plant. As a result, this impact would be less than significant.

Mitigation Measures

No mitigation would be required.

Impact GEO-7: Unsuitable soils result in damage to project structures.

Expansive, corrosive, or other unsuitable soil characteristics could cause damage to solar generation plant components and/or injury to workers during project operation. **(Less than Significant with Mitigation)**

Impact Discussion

Operation and Maintenance. All the soils mapped in the Proposed Project area have low shrink-swell potential, with the exception of the Mirage Sandy Loam, which has moderate shrink swell potential. Most of the soils in the Proposed Project area are granular with high percentages of sand and have a low potential for expansion. Therefore, there is the potential for damage to project components from expansive soils in areas underlain by the Mirage Sandy Loam.

Several of the soils within the Proposed Project area have corrosion potential of moderate to high for uncoated steel and concrete. In areas where corrosive subsurface soils underlie the solar generation plant, the corrosive soils could have a detrimental effect on concrete and metals. Depending on the degree of corrosivity of subsurface soils, concrete and reinforcing steel in concrete structures and bare-metal structures exposed to these soils could deteriorate, eventually leading to structural failures. Implementation of MM GEO-7 would ensure that Proposed Project components would not be damaged by unsuitable soils causing injury to project workers, therefore the impact would be less than significant with mitigation.

Corrosion potential of soils underling the solar generation plant would not be affected by, nor would it affect decommissioning and removal of the proposed solar generation plant components.

Mitigation Measures

MM GEO-7: Assess Unsuitable Soils. The project-specific geotechnical investigation(s) shall include evaluation of expansive and corrosive soils underlying Project components and if necessary, develop recommendations to protect project structures from expansive or corrosive soil conditions. If expansive soils are identified, geotechnical recommendations to mitigate potential problems from expansive soils could include over-excavation and replacement with non-expansive fill, ground treatment processes, or redirection of surface water and drainage away from components underlain by expansive soils. If corrosive soils are identified, geotechnical design recommendations for the protection of steel reinforcement, concrete, and buried metal structural components could include use of corrosion resistant materials and coatings, increased thickness of project components exposed to corrosive soils, or use of passive or active cathodic protection systems. The geotechnical recommendations shall be incorporated in the final project design to reduce impacts related to expansive or corrosive soils. The geotechnical investigation report and project plans with any modifications made based

on geotechnical recommendations should be submitted to CSLC for review 60 days prior to the start of construction.

Impact GEO-8: Soils could be incapable of supporting a Septic System.

Soils at the solar generation plant site could be found to be inadequate for use of a septic system. **(Less than Significant)**

Impact Discussion

Operation and Maintenance. The O&M building would serve up to 10 employees and would require restroom facilities. Wastewater generated by the restroom facilities would be disposed of through an OWTS. The proposed location of the leach field for the septic system is in the vicinity of the O&M site, and OWTS would have an estimated wastewater capacity of as much as 130,500 gallons per year. The area at and near the O&M site is underlain by young alluvial fan and valley sediments with surficial soils of the Cajon-Arizo Complex and Mirage Sandy Loam. County of San Bernardino permit and design requirements related to OWTS would require percolation testing and design of the OWTS by a qualified professional. Although unlikely due to the sandy nature of the underlying materials, if the soils were found to be inadequate for a leach field per County of San Bernardino requirements, an alternative wastewater disposal system, as outlined in the County of San Bernardino Local Agency Management Program (LAMP) for OWTS, could be installed. Therefore, the impact of soils inadequate to support a septic system would be less than significant.

Mitigation Measures

No mitigation would be required.

4.7.4.2 Impacts of the Stagecoach Gen-tie Line

The Stagecoach Gen-tie Line would not include any wastewater facilities or require wastewater disposal, therefore Impact GEO-8 (Soils could be incapable of supporting a Septic System) is not addressed in this section.

Impact GEO-1: Damage or injury from fault rupture.

Surface fault rupture of active or potentially active faults crossing the Stagecoach Gen-tie Line could damage structures and/or injure people. **(No Impact)**

Impact Discussion

Operation and Maintenance. No known active, potentially active, or Alquist-Priolo zoned faults cross the gen-tie line. Therefore, there is no potential for surface fault rupture at the proposed gen-tie line route.

Mitigation Measures

No mitigation would be required.

Impact GEO-2: Strong earthquake-induced ground shaking could result in damage to project structures and/or injury to people.

Large local or regional earthquakes could result in strong ground shaking along the gen-tie line, causing damage to structures, which in turn could potentially cause injury to workers. **(Less than Significant)**

Impact Discussion

Operation and Maintenance. Seismically induced ground shaking would not be affected by, nor would it affect construction of the proposed gen-tie line. While the potential for seismically induced ground shaking in the Proposed Project area during operation of the gen-tie line is unavoidable, the proposed gen-tie line would not include any occupied structures that would expose people to significant hazards due to seismic shaking. The gen-tie line would be designed per the project specific geotechnical investigation recommendations, reducing the potential for damage due to ground shaking. While it is unlikely that the above-ground gen-tie line would be damaged by moderate seismic ground shaking, any resultant damage to these lines from seismic events could be repaired and would not pose a significant hazard of loss, injury, or death.

Seismically induced ground shaking would not affect the removal of the gen-tie line from the gen-tie line right-of-way (ROW) during decommissioning. Therefore, impacts related to seismically induced ground shaking are less than significant.

Mitigation Measures

No mitigation would be required.

Impact GEO-3: Project structures could be damaged by seismically induced liquefaction phenomena.

Liquefaction phenomena caused by large local or regional earthquakes could damage gen-tie line structures, which in turn could potentially cause injury to workers. **(Less than Significant)**

Impact Discussion

Operation and Maintenance. Despite the presence of unconsolidated sedimentary deposits underlying the gen-tie line, liquefaction-related phenomena are unlikely to occur along the gen-tie route due to the deep groundwater levels (greater than 100 feet bgs) and the expected moderate ground shaking. Additionally, the gen-tie line would be designed per the project specific geotechnical investigation recommendations. Therefore, the potential

for damage to structures or injury to workers due to liquefaction-related phenomena is less than significant.

Mitigation Measures

No mitigation would be required.

Impact GEO-4: Seismically induced landslides or slope failures could damage project structures or expose workers to injury.

Landslides or other slope failures could be triggered by large local or regional earthquakes resulting in damage to gen-tie line structures and in turn cause injury to workers. **(Less than Significant)**

Impact Discussion

Operation and Maintenance. Most of the gen-tie alignment traverses flat to gently sloping terrane and would not be subject to slope failures. The gen-tie line traverses near material mapped as mixed debris flow and alluvial fan deposits in two locations (Figure 4.7-1, Geologic Map of the Stagecoach and SCE Calcite Facilities Project Area), at distances of approximately 0.2 and 0.1 miles from the mapped deposits. No mapped landslides or areas of landslide susceptibility are indicated along the proposed gen-tie route on the County of San Bernardino General Plan Liquefaction & Landslides Policy Map (Policy Map HZ-2) (San Bernardino County 2020c). Additionally, the Proposed Project area is likely to be subjected to only moderate ground shaking in the event of a local or regional earthquake. The County Safety Background Report (San Bernardino County 2018b) indicates that in the desert areas of the County landslides are generally less of a concern due to the low annual rainfall, and any slope failures that would occur during an earthquake would likely be localized rock falls and debris flows. The gen-tie line transmission structures will be designed and constructed per geotechnical investigation recommendations which would include recommendations to mitigate any potential seismic and landslide hazards. Therefore, the potential for damage due to seismically induced landslides or slope failures is less than significant.

Mitigation Measures

No mitigation would be required.

Impact GEO-5: Construction and operation of the Project could trigger or accelerate soil erosion.

Excavation and grading for gen-tie line components and access roads could loosen soil and trigger or accelerate erosion. **(Less than Significant with Mitigation)**

Impact Discussion

Construction. Excavation and grading during construction of the proposed gen-tie line and associated access and spur roads could potentially loosen soils and trigger or accelerate erosion. Existing paved and unpaved roads would be used as much as possible to transport material and equipment to and from the locations within the gen-tie line ROW; however, existing roads may need to be improved for use by construction equipment for the proposed gen-tie line and a new two-track road would be constructed under or immediately adjacent to the proposed gen-tie line for operation and maintenance access. The soils underlying the proposed gen-tie line components have potential for wind erosion that ranges from slight to very high and erosion potential by water of slight to moderate. The San Bernardino County 2020 General Plan Wind Erosion Hazards Policy Map (Policy Map HZ-11) maps most of the Stagecoach Gen-tie Line route as high wind erosion potential with medium wind erosion potential at the southern end (San Bernardino County 2020c).

The Applicant would be required to prepare a SWPPP, which would reduce effects of water-driven erosion and would apply to the gen-tie line construction. The SWPPP would require development and implementation of BMPs to identify and control erosion, which would reduce the potential for construction triggered erosion to less than significant.

The control of wind-driven erosion that causes blowing dust would be governed by MDAQMD fugitive dust rules (discussed in Section 4.2, *Air Quality*). These requirements would be supplemented by MM AQ-1a (Fugitive Dust Control, Section 4.2, *Air Quality*). In combination, these measures would reduce the potential for construction triggered wind erosion to less than significant levels.

The several small areas along the proposed gen-tie route have soils that commonly have desert pavement. Desert pavement would be disturbed by grading for access and spur roads, and ground disturbance in work areas and result in an increase in erosion by wind and water. In addition to Proposed Project use of existing roads as much as possible and compliance with the SWPPP, implementation of MMs GEO-5 (Prepare Desert Pavement Assessment), AQ-1 (Develop Fugitive Dust Control Plan, Section 4.2, *Air Quality*), BIO-1c (Minimize Impact and Protect Identified Vegetation and Habitat), BIO-1e (Revegetation), and BIO-1g (Compensate for Loss of Natural Habitat) would be required to reduce impacts due to disturbance of desert pavement that would result in triggering or accelerating soil erosion. In combination, these measures would reduce the potential for construction triggered or accelerated wind and water erosion to less than significant levels.

Operation and Maintenance. During operation and maintenance of the proposed gen-tie line, access to the ROW and transmission structure sites would be necessary; however, no significant ground disturbance would be required during O&M of the gen-tie line. The new two-track road would be used to access the proposed gen-tie line except where the route parallels the State Route 247 (SR-247, or Barstow Road) would be compacted during

construction and limited dust would be generated during vehicle use for operation and maintenance activities. Proposed Project operation and maintenance would be subject to that would be subject to MDAQMD fugitive dust rules and MM AQ-1a, therefore, the impact related to erosion would be less than significant during Proposed Project operation.

Decommissioning of the proposed gen-tie line would require ground disturbance to remove the underground components. The transmission pole structure foundations would be removed to a depth of at least 2 feet below the ground surface. NPDES regulations would likely still be in place at the time of decommissioning, requiring a SWPPP and BMPs to limit the potential for water-driven erosion during decommissioning activities. Additionally, implementation of MM AQ-1a would reduce the potential for wind-driven erosion during decommissioning activities. Therefore, impacts from soil erosion would be less than significant due to the Proposed Project decommissioning.

Mitigation Measures

MM GEO-5: Prepare Desert Pavement Assessment

MM AQ-1a: Fugitive Dust Control (Section 4.2, *Air Quality*)

MM BIO-1c: Minimize Impact and Protect Identified Vegetation and Habitat (Section 4.3, *Biological Resources*)

MM BIO-1e: Revegetation (Section 4.3, *Biological Resources*)

MM BIO-1g: Compensate for Loss of Natural Habitat (Section 4.3, *Biological Resources*)

Impact GEO-6: Slope failures, such as landslides, could be triggered by project construction.

Excavation and grading for gen-tie line structures and access roads along and near slopes and previously mapped landslides could trigger slope failures. **(Less than Significant)**

Impact Discussion

Operation and Maintenance. Most of the gen-tie alignment traverses flat to gently sloping terrain and would not be subject to construction triggered slope failures. The gen-tie line traverses near two areas with material mapped as mixed debris flow and alluvial fan deposits (Figure 4.7-1, Geologic Map of the Stagecoach and SCE Calcite Facilities Project Area); the mixed debris flow and alluvial fan deposits are mapped approximately 0.2 and 0.1 miles from gen-tie line. No existing landslides or areas of landslide susceptibility are indicated along the proposed gen-tie route on the County of San Bernardino General Plan Liquefaction & Landslides Policy Map (Policy Map HZ-2) (San Bernardino County 2020c). No ground disturbance for new access roads or other proposed gen-tie line components

are located on or immediately adjacent to moderate to steep slopes or the areas of existing mixed debris flow and alluvial fan deposits. The County Safety Background Report (San Bernardino County 2018b) indicates that in the desert areas of the County landslides are generally less of a concern due to the low annual rainfall. The gen-tie line transmission structures would be designed and constructed per the geotechnical investigation recommendations. Therefore, the impacts related to project-triggered slope failures would be less than significant.

Mitigation Measures

No mitigation would be required.

Impact GEO-7: Unsuitable soils result in damage to project structures.

Expansive, corrosive, or other unsuitable soil characteristics could cause damage to Proposed Project components and/or injury to workers during project operation. **(Less than Significant with Mitigation)**

Impact Discussion

Operation and Maintenance. Most of the soils underlying the proposed gen-tie line are granular with high percentages of sand and have low shrink-swell potential. However, the Mirage Sandy Loam soil, identified underlying two areas at the northern end of the proposed gen-tie line, has moderate expansion potential. Therefore, there would be potential for damage to project components from expansive soils in these areas.

Soils underlying the proposed gen-tie line have corrosion potential of low to moderate for uncoated steel and low for concrete, with the exception of the Mirage Sandy Loam soils, which have a high potential for corrosion to both uncoated steel and concrete. In areas where corrosive subsurface soils underlie the proposed gen-tie line, the corrosive soils could have a detrimental effect on concrete and metals. Depending on the degree of corrosivity of subsurface soils, concrete and reinforcing steel in concrete structures and bare-metal structures exposed to these soils could deteriorate, eventually leading to structural failures.

Implementation of MM GEO-7 would ensure that proposed gen-tie line structures would not be damaged by unsuitable soils resulting in injury to project workers, therefore the impact would be less than significant with mitigation.

Corrosion potential of soils underling the proposed gen-tie line would not be affected by, nor would it affect decommissioning and removal of the proposed gen-tie line.

Mitigation Measures

MM GEO-7: Assess Unsuitable Soils

4.7.4.3 Impacts of the SCE Calcite Facilities

The SCE Calcite Facilities would be primarily an unmanned substation and would not need restroom facilities, other than portable toilets, and would not require a wastewater disposal system. Therefore, Impact GEO-8 (Soils could be incapable of supporting a Septic System) is not addressed for the SCE Calcite Facilities.

Impact GEO-1: Damage or injury from fault rupture.

Surface fault rupture of active or potentially active faults crossing SCE Calcite Facilities could damage structures and/or injure people. **(No Impact)**

Impact Discussion

Operation and Maintenance. No known active, potentially active, or Alquist-Priolo zoned faults cross the SCE Calcite Facilities. Therefore, there is no potential for surface fault rupture at the proposed SCE Calcite Facilities.

Mitigation Measures

No mitigation would be required.

Impact GEO-2: Strong earthquake-induced ground shaking could result in damage to project structures and/or injury to people.

Large local or regional earthquakes could result in strong ground shaking at the SCE Calcite Facilities, causing damage to substation structures, which in turn could potentially cause injury to workers. **(Less than Significant)**

Impact Discussion

Operation and Maintenance. Seismically induced ground shaking would not be affected by nor would it affect construction of the proposed SCE Calcite Facilities. While the potential for seismically induced ground shaking in the Proposed Project area during operation of the SCE Calcite Facilities is unavoidable, the proposed substation would not include any occupied structures that would expose people to significant hazards due to seismic shaking. It is unlikely that the below grade and above-ground SCE Calcite Facilities components would be damaged by moderate seismic ground shaking. However, a site-specific geotechnical investigation that includes seismic hazard assessment would provide proper design for these facilities. Such an assessment would ensure compliance with all appropriate and applicable codes and seismic standards and guidelines, including those presented in IEEE 693 (Recommended Practices for Seismic Design of Substations), California Public Utilities Commission (CPUC) General Order (GO) 128 for underground electrical supply and communication systems, and CPUC GO 95 for overhead electrical supply and communications facilities. These existing requirements would ensure that the hazard from seismically induced ground shaking would be less than significant.

Seismically induced ground shaking would not affect the removal of the SCE Calcite Facilities during decommissioning.

Mitigation Measures

No mitigation would be required.

Impact GEO-3: Project structures could be damaged by seismically induced liquefaction phenomena.

Liquefaction phenomena caused by large local or regional earthquakes could damage SCE Calcite Facilities, which in turn could potentially cause injury to workers. **(Less than Significant)**

Impact Discussion

Operation and Maintenance. While the SCE Calcite Facilities are underlain by young alluvial fan and valley deposits, liquefaction-related phenomena are very unlikely to occur at the SCE Calcite Facilities due to deep groundwater levels in the area (generally greater than 100 feet bgs; USGS 2017a). Additionally, the substation would be designed consistent with project-specific geotechnical investigation recommendations and all applicable regulations and guidelines. Therefore, the potential for damage to substation structures and injury to workers due to liquefaction-related phenomena is less than significant.

Mitigation Measures

No mitigation would be required.

Impact GEO-4: Seismically induced landslides or slope failures could damage project structures or expose workers to injury.

Landslides or other slope failures could be triggered by large local or regional earthquakes resulting in damage to SCE Calcite Facilities and in turn cause injury to workers. **(No Impact)**

Impact Discussion

Operation and Maintenance. The SCE Calcite Facilities are located on flat to very gently sloping alluvial fan and valley floor and do not cross any areas mapped with existing landslides deposits or slope failures. The County of San Bernardino 2020 General Plan Liquefaction & Landslides Policy Map (Policy Map HZ-2) does not define any existing landslides or any landslide hazard zones in or near the SCE Calcite Facilities (San Bernardino County 2020c). Therefore, there is no impact related to seismically induced landslides at the SCE Calcite Facilities.

Mitigation Measures

No mitigation would be required.

Impact GEO-5: Construction and operation of the Project could trigger or accelerate soil erosion.

Excavation and grading for SCE Calcite Facilities and access roads could loosen soil and trigger or accelerate erosion. **(Less than Significant with Mitigation)**

Impact Discussion

Construction. Vegetation removal and excavation and grading during construction of the proposed SCE Calcite Facilities could potentially loosen soils and trigger or accelerate wind and water erosion. Erosion potential of the soils underlying the SCE Calcite Facilities site range from slight to moderate for water and moderate to high for erosion by wind. The San Bernardino County Wind Erosion Hazards Policy Map (Policy Map HZ-11) maps most of the SCE Calcite Facilities as medium wind erosion potential (San Bernardino County 2020c).

Erosion by water is governed by Clean Water Act regulations that require that the Applicant prepare and submit a SWPPP. The SWPPP would require development and implementation of BMPs to identify and control erosion. The SWPPP would require development and implementation of Best Management Practices (BMPs) to identify and control water-driven erosion and would reduce the potential for water-driven erosion to less than significant.

Wind-driven erosion at the substation site would be controlled by MDAQMD fugitive dust rules (discussed in Section 4.2, *Air Quality*), which would require dust control measures. In addition, MM AQ-1a in Section 4.2, *Air Quality*, would supplement these dust control rules. Dust and erosion control measures would be implemented during construction on the substation site. Therefore, the potential for construction-triggered erosion would be less than significant with mitigation.

Operation and Maintenance. Operation and maintenance of the SCE Calcite Facilities would not require ongoing ground disturbance, so significant soil erosion would not be triggered or accelerated due to project operation.

Decommissioning of the proposed SCE Calcite Facilities would require extensive ground disturbance to remove the underground components. NPDES regulations would likely still be in place at this time requiring a SWPPP and BMPs to limit the potential for water-driven erosion during decommissioning activities. Implementation of MM AQ-1a would reduce the potential for wind-driven erosion during decommissioning activities. Therefore, impacts related to soil erosion would be less than significant due to SCE Calcite Facilities decommissioning.

Mitigation Measures

MM AQ-1a: Fugitive Dust Control (Section 4.2, *Air Quality*)

Impact GEO-6: Slope failures, such as landslides, could be triggered by project construction.

Excavation and grading for SCE Calcite Facilities along and near slopes and previously mapped landslides could trigger slope failures. **(No Impact)**

Impact Discussion

Operation and Maintenance. The SCE Calcite Facilities are located on gently sloping to flat terrain and are not on or adjacent to any areas identified as existing landslide or landslide hazard. No areas of landslide susceptibility are indicated at the SCE Calcite Facilities site on the County of San Bernardino General Plan Liquefaction & Landslides Policy Map (Policy Map HZ-2) (San Bernardino County 2020c). There would be no impact related to construction triggered landslides or slope failures at the SCE Calcite Facilities.

Mitigation Measures

No mitigation would be required.

Impact GEO-7: Unsuitable soils result in damage to project structures.

Expansive, corrosive, or other unsuitable soil characteristics could cause damage to SCE Calcite Facilities and/or injury to workers during project operation. **(Less than Significant with Mitigation)**

Impact Discussion

Operation and Maintenance. The soils underlying the proposed SCE Calcite Facilities are granular with high percentages of sand and have a low potential for expansion.

Corrosion potential of the soils underlying the proposed SCE Calcite Facilities range from moderate to high potential to corrode uncoated steel and low to moderate potential to corrode concrete. In areas where moderate to highly corrosive subsurface soils underlie the proposed SCE Calcite Facilities the corrosive soils could have a detrimental effect on concrete and metals. Depending on the degree of corrosivity of subsurface soils, concrete and reinforcing steel in concrete structures and bare-metal structures exposed to these soils could deteriorate, eventually leading to structural failures. Implementation of MM GEO-7 would ensure that Proposed Project components would not be damaged by unsuitable soils causing injury to project workers, therefore the impact would be less than significant with mitigation.

Corrosion potential of soils underling the proposed SCE Calcite Facilities would not be affected by nor would it affect decommissioning and removal of the proposed SCE Calcite Facilities.

Mitigation Measures

MM GEO-7: Assess Unsuitable Soils

4.7.5 Cumulative Impacts

4.7.5.1 Geographic Scope

Impacts related to geology and soils are specific to the Proposed Project site and would generally combine only with those of projects that are in the immediate Proposed Project area. The geographic scope for the analysis of cumulative impacts associated with geology and soils is the area of ground disturbance for construction of the Proposed Project with the exception of erosion. Impacts resulting from erosion are also localized in nature but may extend beyond the actual Proposed Project boundaries to adjacent areas of other projects but would not extend beyond adjacent areas unless an extreme event results in substantial downstream/downwind erosion.

4.7.5.2 Cumulative Impact Analysis

Potential adverse effects related to geology and soils can be assessed in two categories: geology and soil conditions that could adversely affect a project (such as seismic hazards and problematic soils), and project-related impacts to the surrounding geology and soil (such as erosion and slope instability). Impacts related to seismic hazards and problematic soils result from the geologic characteristics of the Proposed Project area and are generally unrelated to past, present, and reasonably foreseeable development projects and human activity. The cumulative conditions for erosion and slope instability can be the result of other past, present, and reasonably foreseeable projects within the cumulative analysis study area.

Seismic hazards such as fault rupture, ground shaking, and liquefaction (Impacts GEO-1 through GEO-4) comprise an impact created by the geologic environment on individual projects. These forces would not create cumulatively considerable impacts. Impacts from unsuitable soils, such as expansive, corrosive, or soils incapable of supporting a septic system (Impacts GEO-7 and GEO-8) would also represent an impact of the environment on a specific project and also would not create impacts that are cumulatively considerable.

<u>Impacts GEO-5 and GEO-6: Construction Could Trigger or Accelerate Soil Erosion or Slope Failure</u>

Impacts related to slope instability and soil erosion (GEO-5 and GEO-6) are typically limited to a project site and immediately adjacent properties. The impacts of each past,

present, and reasonably foreseeable project would also be specific to the respective site, adjacent properties, and their users and would not be in common with or contribute to (or shared with, in an additive sense) the impacts on other sites further removed from the project. In addition, development of each site would be subject to site development and construction guidelines and standards (local, State, and federal) that are designed to protect public safety. Therefore, with regard to cumulative slope instability and soil erosion impacts, the Proposed Project's contribution to a cumulative impact would be considered significant only if it were to occur concurrently and immediately adjacent to or in the same location as the cumulative projects.

Although several of the cumulative projects discussed in Section 3.0 are located near the Proposed Project, none of the listed cumulative projects are immediately adjacent to nor physically overlap with the Proposed Project, therefore the Proposed Project would not be cumulatively considerable. Therefore, adverse impacts related to geology and soils from the Proposed Project would not be cumulatively considerable.

4.7.6 Mitigation Measure Summary

Table 4.7-4 summarizes the mitigation measures identified in this section to reduce or avoid potentially significant impacts related to geology and soils. Unless otherwise noted, all mitigation measures apply to impacts for both the Stagecoach Facilities and the SCE Calcite Facilities.

Table 4.7-4. Impact and Mitigation Measure Summary for Geology and Soils

Impact	Mitigation Measures
Impact GEO-1: Damage or injury from fault rupture	No mitigation required
Impact GEO-2: Strong earthquake-induced ground shaking could result in damage to project structures and/or injury to people	No mitigation required
Impact GEO-3: Project structures could be damaged by seismically induced liquefaction phenomena	No mitigation required
Impact GEO-4: Seismically induced landslides or slope failures could damage project structures or expose workers to injury	No mitigation required

Table 4.7-4. Impact and Mitigation Measure Summary for Geology and Soils	
Impact	**Mitigation Measures**
Impact GEO-5: Construction and operation of the Project could trigger or accelerate soil erosion	*MMs Applicable to Stagecoach Facilities:* **MM GEO-5**: Prepare Desert Pavement Assessment **MM BIO-1c:** Minimize Impact and Protect Identified Vegetation and Habitat (Section 4.3, *Biological Resources*) **MM BIO-1e:** Revegetation (Section 4.3, *Biological Resources*) **MM BIO-1g:** Compensate for Loss of Natural Habitat (Section 4.3, *Biological Resources*) *MMs Applicable to Stagecoach Facilities and SCE Calcite Facilities:* **MM AQ-1a:** Fugitive Dust Control (Section 4.2, *Air Quality*)
Impact GEO-6: Slope failures, such as landslides, could be triggered by project construction	No mitigation required
Impact GEO-7: Unsuitable soils result in damage to project structures	**MM GEO-7:** Assess Unsuitable Soils
Impact GEO-8: Soils could be incapable of supporting a septic system	No mitigation required

4.8 GREENHOUSE GAS EMISSIONS

This section describes the nature of greenhouse gas (GHG) emissions, evaluates the type and significance of impacts to climate change associated with GHG emissions from construction and operation of the Proposed Project, and identifies measures to avoid or substantially lessen any impacts found to be potentially significant.

Issues raised during scoping related to GHG emissions include consideration of the State's Renewable Portfolio Standards, the need to evaluate total GHG emissions throughout all phases of the Proposed Project (including the emissions due to land use conversion, and emissions avoided by producing electricity).

The Proposed Project is described in detail in Section 2, *Project Description*. The Environmental Impact Report (EIR) analysis of the Proposed Project is presented in three parts. The first two parts comprise the **Stagecoach Facilities** proposed by Aurora Solar, LLC and the third part includes the **SCE Calcite Facilities,** proposed by Southern California Edison (SCE). The analysis components are:

- The **Stagecoach Solar Generation Plant,** which would include the solar arrays and collector lines, ancillary project facilities, and the battery energy storage system (BESS), all located within the 3,570 acres of State-owned school lands managed by the CSLC
- The **Stagecoach Gen-tie Line** (located on State-owned lands, leased land, and purchased private land), which would run approximately 9.1 miles, connecting the Stagecoach Solar Generation Plant to the proposed SCE Calcite Facilities and the SCE electrical transmission system
- The **SCE Calcite Facilities,** which would be constructed, owned, and operated by SCE and would include a substation (referred to as the **SCE Calcite Substation**), a connection to distribution-level electric power, access roads, telecommunications facilities, and new transmission structures to interconnect with the existing transmission system

4.8.1 Environmental Setting

Anthropogenic Global Climate Change

The effects of anthropogenic global climate change are driven by human-caused emissions of GHGs, which are defined as any gas that absorbs infrared radiation in the atmosphere. GHGs include, but are not limited to, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3). These GHGs lead to the trapping and buildup of heat in the atmosphere near the earth's surface, commonly known as the greenhouse effect.

There is overwhelming scientific consensus that human-related emissions of GHGs above natural levels have contributed significantly to global climate change by increasing the concentrations of the gases responsible for the greenhouse effect, which causes atmospheric warming above natural conditions.

According to the National Oceanic and Atmospheric Administration (NOAA), the atmospheric concentration of CO_2 measured at Mauna Loa, Hawaii, in September 2020 was 411.29 parts per million (ppm), compared to 408.54 ppm for September 2019 and levels below 320 ppm prior to 1960 (NOAA 2020). Because GHG emissions are known to increase atmospheric concentrations of GHGs, and increased GHG concentrations in the atmosphere exacerbate global warming, a project that adds to the atmospheric load of GHGs adds to the problem. As a result, in order to avoid disruptive and potentially catastrophic climate change, annual GHG emissions must not only stabilize, but must be substantially reduced.

The impact of anthropogenic global climate change due to the increase in ambient concentrations of GHGs differs from those of criteria air pollutants that affect localized air quality, in that GHG emissions from a specific project do not cause direct adverse localized human health effects. Rather, the direct environmental effect of GHG emissions is the cumulative effect of forcing overall changes in global temperatures, precipitation, and concentrations of GHGs in the atmosphere, which in turn have numerous indirect effects on the environment and humans.

The Intergovernmental Panel on Climate Change (IPCC) completed a Fifth Assessment Report (AR5) in 2014 to review the state of scientific, technical, and socio-economic knowledge about climate change.[17] The AR5 includes working group reports on basics of the science, potential impacts and vulnerability, and mitigation strategies. Global climate change has caused physical, social, and economic impacts in California, such as land surface and ocean warming, decreasing snow and ice, rising sea levels, increased frequency and intensity of droughts, storms, and floods, and increased rates of coastal erosion. The IPCC Synthesis Report for AR5 (IPCC 2014) confirms:

> *"Human influence on the climate system is clear, and recent anthropogenic emissions of greenhouse gases are the highest in history. Recent climate changes have had widespread impacts on human and natural systems." And: "Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, and sea level has risen."*

[17] The Synthesis Report of the IPCC Fifth Assessment Report (AR5) is available at: https://www.ipcc.ch/report/ar5/syr/. The Sixth Assessment Report (AR6) is due to be released in 2022.

The potential of a gas or aerosol to trap heat in the atmosphere is called global warming potential (GWP). The GWP of different GHGs varies because they absorb different amounts of heat. CO_2, the most ubiquitous GHG, is used to relate the amount of heat absorbed to the amount of the gas emissions; this is referred to as CO_2-equivalent (CO_2e). CO_2e is the amount of GHG emitted multiplied by the GWP. The GWP of CO_2, as the reference GHG, is 1. Methane has a GWP of 25; therefore, 1 pound of methane equates to 25 pounds of CO_2e.

Table 4.8-1 lists the primary GHG contaminants with their estimated lifetime in the atmosphere and their associated GWP over a 100-year timeframe (per federal and state reporting requirements).

Table 4.8-1. Global Warming Potential of Various Greenhouse Gases

Greenhouse Gas	Gas Life in Atmosphere (years)	100-year GWP (average)
Carbon Dioxide (CO_2)	50–200	1
Methane (CH_4)	12	25
Nitrous Oxide (N_2O)	120	298
HFCs	1.5–264	12–14,800
Sulfur Hexafluoride (SF_6)	3,200	22,800

Source: U.S. Environmental Protection Agency (USEPA) 40 Code of Federal Regulations [CFR] Part 98, Subpart A, Table A-1, effective January 1, 2015.
Note: GWP = global warming potential; HFC = hydrofluorocarbon.

Anthropogenic GHG Emissions Trends

Globally, anthropogenic GHG emissions increased between 1970 and 2010 with larger absolute increases between 2000 and 2010, despite a growing number of climate change mitigation policies. Anthropogenic GHG emissions in 2010 reached 49,000 million metric tons of CO_2e ($MMTCO_2e$) per year (IPCC 2014).

Nationally, according to the U.S. Environmental Protection Agency (USEPA), emissions in the U.S. have increased 3.7 percent from 1990 to 2018, and overall U.S. total GHG emissions were approximately 6,677 $MMTCO_2e$ in 2018 (USEPA 2020).

The California Air Resources Board (CARB) maintains an online inventory of GHG emissions in California. California first formalized a strategy to achieve GHG reductions in 2008, when California produced approximately 484 $MMTCO_2e$ according to California's official inventory (CARB 2020). The economy-wide emissions have been declining in recent years, and California emitted approximately 425 $MMTCO_2e$ according to the most recent inventory released in October 2020 (CARB 2020). In the global context, California emits less than one percent of the global anthropogenic GHG.

Indicators of Climate Change

The effects of GHG-related climate change are a relevant aspect of the environmental setting. Changing temperatures, precipitation, sea levels, ocean currents, wind patterns, and storm activity provide indicators and evidence of the effects of climate change. For the period 1950 onward, relatively comprehensive data sets of observations are available.

Research by California's Office of Environmental Health Hazard Assessment (OEHHA) documents climate change indicators by categorizing the effects as: changes in California's climate; impacts to physical systems including oceans, lakes, rivers, and snowpack; and impacts to biological systems including humans, vegetation. and wildlife. The primary observed changes in California's climate include increased annual average air temperatures, more-frequent extremely hot days and nights, and increasing severity of drought. Impacts to physical systems affected by warming temperatures and changing precipitation patterns show decreasing snowmelt runoff, shrinking glaciers, and rising sea levels. Impacts to terrestrial, marine, and freshwater biological systems, with resulting changes in habitat, agriculture, and food supply are occurring in conjunction with the potential to impact human well-being (OEHHA 2018).

4.8.2 Regulatory Setting

The primary federal and state laws, regulations, and policies that pertain to the Proposed Project are summarized in Appendix A. Additional information on California regulations is presented here because the need for the Proposed Project is partially driven by state mandates.

In California, the CARB is the primary agency responsible for implementing the GHG reductions required by Assembly Bill (AB) 32, the Global Warming Solutions Act of 2006 (Nunez, Chapter 448, Statutes of 2006), and the updated requirements set by Senate Bill (SB) 32 (Pavley, Chapter 249, Statutes of 2016). Together, these laws require CARB to develop regulations that reduce GHG emissions to 1990 levels by 2020 and to 40 percent below 1990 levels by 2030.

CARB developed and approved its first Scoping Plan in 2008 to establish the approach to meeting the AB 32 goal to reduce GHG emissions to 1990 levels by 2020(CARB 2008). With enactment of SB 32, CARB adopted the 2017 Climate Change Scoping Plan Update to reach the GHG target for 2030. The 2017 Scoping Plan shows California's strategy for achieving the 2020 and 2030 targets, which are 431 $MMTCO_2e$ and 260 $MMTCO_2e$, respectively (CARB 2017). The 2017 Scoping Plan Update also identifies measures to maintain progress towards meeting the long-term climate goal of reducing GHG emissions to 80 percent below 1990 levels by 2050 (Executive Order S-3-05).

Project-related GHG emissions would be within the jurisdiction of the CARB and California's energy agencies, which have established a regulatory framework for reducing GHG emissions including the following programs:

Renewable Portfolio Standard (RPS)

- *The RPS goals include achieving 33 percent by 2020 and 60 percent by the end of 2030, under the Clean Energy and Pollution Reduction Act of 2015 in SB 350 and SB 100, signed in September 2018. SB 100 (De León, Chapter 312, Statutes of 2018) also established the policy to require renewable energy and zero-carbon resources supply 100 percent of electric retail sales to end-use customers by 2045. Power procured from renewable resources such as the solar generation plant of the Proposed Project is eligible for RPS compliance.*

Mandatory Reporting of Greenhouse Gas Emissions (17 CCR 95100 95158)

- *Applies to entities in certain source categories, including suppliers of transportation fuels and generators of electricity, except no specific reporting requirements apply to electric power generation from solar resources*

Cap-and-Trade Program (17 CCR 95800 to 96022)

- *Covers in-state generators of electricity that create combustion emissions of GHG from stationary sources. Renewable energy facilities eligible under the RPS or having GHG emissions less than 25,000 MTCO2e are not subject to cap-and-trade.*

Low Carbon Fuel Standard (LCFS)

- *Requires reducing the full fuel-cycle, carbon intensity of transportation fuels used statewide. Transportation fuels used in the construction and operation of the Project would be subject to the LCFS.*

SF_6 Emissions Controls (17 CCR 95350)

- *Requires reducing SF_6 emissions from electric power system gas-insulated switchgear. The regulations require owners of such switchgear to (1) annually report their SF_6 emissions, (2) determine the emission rate relative to the SF6 capacity of the switchgear, (3) provide a complete inventory of all gas-insulated switchgear and their SF6 capacities, (4) produce a SF_6 gas container inventory, and (5) keep all information current for CARB enforcement staff inspection and verification. Existing and new electric transmission facilities and switchgear associated with renewable energy generation would be subject to this regulation.*

Local policies are summarized below.

San Bernardino Countywide Plan: 2020 County Policy Plan

The 2020 County Policy Plan serves as the County's General Plan. It includes the following goal and policies relevant to the Proposed Project regarding GHG emissions.

Goal NR-1 Air quality. Air quality that promotes health and wellness of residents in San Bernardino County through improvements in locally-generated emissions.

- ***Policy NR-1.1 Land use****. We promote compact and transit-oriented development countywide and regulate the types and locations of development in unincorporated areas to minimize vehicle miles traveled and greenhouse gas emissions.*
- ***Policy NR-1.7 Greenhouse gas reduction targets****. We strive to meet the 2040 and 2050 greenhouse gas emission reduction targets in accordance with state law.*

San Bernardino County Greenhouse Gas Emissions Reduction Plan (2011)

This Plan identified a goal to reduce GHG from activities over which the County has jurisdictional and operational control by at least 15 percent by 2020. In order to identify reduction strategies for development projects, the County established a uniform set of performance standards as part of a GHG Development Review Process (2016) that included a review standard of 3,000 $MTCO_2e$ per year. Projects that do not exceed 3,000 $MTCO_2e$ per year would be considered to be consistent with the County GHG Emissions Reduction Plan and determined to have a less than significant individual and cumulative impact for GHG emissions (San Bernardino County 2011).

Mojave Desert Air Quality Management District Guidelines

The District (MDAQMD) maintains separate recommendations for California Environmental Quality Act (CEQA) lead agencies in the region (MDAQMD 2016). According to the air district guidance, a project that generates direct and indirect GHG emissions in excess of 100,000 tons of CO_2e annually or 548,000 pounds of CO_2e on any given day, including construction, would be considered to cause a significant impact.

4.8.3 Significance Criteria

Impacts related to GHG emissions are considered significant if the Proposed Project would:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment
- Conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases

4.8.4 Environmental Impact Analysis and Mitigation

Methodology and Use of Thresholds

All construction- and operation-related emissions are quantified based on the best available forecast of activities. This analysis uses the California Emissions Estimator Model (CalEEMod; version 2020.4.0) software developed by the California Air Pollution Control Officers Association (CAPCOA). This is the most recent version of the CalEEMod software, and it relies upon mobile source emission factors from the CARB OFFROAD

inventory and EMFAC2017[18] models. Where project-specific parameters are not yet defined, default and typical settings from CalEEMod are used. Default emission factors used in this analysis appear in the CalEEMod User's Guide Appendix D (2021). Modeling results are presented in EIR Appendix H.

The direct and indirect effects of all project activities, including short-term, construction-related GHG emissions and the operation of the project, are quantified to determine overall project effects on GHG emissions. Significance is characterized by comparing the project's potential GHG emissions with the San Bernardino County review standard of 3,000 $MTCO_2e$ per year (San Bernardino County 2011).

4.8.4.1 Impacts of the Stagecoach Solar Generation Plant

Impact GHG-1: GHG emissions from Project activities.

Construction and operation and maintenance (O&M) activities associated with the Proposed Project would not cause a significant increase of GHG emissions. **(Less than Significant)**

Impact Discussion

The Proposed Project would cause GHG emissions due to construction activities and during operation and maintenance. Operation of the solar generation plant would produce electricity from renewable energy resources that would displace the need to produce electricity from conventional (fossil-fueled) resources. Separate discussions appear for the different effects on GHG emissions: those caused by ground-disturbing activities including near-term construction; activities related to long-term operation and maintenance (O&M); the effects of land use conversion; and indirect GHG emissions reductions due to the electricity produced from renewable energy.

Emissions from Development Activities: Construction and O&M. Construction, and O&M activities would cause GHG emissions as a result of fossil-fuel combustion in the engines of construction equipment and the vehicles carrying construction materials and workers to and from the site. Diesel fuel or gasoline is used in mobilizing the heavy-duty construction equipment, site development and preparation, facility construction, and roadway construction.

Total GHG emissions over the duration of construction of the Stagecoach Facilities, including the gen-tie line, would amount to 18,722 $MTCO_2e$ plus 169 $MTCO_2e$ for the water supply. To interconnect the solar generation plant, the SCE Calcite Facilities would need to be developed, and total construction GHG emissions for the SCE Calcite Facilities would be 2,129 $MTCO_2e$. The combined quantity of construction GHG emissions would be 20,852 $MTCO_2e$, or 701 $MTCO_2e$/year if averaged over a 30-year life of the project. Direct on-site

[18] EMFAC2017 is a database developed by CARB to provide California emissions inventories for mobile sources and tools to use for project-level assessments (https://arb.ca.gov/emfac/).

O&M activities for the Stagecoach Solar Generation Plant, the Stagecoach Gen-tie Line, and the SCE Calcite Facilities would contribute an additional amount of 420 $MTCO_2e$/year, plus 48 $MTCO_2e$/year for the propane generators.

Emissions Related to Land Use Conversion. Development of the Proposed Project would result in ground disturbance that would disturb soils and remove vegetation that naturally provide carbon uptake. Converting a portion of the existing land would eliminate the natural sequestration of carbon because the existing soil and vegetation acts as a sink by removing CO_2 from the atmosphere. Ground disturbance and vegetation removal during construction accordingly adds to the GHG impact because a portion of the soils and vegetation onsite would no longer be present to sequester CO_2. Section 2.2.1 of the Project Description, in Table 2-1, states that 1,961 acres of permanent disturbance would result from Proposed Project construction. While this data has been provided by the Applicant, the actual amount of this loss of soils and vegetation would depend on the characteristics of the site and implementation of mitigation measures. The available data on rates of sequestration by vegetation and soils are approximations.

The loss of natural carbon uptake would be approximately 4.31 $MTCO_2e$ per year per acre. Because it is not possible to define a specific factor for this site and the project's treatment of it, this factor is a proxy based on removing the natural sequestration capability of grassland (CalEEMod User's Guide Appendix A, 2021). By permanently converting 1,961 acres for the Stagecoach Solar Generation Plant, plus 75 acres for the SCE Calcite Facilities, and approximately 30 acres for the Stagecoach Gen-tie Line, up to 2,080 acres of combined land use change for the Proposed Project would result in 8,965 $MTCO_2e$ per year of sequestration capability being lost. This estimate is conservatively high because some natural carbon sequestration capabilities could be expected to continue through soils and vegetation within the site.

Emissions Avoided by Producing Electricity. The production of renewable power would displace power produced by carbon-based fuels that would otherwise be used to meet electricity demand. The power displaced is incremental power provided by generators elsewhere on the grid, typically from natural gas power plants.

The Proposed Project would produce overall about 493,800 megawatt-hours (MWh) each year for delivery to California's end-users. The volume of production is based on the generating capacity of 200 megawatt (MW) at a capacity factor of 29 percent, which is typical for a solar PV system in the Lucerne Valley area of San Bernardino County, with consideration of transmission line losses prior to delivery. The electricity produced by the Proposed Project would displace fuel-burning by California's flexible natural gas-fired resources or electricity otherwise imported to California. This would avoid GHG that could otherwise be emitted by fuel-burning generators at a rate of approximately 186,000 MT per year, for an avoided emissions displacement factor of 0.379 MT of CO_2 per MWh (CEC 2015, CEC 2019).

The quantity of avoided GHG could vary somewhat from the quantity predicted depending on how the BESS would be dispatched. By requiring a charging cycle for the storage component before discharging, some round-trip loss of energy would occur, and this would reduce the overall MWh-produced for end-users. The output of the storage component would be likely to be timed (dispatched) to occur during hours of peak demand for electricity. By dispatching stored renewable power during the hours of highest demand, the storage component is likely to result in beneficial GHG effects by displacing the peak-hour use of fossil fuel-burning generating units elsewhere on the grid. Although the GHG effects of the storage component are not quantified, the relative scale of avoided GHG as a result of the electricity production and storage components would be comparable to the amount estimated in this analysis.

Quantification GHG Emissions Resulting from the Project. The combined direct and indirect effects of the GHG emissions resulting from the Proposed Project are summarized in Table 4.8-2.

Table 4.8-2. Proposed Project, Overall GHG Emissions

Activity	One-Time Construction ($MTCO_2e$)	Construction + O&M, Annualized ($MTCO_2e$/yr)	Overall Emissions ($MTCO_2e$/yr)
Construction of Stagecoach Solar Generation Plant and Stagecoach Gen-tie Line	18,722	—	—
Construction of SCE Calcite Facilities	2,129	—	—
Construction of Water Supply	169	—	—
Construction, Total and 30-year Amortized	21,021	701	701
O&M (Mobile Sources, Water Use)	—	420	420
O&M (Propane Generators)	—	48	48
Related to Land Use Conversion			8,836
Avoided by Producing Electricity			–186,000
Total GHG, Construction and O&M			–175,995

Source: CalEEMod Results of Emissions Estimates (see EIR Appendix H).
Note: Emissions totals include Stagecoach Solar Generation Plant, Stagecoach Gen-tie Line, and SCE Calcite Facilities.

The combined direct and indirect effects of the emissions quantified in Table 4.8-2 indicates that a net GHG reduction would occur as a result of implementing the Project, by avoiding

around 176,000 $MTCO_2e$ annually. This impact would be less than significant, and no mitigation would be required.

Mitigation Measures

No mitigation would be required.

Impact GHG-2: Consistency with applicable GHG plan, policy, or regulation.

Construction and O&M of the Project, including generating electricity, would cause GHG emissions that would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHG. **(No Impact)**

Impact Discussion

The Proposed Project would produce electricity in a manner that improves California's ability to supply renewable energy to end-use customers and to achieve statewide renewable energy goals. Electricity from the solar generation plant would be used to serve the needs of California's customers and would facilitate compliance with California's RPS.

The renewable energy targets in the RPS support California's overall approach to achieving GHG reduction goals. The California Global Warming Solutions Act of 2006 (AB 32) and SB 32 (2016) codified the GHG emissions target to 40 percent below the 1990 level by 2030. Subsequently, California's Clean Energy and Pollution Reduction Act of 2015, SB 350 (De León, Chapter 547, Statutes of 2015), set ambitious 2030 targets for energy efficiency and renewable electricity, among other actions aimed at reducing GHG emissions across the energy and transportation sectors. SB 350 also enhances the state's ability to meet its long-term climate goal of reducing GHG emissions to 80 percent below 1990 levels by 2050. The current RPS was signed into law in September 2018 with SB 100, which established the goals of 50 percent renewable energy resources by 2026 and 60 percent renewable energy resources by 2030. SB 100 also sets a target for California to achieve a GHG-free energy supply by December 31, 2045.

The strategy for achieving the GHG reductions by 2030 is set forth by the CARB Climate Change Scoping Plan (CARB 2017). Overall, the electricity produced by the Proposed Project would contribute to continuing GHG reductions in California's power supply. Because the Proposed Project would use renewable energy resources to produce electricity, the avoided GHG emissions would be consistent with and would not conflict with California's GHG emissions reduction targets and the Climate Change Scoping Plan that relies on achieving the RPS targets.

Other activities related to construction and operation of the Proposed Project would either be exempt from or would be required to comply with CARB rules and regulations to reduce GHG emissions and would cause no other potential conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

As the total GHG emissions generated during construction and operation of the Proposed Project would be considerably less than the GHG emissions avoided, the solar power generation would lead to a net reduction in GHG emissions across the State's electricity system. This would contribute to meeting the State's GHG reduction goals under AB 32 and subsequent targets for 2030 and beyond. The Proposed Project would not conflict with any applicable GHG management plan, policy, or regulation; therefore, there would be no impact.

Mitigation Measures

No mitigation would be required.

4.8.4.2 Impacts of the Stagecoach Gen-tie Line

The Stagecoach Gen-tie Line would be an approximately 9.1-mile-long 220 kV transmission line to interconnect the Stagecoach Solar Generation Plant with the proposed SCE Calcite Facilities.

The gen-tie line would be constructed in the same geographic region as the solar generation plant and would serve to deliver renewable energy to California's end-users of electricity. Quantities of GHG emissions related to construction of the gen-tie line are included with those of the solar generation plant. Impacts associated with construction of the gen-tie line are the same as those described in Section 4.8.4.1. The GHG impacts would be less than significant.

4.8.4.3 Impacts of the SCE Calcite Facilities

The SCE Calcite Facilities would be constructed and owned by SCE, and electricity generated by the Stagecoach Facilities would be delivered to California's transmission grid through the proposed SCE Calcite Facilities. The electricity generated by the Stagecoach Facilities and other potential solar projects that may connect to the SCE Calcite Substation in the future would be sold to a power purchaser, or a load-serving entity, for sale to California's end-users of electricity.

Impact GHG-1: GHG emissions from Project activities.

Construction and O&M activities associated with the SCE Calcite Facilities would not cause a significant increase of GHG emissions. **(Less than Significant)**

Impact Discussion

The substation would be constructed in the same geographic region as the solar generation plant and would serve to deliver renewable energy to California's end-users of electricity. The quantity of GHG emissions related to the total duration of construction of the SCE Calcite Facilities would be 2,129 $MTCO_2e$ (see Table 4.8-2). Construction and O&M activities causing GHG emissions would occur separately from those of the solar generation plant and gen-tie line, although the SCE Calcite Facilities would be used to interconnect

the solar generation plant. Impacts associated with construction of the SCE Calcite Facilities are the same as those described in Section 4.8.4.1. The GHG impacts would be less than significant.

Impact GHG-2: Consistency with applicable GHG plan, policy, or regulation.

Construction and operation of the SCE Calcite Facilities would cause GHG emissions that would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHG. **(Less than Significant)**

Impact Discussion

The SCE Calcite Facilities are intended to allow interconnection of solar generation plant in the Lucerne Valley area. These facilities would produce electricity in a manner that improves California's ability to supply renewable energy to end-use customers and to achieve statewide renewable energy goals. Electricity from the solar generation plant would be used to serve the needs of California's customers and would facilitate compliance with California's Renewables Portfolio Standard (RPS).

The analysis presented in Section 4.8.4.1 (Impact GHG-2) describes how the electricity produced by the solar generation plant would contribute to continuing GHG reductions in California's power supply. Therefore, by allowing for interconnection of solar generation plant that achieve net reductions in GHG emissions across the State's electricity system, the SCE Calcite Facilities would contribute to meeting the State's GHG reduction goals under AB 32 and subsequent targets for 2030 and beyond. The SCE Calcite Facilities would not conflict with any applicable GHG management plan, policy, or regulation. This impact would be less than significant, and no mitigation would be required.

4.8.5 Cumulative Impacts

This impact assessment describes impact of the Proposed Project contributing towards global climate change through GHG emissions. Because the direct environmental effect of GHG emissions is to influence global climate change, GHG emissions are by their nature a cumulative concern with a cumulatively global scope. No single project could, by itself, result in a substantial change in climate. As the project-specific analysis describes GHG emissions that influence cumulatively global impacts, there is no separate cumulative impacts analysis for global climate change.

Furthermore, the evaluation of GHG impacts evaluates the contribution of the Proposed Project to addressing cumulative climate change effects. The analysis demonstrates that the Proposed Project would result in a long-term net reduction of GHG emissions and would not conflict with GHG reduction goals. The project-specific incremental impact on GHG emissions would therefore not be cumulatively considerable.

4.8.6 Mitigation Measure Summary

No mitigation would be required.

4.9 HAZARDS AND HAZARDOUS MATERIALS

This section describes the hazards and hazardous materials characteristics of the Proposed Project vicinity, evaluates the type and significance of impacts that may occur as a result of the Proposed Project, and identifies measures to avoid or substantially lessen any impacts found to be potentially significant.

The study area is defined as the Proposed Project site for hazards and hazardous materials and as the area within 0.5 miles of Proposed Project components for effects of existing contamination. The existing hazards, hazardous material use, and level of contamination in the area and at the Proposed Project site were used as the baseline to compare potential hazards and hazardous materials-related impacts of the Proposed Project.

The Proposed Project is described in detail in Section 2, *Project Description*. The Environmental Impact Report (EIR) analysis of the Proposed Project is presented in three parts. The first two parts comprise the **Stagecoach Facilities** proposed by Aurora Solar, LLC and the third part includes the **SCE Calcite Facilities,** proposed by Southern California Edison (SCE). The analysis components are:

- The **Stagecoach Solar Generation Plant,** which would include the solar arrays and collector lines, ancillary project facilities, and the battery energy storage system, all located within the 3,570 acres of State-owned school lands managed by the CSLC
- The **Stagecoach Gen-tie Line** (located on State-owned lands, leased land, and purchased private land), which would run approximately 9.1 miles, connecting the Stagecoach Solar Generation Plant to the proposed SCE Calcite Facilities and the SCE electrical transmission system
- The **SCE Calcite Facilities,** which would be constructed, owned, and operated by SCE and would include a substation (referred to as the **SCE Calcite Substation**), a connection to distribution-level electric power, access roads, telecommunications facilities, and new transmission structures to interconnect with the existing transmission system

4.9.1 Environmental Setting

4.9.1.1 Regional Setting

Land Uses Relevant to Hazardous Materials

Existing and past land use activities are commonly used as indicators of sites or areas where hazardous material storage and use may have occurred or where potential environmental contamination may exist. For example, many historic and current industrial sites have soil or groundwater contaminated by hazardous substances. Other hazardous

materials sources include leaking underground tanks in commercial and rural areas, contaminated surface runoff from polluted sites, and contaminated groundwater plumes.

The proposed Stagecoach Facilities, which include both the solar generation plant and the gen-tie line, and the SCE Calcite Facilities, would be located in the central portion of San Bernardino County approximately 15 miles south of the City of Barstow and 12 miles northwest of the unincorporated Lucerne Valley community. The Proposed Project is in North Lucerne Valley in an area of primarily undeveloped desert with local areas of very low-density residential uses consisting of scattered ranchettes and homes. Most of the gen-tie line route roughly parallels the Lucerne Valley Cutoff and State Route 247 (SR-247, or Barstow Road). There are no industrial or commercial areas in the Proposed Project vicinity.

No K-12 schools are located within a quarter mile of the Proposed Project; the closest school to the Proposed Project site is the Lucerne Valley Middle School located 6.2 miles south of the southern end of the gen-tie line. There are no public or private airports or airstrips within 2 miles on the Proposed Project. The closest airport to the Proposed Project is the Holiday Ranch Airport, a private airstrip located over 4.5 miles southwest of the site at its closest point. The closest public airport is the Apple Valley Airport, located just over 8.5 miles west of the Proposed Project site.

One former World War II era practice bombing range occurs in the study area, identified on the U.S. Army Corps of Engineers (USACE) Formerly Used Defense Sites (FUDS) database as Victorville Precision (or Practice) Bombing Range (PBR) No. 5, located in North Lucerne Valley just east of the proposed solar farm (SWRCB 2017; USACE 2020). PBR No. 5 is located 0.8 miles east of the Stagecoach Solar Generation Plant site boundary.

Hazardous Materials

Hazardous substances are defined in various federal and state regulations related to protection of public health and the environment. Hazardous materials have certain chemical, physical, or infectious properties that cause them to be considered hazardous. Hazardous materials include toxic, ignitable, corrosive, reactive, and explosive substances. Toxic substances may cause short-term or long-lasting health effects. For example, toxic substances can cause eye or skin irritation, disorientation, headache, nausea, allergic reactions, acute poisoning, chronic illness, or other adverse health effects if human exposure exceeds certain levels (the level depends on the substance involved). Carcinogens (substances known to cause cancer) are a special class of toxic substances. Examples of toxic substances include most heavy metals, pesticides, and benzene (a carcinogenic component of gasoline). Ignitable substances are hazardous because of their flammable properties. Gasoline, hexane, and natural gas are examples of ignitable substances. Corrosive substances are chemically active and can damage other materials or cause severe burns upon contact. Examples include strong acids and bases such as sulfuric (battery) acid or lye. Reactive substances may cause explosions or generate

gases or fumes. Explosives, pressurized canisters, and pure sodium metal (which reacts violently with water) are examples of reactive materials.

The Proposed Project would involve limited transport, storage, use, and disposal of hazardous materials during construction. Some examples of hazardous materials handling during construction would include the transport of fuels, lubricating fluids, degreasers, paints, ethylene glycol, propane, pesticides, herbicides, solvents, and welding materials associated with construction, as well as the transport of potentially contaminated soils excavated from the Proposed Project site. The Proposed Project would also require the use of a 2,000 gallon propane tank to supply two backup generators.

Military Munitions

Military munitions and explosives of concern (MEC), principally unexploded ordnance (UXO), are known or suspected at or in the vicinity of former military sites in the Mojave Desert. These former bombing range sites are known or suspected to contain munitions and explosives of concern (e.g., unexploded ordnance), and therefore may present an explosive hazard. Practice Bombing Range No. 5 is located outside the Proposed Project boundary. The Victorville PBR No. 5 site was used for bombing practice by the Victorville Army Air Field (VAAF) and included a range target composed of three concentric, circular rings laid out at increasing distances from the center target. The site consists of approximately 692 acres and is located just to the east of the proposed solar farm site. A site inspection of PBR No. 5 site was conducted by the USACE in 2008 (Parsons 2008) to determine whether the site warranted further study under a remedial investigation/ feasibility study (RI/FS) or no further Department of Defense (DoD) action (NDAI). The investigation of the PBR No. 5 site did not encounter any MEC, and no explosive chemicals or heavy metals above background concentrations were detected in surface soils. Munitions debris (MD) were observed at the site during the site inspection, and it was concluded that it is possible that undetected MEC remain at the site, therefore the report recommended that the site proceed to a RI/FS (Parsons 2008).

During the Cultural Resource Assessment surveys for this Proposed Project, conducted in June and July 2017, October 2017, and May 2020, 43 locations with practice bomb debris/remains were identified within the solar generation plant site (Aspen 2020). Most of the munitions debris/remains identified in the cultural surveys are located in the northeast portion of the Solar Generation site. In October 2017, ECM Consultants, a UXO specialist company, provided detector-assisted UXO support and escort services for biologist and archeologist surveys of the Proposed Project site (ECM 2018). During their escort services ECM identified numerous subsurface anomalies throughout the site, primarily in the western and southwestern portion of the site and munitions debris consisting of box fin debris from two 100 lb. practice bombs. In their summary report ECM concluded that although the site does not have the typical surface debris associated with a bombing range, evidence of this activity is suggested through the detection of the practice bomb munitions debris. Additionally, ECM notes that numerous subsurface anomalies were

detected in the portion of the site where the two munitions debris items were found. Due to this potential hazard ECM recommended, that at a minimum, field and construction personnel working/visiting the site be accompanied by qualified UXO personnel (ECM 2018).

Environmental Contamination

No Phase I Environmental Site Assessments have been or were conducted as part of this study. To collect information on the existing conditions in the study area, a search of regulatory agency databases, including the California State Water Resources Control Board (SWRCB) Geotracker, Department of Toxic Substance Control (DTSC) EnviroStor, and aerial photographs, was performed to verify land uses of concern. The agency databases identify sites with current or past hazardous waste concerns, such as the use and storage of chemicals, leaks and spills of chemicals, and leaking underground storage tanks. This review was performed in order to note any issues related to use and storage of hazardous materials and identify any sites with known environmental contamination issues within the study area.

No hazardous material or environmentally contaminated sites were identified in the Proposed Project vicinity by the Geotracker or EnviroStor databases, except for the Victorville PBR No. 5 site, which is discussed above (SWRCB 2017, DTSC 2017a, and DTSC 2017b). Aerial photo review indicates no obvious indicators of contamination; the area is primarily undeveloped desert with low lying scrub brush and scattered rural residential properties. Due to the long history of use, there is a potential that soils contaminated with aerially deposited lead (ADL) may exist adjacent to Lucerne Valley Cutoff and SR-247. Elevated lead concentrations exist in soils along older roadways as a result of historical use of leaded gasoline. This has resulted in ADL from the leaded gasoline tailpipe emissions. Due to the isolated nature of the area, there is a potential that unauthorized dumping of trash and other materials may have occurred anywhere within the Proposed Project.

Valley Fever

Valley Fever (coccidioidomycosis or “cocci”) is an illness caused by the inhalation of soil-dwelling *Coccidioides* fungus spores. The *Coccidioides* fungus lives in the top 2 to 12 inches of soil and dirt in many parts of California; it is most prevalent in the Central Valley and in desert/dry areas (CDPH 2013). When soil containing this fungus is disturbed by activities such as digging, vehicles, or by the wind, the fungal spores become airborne and can be inhaled. Valley Fever is not transmitted directly from person to person.

Valley Fever is considered endemic in California, with over 1,000 people receiving hospital treatment for severe cases every year (CDPH 2020a). Many people who are exposed to the *Coccidioides* fungus spores never have symptoms, while others may have cold or flu-like symptoms that usually go away on their own after several weeks to months; it is likely

that numerous mild cases of Valley Fever go undiagnosed. It usually infects the lungs and can cause flu-like symptoms or pneumonia. Severe and/or long-term complications such as pneumonia are rare, affecting about 5-10 percent of cases. For a very small percentage of people (about one percent) with compromised immune systems, the Valley Fever infection can spread to the central nervous system, skin, or bones and joints, and can be fatal (CDC 2018a).

According to the California Department of Public Health (CDPH) the number of reported incidences of Valley Fever over the last few years in California has increased significantly (CDPH 2020a); as shown in Table 4.9-1. Valley Fever cases in California increased from less than 1,000 cases in 2000 to more than 9,000 cases in 2019 (CDPH 2020a). According to the CDPH, the number of reported incidences of Valley Fever in California in 2019 is the highest annual incidence reported in California since coccidioidomycosis became individually reportable in 1995. There were 9,004 cases reported in 2019, with an incidence rate of 22.5 cases per 100,000 population. This is a 159 percent increase of incidence of coccidioidomycosis from 2013 (CDPH 2020a).

The number of incidences has also significantly increased in San Bernardino County, from 49 cases with an incidence rate of 2.3 cases per 100,000 in 2013 to 229 cases and an incidence rate of 10.4 per 100,000 in 2019 (CDPH 2020a). Valley Fever is considered highly endemic in counties where incidence rates are greater than 20 per 100,000 population.

Table 4.9-1. CDPH Reported Incidences and Rate of Valley Fever 2013-2019

	Year of Estimated Onset						
	2019	**2018**	**2017**	**2016**	**2015**	**2014**	**2013**
State of California, Total	9,004	7,625	7,689	5,567	3,184	2,326	3,327
San Bernardino County: Number of Incidences*	229	97	88	39	29	33	49
San Bernardino County: Incidence Rate**	10.4	4.5	4.1	1.8	1.4	1.6	2.3

*Estimated onset date is the date closest to the time when symptoms first appeared.
** Incidence rate per 100,000 people.
Source: CDPH 2020c

It is unknown why there has been such a large increase in reported Valley Fever cases in California. The incidence of Valley Fever depends on a variety of environmental factors and types of human activity in areas where the fungus is present; changes in testing, diagnosis, and reporting patterns could also impact reported disease levels (CDPH 2017). Anyone who lives in, works in, or visits a place with Valley Fever could become infected. People who spend large amounts of time outdoors, such as agricultural workers and construction workers, and are exposed to wind, dust, and disturbed soil, are at increased risk of getting the illness.

Valley Fever During Solar Project Construction. Several notable incidences of solar project construction workers contracting Valley Fever have occurred in San Luis Obispo and Monterey Counties. Between October 2011 and April 2014, 44 cases of Valley Fever were identified among the 3,572 employees at 2 solar farm construction sites in San Luis Obispo County (a rate of 1.2 cases per 100 workers). Although most workers indicated they received Valley Fever safety training, their descriptions of the training varied widely from comprehensive safety training that addressed how to minimize dust exposure to more limited notification about risks of Valley Fever (Wilken et al. 2015).

Nine confirmed cases of Valley Fever were identified in early 2017 from among 2,410 construction workers who worked from February 2016 to April 2017 on a solar project in southeastern Monterey County (CDC 2018b). This corresponded to an annualized incidence rate of Valley Fever among workers of 1,095 per 100,000 population, significantly higher than the 2016 County rate of 17.5 per 100,000 population. At the Monterey solar site, the workers reported frequent high dust levels that were unable to be controlled by the water trucks, infrequent use of respirators or dust masks, and inadequate Valley Fever symptom and prevention training (CDC 2018b). Cal/OSHA fined the contractor and several subcontractors at the Monterey County project a total of over $240,000 for violations such as not ensuring adequate mask or respirator use, inadequate training in mask use, and not implementing a program to train workers in illness and workplace hazards, including Valley Fever (Bakersfield California 2017).

Electric and Magnetic Fields

There is often public interest and concern regarding potential health effects that could result from exposure to electric and magnetic fields (EMF) from power lines; therefore, this subsection provides information regarding EMF associated with electric utility facilities and the potential effects of the Proposed Project related to public health and safety. Potential health effects from exposure to ***electric fields*** from power lines (produced by the existence of an electric charge, such as an electron, ion, or proton, in the volume of space or medium that surrounds it) are typically not of concern since electric fields are effectively shielded by materials such as trees, walls, etc. Therefore, the majority of the following information related to EMF focuses primarily on exposure to ***magnetic fields*** (invisible fields created by moving charges) from power lines.

Magnetic fields can be reduced either by cancellation or by increasing distance from the source. Cancellation is achieved in two ways. A transmission line circuit consists of three "phases" associated with three separate wires (conductors), usually on an overhead tower. The configuration of these three conductors can directly influence the strength of the magnetic field. When the configuration places the three conductors closer together, the interference or cancellation of the fields from each wire is enhanced, and the magnetic field is reduced. This technique has practical limitations because of the potential for short circuits if the wires are placed too close together. Close conductor spacing can also create

worker safety concerns because there is a risk of workers contacting energized conductors during maintenance.

This EIR does not consider magnetic fields as an impact in the context of California Environmental Quality Act (CEQA) impacts, but it does describe the issue and the means of reducing a magnetic field. EMF is not considered to be a CEQA impact because: (a) there is no agreement among scientists that EMF does create a potential health risk, and (b) there are no defined or adopted CEQA standards for defining health risk from EMF. As a result, EMF information is presented as background information for the benefit of the public and decisionmakers.

4.9.1.2 Environmental Setting of the Stagecoach Solar Generation Plant

The general environmental setting of the Stagecoach Solar Generation Plant is as described above. There are no residences or other structures present within the Stagecoach Solar Generation Plant boundaries; however, there are structures and houses associated with several ranchettes within 0.25 miles of the eastern boundary of the Stagecoach Solar Generation Plant boundary (Google Earth 2021).

No hazardous material or environmentally contaminated sites were identified on the California SWRCB Geotracker or DTSC EnviroStor websites within or near the solar generation plant site, with the exception of the Victorville PBR No. 5 site, which is located directly east of the Stagecoach Solar Generation Plant site. As discussed above, munitions debris/remains were identified in multiple locations within the solar generation plant site.

Due to its long history of use, there is a small potential that ADL contaminated soils may exist adjacent to Lucerne Valley Cutoff which transects the Stagecoach Solar Generation Plant.

4.9.1.3 Environmental Setting of the Stagecoach Gen-tie Line

<u>Land Uses and Sites</u>

The Stagecoach Gen-tie Line would extend from the Stagecoach Solar Generation Plant to the SCE Calcite Facilities, approximately 9.1 miles in length. The environmental setting for the Stagecoach Gen-tie Line is similar to that described above in Section 4.9.1.1. The gen-tie line area is in primarily undeveloped desert with very low density residential use; there are no residences or other structures along or near the gen-tie line right-of-way (ROW) or associated new access roads. However, there are multiple ranchettes with associated structures and houses within 0.25 miles of the Stagecoach Gen-tie Line.

No sites were identified on the SWRCB Geotracker or DTSC EnviroStor were within or near the gen-tie line vicinity, except for the northern end of the gen-tile line where it passes through the solar generation plant site and is in proximity to the PBR No. 5 site. Several

UXO/munitions debris sites were identified during the cultural surveys for this Proposed Project in the vicinity of the gen-tie line within the southeastern portion of the solar generation plant site.

Due to its long history of use, there is potential for aerial lead contaminated soils to exist at the two locations where the gen-tie line crosses SR-247, and smaller potential for it to occur at other locations within the gen-tie footprint where it is adjacent to or crosses Lucerne Valley Cutoff.

Electric and Magnetic Fields

The following issues apply primarily to the Stagecoach Gen-tie Line.

Electrical Hazards and Interference

Corona, gap discharges, and audible noise from transmission lines consist of high frequency energy; however, they are transmitted at a lower power level than radio and television broadcasts. Therefore, these transmissions attenuate within a short distance from the transmission line. As such, the affected environment would be along the entire length of the gen-tie line, but only for a narrow width of several hundred feet on each side of the line ROW. Audible noise from transmission lines is addressed in Section 4.13, *Noise* and is not discussed further in this section.

Interference with Radio, Television, Communication, and Electronic Equipment. Corona discharges form at the surface of a transmission line conductor when the electric field intensity on the conductor surface exceeds the breakdown strength of air. The breakdown of air generates light, audible noise, radio noise, ozone, conductor vibration, and causes a dissipation of energy (EPRI 1982). The Institute of Electrical and Electronic Engineers (IEEE) has published a design guide (IEEE Radio Noise Subcommittee 1971) that is used to limit conductor surface gradients so as to minimize corona levels which would cause electronic interference.

Gap discharges occur when an arc forms across a gap in loose or worn line hardware and can also be a source of high frequency energy. It is estimated that over 90 percent of radio and television interference problems for electric transmission lines are due to gap discharges. Line hardware is designed to be problem-free, but wind motion, corrosion, and other factors can create a gap discharge condition. When identified, gap discharges can be located and remedied by utilities by tightening loose fittings or replacing worn hardware.

Electric fields from power lines do not typically pose interference problems for electronic equipment in businesses since the equipment is shielded by buildings and walls. However, magnetic fields can penetrate buildings and walls, thereby interacting with electronic equipment. Depending upon the sensitivity of equipment, the magnetic fields have been found to interfere with electric equipment operation. Review of this phenomenon in regard

to the sensitivity of electrical equipment identifies a number of thresholds for magnetic field interference. Interference with cathode ray tube (CRT) type televisions or computer monitors can be detected at magnetic field levels of 10 milligauss (mG) and above, while large screen or high-resolution CRT monitors can be susceptible to interference at levels as low as 5 mG. Other specialized equipment, such as medical equipment or testing equipment can be sensitive at levels below 5 mG. Equipment that may be susceptible to very low magnetic field strengths is typically installed in specialized and controlled environments, since even building wiring, lights, and other equipment can generate magnetic fields of 5 mG or higher.

The most common electronic equipment that can be susceptible to magnetic field interference is older CRT televisions or computer monitors. Magnetic field interference results in disturbances to the image displayed on the monitor, often described as screen distortion, “jitter,” or other visual defects. In most cases it is annoying, and at its worst, it can prevent use of the monitor. This type of interference is a recognized problem in the video monitor industry. As a result, there are manufacturers who specialize in monitor interference solutions and shielding equipment. Possible solutions to this problem include: relocation of the monitor, use of magnetic shield enclosures, software programs, and replacement of CRT monitors with current technology displays that are not susceptible to magnetic field interference.

Induced Currents and Shock Hazards. Power line fields can induce voltages and currents on conductive objects, such as metal roofs or buildings, metal fences, and vehicles. Transmission lines are designed to limit the short circuit current, from conductive items beneath the line, to a safe level (less than 5 milliampere). When a person or animal comes in contact with a conductive object, a perceptible current or small electric shock may occur. These small electric shocks cause no physiological harm; however, they may present a nuisance.

Cardiac Pacemakers. An area of concern related to electric fields from transmission lines has been the possibility of interference with cardiac pacemakers. There are two general types of pacemakers: asynchronous and synchronous. The asynchronous pacemaker pulses at a predetermined rate. It is generally immune to interference because it has no sensing circuitry and is not exceptionally complex. The synchronous pacemaker, however, pulses only when its sensing circuitry determines that pacing is necessary. Interference from transmission line electric field may cause a spurious signal on the pacemaker’s sensing circuitry. However, when these pacemakers detect a spurious signal, such as a 60 Hz signal, they are programmed to revert to an asynchronous or fixed pacing mode of operation, returning to synchronous operation within a specified time after the signal is no longer detected. Cardiovascular specialists do not consider prolonged asynchronous pacing a problem since some pacemakers are designed to operate that way. Periods of operation in this mode are commonly induced by cardiologists to check pacemaker performance. So, while transmission line electric fields may interfere with the normal operation of some of the older model pacemakers, the result of the interference is not harmful, and is of short duration (IEEE 1979).

EMF

After several decades of study regarding potential public health risks from exposure to power line EMF, research results remain inconclusive. Several national and international panels have conducted reviews of data from multiple studies and state that there is not sufficient evidence to conclude that EMF causes cancer. The International Agency for Research on Cancer (IARC), an agency of the World Health Organization (WHO), and the California Department of Health Services (DHS) both classify EMF as a possible carcinogen (WHO 2001; DHS 2002).

In addition, the 2007 WHO [Environmental Health Criteria (EHC) 238] report concluded that:

- Evidence for a link between Extremely Low Frequency (ELF, 50–60 Hz) magnetic fields and health risks is based on epidemiological studies demonstrating a consistent pattern of increased risk for childhood leukemia. However, "…virtually all of the laboratory evidence and the mechanistic evidence fail to support a relationship between low-level ELF magnetic fields and changes in biological function or disease status.…the evidence is not strong enough to be considered causal but sufficiently strong to remain a concern."
- "For other diseases, there is inadequate or no evidence of health effects at low exposure levels"

Currently, there are no applicable regulations related to EMF levels from power lines or substations. However, the California Public Utilities Commission (CPUC), which regulates investor-owned utilities in California, addresses the EMF issue as defined in a CPUC decision from 1993 (Decision [D.]93-11-013) that was reaffirmed by the CPUC on January 27, 2006 (D.06-01-042; CPUC 2006). In that Decision, the CPUC required all regulated utilities to incorporate "low-cost" or "no-cost" measures to mitigate EMF from new or upgraded electrical utility facilities up to approximately 4 percent of total project cost. This mitigation requirement is addressed separately from CEQA analysis. The CPUC does not have jurisdiction over the Stagecoach Gen-tie Line, but this information is presented here to provide context for this issue related to the gen-tie line.

CPUC-regulated projects comply with the CPUC Decision by developing a Field Management Plan (FMP) for EMF. This FMP is required to be provided to the CPUC as part of a utility application for a Proposed Project, and it presents measures for reducing magnetic field levels in the vicinity of CPUC-regulated transmission lines and other Proposed Project components.

EMF in the Proposed Project Area

Magnetic field strength is a function of both the electric current carried by the wires, and the configuration and design of the three conductors that together form a single circuit of

an electric transmission line. Magnetic field strengths for typical transmission power line loads at the edge of an *overhead* transmission system right-of-way generally range from 10 to 30 mG (NIEHS 2002).

Exposure to EMF occurs in the community from sources other than electric transmission lines. Research on ambient magnetic fields in homes indicates that levels below 0.6 mG could be found in half of the studied homes in the centers of rooms, and that the average levels in the homes away from electrical appliances was 0.9 mG. Immediately adjacent to appliances (within 12 inches), field values are much higher, for example: 4 to 8 mG near electric ovens and ranges, 20 mG for portable heaters, or 60 mG for vacuum cleaners (NIEHS 2002). Outside of the home, the public also experiences EMF exposure from the electric distribution system, like the one located in the Lucerne Valley area south of the location where Algoman Avenue crosses SR-247.

Existing EMF levels along the route of the Stagecoach Gen-tie Line are assumed to be very low along the northern half of the proposed line, but the southern half of the route is served by SCE distribution lines so there is a baseline of existing magnetic field in this area, near the existing lines and where electricity enters each residence. In general, the presence of the Stagecoach Gen-tie Line would result in an increase in magnetic field in the project area within a few hundred feet of the gen-tie line itself.

4.9.1.4 Environmental Setting of the SCE Calcite Facilities

The SCE Calcite Facilities are located approximately 5 miles southeast of the Stagecoach Solar Generation Plant, at the southern terminus of the gen-tie line. The environmental setting for the SCE Calcite Facilities is similar to that described above in Section 4.9.1.1. There is a ranchette (one house and associated structures) less than 0.25 miles north of the SCE Calcite Facilities. Additional structures and houses are present north, east, and south within one mile of the SCE Calcite Facilities, including what appears to be an agricultural property. Three electrical transmission towers for existing transmission lines that cross the site are present in the eastern part of the SCE Calcite Facilities (east of SR-247).

No sites on the SWRCB Geotracker or DTSC EnviroStor were identified within or near the SCE Calcite Facilities vicinity. There is a potential aerial lead contaminated soils may occur within the SCE Calcite Facilities site where it is traversed by SR-247.

4.9.2 Regulatory Setting

The primary federal and state laws, regulations, and policies that pertain to the Proposed Project are summarized in Appendix A. Local policies relevant to hazards and hazardous materials for the Proposed Project are summarized below.

San Bernardino County Fire Department

The Office of Emergency Services (OES) is a division of the San Bernardino County Fire Department; OES is responsible for countywide emergency planning, mitigation, response, and recovery activities. The OES works with all County departments and 24 cities, and many non-government organizations. In the event of an emergency the OES manages the County's Emergency Operations Center (EOC) and coordinates with the County's disaster response expenses for recovery from state and federal governments. The OES is authorized to oversee and implement the County's Emergency Operations Plan (EOP) and the 2017 County of San Bernardino Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). The EOP plan describes the fundamental systems, strategies, policies, assumptions, responsibilities, and operational priorities that San Bernardino County will utilize to guide and support emergency management efforts for unusual and unique emergency conditions that will require extraordinary response. The MJHMP describes various County hazards, provides a risk assessment of these hazards, and presents mitigation strategies for these hazards.

The Hazardous Materials Division of the San Bernardino County Fire Department is designated by the State Secretary for Environmental Protection as the Certified Unified Program Agency or "CUPA" for the County of San Bernardino. The CUPA is charged with the responsibility of conducting compliance inspections for over 7000 regulated facilities in San Bernardino County. As a CUPA, San Bernardino County Fire Department manages, coordinates, administers permits, inspection activities, and enforcement activities for the following six hazardous material and hazardous waste programs: Hazardous Materials Release Response Plans and Inventory (Business Plan); Hazardous Waste Inspection Program; Aboveground Petroleum Storage Act (APSA)/Spill Prevention Control, and Countermeasure Plan (SPCC Plan); Underground Storage Tank (UST) Program; California Accidental Release Prevention (CalARP) program; and Hazardous Materials Management Plans and Inventory Statements.

San Bernardino Countywide Plan: 2020 County Policy Plan

The 2020 County Policy Plan serves as the County's General Plan. It contains goals and policies related to hazards, hazardous materials, and pollution within several elements. The following County goals and associated policies are relevant to hazards and hazardous materials for the Proposed Project.

Goal NR-1 Air Quality. Air quality that promotes health and wellness of residents in San Bernardino County through improvements in locally-generated emissions.

- ***Policy NR-1.6 Fugitive dust emissions.*** *We coordinate with air quality management districts on requirements for dust control plans, revegetation, and soil compaction to prevent fugitive dust emissions.*

Goal NR-2 Water Quality. Clean and safe water for human consumption and the natural environment.

- ***Policy NR-2.2 Water management plans.*** *We support the development, update, and implementation of ground and surface water quality management plans emphasizing the protection of water quality from point and non-point source pollution.*
- ***Policy NR-2.4 Wastewater discharge.*** *We apply federal and state water quality standards for wastewater discharge requirements in the review of development proposals that relate to type, location, and size of the proposed project in order to safeguard public health and shared water resources.*
- ***Policy NR-2.5 Stormwater discharge.*** *We ensure compliance with the County's Municipal Stormwater NPDES (National Pollutant Discharge Elimination System) Permit by requiring new development and significant redevelopment to protect the quality of water and drainage systems through site design, source controls, stormwater treatment, runoff reduction measures, best management practices, low impact development strategies, and technological advances. For existing development, we monitor businesses and coordinate with municipalities.*

Goal 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-2.1: Hazardous waste facilities.*** *We regulate and buffer hazardous waste facilities to protect public health and avoid impacts on the natural environment.*
- ***Policy HZ-2.2: Database of hazardous materials.*** *We maintain up-to-date databases of the storage, use, and production of hazardous materials, based on federally- and state-required disclosure and notification, to appropriately respond to potential emergencies.*
- ***Policy HZ-2.3: Safer alternatives.*** *We minimize the use of hazardous materials by choosing and by encouraging others to use non-toxic alternatives that do not pose a threat to the environment.*
- ***Policy HZ-2.4: Truck routes for hazardous materials.*** *We designate truck routes for the transportation of hazardous materials through unincorporated areas and prohibit routes that pass through residential neighborhoods to the maximum extent feasible.*
- ***Policy HZ-2.5: Community education.*** *We engage with residents and businesses to promote safe practices related to the use, storage, transportation, and disposal of hazardous materials.*

4.9.3 Significance Criteria

The first two significance criteria for hazards and hazardous materials are derived largely from the State CEQA Guidelines[19] Appendix G Environmental Checklist. The third criterion was added due to the potential presence of specific hazards that may exist in the Proposed Project area, including UXO, aerially deposited lead, and Valley Fever spores. Impacts of the Proposed Project would be considered significant and would require mitigation if the Proposed Project would:

- Create a substantial hazard to people or the environment through the routine transport, use, or disposal of hazardous materials or as a result of an accidental release of hazardous materials during construction, operation, or maintenance of the Proposed Project
- Be located on or near a site included on a list of hazardous materials sites, compiled pursuant to Government Code 659625
- Would result in mobilization of environmental contaminants, including disease vectors, currently existing in the soil or groundwater creating potential pathways of exposure to humans or other sensitive receptors

The discussion of the Proposed Project's potential to impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan is included in Section 4.17, *Traffic and Transportation*. The discussion of wildland fires, and their potential to expose people or structures to a risk of loss, injury, or death is presented in Section 4.18, *Wildfire*.

There are two items included in the CEQA checklist that are not further addressed in this EIR other than the following discussion:

- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school
- Create a substantial aviation hazard within 2 miles of an airport or airstrip resulting in a safety hazard for people residing or working in the Proposed Project area

These two significance criteria are not further addressed or analyzed because there are no schools within one-quarter mile of the Proposed Project site and no airports or airstrips within 2 miles of the Proposed Project site. As a result, there would be no impacts related to hazardous material use near a school or from aviation hazards related to the Proposed Project.

As explained in Section 4.9.1.1, EMF is not evaluated as an environmental impact under CEQA because there is no conclusive data on health effects. The concern is addressed in Section 4.9.4.2, *Stagecoach Gen-tie Line*.

[19] The "State CEQA Guidelines" refers to California Code of Regulations, Title 14, Chapter 3.

The Environmental Checklist Form in Appendix G of the State CEQA Guidelines does not provide any significance criteria related to electrical hazards and interference created by the gen-tie line. CEQA significance determinations for electrical interference and safety are made based on reasonably assumed potential impacts, as described in Section 4.9.4.2. For purposes of the CEQA analysis for this Proposed Project, an impact would be considered significant and require additional mitigation if Proposed Project construction or if maintenance of Proposed Project facilities during operation would:

- Create interference with radio, television, communications, or electronic equipment
- Create hazards to the public through Proposed Project-induced currents or shocks
- Create interference with cardiac pacemakers

4.9.4 Environmental Impact Analysis and Mitigation

The impacts of the Stagecoach Solar Generation Plant are presented in Section 4.9.4.1, and the Stagecoach Gen-tie Line and SCE Calcite Facilities are analyzed in Sections 4.9.4.2 and 4.9.4.3, respectively.

4.9.4.1 Impacts of the Stagecoach Solar Generation Plant

Impact HAZ-1: Spill or release of hazardous materials occurs during construction, operation, or maintenance of the project.

Improper handling, storage, or disposal of hazardous materials at the solar generation plant could result in spills or leaks and cause soil or water contamination. **(Less than Significant with Mitigation)**

Impact Discussion

Construction. During construction of the solar generation plant, hazardous materials typical of construction projects would be used and stored in construction staging areas. Gasoline, diesel fuel, oil, lubricants, paints, solvents, detergents, degreasers, ethylene glycol, dust palliative, pesticides, herbicides, and welding materials/supplies would be used in construction activities, construction equipment, and vehicles. Small quantities of hazardous waste would likely be generated during construction and may include waste paint, spent construction solvents, waste cleaners, waste oil, oily rages waste batteries, and spent welding materials. Hazardous materials could be released during construction as a result of improper handling, accidental spills or leaks, and/or due to leaking equipment or vehicles and could result in soil or water contamination, in addition to any toxic fumes that might be generated. Human exposure to contaminated soil or water can have potential health effects from a variety of factors, including the nature of the contaminant and the degree of exposure.

An accidental release of a potentially harmful or hazardous material into a dry stream bed or wash would not directly affect water quality. Similarly, an accidental spill or release of

hazardous materials outside of a stream channel would not directly affect water quality. However, accidental spills or releases of hazardous materials into a dry stream bed or wash, or on the banks of a stream channel, could indirectly adversely affect water quality through runoff during a subsequent storm event, when the spilled material would be washed into a stream or waterbody. Accidental spills or releases of hazardous materials could also indirectly affect groundwater through leaching. Hazardous material spills that are left on the ground surface for an extended period or that are followed quickly by a storm event could leach through the soil and into the groundwater, thereby resulting in the degradation of groundwater quality. Analysis of the potential for an accidental spill or leak of hazardous materials to affect water resources is presented in Section 4.10*, Hydrology and Water Quality*.

The proposed installation of a 2,000-gallon propane tank serving backup generators would not present a hazard as long as it is properly separated from the operation and maintenance (O&M) building (general standards require at least 10 feet of separation). Because the nearest residences are over 1,000 feet from the O&M building, the tank would not present an explosion risk, and fire suppression plans and equipment would be in place (see Section 2.2.5, *Project Description*).

The Proposed Project would be required to prepare a project-specific Storm Water Pollution Prevention Plan (SWPPP) for construction activities. Compliance with the SWPPP, combined with the required Spill Prevention, Control, and Countermeasure (SPCC) Plan and all other applicable health and safety regulations set forth by the County of San Bernardino, State, and federal agencies would reduce the potential for accidental spills and leaks of hazardous materials at the solar generation plant. Compliance with local, State, and federal hazardous materials regulations and the project-specific SWPPP and SPCC would reduce the potential for spills to occur through implementation of protocols for storage, transport, and handling of hazardous materials for the proposed Stagecoach Facilities construction activities.

Any hazardous waste generated on site during construction would be disposed of at a licensed treatment or disposal facility by a licensed and permitted hazardous waste hauler.

Implementation of Mitigation Measure (MM) HAZ-1 (Hazardous Materials Training and Management Plan) would further reduce the potential for hazardous material spills or leaks for the purposes of worker safety, to protect against soil and water contamination, and ensure proper disposal of hazardous materials, therefore the impact would be less than significant.

Operation and Maintenance. During operation and maintenance, hazardous materials such as vehicle fuels, oil, hydraulic fluid, and other vehicle maintenance fluids would be used by field crews and stored at the O&M building, storage yard, or substation. Gasoline, diesel fuel, oil, lubricants, paints, solvents, detergents, degreasers, ethylene glycol, dust palliative, pesticides, herbicides, and welding materials/supplies used in maintenance

activities, equipment, and vehicles could be released during operation as a result of accidents, and/or leaking equipment or vehicles. Spills and leaks of hazardous materials during maintenance activities could result in soil or water contamination.

The solar generation plant would include a battery storage facility on concrete foundations and housed in air-conditioned metal enclosures. The enclosures will include suitable fire suppression equipment and gas detection and ventilation if deemed appropriate based on design specifications, per current California Fire Code. Hazardous materials used in the battery system would include required secondary containment as per regulatory standards. The solar generation plant would use photovoltaic (PV) modules without any toxic metals such as mercury, lead, cadmium telluride, or gallium, and therefore there would be no release of hazardous materials if a solar module becomes damaged or broken. The PV module and associated materials would be easily recycled or reused if damaged or at the end of their useful life.

The Proposed Project will be required to comply with all local, State, and federal regulations, including preparing and complying with a project-specific SPCC Plan, and Business Emergency/Contingency Plan (Business Plan) related to the identification of and proper storage and use of hazardous materials onsite and providing applicable clean-up and reporting measures for spills of hazardous materials during operation of the solar generation plant. The SPCC Plan and Business Plan would outline the types and quantities of hazardous materials including fuels, lubricants, solvents, and paint to be stored and provide control and cleanup guidelines for spills that may occur at the solar generation plant during Proposed Project operation. The impact would be less than significant during Proposed Project operation and maintenance.

Mitigation Measures

MM HAZ-1: Hazardous Materials Training and Management Plan. Prior to approval of final construction plans, a Project-specific Hazardous Materials Training and Management Plan shall be prepared for the construction phase of the Project to ensure that accidental spills, leaks, or mishandling of hazardous materials does not result in contamination of soil or water. The plan is subject to CSLC approval, and shall include the following information related to hazardous materials, as applicable:

- Hazardous Material Storage and Disposal Procedures. A list of the hazardous materials that will be present onsite during construction, including Material Safety Data Sheets (MSDSs) and other information regarding their storage, use, and transportation requirements. A description of the waste management and disposal procedures for any hazardous materials that will be used or generated during construction. Hazardous materials shall not be stored near drainages or waterways.
- Training. The plan shall also include procedures for training and communication to minimize the potential exposure of the public and site workers to potential hazardous materials during all phases of construction. This would include training on hazardous

material protocols and best management practices (BMPs). All project personnel shall be provided with project-specific training to ensure that all hazardous materials and wastes associated with the project are handled in a safe and environmentally sound manner and disposed of according to applicable rules and regulations.

- Emergency Release Response Procedures. The Plan shall include emergency response procedures in the event of a release of hazardous materials. The Plan must prescribe hazardous materials handling procedures for reducing the potential for a spill during construction and would include an emergency response program to ensure quick and safe cleanup of accidental spills. A list of spill response materials and the locations of such materials at the Project site during construction shall be included. All construction personnel, including environmental monitors, would be made aware of state and federal emergency response reporting guidelines for accidental spills.
- Fueling and Maintenance of Construction Equipment. Written procedures for fueling and maintenance of construction equipment shall be included in the Plan. Refueling and maintenance procedures may require vehicles and equipment to be refueled on site or by tanker trucks. Procedures will require the use of drop cloths made of plastic, drip pans and trays to be placed under refilling areas to ensure that chemicals do not come into contact with the ground. Equipment would be inspected daily for potential leakage or failures. Fueling shall not take place within 200 feet of drainages or waterways with flowing water or within 75 feet of drainages or waterways that are dry.

The Hazardous Material Training and Management Plan shall be submitted to the CSLC 60 days prior to the start of construction for review, comment, and approval.

Impact HAZ-2: Encountering unexploded ordnance or military munitions and explosives of concern (UXO or MEC).

Proposed Project construction and operation activities at the solar generation plant could encounter UXO or MEC, creating potential explosive or chemical exposure hazard to workers. **(Less than Significant with Mitigation)**

Impact Discussion

Construction. The Victorville PBR No. 5 site is located east of the Proposed Project site; the former bombing range practice site is known or suspected to contain MEC (Parsons 2008). The potential presence of UXO, MEC, and munitions debris in construction areas where ground disturbance will occur for grading of access roads, excavation for the electrical collection system and structure foundations, and installation of solar array supports may present an explosive or hazardous materials hazard. Although the Victorville site is located 0.8 miles east of the Proposed Project boundary and will not directly affect the construction of the solar generation plant, munitions debris or remains and several

subsurface anomalies were identified during the cultural surveys of the solar generation plant. Practice bomb remains were identified in at least 43 locations throughout the site. The UXO specialist company (ECM) that escorted the cultural survey crews for a portion of their work recommended that that, at minimum, field and construction personnel working on the site be accompanied by qualified UXO personnel. The potential for harm to occur due to encountering UXO, MEC, or other munitions debris onsite would be reduced through the implementation of MM HAZ-2. MM HAZ-2 would ensure training of workers and avoidance of and removal of ordnance if identified onsite, and the impact would be less than significant.

Operation and Maintenance. With successful UXO removal during construction, the ongoing risk of encountering UXO during O&M would be substantially reduced. The impact would be less than significant.

Mitigation Measures

MM HAZ-2: Unexploded Ordnance (UXO) Identification, Training, and Reporting Plan. A project-specific UXO Identification, Training, and Reporting Plan shall be prepared and implemented to properly train all site workers in the recognition, avoidance, and reporting of military waste, munitions debris, and ordnance, and provide guidelines for identification and removal of UXO or munition and explosives of concern (MEC) by trained experts. The Plan shall contain, at a minimum, the following:

- Identification of areas of ground disturbance where UXO, MEC, or munitions debris may be encountered that may require additional ordnance surveys prior to construction. Identification of these areas and additional surveys shall be conducted by an UXO expert or another specialist approved by the CSLC.
- A description of the training program and materials and the qualifications of the training program preparer and training personnel
- Notification and avoidance requirements when potential UXO, MEC, or munitions debris are noted by site workers
- Identification of available trained experts that will respond to notification of discovery of any UXO, MEC, or munitions debris (unexploded or not)
- Work plan to recover and remove discovered ordnance or munitions debris and complete additional field screening, possibly including geophysical surveys to investigate adjacent areas for surface, near surface, or buried ordnance in all proposed land disturbance areas

The UXO Identification, Training, and Reporting Plan shall be submitted to the CSLC 60 days prior to the start of construction for review, comment, and approval.

Impact HAZ-3: Unknown environmental contamination could be encountered during project construction.

Contaminated soil could be encountered during excavation for installation of solar generation plant and transmission towers. **(Less than Significant with Mitigation)**

Impact Discussion

Construction. Unanticipated soil contamination could exist in the Proposed Project area due to illegal dumping or other historical activities (e.g., mining, military training activities). Due to the isolated nature of the area, there is a potential that unknown dumping of trash and other materials may have occurred. Other possible types of contamination include heavy metals and/or other hazardous materials.

There is a small potential that ADL contaminated soils may exist along and adjacent to Lucerne Valley Cutoff where it crosses through the Proposed Project area and may be encountered during ground disturbing activities near the road.

While the required project-specific SWPPP and SPCC Plan would partly address the excavation, handling, and disposal of contaminated soil, additional mitigation is required to fully protect workers and the public from ADL and unanticipated soil contamination. Environmentally contaminated soil could be improperly identified, handled, and disposed of, resulting in additional environmental contamination or exposure of workers to contaminated materials. The Proposed Project's adverse impacts related to encountering ADL contaminated soil or unanticipated contaminated soil would be less than significant with implementation of MM HAZ-3a (Aerially Deposited Lead Testing Program) and MM HAZ-3b (Soil and Groundwater Management Plan).

Operation and Maintenance. The effective implementation of mitigation during construction would reduce the risk of encountering of soil contamination during O&M. The impact would be less than significant.

Mitigation Measures

MM HAZ-3a: Aerially Deposited Lead Testing Program. Prior to Project construction, an ADL soil testing program will be prepared and conducted to determine the presence and extent of ADL contaminated soils along and adjacent to Lucerne Valley Cutoff and SR-247 in areas where Project-related ground disturbance would occur. If ADL contaminated soil is identified, the Applicant shall coordinate with the DTSC to determine appropriate handling, treatment, and disposal of any ADL contaminated soil.

The ADL Testing Program shall be submitted to the CSLC and Hazardous Materials Division of the San Bernardino County Fire Department 60 days prior to the start of construction for review, comment, and approval.

MM HAZ-3b: Soil and Groundwater Management Plan. The Applicant shall prepare a Soil and Groundwater Management Plan that outlines how Proposed Project construction crews would identify, handle, and dispose of previously unidentified potentially contaminated soil and groundwater. Due to the potential for unknown contamination, the plan shall include the following requirements:

- Identify the anticipated field screening methods and appropriate regulatory limits to be applied to determine proper handling and disposal of excavated soil spoils
- Any suspect soil already excavated shall be segregated, and work will stop in the subject area until sampling and testing is done to determine appropriate treatment and disposal
- Although dewatering during construction is unlikely, any water produced by dewatering shall be tested prior to disposal, which would be in accordance with all applicable regulations
- Include requirements for documenting and reporting incidents of encountered contaminants, such as documenting locations of occurrence, sampling results, and reporting actions taken to dispose of contaminated materials. The Applicant shall immediately notify the Hazardous Materials Division of the San Bernardino County Fire Department and the CSLC in the event of encountering contaminated soil or groundwater. A weekly report listing encounters with contaminated soils and describing actions taken shall be submitted to the CSLC and the County Fire Department.

The Soil and Groundwater Management Plan shall be submitted to the CSLC and Hazardous Materials Division of the San Bernardino County Fire Department 60 days prior to the start of construction for review, comment, and approval.

Impact HAZ-4: Valley Fever spores could be mobilized.

Ground disturbing activities for the solar generation plant construction could mobilize *Coccidioides* fungus spores, causing exposure of workers and the public to contracting Valley Fever. **(Less than Significant with Mitigation)**

Impact Discussion

Construction and Operation and Maintenance. Valley Fever, caused by inhaling *Coccidioides* fungus spores, is considered endemic in California and are present in the arid desert regions of California, including San Bernardino County. Although the numbers of reported Valley Fever cases in San Bernardino County is a fraction of that reported statewide (see Table 4.9-1), there is still a potential that construction and O&M activities such as grading, excavation, and construction vehicle traffic, could stir up dust containing *Coccidioides* fungus spores, exposing workers and the public to contracting Valley Fever. Proposed Project construction activities would be subject to dust control requirements

(including Mojave Desert Air Quality Management Division [MDAQMD] Rules, described in Section 4.02, *Air Quality*). Standard construction dust suppression procedures, including the use of water trucks and the application of non-toxic soil binders in construction areas, covering of temporary soil stockpiles, and maintaining roads, reduce airborne emissions of dust containing fungal spores and reduce the risk of exposure of workers and the public. In addition, gravel or surface treatments on the unpaved access roads may be required.

CDPH has recommended consideration of the following actions for reducing likelihood of disease in areas where *Coccidioides* fungus spores are prevalent:

- Improved worksite dust-control measures, using earth-moving equipment and trucks with high-efficiency particulate air ([HEPA]-filtered) enclosed cabs to protect the operator
- Implementing and enforcing criteria for suspending work on the basis of wind and dust conditions
- Providing all outdoor workers access to National Institute for Occupational Safety and Health–approved respiratory protection when conducting or in close proximity to soil-disturbing work, or when exposed to excessive wind-blown dust
- Providing clean coveralls daily to employees
- Encouraging workers to remove coveralls and work shoes before entering vehicles to leave the worksite
- Developing effective Valley Fever training for all employees that includes ways to reduce exposure and how to recognize symptoms
- Information on where to seek care; and improving compliance by employers and their designated health care providers with reporting cases to local health jurisdictions, workers' compensation carriers, and Cal/OSHA (Wilken et al. 2015)

The risk of contracting Valley Fever in connection with Proposed Project construction is considered to be low due to the MDAQMD required fugitive dust control rules and standard construction dust suppression procedures. However, there is still a potential for minor amounts of dust containing *Coccidioides* fungus spores to become airborne and infect solar generation plant construction workers and residents at adjacent properties. Implementation of MM AQ-1a (Fugitive Dust Control) would reduce Impact HAZ-4 to less than significant levels.

Mitigation Measures

MM AQ-1a: Fugitive Dust Control (Section 4.2, *Air Quality*)

4.9.4.2 Impacts of the Stagecoach Gen-tie Line

This section evaluates the same four impacts as for the Stagecoach Solar Generation Plant, except for the addition of the discussion of EMF, following Impact HAZ-4.

Impact HAZ-1: Spill or release of hazardous materials occurs during construction, operation, or maintenance of the project.

Improper handling, storage, or disposal of hazardous materials within the Stagecoach Gen-tie Line footprint could result in spills or leaks and cause soil or water contamination. **(Less than Significant with Mitigation)**

Impact Discussion

Construction. During construction of the gen-tie line and associated access roads, hazardous materials such as gasoline, diesel fuel, oil, lubricants, paints, solvents, detergents, degreasers, ethylene glycol, dust palliative, pesticides, herbicides, and welding materials/supplies would be used in construction activities, construction equipment, and vehicles. Small quantities of hazardous waste would likely be generated during construction and may include waste paint, spent construction solvents, waste cleaners, waste oil, oily rages waste batteries, and spent welding materials. Hazardous materials could be released during construction as a result of improper handling, accidental spills or leaks, and/or due to leaking equipment or vehicles and could result in soil or water contamination. Human exposure to contaminated soil or water can have potential health effects from a variety of factors, including the nature of the contaminant and the degree of exposure.

An accidental release of a potentially harmful or hazardous material into a dry stream bed or wash would not directly affect water quality. Similarly, an accidental spill or release of hazardous materials outside of a stream channel would not directly affect water quality. However, accidental spills or releases of hazardous materials into a dry stream bed or wash, or on the banks of a stream channel, could indirectly adversely affect water quality through runoff during a subsequent storm event, when the spilled material would be washed into a stream or waterbody or could affect groundwater through leaching. Analysis of the potential for an accidental spill or leak of hazardous materials to affect water resources is presented in Section 4.10, *Hydrology and Water Quality*.

Compliance with the required Proposed Project SWPPP, combined with the required SPCC Plan and all other applicable health and safety regulations set forth by the County of San Bernardino, State, and federal agencies would reduce the potential for accidental spills and leaks of hazardous materials along the Stagecoach Gen-tie Line and associated access roads. Compliance with local, State, and federal hazardous material regulations and the project-specific SWPPP and SPCC would reduce the potential for spills to occur through implementation of protocols for storage, transport, and handling of hazardous materials for the Proposed Project construction activities. In addition, any hazardous waste generated on-site during construction would be disposed of at a licensed treatment of

disposal facility by a licensed and permitted hazardous waste hauler. Implementation of MM HAZ-1 (Hazardous Materials Training and Management Plan) will further reduce the potential for hazardous material spills or leaks for the purposes of worker safety, to protect against soil and water contamination, and ensure proper disposal of hazardous materials, therefore the impact would be less than significant.

Operation and Maintenance. During O&M, small amounts of hazardous materials such as vehicle fuels, oil, and other vehicle maintenance fluids would be used by field crews and may be stored in field vehicles. The project-specific SWPPP and SPCC would include guidance of cleanup of minor spills or leaks that may occur from field vehicles during maintenance activities. Additionally, all local, State, and federal regulations regarding the use, storage, disposal, and transport of hazardous materials will be followed. The impact would be less than significant during Proposed Project operation and maintenance.

Mitigation Measures

MM HAZ-1: Hazardous Materials Training and Management Plan

Impact HAZ-2: Encountering unexploded ordnance or military munitions and explosives of concern (UXO or MEC).

Proposed Project construction and operation activates at the northern end of the gen-tie line could encounter UXO or MEC, creating potential explosive or chemical exposure hazard to workers. **(Less than Significant with Mitigation)**

Impact Discussion

Construction. Although the Victorville PBR No. 5 is located east of the northern end of the Proposed Project and will not directly affect the construction of the gen-tie line, munitions debris/remains and several subsurface anomalies were identified during the cultural surveys of the solar generation plant site, including in the general vicinity of the northern end of the gen-tie line. The potential presence of MEC, UXO, and munitions debris in construction areas where ground disturbance will occur for grading of access and spur roads and drilling of transmission line structure foundations may present an explosive or hazardous materials hazard. The UXO specialist company (ECM) that escorted the cultural survey crews for a portion of their work recommended that that, at minimum, field and construction personnel working on the site be accompanied by qualified UXO personnel. The potential for harm to occur due to encountering UXO, MEC, or other munitions debris onsite would be reduced through the implementation of MM HAZ-2. MM HAZ-2 would ensure training of workers and avoidance of and removal of ordnance if identified onsite, reducing the impact to less than significant.

Operation and Maintenance. With successful UXO removal during construction, the ongoing risk of encountering UXO during O&M would be substantially reduced. The impact would be less than significant.

Mitigation Measures

MM HAZ-2: Unexploded Ordnance (UXO) Identification, Training, and Reporting Plan

Impact HAZ-3: Unknown environmental contamination could be encountered during project construction.

Contaminated soil could be encountered during excavation for the gen-tie line. **(Less than Significant with Mitigation)**

Impact Discussion

Unanticipated soil contamination could exist along the Stagecoach Gen-tie Line due to illegal dumping or other historical activities (e.g., mining, military training activities). Due to the isolated nature of the area and availability of remote access roads, there is a potential that unknown dumping of trash and other materials may have occurred within the footprint or within the vicinity of the gen-tie line. Other possible types of unknown contamination include heavy metals and/or other hazardous materials.

There is a potential for ADL contaminated soils at two locations where the gen-tie crosses SR-247, and a small potential for it to occur at other locations within the gen-tie footprint where it is adjacent to or crosses Lucerne Valley Cutoff.

While the Applicant's SWPPP and SPCC Plan would partly address the excavation, handling and disposal of ADL and unanticipated contaminated soil, additional mitigation is required to fully protect workers and the public from unanticipated soil contamination. Environmentally contaminated soil could be improperly identified, handled, and disposed of, resulting in additional environmental contamination or exposure of workers to contaminated materials.

The Proposed Project's adverse impacts related to encountering ADL contaminated soil or unanticipated contaminated soil would be reduced to less than significant through the implementation of MM HAZ-3a (Aerially Deposited Lead Testing Program) and MM HAZ-3b (Soil and Groundwater Management Plan).

Operation and Maintenance. With successful implementation of mitigation during construction, the ongoing risk of encountering soil contaminants during O&M would be substantially reduced. The impact would be less than significant.

Mitigation Measures

MM HAZ-3a: Aerially Deposited Lead Testing Program

MM HAZ-3b: Soil and Groundwater Management Plan

Impact HAZ-4: Valley Fever spores could be mobilized.

Ground disturbing activities for gen-tie line construction and access road grading could mobilize *Coccidioides* fungus spores, causing exposure of workers and the public to contracting Valley Fever. **(Less than Significant with Mitigation)**

Impact Discussion

Construction and Operation and Maintenance. Construction activities such as grading, excavation, and construction vehicle traffic, could stir up dust containing *Coccidioides* fungus spores, exposing workers and the public to contracting Valley Fever. Proposed Project construction activities would be subject to dust control requirements (including MDAQMD Rules, described in Section 4.02, *Air Quality*). Standard dust suppression procedures, including the use of water trucks and the application of non-toxic soil binders in construction areas, covering of temporary soil stockpiles, and maintaining roads, reduce airborne emissions of dust containing *Coccidioides* fungal spores and reduce the risk of exposure of workers and the public. In addition, gravel or surface treatments on the unpaved access roads may be required.

The risk of contracting Valley Fever in connection with Proposed Project construction is considered to be low due to the MDAQMD required fugitive dust control rules and standard construction dust suppression procedures. However, there is still a potential for minor amounts of dust containing *Coccidioides* fungus spores to become air born and infect gen-tie line construction workers and residents at adjacent properties. Implementation of MM AQ-1a (Fugitive Dust Control) would reduce the impact to less than significant.

Mitigation Measures

MM AQ-1: Fugitive Dust Control (Section 4.2, *Air Quality*)

Impact HAZ-5: Gen-tie line could cause interference with radio, television, communications, or electronic equipment.

The presence of the gen-tie line would result in an increased electric and magnetic field in the immediate vicinity of the line. **(Less than Significant with Mitigation)**

Impact Discussion

Operation and Maintenance. Electric and magnetic fields from power lines occur at a frequency level that is substantially below the frequency range of communications systems and do not typically pose interference problems for communication equipment, as can be seen from the proliferation of cell phone arrays that are mounted directly on transmission line structures.

Corona or gap discharges related to high frequency radio and television interference impacts are dependent upon several factors, including the strength of broadcast signals and are

anticipated to be very localized, if it were to occur. Individual sources of adverse radio/ television interference impacts can be located and corrected on power lines. Conversely, magnetic field interference with electronic equipment, such as older CRT monitors, can be corrected through the use of software, shielding, or changes at the monitor location. MM HAZ-5a (Limit the Conductor Surface Gradient) and MM HAZ-5b (Document and Resolve Electronic Interference Complaints) would limit interference by reducing corona discharges from the energized conductor and by addressing loose connections that result in gap discharges.

Project-induced currents or shocks would create hazards to the public. Induced currents and voltages on conducting objects near the proposed transmission lines represent a potential adverse impact that can be mitigated. These impacts do not pose a threat in the environment if the conducting objects are properly grounded. MM HAZ-5c (Implement grounding measures) would provide a conductive path to ground thereby avoiding a buildup of electrical potential that could discharge as an electrical shock.

Interference with cardiac pacemakers. The function of some pacemakers could be altered by exposure to electric fields that would be generated in the immediate vicinity of the Proposed Project (i.e., adjacent to the transmission line ROW), potentially resulting in inaccurate detections by the pacemaker of normal cardiac signals or resulting in inappropriate behavior, until the field strength is reduced by the individual leaving the immediate area. However, the biological consequences of transient, reversible pacemaker malfunction are mostly benign because, as discussed above, most modern units revert to a fixed-rate pacing mode, which is life-sustaining (IEEE 1979). There are, however, exceptions, which include: individuals that are completely dependent on their pacemakers for maintaining all cardiac rhythms; individuals whose pacemakers function in inhibited modes, where field interference could severely compromise cardiovascular function; and individuals with compromised coronary circulation who are prone to episodes of reduced cardiac blood flow (IEEE 1979). A 2012 study studied potential effects on pacemakers from 400 kV powerlines and determined that the risk of disturbances was not high (Korpinen et al. 2012). A 2015 study of pacemakers found no significant concern for patients with normal bipolar settings, but advised wearers to limit their exposure in the areas with highest field strength where lines sag (Technology.org 2015).

Such episodes that would occur at the same time that the pacing becomes fixed-rate or irregular are dangerous, because these individuals would be more easily triggered into ventricular fibrillation (EPRI 1997). The precise coincidence of an individual being exposed to high electric fields within a transmission line ROW and a biological need of that individual for the full function of his/her pacemaker would appear, in general, to be a rare event (IEEE 1979). However, given the data available, the probability of such a coincidence to occur cannot be estimated. Clear exceptions to this conclusion are individuals who are completely dependent on a pacemaker for all cardiac rhythms (IEEE 1979).

Given the rarity of an exposure event to occur simultaneously with a biological need for full function pacemakers, it would be unlikely that the transmission line's electric field would cause harmful interference to the operation of cardiac pacemakers. No mitigation would be required.

Mitigation Measures

MM HAZ-5a: Limit the conductor surface gradient. As part of the design and construction process for the Stagecoach Gen-tie Line, the Applicant shall limit the conductor surface gradient in accordance with the Institute of Electrical and Electronic Engineers Radio Noise Design Guide.

MM HAZ-5b: Document and resolve electronic interference complaints. After energizing the Stagecoach Gen-tie Line, the Applicant shall respond to, document, and resolve radio, television, and electronic equipment interference complaints received. These records shall be made available to the CSLC for review upon request. All unresolved disputes shall be referred by the Applicant to the CSLC for resolution.

MM HAZ-5c: Implement grounding measures. As part of the final siting and construction process for the Stagecoach Gen-tie Line, the Applicant shall identify objects (such as metal fences, metal buildings, and metal pipelines) within and near the right-of-way that have the potential for induced voltages and shall implement electrical grounding of metallic objects in accordance with the industry standards (e.g., IEEE 1048-2016 – IEEE Guide for Protective Grounding of Power Lines) (IEEE 2016). The identification of objects shall document the threshold electric field strength and metallic object size at which grounding becomes necessary.

Issue HAZ-6: Electric and Magnetic Fields would be increased with presence of the Stagecoach Gen-tie Line

The presence of the gen-tie line would result in an increased electric and magnetic field in the immediate vicinity of the line. **(Not a CEQA Impact)**

EMF Discussion

Operation and Maintenance. As stated in Section 4.9.1.3 and based on evidence presented in the Environmental Setting from agencies studying the health risks of power line electric and magnetic fields, EMF issues are not evaluated as CEQA impacts. Approximately 20 years ago, the WHO's IARC review (WHO 2001; DHS 2002) considered the evidence for Extremely Low Frequency (ELF) magnetic and electric fields separately: It found "limited evidence" in humans for the carcinogenicity of ELF magnetic fields in relation to childhood leukemia, with "inadequate evidence" in relation to all other cancers. It found "inadequate evidence" for the carcinogenicity of ELF magnetic fields based on studies in lab animals. It found "inadequate evidence" for the carcinogenicity of ELF electric fields in humans. Based on this work, IARC classified ELF magnetic fields as

"possibly carcinogenic to humans," and it classified ELF electric fields as "not classifiable as to their carcinogenicity to humans." (American Cancer Society 2017). Although much of the body of national and international research regarding EMF and public health risks remains contradictory and inconclusive, the strength of power line EMF is greatest directly under the line and decreases with distance from the line (American Cancer Society 2017). Due to the lack of correlation between proximity to high voltage power lines and increased leukemia and other cancer rates, the health-related EMF information in this EIR is presented in response to public interest and concern.

Methods to Reduce Magnetic Fields. Magnetic fields can be reduced in two ways: either by cancellation or by increasing distance from the source (or both).

Cancellation is achieved in two ways. A transmission line circuit consists of three "phases": three separate wires (conductors) on a transmission tower. The configuration of these three conductors can be designed specifically to reduce magnetic fields:

- One option is to configure the three conductors closer together. The result is that the interference, or cancellation, of the fields from each wire is enhanced. This technique has practical limitations because of the potential for short circuits if the wires are placed too close together. There are also worker safety issues to consider if spacing is reduced.
- A second option can apply where there are two circuits (requiring more than three phase wires), which is not the case with the Stagecoach Gen-tie Line. In double-circuit lines, cancellation can be accomplished by arranging phase wires from the different circuits to be near each other. In underground lines, the three phases are typically much closer together than in overhead lines because the cables are insulated (coated), but field cancellation still occurs.

The **distance** between the source of fields and the public can be increased by: (a) placing the wires higher aboveground, (b) burying underground cables deeper, or (c) increasing the width of the ROW so people would only be exposed at a greater distance where the field is lower. These methods can prove effective in reducing fields because the reduction of the field strength drops rapidly with increased distance.

In order to parallel the actions of the CPUC for a high-voltage transmission line, the following Best Management Practice EMF-1 is presented for consideration by the CSLC and the Applicant.

Best Management Practice

Best Management Practice EMF-1, Low-Cost EMF Reduction: The Applicant shall implement the provisions of CPUC Decision 06-01-042 (CPUC 2006), focusing on reduction of magnetic field where the gen-tie line is closest to existing residences. In these areas, the tower height could be increased, or the conductor phases modified, with the

goal being a magnetic field reduction of at least 15 percent in areas where residences are located adjacent to the ROW. The cost of these practices would be capped at 4 percent of total gen-tie cost, unless the CSLC determines that a higher expenditure is appropriate.

4.9.4.3 Impacts of the SCE Calcite Facilities

Impact HAZ-2 (Encountering unexploded ordnance or military munitions and explosives of concern [UXO or MEC]) would not occur at the SCE Calcite Facilities as the substation site is located more than 6 miles south of the Victorville PBR No. 5 former practice bombing range and UXO, MEC, or munitions debris are unlikely to be encountered in this area.

Impact HAZ-1: Spill or release of hazardous materials occurs during construction, operation, or maintenance of the project.

Improper handling, storage, or disposal of hazardous materials at the SCE Calcite Facilities could result in spills or leaks and cause soil or water contamination. **(Less than Significant with Mitigation)**

Impact Discussion

Construction. During construction of the SCE Calcite Facilities, hazardous materials such as fuels, lubricants, and solvents would be used and stored in construction staging yards. Gasoline, diesel fuel, oil, lubricants, paints, solvents, detergents, degreasers, ethylene glycol, dust palliative, pesticides, herbicides, and welding materials/supplies would be used in construction activities, equipment, and vehicles. Small quantities of hazardous waste would likely be generated during construction and may include waste paint, spent construction solvents, waste cleaners, waste oil, oily rags, waste batteries, and spent welding materials. Hazardous materials could be released during construction as a result of improper handling, accidental spills or leaks, and/or due to leaking equipment or vehicles and could result in soil or water contamination. Human exposure to contaminated soil or water can have potential health effects from a variety of factors, including the nature of the contaminant and the degree of exposure.

An accidental release of a potentially harmful or hazardous material into a dry stream bed or wash would not directly affect water quality. Similarly, an accidental spill or release of hazardous materials outside of a stream channel would not directly affect water quality. However, accidental spills or releases of hazardous materials into a dry stream bed or wash, or on the banks of a stream channel, could indirectly adversely affect water quality through runoff during a subsequent storm event, when the spilled material would be washed into a stream or waterbody. Accidental spills or releases of hazardous materials could also indirectly affect groundwater through leaching. Hazardous material spills that are left on the ground surface for an extended period or that are followed quickly by a storm event could leach through the soil and into the groundwater, thereby resulting in the degradation of groundwater quality. Analysis of the potential for an accidental spill or leak

of hazardous materials to affect water resources is presented in Section 4.10, *Hydrology and Water Quality*.

SCE would be required to prepare a SWPPP and a SPCC Plan for the SCE Calcite Facilities. Compliance with the SWPPP, combined with the SPCC all other applicable health and safety regulations set forth by the County of San Bernardino, State, and federal agencies would reduce the potential for accidental spills and leaks of hazardous materials at the SCE Calcite Facilities. The SWPPP and SPCC would reduce the potential for spills to occur through implementation of protocols for storage, transport, and handling of hazardous materials for the SCE Calcite Facilities construction activities. In addition, any hazardous waste generated on site during construction would be disposed of at a licensed treatment or disposal facility by a licensed and permitted hazardous waste hauler. Implementation of MM HAZ-1 (Hazardous Materials Training and Management Plan) will further reduce the potential for hazardous material spills or leaks for the purposes of worker safety, to protect against soil and groundwater contamination, and ensure proper disposal of hazardous materials, therefore the impact would be less than significant.

Operation and Maintenance. During O&M, hazardous materials such as vehicle fuels, oil, hydraulic fluid, and other vehicle maintenance fluids would be used by field crews and stored at the O&M building, storage yard, or substation. Gasoline, diesel fuel, oil, lubricants, paints, solvents, detergents, degreasers, ethylene glycol, dust palliative, pesticides, herbicides, and welding materials/supplies used in maintenance activities, equipment, and vehicles could be released during O&M as a result of accidents, and/or leaking equipment or vehicles. Spills and leaks of hazardous materials during maintenance activities could result in soil or water contamination.

SCE would be required to comply with all local, State, and federal regulations for the SCE Calcite Facilities, including preparing and complying with a project-specific SPCC Plan, and Business Emergency/Contingency Plan related to the identification of and proper storage of hazardous materials onsite and providing applicable clean-up and reporting measures for spills of hazardous materials during operation of the SCE Calcite Facilities. The SPCC Plan and Business Emergency/Contingency Plan would outline the types and quantities of hazardous materials including fuels, lubricants, solvents, and paint to be stored and provide control and cleanup up guidelines for spills that may occur at the SCE Calcite Facilities during Proposed Project operation. These requirements would ensure that the impact would be less than significant during O&M.

Mitigation Measures

MM HAZ-1: Hazardous Materials Training and Management Plan

Impact HAZ-3: Unknown environmental contamination could be encountered during project construction.

Contaminated soil could be encountered during excavation for the SCE Calcite Facilities. **(Less than Significant with Mitigation)**

Impact Discussion

Construction. Unanticipated soil contamination could exist at the SCE Calcite Facilities and access road due to illegal dumping or other historical activities (e.g., mining, military training activities). Due to the isolated nature of the area and availability of remote access roads, there is a potential that unknown dumping of trash and other materials may have occurred within the Proposed Project site or in the vicinity of the SCE Calcite Facilities. Other possible types of contamination include heavy metals and/or other hazardous materials.

There is a potential that ADL contaminated soils may occur within the SCE Calcite Facilities site where it is traversed by SR-247.

While the Applicant's SWPPP and SPCC Plan would partly address the excavation, handling, and disposal of contaminated soil, additional mitigation is necessary to fully protect workers and the public from unanticipated soil contamination. Environmentally contaminated soil could be improperly identified, handled, and disposed of, resulting in additional environmental contamination or exposure of workers to contaminated materials.

The adverse impacts at the SCE Calcite Facilities related to encountering unanticipated contaminated soil would be reduced through the implementation of MM HAZ-3b.

Operation and Maintenance. With successful implementation of mitigation during construction, the ongoing risk of encountering contaminants during O&M would be substantially reduced. The impact would be less than significant.

Mitigation Measures

MM HAZ-3a: Aerially Deposited Lead Testing Program

MM HAZ-3b: Soil and Groundwater Management Plan

Impact HAZ-4: Valley Fever spores could be mobilized.

Ground disturbing activities for SCE Calcite Facilities construction could mobilize *Coccidioides* fungus spores, causing exposure of workers and the public to contracting Valley Fever. **(Less than Significant with Mitigation)**

Impact Discussion

Construction and Operation and Maintenance. Construction activities such as grading, excavation, and construction vehicle traffic, could stir up dust containing *Coccidioides* fungus spores, exposing workers and the public to contracting Valley Fever. Proposed Project construction activities would be subject to dust control requirements (including MDAQMD Rules, described in Section 4.02, *Air Quality*). Standard construction dust suppression procedures, including the use of water trucks and the application of non-toxic soil binders in construction areas, covering of temporary soil stockpiles, and maintaining roads, reduce airborne emissions of fungal spores and reduce the risk of exposure of workers and the public. In addition, gravel or surface treatments on the unpaved access roads may be required.

The risk of contracting Valley Fever in connection with Proposed Project construction is considered to be low due to the MDAQMD required fugitive dust control rules and standard construction dust suppression procedures. However, there is still a potential for minor amounts of dust containing *Coccidioides* fungus spores to become air born and infect SCE Calcite Facilities construction workers and residents of adjacent properties. Implementation of MM AQ-1a (Fugitive Dust Control) would reduce Impact HAZ-4 to less than significant.

Mitigation Measures

MM AQ-1a: Fugitive Dust Control (Section 4.2, *Air Quality*)

4.9.5 Cumulative Impacts

4.9.5.1 Geographic Scope

The geographic extent for the analysis of cumulative impacts related to hazards and hazardous materials is limited to the immediate vicinity surrounding the Stagecoach Facilities and the SCE Calcite Facilities. These geographic limits are appropriate to consider the potential cumulative impacts as the Proposed Project impacts are limited to the Proposed Project sites and immediately adjacent properties and hazards and similar impacts of other past, present, and reasonably foreseeable future projects that would have the potential to occur would be limited to their respective project sites and immediately adjacent properties.

4.9.5.2 Cumulative Impact Analysis

Cumulative projects relevant to this analysis include proposed solar projects, an electrical transmission upgrade project, and residential development projects within 10 miles of the Proposed Project. These projects are located in similar settings as the Proposed Project: generally undeveloped desert, open space, scattered rural residences, and areas of former military use (such as WWII practice bombing ranges). The other projects would be expected to have similar hazards and hazardous materials impacts as the Proposed Project. These

projects would comply with CEQA and would likely develop and comply with similar mitigation measures for the hazards and hazardous materials impacts.

Impacts HAZ-1, HAZ-2, and HAZ-3: Potential to Encounter Hazardous Materials or UXO

These impacts related to hazardous materials are specific to each component of the Proposed Project and would occur only at the subject Proposed Project site. They have no potential to contribute to effects of other projects.

Impact HAZ-4: Valley Fever Spores Could be Mobilized

The potential cumulative effects of Impact HAZ-4 would be limited to areas where dust resulting from construction activities at other sites could combine with the dust from the Proposed Project site. MM AQ-1a incorporates the Mojave Desert Air Quality Management District's strict requirements about control of dust during construction. The other cumulative projects would have to comply with the same requirements during construction and operation. While several of the cumulative projects are located within a few miles of the Proposed Project, none are close enough for their dust effects to combine with those of the Proposed Project. Therefore, the Proposed Project would not contribute to cumulatively considerable effects related to Valley Fever.

4.9.6 Mitigation Measure Summary

Table 4.9-2 summarizes the mitigation measures identified in this EIR to reduce or avoid potentially significant impacts related to hazards and hazardous materials. All mitigation measures apply to impacts for the Stagecoach Facilities and the SCE Calcite Facilities.

Table 4.9-2. Impact and Mitigation Measure Summary

Impact	Mitigation Measures
Impact HAZ-1: Spill or release of hazardous materials occurs during construction, operation, or maintenance of the project	**MM HAZ-1:** Hazardous Materials Training and Management Plan
Impact HAZ-2: Encountering unexploded ordnance or military munitions and explosives of concern (UXO or MEC) *[Impact and mitigation are not applicable to SCE Calcite Facilities]*	**MM HAZ-2:** Unexploded Ordnance (UXO) Identification, Training, and Reporting Plan
Impact HAZ-3: Unknown environmental contamination could be encountered during construction	**MM HAZ-3a:** Aerially Deposited Lead Testing Program **MM HAZ-3b:** Soil and Groundwater Management Plan

Table 4.9-2. Impact and Mitigation Measure Summary	
Impact	**Mitigation Measures**
Impact HAZ-4: Valley Fever spores could be mobilized	**MM AQ-1a:** Fugitive Dust Control (Section 4.2, *Air Quality*)
Impact HAZ-5: Gen-tie line could cause interference with radio, television, communications, or electronic equipment *[Impact and mitigation are not applicable to Stagecoach Solar Generation Plant or SCE Calcite Facilities]*	**MM HAZ-5a:** Limit the Conductor Surface Gradient **MM HAZ-5b:** Document and Resolve Electronic Interference Complaints **MM HAZ-5c:** Implement Grounding Measures
Issue HAZ-6: Electric and magnetic fields would be increased with presence of the Stagecoach Gen-tie Line *[Impact and mitigation are not applicable to Stagecoach Solar Generation Plant or SCE Calcite Facilities]*	No mitigation would be required, but Best Management Plan EMF-1 is recommended **Best Management Practice EMF-1:** Low-Cost EMF Reduction

4.10 HYDROLOGY AND WATER QUALITY

This section describes the water resource qualities in the vicinity of the Proposed Project, evaluates the type and significance of impacts that may occur as a result of the Proposed Project, and identifies measures to avoid or substantially lessen any impacts found to be potentially significant.

The Proposed Project is described in detail in Section 2, *Project Description*. The Environmental Impact Report (EIR) analysis of the Proposed Project is presented in three parts. The first two parts comprise the **Stagecoach Facilities** proposed by Aurora Solar, LLC and the third part includes the **SCE Calcite Facilities,** proposed by Southern California Edison (SCE). The analysis components are:

- The **Stagecoach Solar Generation Plant,** which would include the solar arrays and collector lines, ancillary project facilities, and the battery energy storage system (BESS), all located within the 3,570 acres of State-owned school lands managed by the CSLC.
- The **Stagecoach Gen-tie Line** (located on State-owned lands, leased land, and purchased private land), which would run approximately 9.1 miles, connecting the Stagecoach Solar Generation Plant to the proposed SCE Calcite Facilities and the SCE electrical transmission system.
- The **SCE Calcite Facilities,** which would be constructed, owned, and operated by SCE and would include a substation (referred to as the **SCE Calcite Substation**), a connection to distribution-level electric power, access roads, telecommunications facilities, and new transmission structures to interconnect with the existing transmission system.

Issues raised during scoping related to Hydrology and Water Quality include concerns about availability of groundwater for construction, impacts on surface water and drainages, flooding, and a drainage plan for managing stormwater. Several commenters voiced concerns related to the limited groundwater availability in the region and the current overdraft situation of the groundwater basin. Commenters also requested that the volume of water to be used during construction and operation be defined. In addition to the analysis in this section, the Stagecoach Solar Project Water Supply Assessment (WSA) by Todd Groundwater (Todd 2021), in Appendix D, presents additional detail on groundwater resources and Proposed Project water supply.

4.10.1 Environmental Setting

4.10.1.1 Regional Setting

As described in Section 2.1, the Proposed Project would be located within the North Lucerne Valley portion of San Bernardino County, between the Stoddard Ridge and Sidewinder Mountains. The site is in the Colorado River Hydrologic Region of the Mojave Desert,

about 15 miles south of Barstow, on relatively flat, mostly undisturbed natural terrain covered with natural desert vegetation at an altitude of approximately 3,050 feet above mean sea level.

Climate and Precipitation

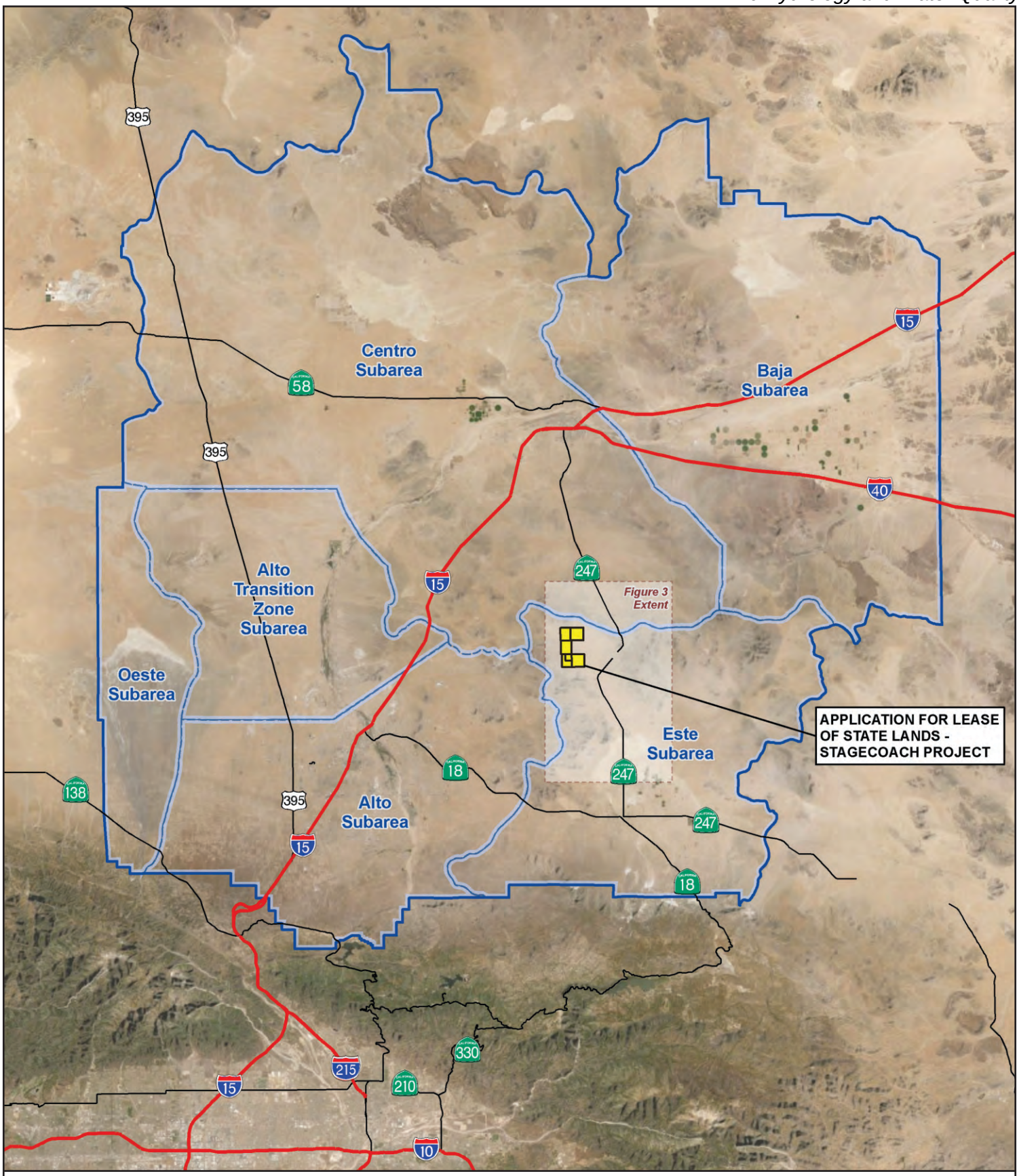
The climate in the North Lucerne Valley area is characterized by high aridity and low precipitation. The region experiences a wide variation in temperature, with very hot summer months with an average maximum temperature at nearby Barstow of 102 degrees Fahrenheit (ºF) in July and cold dry winters with an average minimum temperature of 31ºF in December (WRCC 2020).

Average annual precipitation in the Proposed Project area, based on a gauging station at Barstow, is approximately 4.3 inches, with January recording the highest monthly average of 0.72 inches and June recording the lowest monthly average of 0.08 inches (WRCC 2020). Most rainfall occurs during the winter months.

Groundwater

The Proposed Project is located within the Este Hydrologic Subbasin, which is part of the larger Mojave Basin. The Este Subbasin has been divided into two groundwater basins, the Lucerne Valley groundwater basin (LVGB) and the smaller Fifteenmile Valley groundwater basin (FVGB), that are primarily separated by the Helendale fault, which transects the southwest portion of the Este Subbasin, The LVGB is located northeast of the Helendale fault, and the FVGB is located to the southwest of the fault. The water-bearing units of the groundwater basins in the Este Subbasin primarily consist of older alluvial deposits and the Old Woman Sandstone (MWA 2005A), that are underlain by Mesozoic granitic rocks and Paleozoic to Precambrian metasedimentary and metamorphic rocks.

The Proposed Project overlies the northern portion of the LVGB in North Lucerne Valley (MWA 2005A; see Figure 4.10-1). The LVGB covers an area of 162 square miles in the Lucerne Valley of San Bernardino County (MWA 2005A). It is bounded by the San Bernardino Mountains on the south, the Granite Mountains and the Helendale fault on the west, the Ord Mountains on the north, and the Camp Rock fault and Kane Wash Area Groundwater Basin and Fry Mountains on the east and southeast (CDWR 2004). North Lucerne Valley is characterized by undifferentiated alluvial deposits that occur as a thin veneer over older deposits. These undifferentiated alluvial deposits primarily occur above the water table and thus are only partially saturated. A previous groundwater investigation of the Proposed Project site indicates the occurrence of local groundwater primarily in fractured bedrock and the possible existence of nearby faults. Faults may affect local groundwater occurrence and flow (Todd 2021).



Source: Todd Groundwater, 2021.

0 3 6 12 Miles

Project Parcel Boundary
MWA Adjudicated Boundary
Subarea

Figure 4.10-1

Groundwater Basin Subareas

It is the policy of the State through the Sustainable Groundwater Management Act (SGMA) that groundwater resources be managed sustainably for long-term reliability and multiple benefits for current and future beneficial uses. As part of SGMA groundwater basins are prioritized to identify the extent of groundwater elevation monitoring that should be undertaken within each basin. Basin prioritization is based on eight components that are identified in the California Water Code section 10933(b) and include: population; rate of current and projected population growth; number of public supply wells and total number of wells that draw from the basin; irrigated acreage overlying the basin; degree to which groundwater is relied upon as the primary source of water; documented impacts on the groundwater within the basin or subbasin; and other information determined to be relevant by the department, including adverse impacts on local habitat and local stream flows. Under SGMA, the LVGB has been assigned a very low basin priority.

The LVGB is also an adjudicated basin.[20] As part of the Mojave Basin adjudication, adjudicated basins have requirements under SGMA for monitoring and reporting, including submitting an annual report to the California Department of Water Resources (CDWR) and to the court by April 1 of each year. The annual reports for an adjudicated basin must include the following information: groundwater elevation data, annual aggregated data identifying groundwater extraction for the preceding water year, surface water supply used for or available for use for groundwater recharge or in-lieu use, total water use, and change in groundwater storage.

Proposed Project Water Demand. The Proposed Project water demand comprises two main uses: construction and operations and maintenance. The Applicant has estimated that construction of the Proposed Project would use a total of about 258 acre-feet (AF) over the 18-month construction period, primarily for dust control and potable supply (i.e., drinking water). Based on a review of similar projects, the WSA used a more conservative estimation of construction water use that that presented by the Applicant. The WSA analysis considers an estimated construction demand of 452 AF over the 18-month construction period (as compared with the Applicant-estimated Proposed Project water demand of 258 AF).

Water use during operation and maintenance of the Proposed Project would be for panel washing, fire suppression, and potable supply. The Applicant's estimate of annual water use is approximately 0.6 acre-feet per year (AFY); this figure is used in the WSA analysis (Todd 2021).

[20] Adjudicated groundwater basins result from disputes over legal rights to water by users of water within a basin. To settle disputes, a court can issue a ruling called an adjudication. Adjudications can cover an entire basin, a portion of a basin, or a group of basins and all non-basin locations in between. The court decree defines the area of adjudication. In basins or areas where a lawsuit is brought to adjudicate, the groundwater rights of all the overliers and appropriators are determined by the court. The court typically appoints a watermaster to administer the court's decree.

Construction water use for the SCE Calcite Facilities is estimated at about 31 AF over its 14-month construction period. The SCE Calcite Substation would be an unmanned facility, and no ongoing water use is planned during operation.

Mojave Basin and Adjudicated Groundwater. The Mojave Basin, which includes the Este Subbasin, is an adjudicated groundwater basin. The Mojave Basin Court Judgment that adjudicated the rights to pump groundwater in the Mojave Basin Area in was issued in 1996. Pursuant to the Court Judgment, the Mojave Water Agency (MWA) was appointed as Watermaster. MWA's main responsibilities as Watermaster are to monitor and verify water production for approximately 450 parties (1,700 wells), collect required assessments, conduct studies, and prepare an annual report of its findings and activities to the Court. As Watermaster, MWA also acts as the clearinghouse for recording water transfers, maintains records for all such transfers, and reports changes in ownership of Base Annual Production rights to the Court.

As part of the adjudication of the Mojave Basin, a Physical Solution was developed to correct annual overdraft and maintain flows between its five subbasins (the Oeste, Alto, Baja, Centro, and Este). The solution included requirements for the subbasins to provide a flow equal to the estimated average annual natural flow (excluding stormflow) between the subbasins over the 60-year period (between 1930 to1990) or provide makeup water to offset the difference. A Base Annual Production (BAP) right was assigned to each producer in the Basin that uses 10 AFY or more (originally based on 1986-1990 production) (Todd 2021).

To address overdraft and maintain proper water balances within each subbasin, a decreasing Free Production Allowance (FPA) for the BAP was determined for each subbasin, with the FPAs decreasing to 80 percent of the original by water year (1997-1998) to "ramp down" groundwater production. The Watermaster reviews the Production Safe Yield (PSY) for each subbasin and adjusts each FPA annually, if necessary. Any Producer that pumps more than their FPA must purchase Replacement Water from the Watermaster that is at least equal to the amount of production in excess of their total available FPA multiplied by the Replacement Water Assessment Rate per acre-foot or transfer unused FPA from another party within their subbasin. In most recent cases the Watermaster (MWA) has required a 2:1 replacement water purchase for FPA overages (Todd 2021). Funds collected for Replacement Water are then used by the MWA for purchase of State Water Project (SWP) water to be recharged into the subbasin the FPA water pumping overage was produced from (MWA 2021); however, the Este Subbasin currently has no groundwater recharge facilities in which Replacement Water can be transported to recharge groundwater.

The PSY was last updated in 2018, and the FPA is adjusted annually by the Watermaster. The current Este Subbasin PSY is 4,726 AFY. The Watermaster's recommended FPA for water year 2021-2022 is 65 percent of the BAP for the Este Subbasin (Mojave Watermaster 2021). Verified groundwater production in the Este Subbasin in 2019-2020 was 4,227 AFY

(Todd 2021); however, this does not include groundwater production by minimal users that use less than 10 AFY and are not subject to the Judgment. In water year 2020-2021, the unused FPA in the Este Subbasin was 14,227 AF. Unused FPAs for water year 2020-2021 ranged from 0 to 1,651 AF, and only 10 of the 61 Este Subbasin producers used all their FPA (Todd 2021).

Groundwater Availability and Use. Groundwater in the northern Lucerne Valley is derived from limited natural recharge and subsurface inflow from surrounding mountains. Groundwater flows generally from the basin margins towards the center of the basin to the south. Normal year natural supply is estimated to be 1,500 AFY which is the average subsurface inflow (1,700 AFY) minus the subsurface outflow (200 AFY). Estimations of the Este Subbasin normal year natural water supply, single-dry year supply, and multiple-dry year supply are the same, reflecting the fact that the natural supply is net subsurface inflow and is not responsive to the weather conditions of wet or dry years, but represents the slow subsurface migration of groundwater from across the basin and watershed, which has cumulated over many years and accounts for hydrologic variation (Todd 2021).

The Este Subbasin supply includes three main sources: natural supply (ungauged inflow minus subsurface outflow), return flows (which includes irrigation and septic returns), and wastewater imports from Big Bear Area Wastewater Regional Agency (BBAWRA) which goes to a retention pond and is used for spray irrigation (Todd 2021). Estimated water supply for the Este Subbasin is presented in Table 4.10-1. While the supplies for the Este Subbasin include wastewater imports, there are currently no plans to use wastewater imports as supply for the project.

Table 4.10-1. Water Supply in Este Subbasin (AFY[1])

Water Supply Source	2010	2015	2020	2025	2030	2035	2040
Net Natural Supply[2]	875	1,500	1,500	1,500	1,500	1,500	1,500
Return Flow[3]	2,296	2,654	2,753	2,839	2,928	3,018	3,110
Wastewater Import[4]	2,759	2,905	3,052	3,199	3,345	3,492	3,642
Total Supply	**5,930**	**7,059**	**7,305**	**7,538**	**7,773**	**8,010**	**8,252**

Source: Todd, 2021 (Appendix D)

[1] AFY: Acre-feet per year

[2] Net natural supply is average ungauged inflow (1,700 AFY) minus subsurface outflow (200 AFY)

[3] Return Flow = irrigation and septic returns

[4] This table uses the established Integrated Regional Water Management Plan (IRWMP) numbers which show an increase in wastewater import; however, BBAWRA may upgrade its treatment plant and use some of the treated wastewater in the Big Bear Valley which could reduce wastewater supply. Additionally, ongoing conservation efforts may reduce future wastewater generation amounts from previous projections.

Current and projected water demands in the Este Subarea from MWA's 2014 Integrated Regional Water Management Plan (IRWMP) are broken down into five main categories: municipal production, industrial, agricultural, minimal producers, and other (Todd 2021). Municipal use is pumping by municipal water purveyors primarily for single family residences

and is expected to increase. Industry production is primarily used for sand and cement mining and processing and is expected to remain at a steady demand. Agricultural use for a variety of crops is also expected to remain steady. Minimal producers are individuals pumping less than 10 AFY, and they are not part of the Judgment and not required to decrease or ramp down their water use to the FPA percentage. The "other" category consists of recreational water use such as park irrigation, which is expected to remain steady. Annual groundwater demand/production, in 5-year increments from 2010 through 2040, in the Este Subbasin are summarized in Table 4.10-2 (Todd 2021).

Table 4.10-2. Water Demand and Production[1] in Este Subbasin (AFY[2])

Water Use Category	2010	2015	2020	2025	2030	2035	2040
Municipal Production	700	823	872	942	1,021	1,101	1,179
Industrial	563	857	857	857	857	857	857
Agriculture	3,500	4,100	4,100	4,100	4,100	4,100	4,100
Minimal	922	1,012	1,163	1,263	1,364	1,464	1,569
Other	100	100	100	100	100	100	100
Total Subbasin Production/Demand	**5,785**	**6,892**	**7,092**	**7,262**	**7,442**	**7,622**	**7,805**

Source: Todd 2021 (Appendix D)
[1] Groundwater demand and production in the Este Subbasin are approximately equivalent.
[2] AFY: Acre-feet per year

Water level hydrographs for wells located near the Proposed Project site indicate groundwater levels are locally stable (Todd 2021). Water levels in the Proposed Project area range from approximately 115 to 200 feet below ground surface (bgs) (CDWR 2021). A feasibility study for an on-site well for the Proposed Project included a well survey of the surrounding parcels to compile a list of wells and their production capacities. Production capacities of the nearby wells ranged from 8 to 22 gallons per minute (gpm), which could produce from 13 to 35 AFY, assuming fulltime pumping of the wells. Proposed Project well operations for operation and maintenance (O&M) uses would likely involve pumping for a lesser number of hours per day (for example, to maintain water levels in a storage tank) thus producing less water per year (Todd 2021).

Surface Water

The Proposed Project is in the north part of the Lucerne Valley, all of which drains to the Lucerne Dry Lake approximately 7 miles southeast of the Stagecoach Solar Generation Plant and one mile south of the proposed SCE Calcite Facilities. There are no perennial streams in the northern portion of this drainage basin, which is internally drained.

Federal Emergency Management Act (FEMA) flood insurance rate maps have not been prepared for the Proposed Project site or surrounding lands, and none of the Proposed

Project components lie within a federally mapped floodplain. However, the Proposed Project area is subject to occasional flooding due mainly to the presence of desert washes. Flow depths are likely shallow due to the flat terrain and lack of definition for the washes.

All the drainage that affects the Proposed Project site is ephemeral. Runoff is activated by rainfall only, and typical of desert washes, rainfall is of short duration. The climate is arid, and the washes are dry most of the time. Runoff occurs on wide alluvial fans in shallow, unstable sandy washes. Drainage pathways may shift from one runoff event to another in a manner that may be characterized as shallow sheet flow, though areas of unstable concentrated flow may occur.

Water Quality

The Proposed Project area is within the jurisdiction of the Colorado River Basin Regional Water Quality Control Board (RWQCB). The RWQCB assesses surface water quality and prepares a list of waters considered to be impaired by pollutants, in accordance with section 303(d) of the Clean Water Act (SWRCB 2020). The list of 303(d) water-quality-limited segments defines waters for which impairment may result from point-source and non-point source pollutants. None of the watercourses within the Proposed Project area are listed by the RWQCB as impaired under Clean Water Act (CWA) section 303(d). The nearest CWA section 303(d) impaired water body is the Mojave River, approximately 16 miles southwest of the Stagecoach Solar Generation Plant. There is no natural surface water connection between the Proposed Project components and the Mojave River.

Groundwater quality is generally good in the Este Subbasin. However, in areas of the Lucerne Valley some groundwater constituents (total dissolved solids, chloride, sulfate, and nitrate) have had elevated readings greater than regulatory maximum contaminant levels (MCLs) (MWA 2005A). The concentrations of the four constituents with elevated levels in Este Subbasin and the corresponding regulatory MCLs are presented in Table 4.10-3.

Table 4.10-3. Elevated Water Quality Constituents in Este Subbasin

Constituent	Detected Concentrations in Este Subbasin	Maximum Contaminant Level (MCL)
Nitrate as NO_3	0 to 72 mg/L	45 mg/L[1]
Total Dissolved Solids (TDS)	260 to 3400 mg/L	500 mg/L[2]
Chloride	5.1 to 1200 mg/L	250 mg/L[2]
Sulfate	20 to 630 mg/L	250 mg/L[2]

Source: MWA, 2005A.

[1] CA State Primary MCL – Primary MCLs are adopted as regulations, they are health protective drinking water standards to be met by public water systems

[2] CA State Recommended Secondary MCL – Secondary MCLs are non-enforceable contaminant levels that may cause cosmetic or aesthetic effects in drinking water

Groundwater in the majority the subbasin has been below the nitrate (as NO_3) Primary MCL, with the exception of a small portion of the subbasin west of the Helendale fault. TDS concentrations exceeding the recommended Secondary MCL of 500 mg/L have generally been observed in the vicinity of the Lucerne Dry Lake and to the north. Chloride concentrations higher than the Secondary MCL are primarily from wells located around Lucerne Dry Lake. Elevated sulfate concentrations exceeding the Secondary MCL have been observed from wells in the northeastern portion of the groundwater basin.

The RWQCB has developed a basin plan, the Water Quality Control Plan for the Colorado River Basin (Colorado River Basin Plan), designating beneficial uses of surface and ground waters in the Project area, water quality objectives, and programs to achieve these water quality objectives (RWQCB 2019). Relevant beneficial uses are mainly those associated with direct human use of the water, recreation, and habitat for fish and wildlife. Beneficial uses of desert washes (ephemeral streams) such as those on the Proposed Project area include groundwater recharge, non-contact water recreation, and wildlife habitat. These surface water beneficial uses are classified as intermittent. Beneficial uses of groundwater in the Project area include municipal supply, industrial, and agricultural.

4.10.1.2 Environmental Setting of the Stagecoach Solar Generation Plant

Surface Water

Off-site stormwater flows at the Stagecoach Solar Generation Plant site are from approximately 19 unnamed desert watercourses entering the site over a wide area from the north, west, and south from the Stoddard Ridge and Sidewinder Mountains. The general flow direction is north to south in the northern portion of the site, west to east in the western portion of the site, and south to north in the southern portion of the site. The washes generally have wide sandy beds and converge toward the center of the site then flow eastward and southward. The hydrologic setting of the Stagecoach Solar Generation Plant site is otherwise as described in the regional setting (refer to Section 4.10.1.1).

Groundwater

The Stagecoach Solar Generation Plant is located within the LVGB, in the Este Subbasin. The Este Subbasin is within the adjudicated Mojave Basin. Groundwater levels near the Stagecoach Solar Generation Plant have been stable since 1994, measured in one well near the site at approximately 116 feet bgs between 1994 and 2018 (CDWR 2021). The groundwater setting of the Stagecoach Solar Generation Plant is otherwise as described above in Section 4.10.1.1.

4.10.1.3 Environmental Setting of the Stagecoach Gen-tie Line

Surface Water

Off-site stormwater flows along the Stagecoach Gen-tie Line are from a wide sandy wash that flows between the Ord Mountains and the Sidewinder Mountains to the Lucerne Dry Lake (the same wide sandy wash as the converged washes described in Section 4.10.1.2 for the Stagecoach Solar Generation Plant) as well as from numerous tributary sandy washes originating in the Sidewinder, White Horse, and Ord Mountains. The hydrologic setting of the Stagecoach Gen-tie Line is otherwise as described in the regional setting (refer to Section 4.10.1.1).

Groundwater

The Stagecoach Gen-tie Line would extend from the Stagecoach Solar Generation Plant to the SCE Calcite Facilities, approximately 9.1 miles in length. The groundwater along the Stagecoach Gen-tie Line is the same as that described above in Sections 4.10.1.1 and 4.10.1.2.

4.10.1.4 Environmental Setting of the SCE Calcite Facilities

Surface Water

Off-site stormwater flows at the substation site are from the continuation of the same wide sandy wash described above for the Stagecoach Gen-tie Line as well as from several smaller tributary sandy washes originating in the White Horse Mountains. The hydrologic setting of the SCE Calcite Facilities is otherwise as described in the regional setting (refer to Section 4.10.1.1).

Groundwater

The SCE Calcite Facilities are located approximately 5 miles southeast of the Stagecoach Solar Generation Plant, at the southern terminus of the Stagecoach Gen-tie Line. The groundwater setting for the SCE Calcite Facilities is similar to that described above in Section 4.10.1.1. Groundwater levels in the general area near the SCE Calcite Facilities have ranged from approximately 190 to 214 feet bgs since 1994.

4.10.2 Regulatory Setting

The primary federal and state laws, regulations, and policies that pertain to the Proposed Project are summarized in Appendix A. Local policies are summarized below.

San Bernardino Countywide Plan: 2020 County Policy Plan

The 2020 County Policy Plan serves as the County's General Plan. The Natural Resources Element presents goals and objectives for water quality within the County (San Bernardino

County 2020b). The Plan addresses the County's objective to collaborate with the State, regional water quality control boards, watermasters, water purveyors, and government agencies at all levels to ensure a safe supply of drinking water and a healthy environment.

San Bernardino County 2007 Development Code (Amended 2019)

- ***Title 3, Division 3, Chapter 6, Domestic Water Sources and Systems*** *requires permits for water wells in order to provide minimum standards for construction, reconstruction, abandonment and destruction of water wells in order to protect underground water resources and provide safe water to persons within San Bernardino County*
- ***Division 2, Chapter 6, Floodplain Safety*** *establishes regulations for development and construction within flood prone areas. Although the site is not within a designated floodplain zone due to not having been studied portions of the site are subject to flooding.*
- ***Division 3, Chapter 83.01.100, Waste Disposal*** *requires that no liquids of any kind be discharged into a public or private sewage or drainage system, watercourse, body of water, or into the ground, except in compliance with applicable regulations of the County Code, Title 23 (Waters) of the California Code of Regulations, the California Water Code, and related federal regulations*

San Bernardino County Department of Public Health

The San Bernardino County Department of Public Health requires on-site wastewater disposal systems to be evaluated by a qualified professional who must conduct a percolation test to determine the soil's absorption rate. The County's Local Area Management Program for Onsite Wastewater Treatment Systems includes additional requirements for wastewater disposal systems to protect water quality, public health, and safety.

4.10.3 Significance Criteria

The significance criteria for hydrology and water quality are derived from Appendix G of the State California Environmental Quality Act (CEQA) Guidelines.[21] Impacts to Hydrology and Water Quality are considered significant if the Proposed Project would:

- Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level
- Substantially alter the existing drainage pattern, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a

[21] The "State CEQA Guidelines" refers to California Code of Regulations, Title 14, Chapter 3.

manner that would result in substantial erosion, siltation, increased surface runoff on- or off-site, or that would impede or redirect flood flows

- Be located in flood hazard zone resulting in risk of release of pollutants due to project inundation
- Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan

The Proposed Project has no risk of tsunami or seiche given its location, so impacts related to these potential hazards are not addressed. The Proposed Project is located in an area where there are no existing or planned stormwater drainage systems, so this impact is not addressed.

4.10.4 Environmental Impact Analysis and Mitigation

The impacts of the Stagecoach Solar Generation Plant are presented in Section 4.10.4.1, with impacts from the Stagecoach Gen-tie Line and SCE Calcite Facilities analyzed in Sections 4.10.4.2 and 4.10.4.3, respectively.

4.10.4.1 Impacts of the Stagecoach Solar Generation Plant

Impact HWQ-1: The Proposed Project would violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.

Construction and O&M activities for the Stagecoach Solar Generation Plant would not violate water quality standards or waste discharge requirements or otherwise substantially degrade water quality. **(Less than Significant with Mitigation)**

Impact Discussion

Construction. Construction of the Stagecoach Solar Generation Plant will involve clearing and grubbing, grading for site facilities and access roads, trenching for the installation of the underground electrical system within the site, and assembling the solar array system. Ground-disturbing activities could expose soils to erosion and subsequent transport downstream either overland or within watercourses. Disturbed sediment could enter ephemeral watercourses resulting in increased turbidity and alteration of channel characteristics that could reduce beneficial uses. Construction will involve the use of hazardous materials such as gasoline, diesel fuel, oils, lubricants, solvents, detergents, degreasers, paints, ethylene glycol, dust palliative, pesticides, herbicides, and welding materials/supplies that if spilled or otherwise discharged to the ground surface could contaminate surface water or groundwater.

Development and implementation of the proposed Stormwater Pollution Prevention Plan (SWPPP) would be in compliance with the California General Construction Permit,

described in Appendix A, and thereby intended to ensure no degradation of water quality resulting from disturbance of ground surfaces by construction. A Soil Erosion and Sedimentation Control Plan is also proposed to reduce construction-related soil impacts which could lead to water contamination. Construction entrance and exits would be stabilized to reduce tracking of sediment onto adjacent public roadways.

Hazardous materials would be stored and handled according to relevant laws, ordinances, regulations, and standards as described in Section 2.3.5.6 of the project description. The use of hazardous materials would be documented during construction, and workers would be trained in their identification and proper handling.

Existing regulations described in Appendix A, including the Clean Water Act, the California Fish and Game Code, and the Porter-Cologne Water Quality Control Act, as well as San Bernardino County waste disposal regulations, are intended to prevent the contamination of waters and avoid violating standards and waste discharge requirements. In addition, the Applicant proposes the SWPPP and other measures described above to ensure no violation of water quality standards or waste discharge requirements. Construction impacts would be reduced as a result of compliance with these requirements. In addition, Mitigation Measure (MM) HAZ-1 (Hazardous Materials Training and Management Plan), recommended in Section 4.9, would protect against spills of contaminants and ensure appropriate spill response. As a result, this impact would be less than significant with mitigation.

Operation and Maintenance. Proposed Project operation and maintenance activities would include the generation of electric power, panel washing using treated water, and inspection and repair of power generation and storage facilities. Access roads would be treated with gravel or other surface treatment to prevent dust generation which would also serve to prevent induced siltation from the roads.

The Stagecoach Solar Generation Plant would include a BESS, installed on concrete foundations and housed in air-conditioned metal enclosures that include suitable fire suppression equipment. Hazardous materials used in the BESS would include required secondary containment as per regulatory standards. The release of any such hazardous materials during operation would be disposed of according to regulatory standards. The BESS would be located in an area that, based on a review of local topography and drainage areas, does not appear to be subject to significant flood hazards, though there is a potential for some drainage from the nearby Sidewinder Mountains to impinge upon the site. Ditches are proposed to divert flow around the battery system to protect it from drainage which could otherwise enter the site and potentially carry contaminants downstream in a flood.

The O&M building would include restrooms with a septic system and leach field. The San Bernardino County Department of Public Health requires that this system be evaluated by a qualified professional and be designed to ensure protection of water quality and prevent contamination of local groundwater.

In summary, operations activities which disturb ground and utilize materials which could contaminate surface or groundwater are, as described above, minimal. Any hazardous materials used would be handled and disposed of according to applicable regulations, but MM HAZ-1 is recommended for use throughout the operating period. Water used for panel washing, fire safety, and restroom facilities would be a minor amount (around 725 gallons per day, 0.6 acre-feet per year) compared to the overall size of the facility (3,570 acres) and is therefore unlikely to cause contamination. For these and additional reasons described above, operation and maintenance impacts would be less than significant.

Mitigation Measures

MM HAZ-1: Hazardous Materials Training and Management Plan (Section 4.9, *Hazards and Hazardous Materials*)

Impact HWQ-2: The Proposed Project would substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level.

Construction and O&M activities for the Stagecoach Solar Generation Plant would not substantially deplete groundwater supplies or substantially interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. **(Less than Significant)**

Impact Discussion

Construction. Removal of groundwater from areas of construction excavation (dewatering) is not anticipated, as proposed excavation would be much shallower than the depth to groundwater in this area.

The Proposed Project will use approximately 258 AF of water for construction. Water for construction will be purchased from one or more local producers with existing water rights and unused FPA in the Este Subbasin (likely Golden State Water Company (GSWC)). In the 2020-2021 water year there were 14,227 AF of unused FPAs from the Este Subbasin. If water were to be purchased from producers within the Este Subbasin with inadequate unused FPA for Proposed Project construction use, replacement water, likely at a ratio of 2:1, would need to be purchased from MWA or unused FPA could be leased by the producer from another party within their subbasin (Todd 2021).

Although the Este Subbasin has a previous history of overdraft, the water levels in the subbasin have been stable since the adjudication of the Mojave Basin in 1996 (CDWR 2021). A portion of the water supply in the Este subbasin is from wastewater from the BBAWRA. The flow of wastewater is estimated to increase in the IRWMP, but may actually decrease over time as noted in Table 4.10-1, reducing previously estimated amounts

available to the subbasin. Regardless, the Applicant does not plan to use wastewater as a water source for construction dust control.

Currently there is no deficit in the Este Subbasin, as groundwater demand and production in the subbasin are expected to remain approximately equivalent (see Tables 4.10-1 and 4.10-2), with slightly less demand than supply.

In the 2020-2021 water year, there were 14,227 AF of unused FPA in the Este Subbasin. There is adequate unused FPA within the Este Subbasin that would allow the Applicant to purchase water within the subbasin for construction use. Assuming approximately equivalent amounts of unused FPA in the future, the project's anticipated construction use of 258 AF over 18 months would represent only approximately 1.2 percent of the unused FPA for that period. Using the WSA's more conservative 452 AF for the 18-month construction period, this still represents only about 2.1 percent of the unused FPA for the Este Subbasin. The groundwater used during Stagecoach Facilities construction would come from existing producers over the 18-month construction period. Withdrawal would follow the adjudication stipulations and is unlikely to result in significant changes in groundwater water levels. Any minor water levels changes would be temporary during the construction period.

In addition, groundwater obtained from a local Este Subbasin producer would be subject to the conditions of the Judgment. The Watermaster would monitor flows, verify water production, oversee leases of FPA, and collect any assessments for replacement water as related to water purchased from an existing producer with unused FPA. Additionally, if unused FPA were not available for construction water purchase in the Este Subbasin, GSWC has indicated that it has sufficient unused FPA in the neighboring Centro Subbasin (more than 10,000 AF of unused FPAs) that would allow for purchase of sufficient water from this subbasin for project construction. Impacts to groundwater levels and basin volumes would be minimal due to current basin conditions (no deficit), purchase of water from existing producers with unused FPA, temporary nature of the construction groundwater withdrawals, and monitoring and other requirements of the Judgment. The impact would be less than significant, and no mitigation would be required.

Operation and Maintenance. Operation and maintenance of the Proposed Project would require approximately 0.6 AFY for panel washing, fire safety, and potable supply. This water could be purchased from a producer with unused FPA in the Este Subbasin or supplied by a new on-site well. Based on an analysis conducted to determine the feasibility of an on-site well for water supply (Todd 2021), a well on the Stagecoach Solar Generation Plant site would likely produce adequate supply to meet the estimated 0.6 AFY for Proposed Project operation and maintenance. This estimated demand is well below the 10 AFY de minimis producer category (a minimal user) and would thus not be subject to the Judgment and FPA requirements. The very small amount of water produced during operation and maintenance would not likely affect other nearby groundwater levels. The impact is less than significant, and no mitigation would be required.

The presence of the Stagecoach Solar Generation Plant has the potential to impede groundwater recharge due to the creation of impervious areas where infiltration could not take place. However, the size of impervious areas created by components of the solar generation plant would be negligible in comparison to the total ground area contributing to the LVGB. The O&M building, BESS, substation, and other facilities that would prevent infiltration would cover no more than about 50 acres of the 3,750-acre area, and the watershed covers 472 square miles. The solar panels, while covering 1,486 acres, would be mounted on piers that create very little impervious area. In addition, only a small portion of the total recharge to the LVGB and Este Subbasin comes from infiltration from the desert area north of the San Bernardino Mountains. Groundwater recharge would therefore not be substantially disturbed or reduced by the Proposed Project, resulting in a less than significant impact.

Mitigation Measures

No mitigation would be required.

Impact HWQ-3: The Proposed Project would substantially alter existing drainage patterns by altering the course of a waterway or through the addition of impervious surfaces, allowing substantial erosion, siltation, increased surface runoff on- or off-site, or affecting flood flows.

Construction and O&M activities of the Stagecoach Solar Generation Plant could alter the existing drainage pattern of the site or area in a manner which would result in substantial erosion or siltation on- or off-site, or changes in runoff or flood flows. **(Less than Significant with Mitigation)**

Impact Discussion

Construction. The Stagecoach Solar Generation Plant site is in the path of approximately 19 desert washes that cross the site from the north, west, and south. Though desert areas experience infrequent runoff events, there is a potential for ephemeral flood flows to occur and to cross the site during construction and operation. The site plan shows 100-year flood-prone areas with depths of 1 to 1.5 feet crossing the western boundary of the solar generation plant area, mainly at and north of Lucerne Valley Cutoff Road and continuing to the southeast across the site. According to this plan, 100-year flood depths crossing portions of the east side of the property could be up to 3 feet in depth.

Should floods occur during construction, there is a potential for flows to be diverted and for erosion of disturbed surfaces, resulting in siltation downstream. Once constructed, the small increase in impervious area from the solar generation plant (including roads, BESS, and the O&M building) could result in local increases in discharge frequency and magnitude which could induce accelerated erosion downstream.

The site will include a permanent chain-link perimeter fence which could collecting debris carried by a flood flow, thereby blocking or diverting flows. Diverted flows could induce erosion by being concentrated more than would have occurred during natural conditions. Lucerne Valley Cutoff Road is at an approximate low point along the west side of the boundary and could be a concentration point of flows diverted along the western boundary of one section of the Stagecoach Solar Generation Plant.

The site would be graded such that existing drainage areas and patterns would be maintained, thus reducing potential impacts from stormwater runoff. Retention basins are included in the preliminary design; these would be constructed to maintain existing runoff rates and mitigate the risk of downstream flooding. On-site features such as the substation and BESS would also include drainage components to capture and direct stormwaters away from them. Gravel layers will be used on roads and in the substation to reduce surface imperviousness. The site plan shows the perimeter fence could be elevated such that the fence bottom would be approximately 6 inches above the ground, which would allow for stormwater flows beneath the fence. However, if flood depths are 1.5 feet to 3 feet, even this 6-inch opening may result in diverted flows.

MM HWQ-3 (Drainage Plan Development) is recommended to ensure that the site drainage plan incorporates a study of potential flood, erosion, and siltation issues by identifying off-site flow concentration points, discharges, and flood depths and widths, and ensuring that flow patterns entering and exiting the site are not altered in a manner that would induce erosion and siltation. The drainage plan developed by MM HWQ-3 would also allow identification of design measures to avoid erosion damage that may result from concentration of flows (e.g., identifying entryways for incoming flood flows, defining collection and conveyance channels, or developing fence design that does not obstruct flows). With the proposed site design features, grading plans, and implementation of MM HWQ-3, impacts related to construction of the Stagecoach Solar Generation Plant would be less than significant.

Operation and Maintenance. The site would be graded to maintain existing drainage patterns and designed to mitigate effects of surface flow. However, there remains a potential for the perimeter fence to impede or redirect flood flows if debris plugs fence openings. This could result in flow diversions, temporary back-up ponding, or collapse of the fence, which could induce erosion or siltation. MM HWQ-3 (Drainage Plan Development) is recommended to ensure that the site drainage study addresses these issues. With the proposed site design features, grading plans, and the implementation of MM HWQ-3, impacts related to operation and maintenance of the Stagecoach Solar Generation Plant would be reduced to a less than significant level.

Mitigation Measures

MM HWQ-3: Drainage Plan Development. At least 60 days before site mobilization, the Applicant shall submit a Drainage Plan for review and approval to the CSLC and the County of San Bernardino. The Drainage Plan shall address management of

stormwater flow during Project construction and operation, and shall contain the following components:

- An assessment of runoff discharges, floodplains, and flood depths entering and passing through the property under conditions both with and without the Project
- Measures to avoid erosion damage that may result from concentration of flows, including consideration of providing dedicated entryways for incoming flood flows, collection and conveyance channels, and/or fence design that does not obstruct flows
- Consideration of potential flood, erosion, and siltation that could occur on or adjacent to the Project site, by identifying off-site flow concentration points, discharges, and flood depths and widths, and ensuring that flow patterns entering and exiting the site are not altered in a manner that would induce erosion and siltation
- Demonstration that during and after Project construction, existing drainage patterns will not be disturbed, and runoff will not be increased to the extent that either adjacent properties or Project components (substation, O&M building, or BESS) would be adversely affected by erosion or flooding

Impact HWQ-4: The Proposed Project would be located in flood hazard zones, resulting in risk of release of pollutants due to site inundation.

Construction activities and O&M associated with the Stagecoach Solar Generation Plant could risk release of pollutants due to Proposed Project inundation. **(Less than Significant with Mitigation)**

Impact Discussion

Construction. No FEMA flood insurance rate maps have been prepared for the Proposed Project area. Although the Stagecoach Solar Generation Plant does not lie within a federally mapped floodplain or flood hazard zone, as described in Impact HWQ-1, there is a potential for runoff during construction, including flood flows along desert washes, which could cause pollutants to enter surface drainages. Potential impacts would be prevented or minimized by adherence to the required SWPPP and erosion control plan, and implementation of MM HWQ-3 (Drainage Plan Development). In addition, MM HAZ-1 (Hazardous Materials Training and Management Plan) would minimize potential for spills of contaminants, resulting in a less than significant impact.

Operation and Maintenance. During operation, flood flows could inundate the O&M facility, battery storage site, or substation causing the release of pollutants. However, this would be prevented by proposed drainage features at those sites and by the proposed containment features of the batteries. MM HWQ-3 and MM HAZ-1 will additionally ensure that these areas are safe from flooding and associated release of pollutants. With the implementation of MM HWQ-3 (Drainage Plan Development) and MM HAZ-1 (Hazardous Materials Training and Management Plan), Impact HWQ-4 would be less than significant.

Mitigation Measures

MM HWQ-3: Drainage Plan Development

MM HAZ-1: Hazardous Materials Training and Management Plan (Section 4.9, *Hazards and Hazardous Materials*)

Impact HWQ-5: The Proposed Project would conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

There are no features on or near the Stagecoach Solar Generation Plant site which would conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. **(No Impact)**

Impact Discussion

Construction and Operation and Maintenance. The LVGB is not currently required to maintain a sustainable groundwater management plan (CDWR 2020). The Colorado River Basin Plan (RWQCB 2019) lists beneficial uses of groundwater in the Project area as municipal, industrial, and agricultural; use of water for the Proposed Project would be an industrial beneficial use. The Proposed Project would not conflict with or obstruct implementation water quality objectives for beneficial water uses in the Colorado River Basin Plan. Therefore, construction and operation and maintenance of the Stagecoach Solar Generation Plant would have no activities or features that would conflict with or obstruct implementation of a water quality control plan or groundwater management plan. There is no impact from construction or operation and maintenance of the Stagecoach Solar Generation Plant associated with conflicting with or obstructing a water quality control plan or sustainable groundwater management plan.

Mitigation Measures

No mitigation would be required.

4.10.4.2 Impacts of the Stagecoach Gen-tie Line

Impact HWQ-1: The Proposed Project would violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.

Construction activities and O&M associated with the Stagecoach Gen-tie Line would not violate water quality standards or waste discharge requirements or otherwise substantially degrade water quality. **(Less than Significant with Mitigation)**

Impact Discussion

Construction. Construction of the Stagecoach Gen-tie Line would involve clearing and grubbing, grading for access road construction, installation of culverts and riprap for the control of stormwater, drilling of foundations for the transmission poles, and installation of the poles and conductor wire. Ground-disturbing activities could expose soils to erosion and subsequent transport downstream either overland or within watercourses. Disturbed sediment could enter watercourses during storm events, resulting in increased turbidity and alteration of channel characteristics that could reduce beneficial uses. Construction will involve the use of hazardous materials such as gasoline, diesel fuel, oils, lubricants, solvents, detergents, degreasers, paints, ethylene glycol, dust palliative, pesticides, herbicides, and welding materials/supplies that if spilled or otherwise discharged to the ground surface could contaminate surface water or groundwater.

Existing regulations governing construction include the Clean Water Act, the California Fish and Game Code, and the Porter-Cologne Water Quality Control Act. These requirements are intended to prevent the contamination of waters and avoid violating standards and waste discharge requirements. The Applicant will develop and implement a SWPPP in compliance with the California General Construction Permit. The Applicant has also committed to preparing a Soil Erosion and Sedimentation Control Plan to reduce construction-related impacts which could lead to water contamination.

Construction impacts would be reduced as a result of compliance with regulatory requirements. In addition, MM HAZ-1 (Hazardous Materials Training and Management Plan), recommended in Section 4.9, *Hazards and Hazardous Materials*, would minimize spills of contaminants and ensure appropriate spill response. Impact HWQ-1 would be less than significant with mitigation.

Operation and Maintenance. Operation and maintenance of the Stagecoach Gen-tie Line would include occasional inspection and repair of power poles, transmission lines, and access roads. Aside from occasional maintenance of access roads there would be minimal disturbance of land and minimal use of hazardous materials. Drainageway crossings of the access roads would have culverts, riprap or other drainage structures to prevent erosion and the need for ongoing maintenance to repair washed-out areas. Hazardous materials used would be handled and disposed of according to applicable regulations. For these and additional reasons described above operations and maintenance impacts would be less than significant. No mitigation would be required.

Mitigation Measures

MM HAZ-1: Hazardous Materials Training and Management Plan (Section 4.9, *Hazards and Hazardous Materials*)

Impact HWQ-2: The Proposed Project would substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level.

Construction activities and O&M associated with the Stagecoach Gen-tie Line would not substantially deplete groundwater supplies or substantially interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. **(Less than Significant)**

Impact Discussion

Construction. Water would be required for dust control during construction. The amounts of groundwater that would be used during gen-tie line construction are included in the total amounts estimated for the Stagecoach Solar Generation Plant construction. Groundwater for construction would be purchased from local producers. See Section 4.10.4.1 for a discussion of potential groundwater impacts due to groundwater extraction in the LVGB and Este Subbasin. Impacts related to groundwater level decline would be less than significant due to current basin conditions, purchase of water from existing producers, temporary nature of the extra groundwater withdrawals during construction, and requirements of the Judgment. Dewatering (from groundwater entering transmission pole foundations) is not anticipated to be needed, as the excavations will be much shallower than the depth to groundwater in this area.

As described for Impact HWQ-2 for the Stagecoach Solar Generation Plant, impacts to groundwater levels and basin volumes would be minimal due to current basin conditions (no deficit). The Applicant would purchase of water from existing producers with unused FPA. Also, the construction would require only temporary withdrawals (during the 18 months of construction). The impact of construction of the Stagecoach Gen-tie Line on groundwater would be less than significant, and no mitigation would be required.

Operation and Maintenance. There would be no long-term use of water associated with the O&M of the gen-tie line. Very small impervious areas would be created by the gen-tie line (including structure locations); these would be negligible in comparison to the total ground area contributing to the LVGB. Groundwater recharge would not be reduced by gen-tie line operation, resulting in a less than significant impact.

Mitigation Measures

No mitigation is recommended.

Impact HWQ-3: The Proposed Project would substantially alter existing drainage patterns by altering the course of a waterway or through the addition of impervious surfaces, allowing substantial erosion, siltation, increased surface runoff on- or off-site, or affecting flood flows.

Construction activities and O&M associated with the Stagecoach Gen-tie Line would not alter the existing drainage patterns of the area in a manner that would result in substantial erosion, siltation, or flood flows on- or off-site. **(Less than Significant)**

Impact Discussion

Construction and Operation and Maintenance. The Stagecoach Gen-tie Line is proposed to be installed in the path of several desert washes that cross the right-of-way from the north, west and south. Though these washes contain flow only during infrequent runoff events, there is a potential for flood flows to occur and to encounter the gen-tie line during construction and operation. There appears to be the potential for shallow but widespread flooding across much of the gen-tie line route.

The most extensive ground disturbance associated with the gen-tie line would be the proposed access road, paralleling the entire 9.1-mile-long gen-tie line. The road would closely follow existing land contours and therefore would not substantially alter drainage patterns. The power poles are narrow enough that they would not offer significant obstruction to flows. Access road crossings of significant drainages would include culverts, riprap or other drainage structures to prevent ongoing erosion during operations. As a result, Impact HWQ-3 would be less than significant for both construction and O&M for the Stagecoach Gen-tie Line.

Mitigation Measures

No mitigation would be required.

Impact HWQ-4: The Proposed Project would be located in flood hazard zones, resulting in risk of release of pollutants due to site inundation.

Construction activities and O&M associated with the Stagecoach Gen-tie Line could risk release of pollutants due to Proposed Project inundation. **(Less than Significant with Mitigation)**

Impact Discussion

Construction. As described for Impact HWQ-1, the Project area has not been included on any FEMA flood insurance maps so there are no mapped floodplains or flood hazard zones on the Proposed Project site. Regardless, there is a potential for runoff during construction, including flood flows along desert washes, to cause pollutants to enter surface drainages. Potential impacts would be prevented or minimized by adherence to the required SWPPP and erosion control plan. In addition, implementation of MM HAZ-1 (Hazardous Materials

Training and Management Plan) would minimize potential for spills of contaminants, resulting in a less than significant impact.

Operation and Maintenance. The gen-tie line would have no features likely to be inundated that would risk release of pollutants other than the access road surface. Access road surfaces will be protected by culverts or other drainage structures at potential flood crossings to prevent flood-related disturbance of sediments. Impact HWQ-4 is therefore less than significant for O&M of the Stagecoach Gen-tie Line and no mitigation would be required.

Mitigation Measures

MM HAZ-1: Hazardous Materials Training and Management Plan (Section 4.9, *Hazards and Hazardous Materials*)

Impact HWQ-5: The Proposed Project would conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

There are no features on or near the Stagecoach Gen-tie Line that would conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. **(No Impact)**

Impact Discussion

Construction and Operation and Maintenance. The LVGB is not currently required to have a sustainable groundwater management plan (CDWR 2020). The Proposed Project would not conflict with or obstruct implementation water quality objectives for beneficial water uses in the Colorado River Basin Plan (RWQCB 2019). Therefore, no features associated with the Stagecoach Gen-tie Line would conflict with or obstruct implementation of a water quality control plan or groundwater management plan. There would be no impact from construction or O&M of the Stagecoach Gen-tie Line.

Mitigation Measures

No mitigation would be required.

4.10.4.3 Impacts of the SCE Calcite Facilities

Impact HWQ-1: The Proposed Project would violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.

Construction activities and O&M associated with the SCE Calcite Facilities would not violate water quality standards or waste discharge requirements or otherwise substantially degrade water quality. **(Less than Significant with Mitigation)**

Impact Discussion

Construction: Construction of the SCE Calcite Facilities would involve clearing and grubbing, grading for site facilities and access roads, construction of drainage conveyances around the facilities, excavation for below-grade facilities, and installation of substation equipment. Ground-disturbing activities could expose soils to erosion and subsequent transport downstream either overland or within watercourses. Disturbed sediment could enter watercourses during storm events, resulting in increased turbidity and alteration of channel characteristics that could reduce beneficial uses.

Construction would involve the use of hazardous materials such as gasoline, diesel fuel, oils, lubricants, solvents, detergents, degreasers, paints, ethylene glycol, dust palliative, pesticides, herbicides, and welding materials/supplies that if spilled or otherwise discharged to the ground surface could contaminate surface water or groundwater.

Development and implementation of the required SWPPP in compliance with the California General Construction Permit would ensure that there is minimal degradation of water quality resulting from construction disturbance of ground surfaces.

Construction of the SCE Calcite Facilities would result in the generation of various waste materials, primarily including soil and vegetation. All construction materials and debris would be removed from the area and recycled or properly disposed of off-site. Soil excavated for the SCE Calcite Facilities would either be used as fill or disposed of off-site at an appropriately licensed waste facility. Sanitation waste (i.e., human generated waste) would be disposed of according to regulatory sanitation waste management practices.

The use of hazardous materials such as fuels, lubricants and cleaning solvents would be according to relevant laws, ordinances, regulations and standards relating to their use, storage and disposal. However, MM HAZ-1 (Hazardous Materials Training and Management Plan), recommended in Section 4.9, *Hazards and Hazardous Materials*, would protect against spills of contaminants and ensure appropriate spill response.

Existing water quality regulations include the Clean Water Act, the California Fish and Game Code, and the Porter-Cologne Water Quality Control Act. These regulations define requirements to prevent the contamination of waters and avoid violating standards. In addition, the Applicant would develop and implement a SWPPP and other measures described above to ensure no violation of water quality standards or waste discharge requirements. As a result of these regulations and MM HAZ-1 (Hazardous Materials Training and Management Plan), the impact of construction on water quality would be less than significant.

Operation and Maintenance. O&M activities at the SCE Calcite Facilities would include inspection, cleaning and repair of substation equipment and facilities, transmission line interconnections, and access roads. Ongoing use of solvents or other contaminants is

likely. Access road maintenance would be on an annual and/or as-needed basis and could include: vegetation removal, blading to smooth over washouts, eroded areas, and washboard surfaces; cleaning ditches; moving/establishing berms; clearing/installing functional drain inlets to culverts; repairing culverts; clearing/establishing water bars; and cleaning/repairing over-side drains. Access road maintenance could include the repair, replacement and/or installation of stormwater diversion devices on an as-needed basis. Emergency repair of facilities would occur as necessary.

O&M activities that disturb ground and use potential fuels or solvents could contaminate surface or groundwater. Quantities would be small and activities are expected to be infrequent, and generally in areas within the substation walls. These areas would already have been disturbed by SCE Calcite Facilities construction. Hazardous materials used would be handled and disposed of according to applicable regulations, but MM HAZ-1 is recommended for use throughout the operating period. With that mitigation measure, O&M impacts would be less than significant.

Mitigation Measures

MM HAZ-1: Hazardous Materials Training and Management Plan (Section 4.9, *Hazards and Hazardous Materials*)

Impact HWQ-2: The Proposed Project would substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level.

Construction activities and O&M associated with the SCE Calcite Facilities would not substantially deplete groundwater supplies or substantially interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. **(Less than Significant)**

Impact Discussion

Construction. Water would be required for dust control during construction. Estimated water demand during construction of the SCE Calcite Facilities is approximately 31 AF over the 14-month construction period. Construction water for the SCE Calcite Facilities would be purchased from the same local producers with unused FPAs as the Stagecoach Solar Generation Plant.

The separate use of groundwater at the SCE Calcite Facilities was not specifically analyzed in the WSA. However, the addition of this volume of water to the volume estimated by Aurora Solar LLC for the Stagecoach Solar Generation Plant (258 AF) still falls well within the 452 AF that were analyzed in the WSA. This volume of groundwater would be easily supplied by unused FPAs in either the Este or Centro Subbasins (see discussion in Section 4.10.1.1). The amount of groundwater needed for the construction of the SCE

Calcite Facilities would require only an additional fraction (0.1 percent) of the unused FPA available in the Este Subbasin. Impacts related to groundwater level decline would be less than significant due to current basin conditions, purchase of water from existing producers, temporary nature of the extra groundwater withdrawals during construction, and requirements of the Judgment. No mitigation would be required.

Operation and Maintenance. There would be no long-term water use at the SCE Calcite Facilities, so no operational impacts on groundwater are expected. Groundwater recharge could be affected by the creation of impervious areas which would impede infiltration within the substation facility. However, the amount of impervious area created by the SCE Calcite Facilities (including the access road, equipment pads, and the permanent graded substation area) would be negligible in comparison to the total ground area contributing to the LVGB. Drainage would be directed around the site. Groundwater recharge would not be substantially reduced by the presence of the SCE Calcite Facilities. The impact would be less than significant impact.

Mitigation Measures

No mitigation would be required.

Impact HWQ-3: The Proposed Project would substantially alter existing drainage patterns by altering the course of a waterway or through the addition of impervious surfaces, allowing substantial erosion, siltation, increased surface runoff on- or off-site, or affecting flood flows.

Construction activities and O&M associated with the SCE Calcite Facilities could alter the existing drainage pattern of the site or area in a manner which would result in substantial erosion or siltation on- or off-site. **(Less than Significant with Mitigation)**

Impact Discussion

Construction. The SCE Calcite Facilities are in the path of several desert washes that cross the site mainly from the north and west. There is a potential for flood flows along these washes to occur and to cross the site during construction. Should floods occur, there is the potential for flows to be diverted by construction disturbance, resulting in erosion of disturbed surfaces and potential siltation downstream. MM HWQ-3 is recommended to ensure that SCE completes a site drainage study prior to construction to address potential drainage concerns. Implementing this measure would ensure that implementation of the drainage design would not induce erosion and siltation off-site. With MM HWQ-3 in place, this impact would be less than significant for construction of the SCE Calcite Facilities.

Operation and Maintenance. The 7-acre SCE Calcite Substation would be surrounded by a wall, so flood flows would not enter the substation itself during operation. The site will include drainage channels intended to convey water around the SCE Calcite Facilities.

However, other SCE facilities include transmission structures, access roads, communication equipment, and electric distribution lines. The increase in impervious areas from these permanent facilities could result in local increases in discharge frequency and magnitude, potentially accelerating erosion downstream. This could result in concentration of flows that could induce local erosion. It is anticipated that erosion and siltation impacts will be minimal during O&M. In addition, the implementation of MM HWQ-3 prior to construction would ensure that the site drainage issues during O&M would be well controlled. Therefore, Impact HWQ-3 would be less than significant for SCE Calcite Facilities for O&M.

Mitigation Measures

MM HWQ-3: Drainage Plan Development

Impact HWQ-4: The Proposed Project would be located in flood hazard zones, resulting in risk of release of pollutants due to site inundation.

Construction activities and O&M associated with the SCE Calcite Facilities would not risk release of pollutants due to Proposed Project inundation. **(Less than Significant with Mitigation)**

Impact Discussion

Construction. As described in Impact HWQ-1, there is a potential for runoff during construction, which would include flood flows that could allow pollutants to enter surface flows. This would be prevented by adherence to the proposed SWPPP and erosion control plan, and implementation of MM HWQ-3 (Drainage Plan Development). This mitigation measure and compliance with water quality regulations would minimize drainage and flooding issues. MM HAZ-1 (Hazardous Materials Training and Management Plan) to minimize potential for spills of contaminants, resulting in a less than significant impact.

Operation and Maintenance. During O&M, flood flows would be diverted around the substation resulting in a less than significant impact during operation and maintenance of the SCE Calcite Facilities. No mitigation would be required for O&M.

Mitigation Measures

MM HWQ-3: Drainage Plan Development

MM HAZ-1: Hazardous Materials Training and Management Plan (Section 4.9, *Hazards and Hazardous Materials*)

Impact HWQ-5: The Proposed Project would conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

There are no features on or near the SCE Calcite Facilities site which would conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. **(No Impact)**

Impact Discussion

Construction and Operation and Maintenance. The LVGB is not currently required to have a sustainable groundwater management plan (CDWR 2020). The Proposed Project would not conflict with or obstruct implementation water quality objectives for beneficial water uses in the Colorado River Basin Plan (RWQCB 2019). Therefore, construction and operation and maintenance of the SCE Calcite Facilities would have no activities or features that would conflict with or obstruct implementation of a water quality control plan or groundwater management plan. There is no impact associated with conflicting with or obstructing a water quality control plan or sustainable groundwater management plan.

Mitigation Measures

No mitigation would be required.

4.10.5 Cumulative Impacts

4.10.5.1 Geographic Scope

The geographic scope for the cumulative analysis includes the water resources that would be affected by the Proposed Project within the watershed draining to the Lucerne Dry Lake (the Watershed). Table 3-1 lists and Figure 3-1 in Section 3, *Cumulative Scenario*, shows cumulative development projects. Those that are located within the watershed include five solar power projects, an existing transmission line with minor upgrades proposed, a wireless tower, a monastery building, and a residential subdivision (project numbers 1, 2, 3, 4, 5, 6, 7, 9, and 10 in Figure 3-1).

4.10.5.2 Cumulative Impact Analysis

<u>Impact HWQ-1: Violate Water Quality Standards or Requirements or Substantially Degrade Surface or Groundwater Quality</u>

Development and implementation of the proposed SWPPP for all Proposed Project components would be in compliance with the California General Construction Permit described in Appendix A and thereby intended to ensure no degradation of water quality resulting from disturbance of ground surfaces by construction. A Soil Erosion and Sedimentation Control Plan is also proposed to reduce construction-related soil impacts which could lead to water contamination. Existing regulations including the Clean Water

Act, the California Fish and Game Code, and the Porter-Cologne Water Quality Control Act are intended to prevent the contamination of waters and avoid violating standards and waste discharge requirements in addition, the Applicant proposes the SWPPP would ensure no violation of water quality standards or waste discharge requirements. Therefore, the Proposed Project would not result in a cumulative impact related to violating water quality standards or degradation of surface or groundwater quality.

Impact HWQ-2: Substantially Deplete Groundwater Supplies or Interfere with Groundwater Recharge

The Este Subbasin, which includes the LVGB, has been adjudicated and is under a groundwater management plan. The adjudication mandates that extractions do not occur in excess of FPAs as determined by the local Watermaster. Currently, there is no deficit in the Este Subbasin, as water demand and water supply in the Este Subbasin are approximately equivalent, with supply slightly exceeding demand. Construction of the Proposed Project would require the temporary use of water that would be purchased from local producers with unused FPAs. The current amount of unused FPAs in the Este Subbasin are significantly greater than the amount of water required by the Proposed Project. Any potential adverse impacts to the basin are reduced due to the existing Judgment. Any other projects in the Este Subbasin that would require groundwater for construction would also be subject to the Judgment and would have to purchase groundwater from producers with unused FPAs in the Este or other subbasins or find other sources. Therefore, there would be no cumulatively significant impacts due to extraction of groundwater for construction.

The Stagecoach Solar Generation Plant would require approximately 0.6 AFY of water for operation and maintenance. This water would be sourced from either a local producer with unused FPA or from a new on-site Proposed Project well that would not be subject to the Judgment due to its proposed production at less than the de minimis level. If sourced from a local producer with unused FPA, the amount of water required for Proposed Project operation would be a fraction of the available unused FPA for the basin and would not result in a cumulatively significant impact. The Stagecoach Gen-tie Line and SCE Calcite Facilities would require nominal amounts of water during operation.

If water for Proposed Project operation and maintenance is sourced from a new on-site well, groundwater extraction from the new well in conjunction with extraction from other nearby water supply wells, could result in local groundwater decline (Impact HWQ-2). Local groundwater level decline could have an adverse effect on nearby water supply wells by lowering localized water levels such that the wells' operational capability would be affected, pumping rates decline, or pumping and operation costs increase. This contribution of the Proposed Project to this potential cumulative decline in basin groundwater levels would be reduced through implementation of MM HWQ-2 (Prepare and Implement Groundwater Monitoring and Reporting Plan).

Groundwater recharge would not be substantially reduced due to new impervious surfaces associated with the Proposed Project and the cumulative projects in the area.

Mitigation Measures

MM HWQ-2: Prepare and Implement Groundwater Monitoring and Reporting Plan. Prior to issuance of an operational well construction permit, a Groundwater Monitoring and Reporting Plan shall be prepared by an Agency-approved California professional geologist or certified hydrogeologist and submitted to the CSLC and MWA for review and approval. The purpose of the Plan is to detect a potential decline in groundwater levels in the Project area because Project water use during operation may contribute to this decline. The Plan shall define a methodology for monitoring groundwater levels. The purpose of monitoring is to establish pre-operation groundwater level, and to monitor changes in groundwater level and groundwater quality during the Project life.

The Plan shall define installation of a discharge meter on the Project well and recording of production on at least a monthly basis. Monitoring of the Project well shall be performed prior to its regular operation for a sufficient time to allow for collection of baseline groundwater level and water quality. Water level monitoring shall be performed and documented monthly for at least one year and quarterly thereafter. Monitoring shall be conducted consistent with California Statewide Groundwater Elevation Monitoring (CASGEM) Program procedures (CDWR 2010). Available information on groundwater levels for all wells within one mile of the State lease boundary shall be obtained at least annually from MWA and from CDWR and U.S. Geological Survey (USGS) websites.

The Plan shall include identification of all water supply wells within one mile of the State lease boundary. It shall also include coordination with MWA for provision of monitoring data including development of a schedule for submittal of annual monitoring data reports by the Applicant to MWA. During the first 5 years of project operation, annual water level monitoring data reports shall be submitted to MWA for review and approval. At a minimum, these annual reports shall include:

- Quarterly usage, quarterly range, and quarterly average of water usage
- Total water used on a quarterly and annual basis in acre-feet
- Summary of all water level data
- Identification of trends that indicate potential for off-site wells within one mile of the Project well to experience deterioration of water level

Based on the results of annual trend analyses during the first 5 years of Project operation, the Applicant and MWA shall determine if a water level decline (drawdown) of 5 feet or more below the baseline (pre-operation) level has occurred. If water level decline of 5 feet or more is found, and the MWA determines that Project groundwater use is attributable for all or part of this decline, the Applicant shall immediately reduce

groundwater pumping to levels approved by the MWA until water levels stabilize or recover. Alternatively, the Applicant may reach out to other well owners within one mile of the Lease boundary to provide compensation to well owners commensurate with the Project's contribution to local water level decline, as determined in conjunction with the MWA. Compensation may include reimbursement of increased energy costs, deepening the well (if appropriate/feasible) or pump setting, or development of a new well.

After the first 5 years of project operation, the Applicant and MWA shall jointly evaluate the effectiveness of the Groundwater Monitoring and Reporting Plan and recommend to the Commission whether it is appropriate that monitoring frequencies or procedures be revised or eliminated.

Impact HWQ-3: Substantially Alter Existing Drainage Allowing Substantial Erosion, Siltation, Increased Surface Runoff or Affecting Flood Flows

Most of the cumulative projects, especially those that are closest to the Stagecoach Solar Generation Plant, are solar projects which will be similar to, and with similar impacts as, the Proposed Project as related to Impact HWQ-3. Construction and operation of past and present projects within the Proposed Project area have resulted in substantial changes to the physical hydrology and water quality of the Watershed, particularly in the area around the town of Lucerne Valley south of the project. Land disturbance and earth movement, including grading and excavation mainly around the Town of Lucerne Valley have led to increased erosion and sedimentation.

Floodplain functions have been impaired through the placement of structures (such as housing) within floodplains and through the alteration of floodplain hydrology. The creation of impervious surface (including parking lots, roadways, and rooftops) has altered the rate and amount of surface water runoff. Spillage and improper handling, storage, and disposal of hazardous materials, and contamination of runoff from contact with urban areas, have led to contamination of surface water and groundwater. However, based on the Proposed Project impact analysis, adherence to required regulations, project design plans, and MMs, the cumulative effect on water quality due to flooding or drainage pattern alternations will be less than significant.

With required retention basins and limited changes in drainage patterns for the Proposed Project, cumulative flood peaks should not be substantially increased. Local diversions and concentrations of flood flows will occur but managed properly the cumulative adverse effect of these will be minor. Development of a drainage plan, as proposed under MM HWQ-3, would ensure that site design does not divert flows or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site or cause off-site impacts. With the incorporation of MM HWQ-3, the Proposed Project would have a less than significant cumulative impact.

Impact HWQ-4: Risk Release of Pollutants Due to Site Inundation

Although no FEMA flood insurance maps exist for the Project area and thus no flood hazard zones have been mapped at the Proposed Project, occasional flooding may occur along the desert washes across and near the Proposed Project. Release of pollutants due to location in a flood prone area would be prevented during construction and operation by adherence to the proposed SWPPP and erosion control plan and implementation of MM HAZ-1 (Hazardous Materials Training and Management Plan). During operation, flood flows would be diverted around the solar generating plant, gen-tie poles, and substation. Cumulative projects would also be required to comply with flood and hazardous materials regulations. This would ensure a less than significant cumulative impacts would occur.

Impact HWQ-5: Conflict with or Obstruct Implementation of a Water Quality Control Plan or Sustainable Groundwater Management Plan

The Proposed Project construction or operation would have no features that would conflict with or obstruct implementation of a water quality control plan or groundwater management plan. There is no impact associated with conflicting with or obstructing a water quality control plan or sustainable groundwater management plan. Therefore, no cumulative impacts would occur.

4.10.6 Mitigation Measure Summary

Table 4.10-4 summarizes the mitigation measures identified in this EIR to reduce or avoid potentially significant impacts to hydrology and water quality.

Table 4.10-4. Impact and Mitigation Measure Summary

Impact	Mitigation Measures
Impact HWQ-1: The Proposed Project would violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality	**MM HAZ-1:** Hazardous Materials Training and Management Plan (Section 4.9, *Hazards and Hazardous Materials*)
Impact HWQ-2: The Proposed Project would substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level *[Mitigation measures for Impact HWQ-2 are not applicable to the Stagecoach Facilities or SCE Calcite Facilities]*	*Stagecoach Facilities and SCE Calcite Facilities:* No mitigation required **Cumulative Impact Mitigation:** **MM HWQ-2:** Prepare and Implement Groundwater Monitoring and Reporting Plan

Table 4.10-4. Impact and Mitigation Measure Summary	
Impact	**Mitigation Measures**
Impact HWQ-3: The Proposed Project would substantially alter existing drainage patterns by altering the course of a waterway or through the addition of impervious surfaces, allowing substantial erosion, siltation, increased surface runoff on- or off-site, or affecting flood flows	**MM HWQ-3:** Drainage Plan Development – *[Does not apply to Stagecoach Gen-tie Line]*
Impact HWQ-4: The Proposed Project would be located in flood hazard zones, resulting in risk of release of pollutants due to site inundation.	**MM HWQ-3:** Drainage Plan Development – *[Does not apply to Stagecoach Gen-tie Line]* **MM HAZ-1:** Hazardous Materials Training and Management Plan (Section 4.9, *Hazards and Hazardous Materials*)
Impact HWQ-5: The Proposed Project would conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan	No mitigation required

4.11 LAND USE AND PLANNING

This section describes the existing land uses within and surrounding the Proposed Project area, identifies applicable land uses and planning documents, evaluates the type and significance of potential impacts that may occur as a result of the Proposed Project, and identifies measures to avoid or substantially lessen any impacts found to be potentially significant.

The Proposed Project is described in detail in Section 2, *Project Description*. The Environmental Impact Report (EIR) analysis of the Proposed Project is presented in three parts. The first two parts comprise the **Stagecoach Facilities** proposed by Aurora Solar, LLC and the third part includes the **SCE Calcite Facilities,** proposed by Southern California Edison (SCE). The analysis components are:

- The **Stagecoach Solar Generation Plant,** which would include the solar arrays and collector lines, ancillary project facilities, and the battery energy storage system, all located within the 3,570 acres of State-owned school lands managed by the CSLC
- The **Stagecoach Gen-tie Line** (located on State-owned lands, leased land, and purchased private land), which would run approximately 9.1 miles, connecting the Stagecoach Solar Generation Plant to the proposed SCE Calcite Facilities and the SCE electrical transmission system
- The **SCE Calcite Facilities,** which would be constructed, owned, and operated by SCE and would include a substation (referred to as the **SCE Calcite Substation**), a connection to distribution-level electric power, access roads, telecommunications facilities, and new transmission structures to interconnect with the existing transmission system

Issues raised during scoping related to Land Use and Planning include concerns about the potential for the Proposed Project to physically divide the community, County land use designations, and the County development code.

4.11.1 Environmental Setting

Stagecoach Solar Generation Plant

The Proposed Project would be located approximately 15 miles south of the City of Barstow and 12 miles northwest of the unincorporated community of Lucerne Valley. The solar field portion of the Proposed Project would be located east of Interstate 15 (I-15), south of Interstate 40 (I-40), and about 1.5 miles west of State Route 247 (SR-247, or Barstow Road). The Lucerne Valley Cutoff is a County-maintained unpaved road running diagonally through the solar field site, which would be in two parts, divided by the road. The Stagecoach Solar Generation Plant would occupy approximately 1,975 acres within six undeveloped state school lands parcels that together cover 3,570 acres.

The CSLC manages school lands in State ownership. Under the 1984 School Land Bank Act, revenue from school lands benefits the Teachers' Retirement Fund (Pub. Resources Code, § 6217.5). The Act directs the CSLC to develop school lands into a permanent and productive resource base for revenue generating purposes. In addition, Public Resources Code sections 6501-6509 govern how the CSLC administers this property, including leasing, mining, mineral rights, and sales. Section 6501.1 states that the CSLC may lease lands for commercial, industrial, and recreational purposes. In 2008, the CSLC adopted a resolution that states, in part, that the CSLC should encourage project operators to submit applications for the use of school lands for the environmentally responsible development of renewable energy (CSLC 2008).

The CSLC's 2021-2025 Strategic Plan (CSLC 2021) continues to support the concept of "working lands" and the transition to renewable energy generation. It states,

> The Commission-managed lands are working lands that under the Public Trust and the School Lands Trust provide multiple benefits to the people of California. While the Commission's revenue generation historically constitutes just a small percentage of California's overall general fund, adequate funding is essential to its operations and the programs that it supports. Implementing equitable revenue replacement sources—transitioning from fossil fuels to renewable and sustainable options—will help fund the Commission's vital work well into the future.

Lands in the vicinity of the solar site include other State-owned school lands, private lands, and federal lands managed by the Bureau of Land Management (BLM). The solar generation plant would be fenced, with Proposed Project elements set back from the fence in the vicinity of residences. A few local unpaved roads crossing the solar generation plant site would be closed by the Proposed Project (see Figure 4.16-2 in Section 4.16, *Recreation*), but other roads would continue to provide access, so no physical barriers would impede movement on or access to private properties or the local road network.

San Bernardino County Planning Designations. The 2020 San Bernardino Countywide Plan has two parts: a County Policy Plan (equivalent to the General Plan) and a County Business Plan. Under the County Policy Plan (adopted in October 2020) the solar generation plant site and surrounding lands are designated by the County as Resource/ Land Management (R/LM), which has a density of one dwelling unit/40 acres (San Bernardino County 2020b). The purpose of the R/LM designation is to "manage, preserve, and protect natural resources such as agricultural/grazing lands, watersheds, minerals, and wildlife habitat areas, as well as open space areas not otherwise protected or preserved." Typical uses of R/LM lands are natural resource conservation, mineral resource extraction, military facilities, recreation areas, renewable energy facilities consistent with the Renewable Energy and Conservation Element (RECE), single family homes on very large parcels, limited and low-density commercial development, and lands under the control of the state or federal government or tribal entities. RECE Policy 4.10.2 prohibits development of utility-oriented renewable energy projects within the boundaries

of existing community plans, including the Lucerne Valley Community Plan (see additional discussion in Section 4.11.2, *Regulatory Setting*).

Residences. Figure 4.11-1a illustrates the locations of potential residences within approximately 1,000 feet of the Stagecoach Solar Generation Plant boundary. These residences are considered "potential" because they were identified based on Google Earth satellite photos, and it is not possible to verify their use or occupancy. As shown on Figure 4.11-1a, these structures are widely dispersed and some share a common boundary with the Proposed Project parcels. Most parcels in the vicinity contain no structures. Saint Joseph Monastery is approximately 1.4 miles southeast of the Proposed Project, on Lucerne Valley Cutoff approximately 0.5 miles from SR-247.

Table 4.11-1 lists all potential residences, using identification numbers tied to Figure 4.11-1a. Because County noise regulations are tied to the distance of noise sources from parcel boundaries of occupied parcels, the table includes both the distance of the parcel boundary to the solar generation plant boundary and the distance to the potential residence itself. If it was unclear based on Google Earth examination whether structures were residences or not, they are shown here as potential residences.

Table 4.11-1. Stagecoach Solar Generation Plant: Potential Residences

Map ID#	Street or Intersection	APN	Distance from Lease Boundary to Residential Parcel Boundary	Distance From Lease Boundary to Potential Residence
1	Unnamed Road to Lucerne Valley Cutoff	0417-162-11	0	>1000
2	North of Villa Nova Road	0417-162-31	0	390
3	Gazelle Road	0464-271-21	0	180
4	Gazelle Road	0464-271-27	650	710
5	Gazelle Road	0464-261-03	650	520
6	Althouse Road	0464-261-43	650	600
7	Althouse Road	0464-261-44	650	970
8	Jayjay Road	0464-291-63	700	990
9	Meander Road	0464-252-01	0	40
10	Meander Road	0464-251-03	0	360
11	Nearbank Road	0464-252-01	330	420

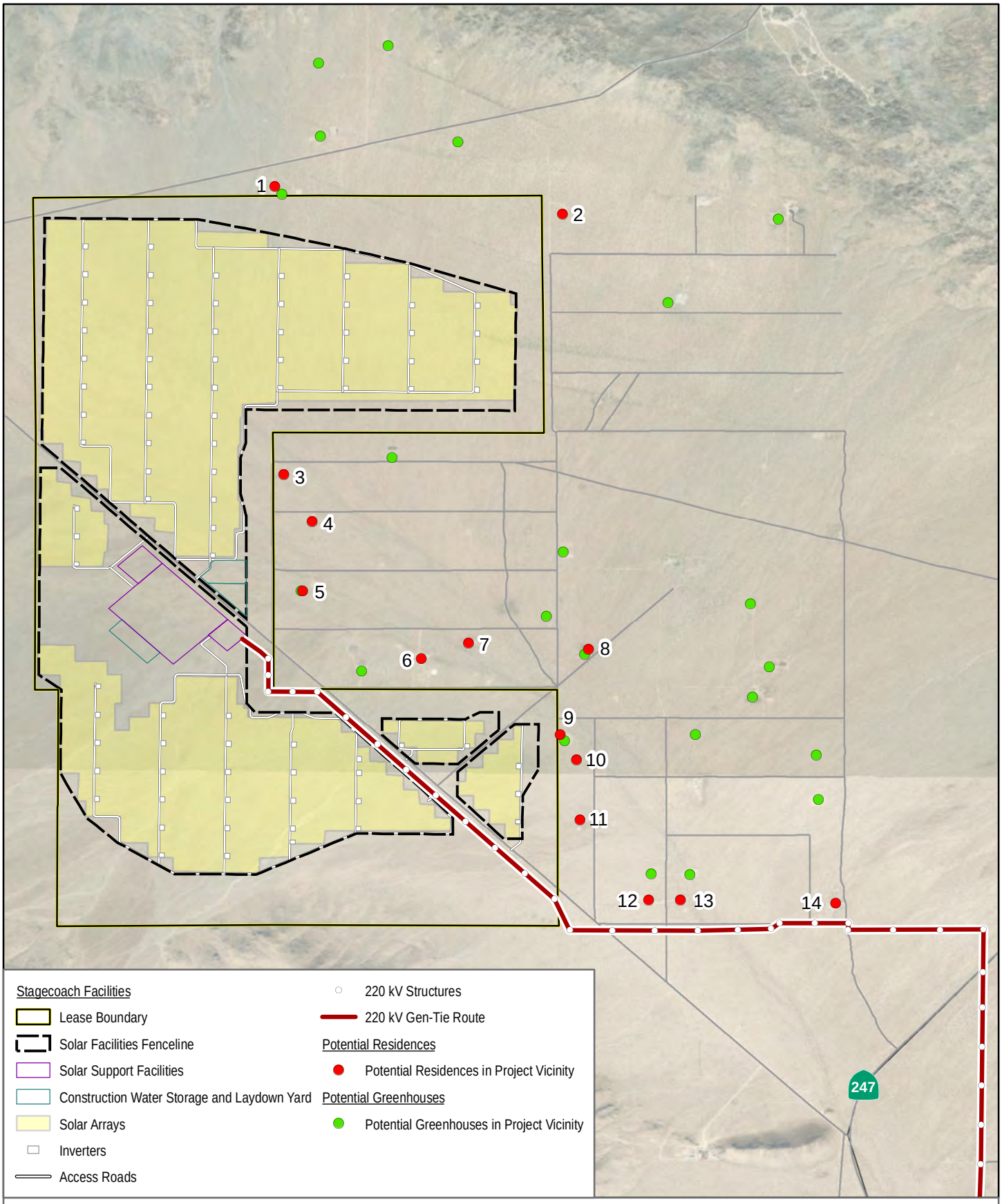


Figure 4.11-1a

Structures on Private Land Near Solar **Generation Plant**

Figure 4.11-1a also shows the location of a number of potential greenhouses in the Proposed Project area, most of which have been constructed in the past 2 years. These facilities are most likely used for marijuana cultivation, and it is not known whether they are permitted legal uses. Greenhouses are not included in Table 4.11-1, unless the property appeared to also have a residence.

Stagecoach Gen-tie Line

A 220 kV generation intertie (gen-tie) line would deliver power from the solar generation plant to a new SCE substation, for transmission to the existing regional electric transmission grid. The gen-tie line would be constructed within easements on private and State land and would run approximately 9.1 miles, connecting the solar generation plant to the proposed SCE Calcite Facilities.

The line would pass through areas designated by the County as R/LM or RL. RL (Rural Living) allows a density of one dwelling unit/2.5 acres maximum. Typical uses include rural residential, small-scale agriculture, and public and quasi-public facilities. The gen-tie would be on towers or poles spaced along the gen-tie right-of-way and would not impede movement on local roads. Figure 4.11-1b illustrates the location of potential residences along the gen-tie line route.

Residences. Table 4.11-2 lists all potential residences, using identification numbers tied to Figure 4.11-1b. Because County noise regulations are tied to the distance of noise sources from parcel boundaries of occupied parcels, the table includes both the distance of the parcel boundary to the edge of the gen-tie line right-of-way and the distance to the potential residence itself.

SCE Calcite Facilities

The 7-acre SCE Calcite Substation proposed by SCE would be located on vacant land west of SR-247. The substation site is designated as R/LM. However, the substation would fall under the jurisdiction of the CPUC, exempting it from local requirements. The SCE Calcite Substation would be fenced.

Residences. Figure 4.11-1b illustrates the location of potential residences in the vicinity of the SCE Calcite Facilities. There are two residences within 1,000 feet of the substation facilities and one structure that appears to be a greenhouse. The residences (#35 and #36 on Figure 4.11-1b) are located as follows:

- #35 is approximately 700 feet north of the proposed SCE Calcite Substation
- #36 is located about 860 feet northeast of the easternmost SCE Calcite component, and the property boundary is 330 feet east of the SCE Calcite component

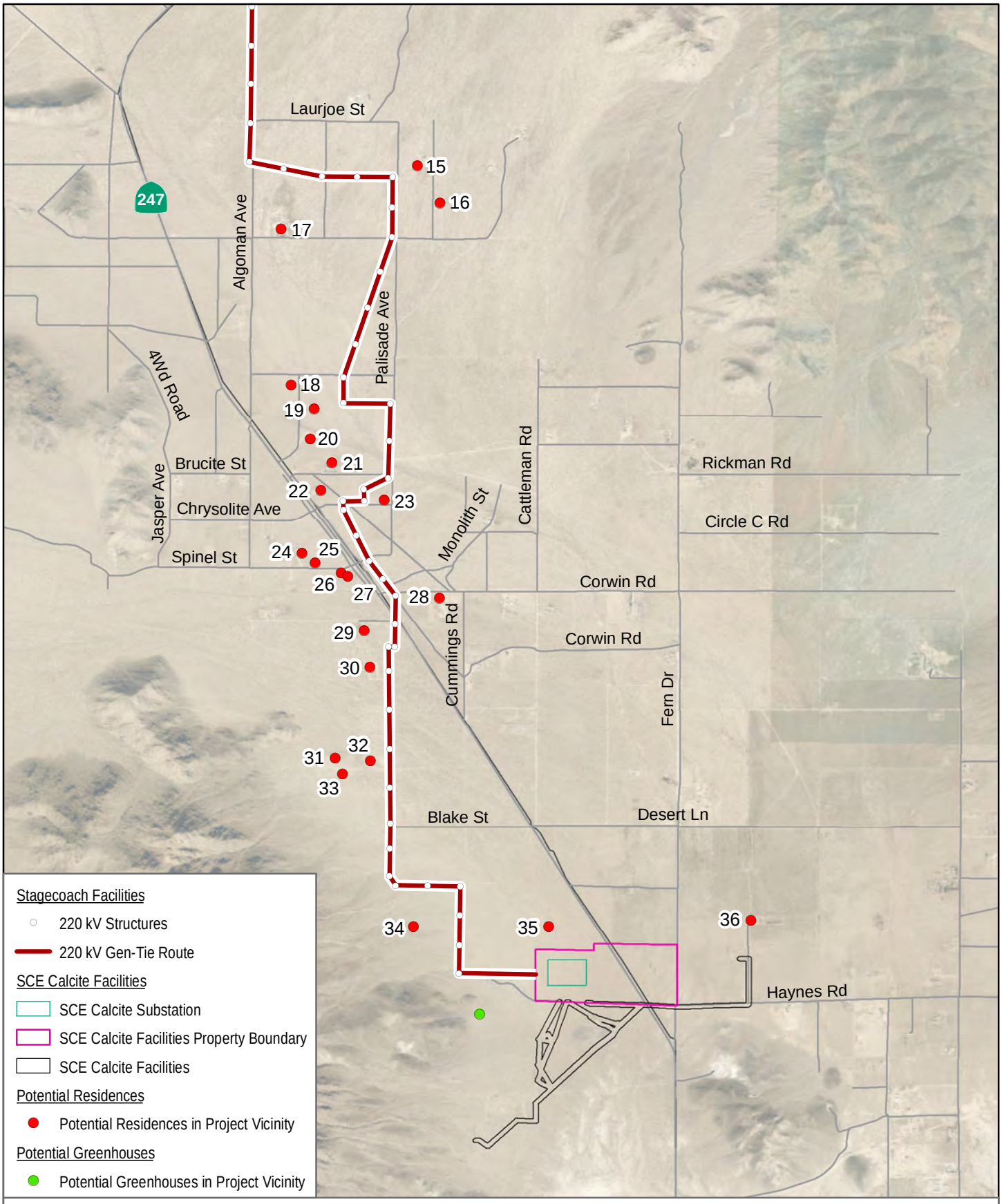


Figure 4.11-1b

Structures on Private Land Near Gen-tie and **SCE** Calcite Facilities

Table 4.11-2. Stagecoach Gen-tie Line: Residences					
Map ID#	**APN**	**Street or Intersection**	**Proximity to Gen-tie Tower #**	**Distance to Residential Parcel Boundary**	**Distance to Potential Residence**
11	0464-252-01	20553 Nearbank Road	GT #11	970	>1000
12	0464-252-15	Greastwood Lane	GT #16	50	160-650
13	0464-252-16	Greastwood Lane and Millberry Street	GT #17	60	550-620
14	0464-252-37	Greastwood Lane	GT #22	0	450
15	0453-013-13	Palisade Avenue	GT #37	100	550
16	0453-013-17	Palisade Avenue	GT #38	700	830
17	0453-013-04	Algoman Avenue	GT #34	170	>1000
18	Unknown	Cascadian Avenue	GT #43	790	860
19	0453-224-10	Cascadian Avenue	GT #44	410	950
20	0453-213-01	Cascadian Avenue	GT #44	0	470
21	0453-224-07	Brucite Street	GT #46	920	940
22	0453-232-06	Barstow Road and Cummings Road	GT #50	450	500
23	0453-232-01	Palisade Ave. and Cummings Road	GT #49	50	300
24	0453-244-05	Spinel Street	GT #52	910	>1000
25	0453-244-04	Spinel Street	GT #52	800	920
26	0453-243-08	Spinel Street	GT #53	560	560
27	0453-243-09	Spinel Street	GT #53	300	450
28	0453-034-05	No End Road	GT #55	560	800
29	0453-032-48	Barstow Road	GT #56	0	590
30	0453-032-14	Rawhide Road	GT #59	120	200
31	0453-032-44	Papago Road	GT #61	540	820
32	0453-032-26	Papago Road	GT #61	0	300
33	0453-032-27	Barstow Road	GT #62	0	820
34	0453-041-24	Barstow Road	GT #69	0	820
35	Unknown	Via Haynes or Waalew Road	Sub.	0	500

Source: Google Earth 2021

4.11.2 Regulatory Setting

San Bernardino County has jurisdiction over nearly 2 million acres, representing about 15 percent of the land within the County. Large portions of the County are under either State or federal jurisdiction, while other parts of the County are incorporated cities.

The principal planning documents for the County are the 2020 Countywide Plan and its Community Action Guides. The 2020 Countywide Plan includes the 2020 Policy Plan (which serves as the County's legal General Plan) and the Business Plan (which directs the integration of goals, policies and actions into County operations and budget).

The Proposed Project is within the Lucerne Valley Community Action Guide planning area, which covers approximately 280,130 acres. The County has jurisdiction over approximately 39.7 percent of the planning area (111,203 acres). Federal agencies have jurisdiction over approximately 56.5 percent of the area (158,218 acres) and the State has jurisdiction over approximately 3.8 percent of the area (10,709 acres). County jurisdiction with regard to the Proposed Project extends only to the portion of the gen-tie line on private land.

The portions of the Proposed Project on land under CSLC jurisdiction include the solar field and associated facilities and a portion of the gen-tie line. The California Public Utilities Commission (CPUC) has jurisdiction over the SCE Calcite Facilities. Both of these areas are outside the County's jurisdiction. However, the CSLC may opt to defer to the County's requirements with regard to construction on the Proposed Project site; in this case, all required building permits would be obtained from San Bernardino County.

Because the State has supremacy over local governments, CSLC's school land management and lease issuance preempt any conflicting local requirements. Compatible local requirements remain applicable to activity on the school land parcel. CSLC considers preempted local requirements to determine the consistency of the Proposed Project with local plans and policies.

The primary federal and State laws, regulations, and policies that pertain to the Proposed Project are summarized in Appendix A. Local land use and planning regulations relevant to the Proposed Project area are summarized below.

Stagecoach Solar Generation Plant

San Bernardino Countywide Plan: 2020 County Policy Plan

The 2020 County Policy Plan serves as the County's General Plan. The land use category in the portion of the Lucerne Valley planning area where the solar field would be located is designated as R/LM. According to the 2020 County Policy Plan, one of the typical uses allowed within an R/LM zone would be "renewable energy facilities" if they were consistent with the RECE (San Bernardino County 2020b). However, the RECE prohibits development of utility-oriented renewable energy projects within the boundaries of existing community

plans, including the Lucerne Valley Community Plan (LVCP; San Bernardino County 2007). According to LVCP Figure 6-1 (Jurisdictional Control), approximately the southern two-thirds of the Stagecoach Solar Generation Plant site fall within the LVCP area.

San Bernardino County Renewable Energy and Conservation Element

The RECE is now considered a part of the newly adopted 2020 County Policy Plan. This element discusses renewable energy in the County (San Bernardino County 2020b). The RECE was adopted on August 8, 2017. The 2017 approval of the RECE excluded Policy 4.10, a policy proposed to limit potential impacts of utility-oriented renewable energy on unincorporated communities. Hearings were held on Policy 4.10 in 2018 and 2019, during which renewable energy developers voiced strong opposition and members of the public voiced support for the element (Victor Valley Daily Press 2018). County staff developed a modified version of RECE Policy 4.10, which was adopted on February 28, 2019 (San Bernardino County 2019c).

While the RECE expresses a preference for small-scale renewables to be located on previously disturbed lands, one of the community-oriented goals is to "Keep utility-oriented projects separate from or sufficiently buffered from existing communities, to avoid adverse impacts on community development and quality of life."

The RECE established six goals; of these, Goals 2, 4, and 5 and some of their policies relate to development of utility-scale solar generation plants:

> ***RE Goal 2: The County will be home to diverse and innovative renewable energy systems that provide reliable and affordable energy to our unique Valley, Mountain, and Desert regions.***
>
> - ***RE Policy 2.2:*** *Promote use of energy storage technologies that are appropriate for the character of the proposed location*
> - ***RE Policy 2.3:*** *Encourage the use of feasible emerging and experimental renewable energy technologies that are compatible with County regulatory standards*
>
> ***RE Goal 4: The County will establish a new era of sustainable energy production and consumption in the context of sound resource conservation and renewable energy development practices that reduce greenhouse gases and dependency on fossil fuels.***
>
> - ***RE Policy 4.10:*** *Prohibit utility-oriented RE project development on sites that would create adverse impacts on the quality of life or economic development opportunities in existing unincorporated communities*
>   - *RE 4.10.1: Prohibit development of utility-oriented RE projects in the Rural Living land use districts throughout the County*
>   - *RE 4.10.2: Prohibit development of utility-oriented RE projects within the boundaries of existing community plans, which at the time of adoption of this*

Element are the Bloomington, Muscoy, Bear Valley, Crest Forest, Hilltop, Lake Arrowhead, Lytle Creek, Oak Glen, Homestead Valley, Joshua Tree, Lucerne Valley, Morongo Valley, Oak Hills and Phelan/Pinon Hills Community Plans

- *RE 4.10.3: Establish exclusion areas in the Development Code regulations for renewable energy development, beginning with the prohibitions in Policies 4.10.1 and 4.10.2 and provide for additional exclusion areas, such as new community plan areas, to be designated by amendment to the Development Code*

RE Goal 5: Renewable energy facilities will be located in areas that meet County standards, local values, community needs and environmental priorities.

- ***RE Policy 5.1****: Encourage the siting of RE generation facilities on disturbed or degraded sites in proximity to necessary transmission infrastructure*
  - *RE 5.1.1: Community-oriented RE generation facility sites may be less disturbed or degraded, but should contribute direct benefits to the communities they are intended to serve*
  - *RE 5.1.2: Siting of community-oriented and utility-oriented RE generation facilities will conform to applicable standards set forth in the Development Code*
  - *RE 5.1.3: Encourage new subdivision applications to set aside an area of land capable of supporting neighborhood-oriented renewable energy generation*
  - *RE 5.1.4: Encourage microgrids supported by energy storage and innovative technologies for incorporation into neighborhood- and community-scale renewable energy projects*
- ***RE Policy 5.2:*** *Utility-oriented RE generation projects on private land in the unincorporated County will be limited to the site-type below, in addition to meeting criteria established herein and in the Development Code:*
  - *i. Private lands adjacent to the federal Development Focus Areas supported by the Board of Supervisors that meet siting criteria and development standards*
  - *ii. Waste Disposal Sites*
  - *iii. Mining Sites (operating and reclaimed)*
  - *iv. Fallow, degraded and unviable agricultural lands*
  - *v. Airports (existing and abandoned or adaptively re-used)*
  - *vi. Brownfields*
  - *vii. California Department of Toxic Substance Control Cleanup Program Sites*
  - *viii. Resource Conservation and Recovery Act Sites*
  - *ix. Sites within or adjacent to electric transmission and utility distribution corridors*

- *x. Existing energy generation sites*
- *xi. Industrial zones proven to not conflict with economic development needs*
- *xii. Other sites proven by a detailed suitability analysis to reflect the significantly disturbed nature or conditions of those listed above*

- ***RE Policy 5.3:*** *Collaborate with utilities and RE generation facility developers to encourage collocation of transmission and intertie facilities*
- ***RE Policy 5.4:*** *Utility-oriented RE generation facilities will be required to meet a higher standard of evaluation for appropriate site selection due to its size and distance from population centers*
  - *RE 5.4.1: Establish a two-step application process for utility-oriented RE generation that evaluates site selection early in the planning process*
  - *RE 5.4.2: Encourage utility-oriented RE generation to occur in the five DRECP Development Focus Areas (DFAs) that were supported by the Board of Supervisors on February 17, 2016, Resolution No. 2016-20 and on adjacent private lands*
  - *RE 5.4.3: Direct utility-oriented RE generation facilities that may require transmission upgrades to seek sites within existing transmission corridors*
- ***RE Policy 5.7:*** *Support renewable energy projects that are compatible with protection of the scenic and recreational assets that define San Bernardino County for its residents and make it a destination for tourists*
  - *RE 5.7.1: Site RE generation facilities in a manner that will avoid, minimize or substantially mitigate adverse impacts to sensitive habitats, cultural resources, surrounding land uses, and scenic viewsheds*
- ***RE Policy 5.9:*** *Collaborate with utilities, the California Energy Commission (CEC) and the Bureau of Land Management (BLM) to plan for RE generation facilities to be located on public lands, apart from existing unincorporated communities*

San Bernardino Countywide Plan: Lucerne Valley Community Action Guide (2020 Draft)

The Lucerne Valley Community Action Guide (LVCAG) was drafted as part of the County Policy Plan adopted on October 27, 2020. With adoption of the County Policy Plan, the earlier Lucerne Valley Community Plan (LVCP) (San Bernardino County 2007) was repealed, although the boundaries of the Lucerne Valley Community are unchanged in the LVCAG. The LVCAG is the primary land use guidance document for the Lucerne Valley area, including the southern two-thirds of the area where the Proposed Project would be located. The new LVCAG does not address lands under State and federal jurisdiction, although it does map these areas and defines the land management jurisdiction. LVCP Figure 6-1 (Jurisdictional Control) identifies the solar generation plant parcels as on State lands.

The LVCAG replaces the goals and policies of the LVCP with Community Focus Statements that include specific Action Statements. With regard to renewable energy, the following Action Statements focus on distributed generation:

Community Focus Statement A: Maintain the rural character of the community.

- **Action Statement A.1**: Aspire to be a model renewable energy community with a principal focus on point-of-use, rooftop solar
- **Action Statement A.2:** Encourage the County to adopt rural desert development standards more befitting the high desert community and in keeping with Lucerne Valley's rural character and sense of openness

Apple Valley Multi-Species Habitat Conservation Plan/Natural Community Conservation Plan (in progress)

The Multiple Species Habitat Conservation Plan (MSHCP)/NCCP that is currently being prepared would include portions of the Proposed Project, but as of this writing, the MSHCP/ NCCP has not been completed or adopted. See the MSHCP/NCCP discussion in Section 4.3, *Biological Resources*.

Stagecoach Gen-tie Line

San Bernardino County 2007 Development Code (Amended 2019)

The code states that transmission lines are under the jurisdiction of the CPUC (San Bernardino County 2019a, page 2-20). However, the CPUC has authority only over investor-owned public utilities such as SCE and not over private power generation interconnection facilities or private transmission lines.

San Bernardino County Development Code section 85.02.050 (Alternative Review Procedures)

Unless preempted by State or Federal Law, the specific land uses listed in the land use tables in Chapters 82.03 through 82.22 shall be allowed without a Conditional Use Permit when the following alternate review procedures have been completed to the satisfaction of the Director.

(a) Alternate procedures.

(1) The land use has been approved at a public hearing by a State or Federally appointed body or commission empowered to approve or license the land use.

(2) Notice has been given to provide an opportunity for those interested or affected by the proposed use to take part in local public hearings conducted by the State or Federal body or commission approving the land use.

(3) The review process used by the approving agency has substantially addressed the same issues and concerns that would be addressed in applicable County review and approval process.

(4) The approving State or Federal body or commission has made a reasonable effort to respond to concerns expressed by the County of San Bernardino and its citizens.

(5) The approval of the land use would not have a substantially detrimental effect on the public health, safety, and welfare.

(6) Approval of the land use has complied with all applicable provisions of the California Environmental Quality Act (CEQA).

(7) The land use is consistent with the General Plan and any applicable specific plan.

The review and approval process for the Proposed Project complies with the alternative procedures identified in Development Code section 85.02.50. Therefore, it appears that a Conditional Use Permit would not be required for installation of the gen-tie line.

Development Code section 84.29.035 (Required Findings for Approval of a Commercial Solar Energy Facility)

For situations where commercial solar projects are proposed on land under County jurisdiction, this code provides that:

8) The proposed commercial solar energy generation facility will be located in proximity to existing electrical infrastructure, such as transmission lines, utility corridors, and roads, so that:

(A) minimal ground disturbance and above ground infrastructure will be required to connect to the existing transmission grid, considering the location of the project site and the location and capacity of the transmission grid,

(B) new electrical generation tie lines will be co-located on existing power poles whenever possible, and

(C) existing rights-of-way and designated utility corridors will be utilized to the extent practicable.

SCE Calcite Facilities

The SCE Calcite Facilities would be constructed and operated by SCE, which is an investor-owned public utility subject to the jurisdiction of the CPUC and would not be subject to County regulations, discretionary approvals, or oversight.

4.11.3 Significance Criteria

Significance criteria have been established for both land use and planning. The significance criteria for land use and planning were derived from Appendix G of the State CEQA Guidelines.[22] Based on the Guidelines, impacts to land use and planning are considered significant if the Proposed Project would:

[22] The "State CEQA Guidelines" refers to California Code of Regulations, Title 14, Chapter 3.

- Physically divide an established community
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect

4.11.4 Environmental Impact Analysis and Mitigation

The analysis of Land Use and Planning impacts is presented in three parts below: generation and storage facilities, gen-tie line, and substation. Two potential impacts are discussed: the physical division of a community and conflict with applicable plans, policies, and regulations.

4.11.4.1 Impacts of the Stagecoach Generation and Storage Facilities

The solar generation and storage facilities would be on State land within the northwestern limits of Lucerne Valley Community Action Guide. However, the CSLC has exclusive authority over the use of State school land under its jurisdiction.

Impact LU-1: The Proposed Project would physically divide an established community.

The solar generation plant would be within fenced parcels in an area with few residences and would not divide an established community. **(Less than Significant)**

Impact Discussion

Construction and Operation and Maintenance. The land around the Proposed Project site is a mix of BLM and private parcels. As shown on Figure 4.11-1a, no residences are found to the west or south of the Proposed Project site, but there are 11 potential residences within 1,000 feet on the east and north sides of the Proposed Project. Parcels in the area range from 2.5 acres to 40 acres in size with most being vacant. Saint Joseph Monastery is approximately 1.4 miles southeast of the Proposed Project.

The solar arrays would be located on both sides of Lucerne Valley Cutoff, with the solar arrays and ancillary facilities surrounded by security fencing. The road would remain open to through traffic, but temporary delays may occur during construction due to equipment and deliveries using the road. The only existing gravel/unpaved road that would be closed by the Proposed Project would be a portion of Meander Road where it traverses State-owned land east of Lucerne Valley Cutoff for distance of approximately 0.8 miles. For anyone located east of the Proposed Project wanting to go north on Lucerne Valley Cutoff from the unaffected part of Meander Road, the closure would add approximately 2 miles of driving. No other existing roads would be affected.

Construction and O&M of the solar generation and battery storage facilities along the Lucerne Valley Cutoff would not physically divide an established community, as access between local residences is not affected by the Proposed Project. The Proposed Project would be within a fenced area and Proposed Project elements, such as solar arrays, would be set back from the site property line in the vicinity of the three adjacent parcels with residences. With the exception of a portion of Meander Road, local unimproved road network providing access to these properties would not be blocked; access through the community will remain unimpeded. The impact would be less than significant.

Mitigation Measures

No mitigation would be required.

Impact LU-2:	**The Proposed Project would not cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.**
The Stagecoach Solar Generation Plant would conflict with the County's adopted RECE, Policy 4.10.2 **(Significant and Unavoidable)**	

Impact Discussion

Construction and Operation and Maintenance. The solar generation plant would be on State school lands under CSLC jurisdiction. The County has designated the adjacent and nearby properties under its jurisdiction as Resource/Land Management (R/LM), which emphasizes conservation and open space. The R/LM designation would allow renewable energy development, unless the land is within the boundaries of an existing community plan. Approximately the southern two-thirds of the Stagecoach Solar Generation Plant is located within the Lucerne Valley Community Plan area.

While County designations do not apply to State land, the Proposed Project is within the LVCP area where the County has prohibited utility-scale renewable energy development. Therefore, the Proposed Project would be inconsistent with the County's RECE. There is no mitigation for this inconsistency, so the impact is significant and unavoidable.

Mitigation Measures

No mitigation is available for an inconsistency with County land use plans.

Residual Impact

Once constructed, the Stagecoach Solar Generation Plant would likely remain for at least 40 years. The policy conflict would exist for as long as the County RECE is in effect.

4.11.4.2 Impacts of the Stagecoach Gen-tie Line

Impact LU-1:	**The Proposed Project would physically divide an established community.**
The gen-tie line would not present a barrier to movement and would not divide an established community. **(Less than Significant)**	

Impact Discussion

Construction and Operation and Maintenance. Much of the gen-tie line would be on private land for which the Applicant has obtained rights. Construction and O&M of the gen-tie line would not physically divide an established community. The gen-tie would be supported on towers or poles within a right-of-way (ROW) or easement agreed with landowners. While it would be visible within the community, the overhead gen-tie line would not physically divide the community. The local road network providing access to properties would not be blocked and access throughout the area will remain unimpeded. The impact would be less than significant.

Mitigation Measures

No mitigation would be required.

Impact LU-2:	**The Proposed Project would not cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.**
The gen-tie line would be installed only to connect the solar generation plant with the regional electricity grid, so as a component of the Stagecoach Facilities, it would conflict with the County's adopted RECE **(Significant and Unavoidable)**	

Impact Discussion

Construction and Operation and Maintenance. About 6 miles of the land along the gen-tie route is within County jurisdiction and about 3 miles are on CSLC land under State jurisdiction. The County land is designated as either Resource/Land Management or Rural Living under the new County Policy Plan.

The County Development Code provides that an electrical power transmission line is an allowed use, as noted in section 82.03.040 (Agricultural and Resource Management Land Use Zoning District Allowed Uses and Permit Requirements) and section 82.04.040 (Residential Land Use Zoning District Allowed Uses and Permit Requirements) (San Bernardino County 2019a; Development Code Table 824 and Table 827). However, the gen-tie line is a component of the Stagecoach Facilities, and it would not be proposed in the absence of the Stagecoach Solar Generation Plant. The majority of the Proposed

Project components are within the boundary of the LCVP area. While County designations do not apply to the State land where the solar generating plant is proposed, the location of the Project within an area where the County has prohibited utility-scale renewable energy development would make the Proposed Project, including the Stagecoach Gen-tie Line, inconsistent with the County's RECE. There is no mitigation for this inconsistency, so the impact is significant and unavoidable.

Mitigation Measures

No mitigation is available for an inconsistency with County land use plans.

Residual Impact

Once constructed, the Stagecoach Gen-tie Line would likely remain for at least 40 years. The policy conflict would exist for as long as the County RECE is in effect.

4.11.4.3 Impacts of the SCE Calcite Facilities

The SCE Calcite Facilities would be on vacant undeveloped land designated as Resource/ Land Management. The nearest residence is east of SR-247, approximately 0.4 miles northeast of the substation site. An existing SCE transmission corridor with two 500 kV and one 220 kV transmission lines is immediately south of the substation site. The CPUC has exclusive authority over approval of investor-owned utility facilities, including the SCE-proposed substation, therefore local zoning would not apply.

Impact LU-1: The Proposed Project would physically divide an established community.

The SCE Calcite Facilities would not present a barrier to movement and would not divide an established community. **(Less than Significant)**

Impact Discussion

Construction and Operation and Maintenance. Construction and O&M of the SCE Calcite Facilities would not physically divide an established community. The substation would be within a fenced area and set back more than 500 feet west of SR-247. There are scattered, low-density residences in the area, as shown in Figure 4.11-1b, two residences are located north and northeast of the substation site. The local road network providing access to these properties would not be blocked; access through the community will remain unimpeded. The impact would be less than significant.

Mitigation Measures

No mitigation would be required.

Impact LU-2:	**The Proposed Project would not cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.**
The substation would be installed only to connect the Stagecoach Facilities with the regional electricity grid, so it would conflict with the County's adopted RECE **(Significant and Unavoidable)**	

Impact Discussion

Construction and Operation and Maintenance. The SCE Calcite Facilities and the transmission lines between the proposed substation and the nearby existing Lugo-Pisgah transmission line corridor would be under CPUC jurisdiction. Utility projects in the CPUC's jurisdiction are exempt from local land use and zoning regulations and permitting, but CPUC's General Order No. 131-D, section III.C (CPUC 2021b) requires that the utility "communicate with, and obtain the input of, local authorities regarding land-use matters and obtain any nondiscretionary local permits." In its County Policy Plan, the County has designated the substation parcel and surrounding properties as R/LM, and the entire area is within the LVCP.

As described in Section 2.6, *Project Description*, SCE proposes to construct the SCE Calcite Substation and associated facilities in order to interconnect the Stagecoach Solar Generation Plant to SCE's existing Lugo-Pisgah No. 1 220 kV Transmission Line. Previously, SCE had proposed the SCE Calcite Substation to interconnect the Ord Mountain Solar Project. This solar project was proposed on private land just east of the SCE Calcite Substation site. A Draft EIR was prepared by the County in October 2018 to evaluate the impacts of the solar project and the substation (San Bernardino County 2018a). However, the February 2019 adoption of the RECE Policy 4.10.2 appears to make the Ord Mountain Solar Project infeasible, and the County has not issued a Final EIR.

It appears that the SCE Calcite Facilities would not be constructed in the absence of the Stagecoach Facilities. As a result, because the SCE Calcite Facilities are within an area where the County has prohibited utility-scale renewable energy development, all components of the Proposed Project, including the SCE Calcite Facilities, would be inconsistent with the County's RECE. There is no mitigation for this inconsistency, so the impact is significant and unavoidable.

Mitigation Measures

No mitigation is available to resolve this policy conflict.

Residual Impact

Once constructed, the SCE Calcite Facilities would likely remain in place for at least 50 years. The policy conflict would exist for as long as the County RECE is in effect.

4.11.5 Cumulative Impacts

4.11.5.1 Geographic Scope

The Proposed Project is in the northwest quadrant of the Lucerne Valley Community Action Guide area identified in the County Policy Plan. The geographic scope used for the analysis of Land Use and Planning is the area within a 10-mile radius of the Proposed Project components. This is sufficient to include known projects in the Lucerne Valley area that may have the potential to have impacts that could combine with those of the Proposed Project with regard to Land Use and Planning.

4.11.5.2 Cumulative Impacts

Cumulative projects that would have the potential to be considered in a cumulative context with a project's incremental contribution, and that are included in the analysis of cumulative impacts relative to land use and planning, are identified in Table 3-1 and Figure 3-1 in Section 3.0, *Cumulative Scenario*.

Impact LU-1: The Proposed Project Would Physically Divide an Established Community

Applications for seven projects within 10 miles of the Proposed Project have been identified. None of them would divide an established community. As discussed in Section 4.11.4, no component of the Proposed Project would physically divide a community, so its effects cannot contribute to those of other proposed projects in the area.

Impact LU-2: The Proposed Project Would Conflict with a Land Use Plan, Policy, or Regulation Adopted to Avoid or Mitigate an Environmental Effect

As discussed in Section 4.11.4 under Impact LU-2, the Proposed Project would be inconsistent with the currently applicable elements of the County Policy Plan, especially RECE Policy 4.10, because it is located within the Lucerne Valley Community Plan area. The following three projects would result in the same inconsistency:

- Sienna Solar North, South, East, and West
- Ord Mountain Solar LLC
- Calcite Solar I

While the Proposed Project is on State-owned land, it would contribute to the plan inconsistency of the other three solar projects, resulting in a cumulatively considerable impact related to land use and planning.

4.11.6 Mitigation Measure Summary

No mitigation would be required.

4.12 NOISE AND VIBRATION

This section describes the noise and vibration issues relevant to the Proposed Project vicinity, evaluates the type and significance of impacts that may occur as a result of the Proposed Project, and identifies measures to avoid or substantially lessen any impacts found to be potentially significant.

The Proposed Project is described in detail in Section 2, *Project Description*. The Environmental Impact Report (EIR) analysis of the Proposed Project is presented in three parts. The first two parts comprise the **Stagecoach Facilities** proposed by Aurora Solar, LLC and the third part includes the **SCE Calcite Facilities,** proposed by Southern California Edison (SCE). The analysis components are:

- The **Stagecoach Solar Generation Plant,** which would include the solar arrays and collector lines, ancillary project facilities, and the battery energy storage system (BESS), all located within the 3,570 acres of State-owned school lands managed by the CSLC
- The **Stagecoach Gen-tie Line** (located on State-owned lands, leased land, and purchased private land), which would run approximately 9.1 miles, connecting the Stagecoach Solar Generation Plant to the proposed SCE Calcite Facilities and the SCE electrical transmission system
- The **SCE Calcite Facilities,** which would be constructed, owned, and operated by SCE and would include a substation (referred to as the **SCE Calcite Substation**), a connection to distribution-level electric power, access roads, telecommunications facilities, and new transmission structures to interconnect with the existing transmission system

4.12.1 Environmental Setting

Fundamentals of Community Noise

Community noise, also called environmental noise,[23] is defined as sound that is unwanted (i.e., loud, unexpected, or annoying). Measuring the effects of community noise uses a scale that simulates human perception. The A-weighted scale of sensitivity accounts for the frequency sensitivity of the human ear, which is less sensitive to low frequencies, and correlates well with human perceptions of the annoying aspects of noise. Decibels are logarithmic-scale units that can be used to conveniently compare wide ranges of sound intensities, and the A-weighted decibel scale (dBA) is the most common scale for community noise.

[23] Community noise (also called environmental noise, residential noise, or domestic noise) is defined as noise emitted from all sources except noise at an industrial workplace. The main sources of community noise include road, rail and air traffic, industries, construction and public works, and a residential neighborhood. (WHO 1999)

Community noise levels can be highly variable from day to day as well as between day and night. For simplicity, sound levels are usually best represented by an equivalent level over a given time period (Leq) or by an average level occurring over a 24-hour day-night period (Ldn). The Leq, or equivalent sound level, is a single value (in dBA) for any desired duration, which includes all of the time-varying sound energy in the measurement period, usually one hour. The L50, is the median noise level that is exceeded 50 percent of the time during any measuring interval. The Ldn, or day-night average sound level, is equal to the 24 hour A-weighted equivalent sound level with a 10 decibel penalty applied to nighttime sounds occurring between 10:00 p.m. and 7:00 a.m. Community Noise Equivalent Level (CNEL) is another metric that is the average equivalent A-weighted sound level during a 24 hour day, obtained after addition of 5 decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and after addition of 10 decibels to sound levels in the night from 10:00 p.m. to 7:00 a.m. To estimate the day-night level caused by any noise source emitting steadily and continuously over 24 hours, the Ldn is 6.4 dBA higher than the source's Leq. For example, if the expected continuous noise level from equipment is 50.0 dBA Leq for every hour, the day-night noise level would be 56.4 dBA Ldn.

Community noise levels are usually closely related to the intensity of human activity. Noise levels are generally considered low when below 45 dBA, moderate in the 45 to 60 dBA range, and high above 60 dBA. In wilderness areas, the Ldn noise levels can be below 35 dBA. In small towns or wooded and lightly used residential areas, the Ldn is more likely to be around 50 or 60 dBA. Levels around 75 dBA are more common in busy urban areas, and levels up to 85 dBA occur near major freeways and airports. Although people often accept the higher levels associated with very noisy urban residential and residential-commercial zones, they nevertheless are considered to be adverse to public health. Table 4.12-1 is a scale showing typical noise levels encountered in common daily activities.

Noise can interrupt ongoing activities causing community annoyance, especially in residential areas. In general, most residents become highly annoyed when noise interferes considerably with activities such as sleeping, talking, noise-sensitive work, and audio entertainment (FTA 2018). People react to the duration of noise events, judging longer events to be more annoying than shorter ones, and transportation noise is usually a primary cause of community dissatisfaction. Construction noise and vibration often generates complaints from the community, even when construction is for a limited timeframe. Public concerns about construction noise and vibration increase considerably with lengthy periods of heavy construction on major projects as well as prevalence of nighttime construction. Complaints typically arise from interference with people's activities, especially when the adjacent community has no clear understanding of the extent or duration of the construction (FTA 2018).

Table 4.12-1. Representative Noise Levels		
Common Outdoor Activities	**Noise Level (dBA)**	**Common Indoor Activities**
Power Saw	—110—	Rock Band
Jet Fly-over at 100 feet		
Subway	—100—	
Gas Lawnmower at 3 feet		
Rail Transit Horn/Tractor	—90—	
Jack Hammer		Food Blender at 3 feet
Rail Transit At-grade (50 mph)	—80—	Garbage Disposal at 3 feet
Noisy Urban Area during Daytime		
Gas Lawnmower at 100 feet	—70—	Vacuum Cleaner at 10 feet
Rail Transit in Station/Commercial Area		Normal Speech at 3 feet
Heavy Traffic at 300 feet	—60—	Sewing Machine
Air Conditioner		Large Business Office
Quiet Urban Area during Daytime	—50—	Dishwasher in Next Room
		Refrigerator
Quiet Urban Area during Nighttime	—40—	Theater, Large Conference Room (background)
Quiet Suburban Area during Nighttime		
	—30—	Library
Quiet Rural Area during Nighttime		Bedroom at Night, Concert Hall (background)
	—20—	
		Broadcast/Recording Studio
	—10—	
Lowest Threshold of Human Hearing	—0—	Lowest Threshold of Human Hearing

Source: California Department of Transportation (Caltrans) 2013.

Surrounding land uses dictate what noise levels would be considered acceptable or unacceptable. Lower community noise levels are expected in rural or suburban areas than what would be expected for commercial or industrial zones. Nighttime ambient levels in urban environments are about seven decibels lower than the corresponding daytime levels. In rural areas away from roads and other human activity, the day-to-night difference can be considerably less. Areas with full-time human occupation and residency are often considered incompatible with substantial nighttime noise because of the likelihood of disrupting sleep. Noise levels above 45 dBA at night can result in the onset of sleep interference. At 70 dBA, sleep interference effects become considerable (USEPA 1974).

Groundborne Vibration

Groundborne vibration is energy transmitted in waves through the ground. in contrast to airborne noise, groundborne vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads (FTA 2018). However, a common source of vibration is certain construction activities, such as pile-driving and the operation of heavy earthmoving equipment.

Vibration is an oscillatory motion that can be described in terms of ground displacement, velocity, or acceleration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal in inches per second (in/sec). The PPV is most frequently used to describe vibration impacts to buildings. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (VdB) is commonly used to measure RMS (relative to 10^{-6} in/sec). People at residences generally find groundborne vibration at levels over 80 VdB to be annoying for infrequent events, and the approximate threshold of perception for humans is around 65 VdB (FTA 2018).

The effects of energy transferred through the soils to building foundations can include perceptible movement of building floors or rumbling sounds. Most construction-related vibration would not be capable of structural damage, with the exception of impact activities such as pile driving. Annoyance from vibration often occurs when the vibration exceeds the threshold of perception by only a small margin. The vibration level that causes annoyance is well below the damage threshold for normal buildings. Receptors sensitive to vibration include certain structures (especially older masonry structures), people (especially residents, the elderly, and sick), and vibration-sensitive equipment.

Ground-motion energy waves are transferred through the soil and dissipate with distance from the vibration source, and energy is lost in any transfer from one particle to another. Typically, vibration from man-made activities attenuates rapidly with distance from the source of the vibration.

Noise Sensitive Areas

Noise-sensitive receptors are areas where excessive noise may conflict with the intended use, examples include residential areas, schools, hospitals, day care centers, places of worship, campgrounds, and certain outdoor recreation areas. The San Bernardino County Development Code (Chapter 83.01.080(b)) identifies noise-sensitive land uses as including residential uses, schools, hospitals, nursing homes, religious institutions, libraries, and similar uses.

Noise sensitive receptors include approximately 11 potentially occupied residences within 1,000 feet of Proposed Project activities or the boundaries of Proposed Project components (see Table 4.11-1 and Figure 4.11-1a in Section 4.11, *Land Use and Planning*). As shown in the table and map, several of these are located immediately adjacent to the Proposed Project boundary, including some residences within 150 feet of the property line. Most parcels in the vicinity contain no structures. Saint Joseph Monastery is approximately 1.4 miles southeast of the Proposed Project, on Lucerne Valley Cutoff near SR-247. Proposed Project elements are proposed to be set-back 600 feet from the boundaries of properties with existing residences.

4.12.1.1 Existing Noise Environment in the Stagecoach Solar Generation Plant Area

The Proposed Project site is in the unincorporated Lucerne Valley area of San Bernardino County, approximately 12 miles north of the Lucerne Valley community and 15 miles south of Barstow. The area is sparsely populated, and there are few potential sources of community noise.

Noise-sensitive receptors near the Stagecoach Solar Generation Plant include approximately 11 potential residences within 1,000 feet of the Stagecoach Solar Generation Plant boundary, as described in Section 4.11, *Land Use and Planning*. Five of the potential residences have parcel boundaries adjacent to the State school land boundaries for the Stagecoach Solar Generation Plant. The design of the solar generation plant ensures that the nearest Proposed Project elements would be set-back over 600 feet from the residential property boundaries. Table 4.11-1 lists all potential residences, using identification numbers tied to Figure 4.11-1a.

On quiet rural lands, noise levels normally vary from around 30 dBA during the night, when located away from traffic, up to about 60 dBA or higher when near traffic, which would approach the level of noise that occurs on a sustained basis in commercial and urban areas (Caltrans 2013).

Baseline noise levels in the Proposed Project area are typical of those for quiet rural lands. Very few roadways access the site. Noise levels are occasionally affected by high-altitude over-flights of aircraft, primarily due to military planes to and from Edwards Air Force Base. Other daytime or nighttime noise sources include natural sounds from birds and insects. No agricultural activities occur near the site.

Table 4.12-2 summarizes the results of measurements taken near traffic State Route 247 (SR-247, or Barstow Road), in 2014 as part of an environmental study in this Proposed Project area. The measurements demonstrate an area of low ambient noise levels ranging from 43 to 46 dBA Leq in the daytime, with peak daytime noise levels up to 62 dBA Lmax.

Table 4.12-2. Measured Background Daytime Noise Levels (2014)		
Site	**Background Noise Levels (dBA Leq)**	**Background Noise Levels (dBA Lmax)**
Along SR-247 (South of Lucerne Valley Cutoff)	43	56 to 60
Along SR-247 (North of Lucerne Valley Cutoff at Stoddard Valley)	46	61 to 62

Source: Brown-Buntin Associates, Inc., Ambient Noise Measurements, Coolwater-Lugo Transmission (August 13, 2014).

For noise levels throughout the day and night, average daily traffic counts reported by Caltrans, typical vehicle speeds, and vehicle type mixes can be used in a spreadsheet model to arrive at predictions (see Appendix I, Noise and Vibration Calculations). Table 4.12-3 presents the existing (predicted) day-night noise levels due to the traffic along the area roadways.

Table 4.12-3. Existing (Predicted) Roadway Noise Levels			
Roadway	**County General Plan Classification**	**Existing Average Daily Traffic (vpd)**	**Existing Predicted Roadway Noise (dBA Ldn)**
Lucerne Valley Cutoff Road (South of Project)	Collector	250	49
SR-247 (South of Lucerne Valley Cutoff)	Major Highway	2,250	65
SR-247 (North of Lucerne Valley Cutoff)	Major Highway	2,500	65

Note: Traffic noise level predicted for 100 feet from centerline.
Source: Caltrans 2020d; also see Appendix I, Noise and Vibration Calculations.

4.12.1.2 Existing Noise Environment in the Area of the Gen-tie Line

The Stagecoach Gen-tie Line would be located within easements on private and State land and would run approximately 9.1 miles, connecting the solar generation plant to the proposed SCE Calcite Facilities. Noise sensitive uses allowed within the area of the gen-tie line include rural residential, small-scale agriculture, and public and quasi-public facilities.

Noise-sensitive receptors near the Gen-tie Line include approximately 21 potential residences within 1,000 feet, including a few (fewer than six) scattered inhabited dwellings that are 200 to 300 feet from the edge of the gen-tie right-of-way. Six of the potential

residences have parcel boundaries adjacent to the gen-tie easements. The nearest potential residences are shown on Figure 4.11-1a and Figure 4.11-1b. As described in Section 4.11, *Land Use and Planning*, Table 4.11-2 lists all potential residences, using identification numbers tied to the figures.

4.12.1.3 Existing Noise Environment in the Area of the SCE Calcite Facilities

The 7-acre SCE Calcite Facilities proposed by SCE would be located on vacant land west of SR-247. The nearest residence is east of SR-247, approximately 0.4 mile northeast of the proposed SCE Calcite Facilities site.

Noise-sensitive receptors near the SCE Calcite Facilities include two potential residences approximately 700 and 860 feet from the nearest proposed components of the SCE Calcite Facilities. The nearest residential property boundary is adjacent to the boundary of the SCE Calcite Facilities. The nearest potential residences are shown on Figure 4.11-1b, and described in Section 4.11, *Land Use and Planning*.

4.12.2 Regulatory Setting

The primary federal and state laws, regulations, and policies that pertain to the Proposed Project are summarized in Appendix A. Regulating noise is generally the responsibility of local governments. Local policies are summarized below.

San Bernardino Countywide Plan: 2020 County Policy Plan

The 2020 County Policy Plan serves as the County's General Plan. The Noise Element of that plan identifies goals and policies to manage noise and identify when land uses would be compatible with ambient noise levels. There are no County noise policies specific to the desert region, within which the Project would be located. The following County-wide goals and policies may be relevant to the Project:

Goal N 1. The County will abate and avoid excessive noise exposures through noise mitigation measures incorporated into the design of new noise-generating and new noise-sensitive land uses, while protecting areas within the County where the present noise environment is within acceptable limits.

- *Policy N 1.3. When industrial, commercial, or other land uses, including locally regulated noise sources, are proposed for areas containing noise sensitive land uses, noise levels generated by the proposed use will not exceed the performance standards of Table N-2 within outdoor activity areas [i.e., 55 dBA Leq during daytime hours (7:00 a.m. to 10:00 p.m.) or 45 dBA Leq during nighttime hours (10:00 p.m. to 7:00 a.m.) for residences as in Development Code Chapter 83.01.080(c)]. If outdoor activity areas have not yet been determined, noise levels shall not exceed the performance standards listed in Chapter 83.01 of the Development Code at the boundary of areas planned or zoned for residential or other noise-sensitive land uses.*

- *Policy N 1.5. Limit truck traffic in residential and commercial areas to designated truck routes; limit construction, delivery, and through-truck traffic to designated routes; and distribute maps of approved truck routes to County traffic officers.*
- *Policy N 1.6. Enforce the hourly noise-level performance standards for stationary and other locally regulated sources, such as industrial, recreational, and construction activities as well as mechanical and electrical equipment.*

Goal N 2. The County will strive to preserve and maintain the quiet environment of mountain, desert and other rural areas.

- *Policy N 2.1. The County will require appropriate and feasible on-site noise attenuating measures that may include noise walls, enclosure of noise generating equipment, site planning to locate noise sources away from sensitive receptors, and other comparable features.*

The 2020 County Policy Plan's Hazards Element includes the following goal and policies relevant to the Proposed Project regarding excessive noise.

Goal HZ-2 Human-generated Hazards. People and the natural environment protected from exposure to hazardous materials, excessive noise, and other human-generated hazards.

- *Policy HZ-2.8. Proximity to noise generating uses. We limit or restrict new noise sensitive land uses in proximity to existing conforming noise generating uses and planned industrial areas.*
- *Policy HZ-2.9. Control sound at the source. We prioritize noise mitigation measures that control sound at the source before buffers, soundwalls, and other perimeter measures.*

San Bernardino County 2007 Development Code (Amended 2019)

The San Bernardino County Development Code includes general performance standards to promote compatibility with surrounding areas and land uses (Chapter 83.01) by protecting the health and safety of businesses, nearby residents, and workers and preventing damaging effects to surrounding properties, including those of noise (Chapter 83.01.080) and vibration (83.01.090).

Construction noise and vibration, including maintenance, repair or demolition, is exempt from the Chapter 83.01 standards between 7:00 a.m. to 7:00 p.m. Monday through Saturday, except federal holidays (Chapter 83.01.080 and 83.01.090).

According to the stationary source noise standards [Chapter 83.01.080(c)], industrial facility related noise must not exceed 55 dBA Leq during daytime hours (7:00 a.m. to 10:00 p.m.) at the property line of any residential use receiving the noise. During nighttime hours (10:00 p.m. to 7:00 a.m.), stationary noise sources must not exceed 45 dBA Leq at the property line of a residential use. The standard is 60 dBA Ldn for exterior noise levels at

residential uses adjacent to roadways and sources of traffic or mobile noise sources [Chapter 83.01.080(d)]. For a noise source that consists of a simple tone, such as a "hum," then the applicable standard is reduced by 5 dBA to 50 dBA Leq [Chapter 83.01.080(f)].

Vibration that is not due to daytime (7:00 a.m. to 7:00 p.m.) construction sources must be confined, according to the vibration performance standard (Chapter 83.01.090), as follows: No ground vibration shall be allowed that can be felt without the aid of instruments at or beyond the lot line, nor shall any vibration be allowed which produces a particle velocity greater than or equal to 0.2 in/sec measured at or beyond the lot line.

The County Development Code separately defines areas that are known to have high noise levels, established with a Noise Hazard Overlay, Chapter 82.18. The Development Code mandates a special review process to study and mitigate noise when land use applications or development permits are proposed in areas where average exterior noise levels exceed 65 dBA Ldn. The Proposed Project site is not in an area of high noise levels.

4.12.3 Significance Criteria

Impacts to noise and vibration are considered significant if the Proposed Project would result in:

- Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies
- A substantial temporary or periodic increase in ambient noise levels in the Proposed Project vicinity above levels existing without the project
- A substantial permanent increase in ambient noise levels in the Proposed Project vicinity above levels existing without the project
- Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels

4.12.4 Environmental Impact Analysis and Mitigation

Methodology and Use of Thresholds

This analysis identifies potential noise and vibration impacts associated with the Proposed Project. State California Environmental Quality Act (CEQA) Guideline topics related to aircraft noise levels do not apply to the Proposed Project because the Proposed Project would not be within an airport land use plan or near any public airport or private airstrip.

Characterizing impact significance depends on determining what constitutes a "substantial increase" in noise or vibration. Because there is no statewide noise regulation or specific threshold, the CEQA lead agency defines what noise level increase would be considered substantial.

Given that environmental noise levels can vary widely, outside of the controlled conditions of an acoustics laboratory, changes in environmental noise are difficult to perceive. In a laboratory testing situation, humans are able to detect noise level changes of slightly less than 1 dBA. However, in a community situation, the noise exposure extends over a long time period, and changes in noise levels that occur over hours and days are less discernable than the immediate experience of a laboratory test. A 3 dBA change is the minimum change in environmental noise that is barely perceptible and recognizable by the human ear, and readily perceptible changes are those of 5 dBA or more (Caltrans 2013). Changes of more than 5 dBA are commonly used as a threshold for causing a change in community reaction (FTA 2018).

Community reaction to new sources of noise is most readily related to the increase over existing day-night sound levels (FTA 2018, USEPA 1974). Permanent increases in day-night environmental noise levels of more than 5 dBA Ldn or CNEL are considered to be substantial and therefore significant. Permanent increases that are greater than 3 dBA and resulting in a noise level over 65 dBA Ldn at residential uses are also considered to be substantial on the basis that the resulting noise levels would qualify the location as having "high noise levels" according to the County Development Code (Chapter 82.18).

Intermittent noise sources, such as construction, may be temporary or periodic and may cease after a short time. Factors normally considered in the determination of whether a temporary or periodic increase in noise levels would be "substantial" include: (1) the resulting noise or vibration level, (2) the duration and frequency of the noise or vibration, (3) the number of people affected, and (4) the land use designation of the affected receptor sites. Along with these qualitative considerations, if construction activity causes noise to exceed the quantitative thresholds of 80 dBA Leq (daytime), 70 dBA Leq (nighttime), or 75 dBA Ldn in a residential area, then the activity would normally warrant a detailed assessment of design considerations and mitigation (FTA 2018), and therefore construction noise levels over these thresholds are considered to be potentially significant.

Vibration may be considered substantial if likely to cause annoyance for humans at residences. Groundborne vibration could exceed the perceptibility threshold if in excess of 65 VdB and would become annoying at levels over 80 VdB (FTA 2018). Intermittent sources of vibration during construction would be considered "distinctly perceptible" if transient vibration exceeds 0.24 in/sec PPV (Caltrans 2020b).

Long-term or permanent cumulative off-site impacts from traffic noise are measured against two criteria. Both criteria must be met for a significant cumulative impact to be identified: (1) future traffic noise levels must create a "readily perceptible" increase of 5 dBA or more compared to existing conditions on a roadway segment adjacent to a noise sensitive land use, and (2) the resulting future with project noise level must exceed the criteria level for the noise sensitive land use or 65 dBA Ldn at residential land uses. A project would considerably contribute to this increase if it contributes more than a "barely perceptible" change of 3 dBA to the increase.

The impacts of the Stagecoach Solar Generation Plant are presented in Section 4.12.4.1, and the Stagecoach Gen-tie Line and SCE Calcite Facilities are analyzed in Sections 4.12.4.2 and 4.12.4.3, respectively.

4.12.4.1 Impacts of the Stagecoach Solar Generation Plant

Impact NOI-1: Construction and operation noise levels in excess of applicable community noise standards.

Noise sources associated with the Proposed Project construction and operation would not create noise levels in excess of applicable community noise standards. **(Less than Significant with Mitigation)**

Impact Discussion

Construction. Noise would be generated during Proposed Project construction as a result of construction equipment being used on the Proposed Project site and transporting construction equipment and materials by heavy-duty trucks to the site. According to the San Bernardino County Development Code, construction noise and vibration, including maintenance, repair or demolition, would be exempt from standards in the Code, if conducted between 7:00 a.m. to 7:00 p.m. Monday through Saturday, except federal holidays (Chapter 83.01.080 and 83.01.090).

The Proposed Project would require approximately 18 months of construction activities that include mobilizing construction equipment, crews, and materials, site preparation, installing the PV and electric facilities, and restoring disturbed areas. The types of construction equipment used on the Proposed Project site would include trucks, small pile drivers, scrapers, dozers, graders, forklifts, cranes, loaders, and compactors. Table 4.12-4 summarizes the typical noise levels for individual pieces of construction equipment.

Table 4.12-4. Typical Noise Levels for Individual Construction Equipment

Equipment	Noise Level at 50 ft (dBA Lmax)	Noise Level at 50 ft (dBA Leq)
Pile driver (impact)	101	94
Mounted impact hammer (hoe ram)	90	83
Scraper	84	80
Dozer	82	78
Grader	85	81
Forklift, man lift	75	68
Crane	81	74
Backhoe, loader	79	75
Excavator	81	77
Compactor	83	76
Generator	81	78
Drill rig, auger	84	77
Dump truck, haul truck, concrete mixer truck	76–79	73–76
Pickup truck, crew truck	75	62–71

Source: FHWA, 2006.
Lmax: Maximum noise level from Actual Measured in Roadway Construction Noise Model (RCNM).
Leq: Equivalent noise level for one hour incorporating the Acoustical Usage Factor.

The source of highest noise levels at the site would be the impact pile driver for installing PV panel structural posts. The maximum intermittent noise levels noise levels at the site would be up to 94 dBA Leq at 50 feet from work spreads where impact pile driving occurs. Use of a small, light-duty mounted impact hammer, where geotechnical conditions allow, would reduce these highest noise levels to 84 dBA Leq at 50 feet. Similarly, work spreads without a pile driver would typically cause up to 84 dBA Leq at 50 feet.

Table 4.12-5 summarizes the noise levels from typical work spreads at the boundaries of the nearest noise sensitive areas. Because sound fades over distance, these levels would diminish over additional distance. Assuming the standard spherical spreading loss (–6 dB per doubling of distance) and the highest unmitigated construction noise level of 94 dBA Leq at 50 feet, Proposed Project construction noise levels are estimated to be no more than 73 dBA Leq at the nearest noise-sensitive residential property boundaries, where Proposed Project elements are set-back 600 feet.

These results represent the worst-case, conservative noise exposure because they do not consider noise attenuation associated with atmospheric absorption or insulation provided by transmission of noise from exterior to interior spaces. Assuming standard construction practices for the residential structures near the site, the residences would provide an interior to exterior noise reduction of 15 to 25 dB. Therefore, resulting interior noise levels at the closest residences would be less than 58 dBA Leq. As stated in Section 2.3.1, Project Description, the Applicant expects that construction would typically occur between 7 a.m. and 7 p.m., Monday through Saturday. The Applicant is not proposing to carry out construction activities at night or on legal holidays.

With respect to construction-related traffic noise, development activities would also cause noise away from Proposed Project site, primarily due to trucks needed to deliver and remove materials and from the traffic of commuting workers. Haul trucks would make trips to bring equipment, water and materials to the sites and remove waste.

Table 4.12-5. Construction Noise Levels at the Nearest Noise Sensitive Uses

Equipment at Work Spread	Equipment Noise Level at 50 ft (dBA Leq)	Equipment Noise Level at 600 ft (dBA Leq)	Exterior Composite Noise Level at 600 ft (dBA Leq)
PV Panel System Installation (Impact Hammer)			
Pile Driver (Impact)	94	72	73
Crane	74	52	
Backhoe or Loader	75	53	
Dump Truck	72	50	

Table 4.12-5. Construction Noise Levels at the Nearest Noise Sensitive Uses			
Equipment at Work Spread	**Equipment Noise Level at 50 ft (dBA Leq)**	**Equipment Noise Level at 600 ft (dBA Leq)**	**Exterior Composite Noise Level at 600 ft (dBA Leq)**
PV Panel System Installation (Light-Duty Hammer)			
Mounted Impact Hammer	83	61	63
Crane	74	52	
Backhoe or Loader	75	53	
Dump Truck	72	50	
Site Preparation			
Grader	81	59	62
Dozer	78	56	
Backhoe or Loader	75	53	
Dump Truck	72	50	
Electrical System Installation			
Crane	74	52	62
Drill rig, auger	77	55	
Concrete Mixer Truck	75	53	
Compactor	76	54	
Generator	78	56	

Off-site traffic noise would be concentrated along the area's access roads leading to individual work sites, with gates providing access to Lucerne Valley Cutoff and/or SR-247. Within the site, traffic noise would be concentrated at the proposed staging and work areas and along the roadways used to access these locations. On-site roadways would carry traffic internal to the site between the tracker arrays and inverters. The noise levels associated with passing trucks and commuting worker vehicles would be approximately 71 to 76 dBA at 50 feet.

Proposed Project construction activities would not be subject to community noise standards in the County Development Code. However, County policies require implementation of acceptable practices to minimize the effects of adverse construction noise.

Recommended Mitigation Measure (MM) NOI-1a (Construction Restrictions) would ensure that the Applicant controls noise in a manner consistent with the County Development

Code. MM NOI-1a would ensure that any construction activities outside of the daily schedule allowed by the County Development Code would be limited to light-duty equipment and vehicles.

Recommended MM NOI-1b (Public Notification Process) and MM NOI-1c (Noise Complaint Process) would require the Applicant to implement best practices for engaging the surrounding community to minimize project noise disturbance and avoid potential noise complaints. These measures would ensure that nearby residents are provided advance notification of potentially adverse noise conditions and would ensure that complaints are resolved by the Applicant.

With the MMs NOI-1a, NOI-1b, and NOI-1c, the impact of construction noise relative to applicable community noise standards would be less than significant.

Operation and Maintenance. The operation phase of the Proposed Project would include solar module washing, vegetation management, security, and other routine operation and maintenance (O&M). The Proposed Project would include stationary sources of noise in the form of motors for tracking modules, the inverters and transformers that operate when the solar panels produce electricity in the daytime, and the BESS. To ensure reliable backup power, the Proposed Project would also include two propane generators that would be new stationary sources of noise; however, each would run only occasionally (up to 300 hours per year) and intermittently.

Throughout the solar field, the equipment that could generate the most prominent stationary source noise would be the inverter stations with pad mount transformers and cooling systems. The noise produced by the individual inverters and transformers would depend on the final equipment selected and the ultimate locations of the individual inverter stations.

The typical performance specification of a commercial or utility-scale inverter with cooling system and enclosure would be to achieve a design standard of 66 dBA at a distance of 32.8 feet (10 meters), based on a 2,200 kilowatt-rated unit (SMA 2015). Auxiliary equipment for inverters and transformers usually includes cooling fans and pumps that operate depending on the internal temperature of the transformer oil. This type of noise would have a broad-band spectrum and would not include simple tones or a “hum.” The inverters would not operate at nighttime. Because inverter equipment would not be positioned near the site boundary, the noise from the inverters would be generally confined within the site. Noise levels from inverters throughout the solar field would cause over 45 dBA Leq for locations within 600 feet of the individual inverter stations.

Within the solar field, other minor sources include tracker motors and mechanisms that allow the solar panels to tilt and track the path of the sun on a single axis throughout the day. Tracker motors and actuators would not operate on a continuous basis or in unison. For example, each set of actuators would operate for a few seconds and then pause for 5

minutes before operating again. This process would occur only during daylight hours, with a return to the starting position at sunrise. Although final design would determine the actual specifications for the motors, based on similar projects, noise from each motor and actuator would be about 62 or 63 dBA at the source or a distance of 3.28 feet (1 meter).

Near the O&M building, which would be located over 1,000 feet from the nearest residential property boundary, the dominant stationary source of noise could be heating, ventilation, and air conditioning units (HVAC), if necessary for the selected battery technology. The substation would also include switching and transformer equipment with cooling fans and pumps. The proposed location of the BESS and substation would be adjacent to the O&M building, and the propane-powered generators would be at the substation and the O&M building. Typical cooling systems, if necessary, could generate 81 dBA at a distance of 10 feet, which would cause over 45 dBA Leq for locations within 900 feet from the BESS. Locations beyond 900 feet from these stationary sources of noise would not be likely to exceed 45 dBA Leq.

The Proposed Project would be operated by up to 10 staff. Occasional vehicular noise would also be caused by crews for O&M, including panel washing and security patrols. These activities would normally involve only a small crew, and the Proposed Project-related O&M traffic would be sporadic.

All mobile and stationary equipment within the Proposed Project site would be required to comply with the San Bernardino County Development Code performance standards to promote the compatibility of land uses. This means that the sources of noise associated with Proposed Project O&M would need to comply with the County Development Code standards that ensure noise levels at any receiving residential land use shall not exceed 55 dBA Leq during daytime hours (7:00 a.m. to 10:00 p.m.) or 45 dBA Leq during nighttime hours (10:00 p.m. to 7:00 a.m.).

The solar generation plant would be primarily active and operational during daytime hours. However, the PV module inverters, step-up transformers, and BESS equipment could operate outside of daylight hours. Therefore, this analysis evaluates the operational-phase noise sources in relation to the County’s nighttime noise standard of 45 dBA at the property line of a residential use.

To ensure that operation of solar generation plant components would not create noise levels in excess of applicable community noise standards, mitigation is recommended to ensure that preventative considerations are included during final Proposed Project design and implementation.

MM NOI-1d (Operational Noise Performance Standard) is recommended to prevent installing noise-generating components within 1,000 feet of the property line of a residential use and to ensure that all stationary sources of noise comply with the property-line standard of 45 dBA Leq at all times.

With the MM NOI-1d, the impact of operation noise relative to applicable community noise standards would be less than significant.

Mitigation Measures

MM NOI-1a: Construction Restrictions. Heavy equipment operation relating to any Project features shall be restricted to the hours between 7:00 a.m. and 7:00 p.m. on Monday through Saturday, and not allowed on Sundays or federal holidays, unless a special approval has been granted by the County of San Bernardino.

MM NOI-1b: Public Notification Process. At least 15 days prior to the start of ground disturbance, the Project owner shall notify all residents within 1 mile of the Project site and the linear facilities, by mail or by other effective means, of the commencement of Project construction. Notification materials shall identify a mechanism for residents to register complaints with the appropriate jurisdiction if construction noise levels are overly intrusive or construction occurs outside the permitted hours. Recommendations to assist noise-sensitive land uses in reducing interior noise levels (e.g., closing windows and doors) shall be included in the notification. At the same time, the Project owner shall establish a telephone number for use by the public to report any undesirable noise conditions associated with the construction and operation of the Project. If the telephone is not staffed 24 hours a day, the Project owner shall include an automatic answering feature, with date and time stamp recording, to answer calls when the phone is unattended. This telephone number shall be posted at the Project site during construction where it is visible to passersby. This telephone number shall be maintained until the Project has been commercially operational for at least one year.

MM NOI-1c: Noise Complaint Process. Throughout construction and operation of the Project, the Project owner shall document, investigate, evaluate, and attempt to resolve all Project-related noise complaints. The Project owner or authorized agent shall be responsible for responding to any complaints about construction activities. The disturbance coordinator shall receive all public complaints about construction disturbances and be responsible for determining the cause of the complaint and implementation of feasible measures to be taken to alleviate the problem.

MM NOI-1d: Operational Noise Performance Standard. The Project design and implementation shall include appropriate noise control features adequate to ensure that the operation of the Project will not cause the noise levels due to plant operation alone to exceed 45 dBA Leq measured at a property boundary of any inhabited dwelling [County Development Code Chapter 83.01.080(c)]. All step-up transformers and power inverters, and air handling units associated with the energy storage system shall be located, enclosed, or shielded, if necessary, to meet this standard. No new pure-tone components shall be caused by the power inverters or transformers associated with the Project. No single piece of equipment shall be allowed to stand out as a source of noise that draws legitimate complaints. To achieve this standard, the final Project design in

site plans shall avoid placing stationary sources of noise within 1,000 feet of residential property boundaries. If the final design of the Project includes any stationary source of noise, including the battery energy storage system, heating, ventilation and air conditioners, inverters, or transformers within 1,000 feet of a residential property boundary, then a final noise study shall be submitted to the satisfaction of the appropriate jurisdiction demonstrating that noise will not exceed 45 dBA Leq at nearby property boundaries of any inhabited dwelling.

Impact NOI-2: Construction noise impacts in excess of ambient noise levels.

Proposed Project construction would be set-back at least 600 feet from residential property boundaries and would not substantially increase noise levels in the Proposed Project vicinity. **(Less than Significant with Mitigation)**

Impact Discussion

Construction. Construction would temporarily increase the noise levels within the Proposed Project area over the 18-month duration, as described for Impact NOI-1. Construction activities would create both intermittent and continuous noises. Intermittent noise would be caused by periodic, short-term equipment operation. For example, site preparation would involve light grading, and following that, PV panel structures would require pile installation using a small, light-duty pile driver, similar to a hydraulic rock hammer attachment on the boom of a rubber-tired backhoe or excavator. Foundations may require drilled piles and concrete. Underground cables would require ordinary trenching and backfilling techniques. These activities and trucks hauling concrete and materials would gradually move as they proceed within the site. Construction activity would also be concentrated around staging areas that would remain at one location for much of the duration. While most equipment would be used intermittently, continuous noise would emanate from some equipment over longer periods, such as power generators or trucks applying water or moving material within the site.

Construction would also cause off-site noise due to traffic, primarily from commuting workers and from heavy-duty trucks bringing materials to the Proposed Project site. The peak noise levels associated with passing trucks and commuting worker vehicles would be approximately 71 to 76 dBA at 50 feet, and this noise would be concentrated along the roads that access the site, primarily SR-247.

On area roadways, increased traffic noise would be caused by vehicles transporting equipment and supplies to the site parcels, trucks removing debris, and workers commuting to and from the Proposed Project area. Construction traffic could generate 1,200 vehicle trips per day (800 passenger vehicle trips and 400 truck trips) to access the site. To compare with baseline traffic, SR-247 carries between 2,250 and 2,500 vehicles daily in the Proposed Project area (Table 4.12-3).

Although construction-related traffic would increase traffic noise, the amount of traffic must generally double to increase noise levels by 3 dB (Caltrans 2013). Over a typical full 24-hour period, construction would not double the baseline level of daily traffic volumes. However, Proposed Project construction peak hour traffic near access driveways would more than double over the existing volumes. Locations along SR-247 that experience baseline daytime traffic noise levels of approximately 65 dBA Leq could experience a readily perceptible, but temporary, increase in daytime environmental noise during the peak hours of Proposed Project construction-phase deliveries. Nighttime traffic noise levels would not change notably with construction, which would be limited to the daytime. With the addition of construction-related daily vehicle trips, day-night noise levels due to traffic noise over a 24-hour period would increase by an amount of less than 3 dBA, and this temporary increase in traffic noise would not be considered substantial.

Proposed Project construction at the site would cause varying noise levels up to 73 dBA Leq at the nearest noise sensitive uses, as shown for Impact NOI-1 (Table 4.12-5). While at times, the temporary or periodic increase in noise levels would be perceptible at the nearest residences, construction noise would be limited to daytime hours and would not exceed any threshold established by the County for daytime construction noise impacts. All construction activities would be set-back 600 feet from residential property boundaries.

Mitigation recommended for Impact NOI-1 (MMs NOI-1a, NOI-1b, and NOI-1c) would require the Proposed Project to control noise in a manner consistent with the County Development Code and implement best practices for engaging the surrounding community to avoid potential noise complaints. With the recommended mitigation, the temporary or periodic increase in noise levels caused by construction activities in excess of ambient noise levels would not be considered substantial, and the impact would be less than significant.

Mitigation Measures

MM NOI-1a: Construction Restrictions

MM NOI-1b: Public Notification Process

MM NOI-1c: Noise Complaint Process

Impact NOI-3: Operational noise impacts in excess of ambient noise levels.

Proposed Project operation would introduce permanent sources of noise in the vicinity of residential facilities and would not substantially increase noise levels in the Proposed Project vicinity. **(Less than Significant with Mitigation)**

Impact Discussion

Operation and Maintenance. The site is in a setting of low ambient noise levels, measured to be between 43 and 46 dBA Leq in the daytime (see Table 4.12-2). Operation of Proposed Project components and O&M activities would occur near the boundaries of the Proposed Project site, and the Proposed Project would introduce noise sources that would permanently increase the noise levels in the Proposed Project area.

Permanent noise sources occurring with the solar generation plant would include the BESS, the tracking motors and electrical equipment, namely the inverters and transformers that operate in the daytime when the solar panels produce electricity. Operating tracker motors and the inverters within the Proposed Project site boundaries normally would occur in the daytime and would not create a permanent increase in noise levels that would substantially change surrounding day-night ambient noise levels.

The off-site noise levels caused by the proposed power blocks and inverters would not exceed 45 dBA Leq for locations 600 feet away from inverters and tracking motors. Noise levels caused by these sources throughout the solar field would be comparable to the low ambient noise levels of the setting.

Nighttime noise would not be noticeably changed by the proposed solar photovoltaic system or electrical collection system. However, depending on the level of HVAC use needed for the selected battery technology, nighttime use of air conditioning for the BESS could cause a noticeable change in nighttime ambient noise levels.

Stationary sources of noise would be subject to the 45 dBA Leq standard of the County Development Code, if operational at night. To comply with that target, mitigation is recommended to ensure that final Proposed Project design and implementation avoids placing components of the solar generation plant near any receiving residential use. This recommendation is included as MM NOI-1d (Operational Noise Performance Standard). With implementation of this mitigation, all equipment associated with the operation of the Proposed Project would achieve off-site noise levels comparable to the low ambient noise levels of the setting, and this would avoid causing a substantial permanent increase in noise levels.

Noise from site maintenance, panel washing, and cleaning of the facility would be created by traffic and mobile sources within the site and on area roadways. Additionally, light utility vehicles with water trailers would be used within the site occur for panel washing up to four times each year. The result would be temporary noise from activity within the site and a limited increase in the average daily traffic noise on area roadways. Along roadway segments accessing the Proposed Project site, O&M-related Proposed Project traffic would not cause a noticeable change from existing conditions.

Mitigation recommended for Impact NOI-1 (MM NOI-1d) would require the Applicant to prevent installation of noise-generating components within 1,000 feet of the property line of a residential use and to ensure that all stationary sources of noise comply with the property-line standard of 45 dBA Leq at all times. With the recommended mitigation, the permanent increase in noise levels caused by Proposed Project operation in excess of ambient noise levels would not be considered substantial, and the impact would be less than significant.

Mitigation Measures

MM NOI-1d: Operational Noise Performance Standard

Impact NOI-4: Vibration impacts to sensitive receptors.

Proposed Project construction would not create excessive ground-borne vibration in the Proposed Project vicinity. **(Less than Significant)**

Impact Discussion

Construction. During construction, the impact or vibratory pile drivers used for installing posts would have the greatest radius of potential groundborne vibration impacts. When necessary to install posts near the Proposed Project site boundaries, use of pile drivers could result in vibration that is perceptible and potentially annoying, for occupants of structures within 100 feet of the source. The upper range of groundborne vibration from an impact pile driver could exceed 1.5 in/sec PPV near the source, but at a distance of 100 feet the level would attenuate to 0.19 in/sec or below the County PPV threshold for adverse human reactions of 0.20 in/sec (calculations appear in Appendix I). Other construction activities would create lower levels of vibration and would not have the potential to create annoyance at distances of 50 feet or more from the equipment in use.

The nearest residential structures to the Proposed Project site boundaries would be over 600 feet away, and these residences would be sufficiently distant from the pile driving activity to eliminate the potential for experiencing annoying levels of construction vibration. Other routine construction would also be sufficiently far from the nearest residences to avoid causing a vibration annoyance. Proposed Project-related vibrations would not cause adverse physical effects to structures because no structures susceptible to damage are known to be nearby. When vibration levels are low enough to avoid causing an annoyance, they would be unlikely to cause structural damage. Impacts from vibration would be localized and temporary (i.e., infrequently recurring during the limited duration of construction near residences), and therefore, would not be excessive, resulting in a less than significant impact.

Operation and Maintenance. Operation of the solar generation plant would not involve any sources capable of generating perceptible levels of vibration in the surrounding area. There would be no permanent source or potential to change vibration levels, except during unscheduled maintenance or repair activities, which would be similar to construction activities. This impact would be less than significant.

Mitigation Measures

No mitigation would be required.

4.12.4.2 Impacts of the Stagecoach Gen-tie Line

Impact NOI-1: Construction and operation noise levels in excess of applicable community noise standards.
Noise sources associated with the Stagecoach Gen-tie Line construction and operation would not create noise levels in excess of applicable community noise standards. **(Less than Significant with Mitigation)**

Impact Discussion

Construction. Construction of the Stagecoach Gen-tie Line between the Solar Generation Plant and the SCE Calcite Facilities would occur within the 18 months of construction sequencing required for the Stagecoach Facilities. Construction equipment would temporarily create noise along the access roads and the gen-tie alignment. Developing the new access roads and installing gen-tie structures would require use of a grader, bulldozer, truck-mounted auger and concrete mixing trucks for pouring the foundations. Installation of poles and conductors would use line trucks and a crane. At each pole site, the construction spread would require a small crew, using equipment capable of generating noise at levels up to 84 dBA Leq at 50 feet, which is comparable to those from a work spread within the proposed solar generation plant (Section 4.12.4.1).

According to the San Bernardino County Development Code, construction noise and vibration would be exempt from standards in the Code, if conducted between 7:00 a.m. and 7:00 p.m. Monday through Saturday, except federal holidays (Chapter 83.01.080 and 83.01.090). Accordingly, gen-tie construction activities would not be subject to community noise standards in the County Development Code. However, County policies require implementation of acceptable practices to minimize the effects of adverse construction noise.

Noise mitigation recommended for the construction of the Solar Generation Plant would apply to Stagecoach Gen-tie Line construction. MM NOI-1a (Construction Restrictions) would require the Applicant to control noise in a manner consistent with the County Development Code, and MM NOI-1b (Public Notification Process) and MM NOI-1c (Noise Complaint Process) would require the Proposed Project implement best practices for engaging the surrounding community to avoid potential noise complaints. With these measures, the impact of gen-tie construction noise relative to applicable community noise standards would be less than significant.

Operation and Maintenance. Routine operation of electric transmission lines can generate a small amount of sound energy as a result of the corona effect. Corona occurs with all

transmission lines, as the localized electric field near energized components and conductors produces an electric discharge that causes the surrounding air molecules to ionize or undergo a localized change of electric charge. Under fair weather conditions, the audible noise from corona is minor and rarely noticed. During wet and humid conditions, water drops collect on the conductors and increase corona activity. Under these conditions, a crackling or humming sound may be heard in the immediate vicinity of the gen-tie lines. This noise increases with the load carried by the line, irregularities on the conductor surface caused either by age or moisture, and wet ambient meteorological conditions, such as when high humidity, fog, or rain occur. At the ground level, directly underneath a single 220 kV circuit, the typical audible corona noise level with wet conductors is about 40 dBA (CPUC 2015).

The gen-tie easements are adjacent to the boundaries of some parcels with residential noise-sensitive land uses, and a few (fewer than six) scattered inhabited dwellings that are 200 to 300 feet from the edge of the gen-tie right-of-way. The anticipated noise level from gen-tie operation would not be in excess of the County's nighttime noise standard of 45 dBA at any receiving residential land use. Because the gen-tie would not create noise levels in excess of applicable community noise standards, the impact of gen-tie operation relative to applicable community noise standards would not be significant.

No mitigation would be required for the Stagecoach Gen-tie Line during the O&M period.

Mitigation Measures

MM NOI-1a: Construction Restrictions

MM NOI-1b: Public Notification Process

MM NOI-1c: Noise Complaint Process

Impact NOI-2: Construction noise impacts in excess of ambient noise levels.

Construction of the Stagecoach Gen-tie Line would occur in easements that are adjacent to the boundaries of some parcels with residential noise-sensitive land uses, and mitigated construction would not substantially increase noise levels in the vicinity of the gen-tie line. **(Less than Significant with Mitigation)**

Impact Discussion

Construction. Construction of the Stagecoach Gen-tie Line would temporarily increase the noise levels along the gen-tie alignment within the 18-month duration of construction needed for the Stagecoach Solar Generation Plant, as described for Impact NOI-1. Along gen-tie access roads and at each gen-tie pole site, the equipment used in each construction spread would generate noise at levels noise up to 84 dBA Leq. Gen-tie construction noise would result in a readily perceptible, but temporary, increase in daytime environmental

noise. The construction activities would only intermittently affect the locations nearest to the different gen-tie construction spreads.

Gen-tie construction noise would occur within easements that are adjacent to the boundaries of some parcels with residential noise-sensitive land uses. The nearest gen-tie construction noise would occur 200 to 300 feet from scattered inhabited dwellings, shown on Figure 4.11-1a and Figure 4.11-1b. Similar to the Stagecoach Solar Generation Plant, gen-tie construction activity would occur only during daytime hours. Mitigation recommended for Impact NOI-1 (MMs NOI-1a, NOI-1b, and NOI-1c) would require the Applicant to control noise in a manner consistent with the County Development Code and would ensure that nearby residents are provided advance notification of potentially adverse noise conditions and to ensure that complaints are resolved.

With implementation of the three referenced mitigation measures, construction impacts of the Stagecoach Gen-tie Line would be less than significant.

Mitigation Measures

MM NOI-1a: Construction Restrictions

MM NOI-1b: Public Notification Process

MM NOI-1c: Noise Complaint Process

Impact NOI-3: Operational noise impacts in excess of ambient noise levels.

Operation of the Stagecoach Gen-tie Line would introduce permanent sources of noise in the vicinity of residences but would not substantially increase noise levels in the vicinity of the gen-tie line. **(Less than Significant)**

Impact Discussion

Operation and Maintenance. The Stagecoach Gen-tie Line would be located is in a setting of low ambient noise levels, measured to be between 43 and 46 dBA Leq in the daytime (see Table 4.12-2). Operation of the 220 kV gen-tie line would create audible corona noise along the alignment. The typical resulting noise level for a gen-tie line with wet conductors would be about 40 dBA, as described for Impact NOI-1. The noise from the gen-tie lines would not cause a substantial permanent increase in ambient day-night noise levels in the area.

The overhead 220 kV gen-tie line would follow along an approximately 9.1-mile route within easements that are adjacent to the boundaries of some parcels with residential noise-sensitive land uses, and a few (fewer than six) scattered inhabited dwellings that are 200 to 300 feet from the edge of the gen-tie right-of-way. For all locations including along the edge of the gen-tie right-of-way, noise levels caused by operation of the gen-tie line would

be comparable to the low ambient noise levels of the setting. At the nearest inhabited dwellings, the permanent increase in noise levels caused by gen-tie line operation would not be considered substantial. The impact of noise levels caused by gen-tie line operation would not be significant, and no mitigation would be required.

Mitigation Measures

No mitigation would be required.

Impact NOI-4: Vibration impacts to sensitive receptors.

Gen-tie line construction would not create excessive ground-borne vibration in the Proposed Project vicinity. **(Less than Significant)**

Impact Discussion

Construction. During Stagecoach Gen-tie Line construction, use of heavy-duty equipment to install the gen-tie line structure foundations, towers and poles would cause vibration levels that could be perceptible within about 50 feet of construction equipment. No residential structures would be near enough to the proposed gen-tie line alignment to experience excessive construction vibration from moving equipment or vehicles. Impacts from vibration would be localized and temporary (i.e., infrequently recurring during the limited duration of construction near residences), and therefore, would not be excessive, resulting in a less than significant impact.

Mitigation Measures

No mitigation would be required.

4.12.4.3 Impacts of the SCE Calcite Facilities

Impact NOI-1: Construction and operation noise levels in excess of applicable community noise standards.

Noise sources associated with construction and operation of the SCE Calcite Facilities would not create noise levels in excess of applicable community noise standards. **(Less than Significant with Mitigation)**

Impact Discussion

Construction. Construction of the SCE Calcite Facilities would occur at the same time as construction of the Stagecoach Facilities and would employ up to approximately 30 construction personnel working on any given day. At the sites of SCE Calcite Facilities components, the construction spread would require a small crew, using equipment capable of generating noise at levels noise up to 84 dBA Leq at 50 feet, which is comparable to those from a work spread within the proposed solar generation plant (Section 4.12.4.1).

According to the San Bernardino County Development Code, construction noise and vibration would be exempt from standards in the Code, if conducted between 7:00 a.m. to 7:00 p.m. Monday through Saturday, except federal holidays (Chapter 83.01.080 and 83.01.090). Accordingly, construction activities related to the SCE Calcite Facilities would not be subject to community noise standards in the County Development Code. However, County policies require implementation of acceptable practices to minimize the effects of adverse construction noise.

Noise mitigation recommended for the construction of the Stagecoach Solar Generation Plant would apply to SCE Calcite Facilities construction. MM NOI-1a (Construction Restrictions) would require the Applicant to control noise in a manner consistent with the County Development Code, and MM NOI-1b (Public Notification Process) and MM NOI-1c (Noise Complaint Process) would require the Proposed Project implement best practices for engaging the surrounding community to avoid potential noise complaints. With these measures, the impact of SCE Calcite Facilities construction noise relative to applicable community noise standards would be less than significant.

Operation and Maintenance. Routine operation of the SCE Calcite Facilities would be unstaffed, and electrical equipment within the substation would be remotely monitored and controlled by SCE. Maintenance activities would occur as needed for inspections, repairs and replacements, and for access road maintenance and vegetation management. Equipment at the substation would include 220 kV buses, circuit breakers, disconnect switches, and an equipment room. Noise sources would include HVAC systems and corona discharge noise, as described for operation of the gen-tie (Section 4.12.4.2).

The nearest noise-sensitive residence is approximately 700 feet from the nearest proposed components of the SCE Calcite Facilities, and one residential property boundary is adjacent to the boundaries of the SCE Calcite Facilities. The equipment at the substation could include cooling systems that, if necessary, typically could generate 81 dBA at a distance of 10 feet, which would cause over 45 dBA Leq for locations within 900 feet of the source. Locations beyond 900 feet would not be likely to exceed 45 dBA Leq.

MM NOI-1d (Operational Noise Performance Standard) is recommended to prevent installing noise-generating components at the SCE Calcite Facilities within 1,000 feet of the property line of a residential use and to ensure that all stationary sources of noise comply with the property-line standard of 45 dBA Leq at all times. With mitigation, the impact of SCE Calcite Facilities operation relative to applicable community noise standards would not be significant.

Implementation of MMs NOI-1a, NOI-1b, and NOI-1c (for construction) and NOI-1d (for operation) would ensure that noise levels at the SCE Calcite Substation would not exceed County standards. As a result, impacts would be less than significant.

Mitigation Measures

MM NOI-1a: Construction Restrictions

MM NOI-1b: Public Notification Process

MM NOI-1c: Noise Complaint Process

MM NOI-1d: Operational Noise Performance Standard

Impact NOI-2: Construction noise impacts in excess of ambient noise levels.

Noise associated with construction of the SCE Calcite Facilities would not substantially affect residences due their distance from the site. **(Less than Significant with Mitigation)**

Impact Discussion

Construction. Construction of the SCE Calcite Facilities would temporarily increase the noise levels near the site within the 18-month duration of construction, as described for Impact NOI-1. At the sites of the SCE Calcite Facilities components, the equipment used in each construction spread would generate noise at levels noise up to 84 dBA Leq at 50 feet. SCE Calcite Facilities construction noise would result in a readily perceptible, but temporary, increase in daytime environmental noise. The construction activities would only intermittently affect the locations nearest to the components of the SCE Calcite Facilities.

Implementation of MMs NOI-1a, NOI-1b, and NOI-1c would ensure that construction noise impacts at the SCE Calcite Substation would be less than significant.

Mitigation Measures

MM NOI-1a: Construction Restrictions

MM NOI-1b: Public Notification Process

MM NOI-1c: Noise Complaint Process

Impact NOI-3: Operational noise impacts in excess of ambient noise levels.

Noise associated with operation of the SCE Calcite Facilities would not substantially affect residences due their distance from the site. **(Less than Significant with Mitigation)**

Impact Discussion

Operation and Maintenance. The SCE Calcite Facilities components would include a 220 kV switchyard on approximately 7 acres and the associated interconnection facilities for the Stagecoach Gen-tie Line. The proposed SCE Calcite Substation would be unstaffed, and electrical equipment within the substation would be remotely monitored and controlled

by SCE. Equipment at the substation would include 220 kV buses, circuit breakers, disconnect switches, and an equipment room. Noise sources would include HVAC systems and corona discharge noise, as described for operation of the gen-tie (Section 4.12.4.2).

The nearest noise-sensitive residence is approximately 700 feet from the nearest proposed components of the SCE Calcite Facilities, and one residential property boundary is adjacent to the boundaries of the SCE Calcite Facilities. Noise levels caused by operation of the SCE Calcite Facilities would not exceed 45 dBA Leq for locations more than 1,000 feet away. At this distance, noise levels caused by operation of the SCE Calcite Facilities would be comparable to the low ambient noise levels of the setting.

Operation of the SCE Calcite Facilities would require implementation of MM NOI-1d to ensure that the new permanent stationary noise source would not contribute substantially to an increase in ambient noise levels. With implementation of MM NOI-1d, the impact of Calcite Substation O&M would be less than significant.

Mitigation Measures

MM NOI-1d: Operational Noise Performance Standard

Impact NOI-4: Vibration impacts to sensitive receptors.

Construction of the SCE Calcite Facilities would not create excessive ground-borne vibration in the vicinity of the SCE Calcite Facilities. **(Less than Significant)**

Impact Discussion

Construction. During construction of the SCE Calcite Facilities, use of heavy-duty equipment would cause vibration levels that could be perceptible within about 50 feet of construction equipment. No residential structures would be near enough to the proposed SCE Calcite Facilities to experience excessive construction vibration from moving equipment or vehicles. Impacts from vibration would be localized and temporary (i.e., infrequently recurring during the limited duration of construction near residences), and therefore, would not be excessive, resulting in a less than significant impact.

Mitigation Measures

No mitigation would be required.

4.12.5 Cumulative Impacts

4.12.5.1 Geographic Scope

The geographic scope for cumulative analysis of noise and vibration is small because these impacts are generally localized. Noise sources attributable to cumulative projects may cause adverse effects within approximately 1 mile of a project site (including truck

routes), but the region of greatest influence is typically within 0.5 miles of the boundary of a project. Similarly, vibration sources that typically occur with construction activity or vehicle traffic have a region of influence that is limited to approximately 200 feet.

4.12.5.2 Cumulative Impact Analysis

The cumulative projects that occur in the geographic scope for noise and vibration include potential developments identified in Table 3-1 and Figure 3-1 in Section 3.0 of this EIR.

The localized nature of impacts related to noise and vibration evaluated in this section ensure that few sources of noise from cumulative projects would occur in the region of greatest influence of Proposed Project impacts.

Impacts NOI-1, NOI-2, and NOI-3: Construction or Operation Noise Exceeding Community Standards or Ambient Noise Levels

Construction. The noise and vibration effects of the equipment used for construction of cumulative projects would depend on the site-specific needs and schedules and may or may not overlap spatially and temporally with those of the Proposed Project. Construction-phase noise impacts would be short-term and limited in nature, with Proposed Project construction activities and activities of cumulative projects normally being limited to the daytime.

Cumulative noise impacts of construction activities would be reduced through compliance with local laws and regulations and implementation of typical mitigation to protect sensitive receptors from noise and to implement feasible noise controls. Cumulative development that is subjected to the environmental permitting process would have a detailed analysis of noise and land use conflicts as part of the project-level environmental review. Additional mitigation may be applied to the cumulative projects through environmental permitting by lead agencies including the County. This would ensure that cumulative noise impacts during construction would not be cumulatively significant.

Operation and Maintenance. Cumulative noise impacts of Proposed Project O&M (Impact NOI-1 and Impact NOI-3) would be related to employee vehicles accessing each development site. Traffic noise may cause localized cumulative effects where multiple projects or shared transportation routes occur adjacent to a sensitive receptor. Because operation-phase activities related to the cumulative projects involve small workforces traveling the shared routes, the cumulative impact of traffic noise would be limited to the construction haul routes where sensitive receptors would have limited potential to experience simultaneous cumulative effects.

The only sources of noise associated with Proposed Project O&M that could combine with the cumulative projects to result in a potential cumulative impact near sensitive receptors would be employee vehicles accessing the facilities. With few employees required for

Proposed Project O&M and distances over 0.5 mile separating cumulative projects from the Proposed Project, the operational noise impact would not be cumulatively significant.

Impact NOI-4: Vibration Impacts to Sensitive Receptors

Cumulative effects due to groundborne vibration would occur only if there were sources of the vibration within 200 feet of the boundaries of the Proposed Project components and cumulative project sites. No residences occur near enough to the Proposed Project site boundaries or the cumulative projects sites to experience cumulative vibration effects. The areas of potential overlap of cumulative project construction-related vibration would not be likely to create a cumulative vibration impact at any residences in the area of the Proposed Project, and no cumulative effects would be likely from groundborne vibration.

4.12.6 Mitigation Measure Summary

Table 4.12-6 summarizes the mitigation measures identified in this EIR to reduce or avoid potentially significant impacts related to noise. All mitigation measures apply to impacts for the Stagecoach Facilities and the SCE Calcite Facilities, unless otherwise noted.

Table 4.12-6. Impact and Mitigation Measure Summary

Impact	Mitigation Measures
Impact NOI-1: Construction and operation noise levels in excess of applicable community noise standards	**MM NOI-1a:** Construction Restrictions **MM NOI-1b:** Public Notification Process **MM NOI-1c:** Noise Complaint Process **MM NOI-1d:** Operational Noise Performance Standard – *[Does not apply to Stagecoach Gen-tie Line]*
Impact NOI-2: Construction noise impacts in excess of ambient noise levels	**MM NOI-1a:** Construction Restrictions **MM NOI-1b:** Public Notification Process **MM NOI-1c:** Noise Complaint Process
Impact NOI-3: Operational noise impacts in excess of ambient noise levels	**MM NOI-1d:** Operational Noise Performance Standard – *[Does not apply to Stagecoach Gen-tie Line]*
Impact NOI-4: Vibration impacts to sensitive receptors	No mitigation required

4.13 PALEONTOLOGICAL RESOURCES

This section describes the existing paleontological resources and the possibility of discovery of fossil resources within the area where the proposed would be implemented. The Proposed Project study area for paleontology encompasses all resources that could be affected by ground disturbance related to the construction and operation of the Proposed Project. Paleontological resources are any fossilized remains, traces, or imprints of organisms that are preserved in the Earth's crust and are of paleontological interest and provide information about the history of life on Earth. Fossil remains may include bones, teeth, shells, leaves, and wood. They are found in geological deposits within which they were originally buried. Paleontological resources include not only the actual fossils, but also the collecting localities and the geological deposits that contain the fossils. Paleontological resources are considered nonrenewable resources because the organisms they represent no longer exist. Thus, once destroyed, these resources can never be replaced.

This section describes the paleontological qualities of the Proposed Project vicinity, evaluates the type and significance of impacts that may occur as a result of the Proposed Project and identifies measures to avoid or substantially lessen any impacts found to be potentially significant.

The Proposed Project is described in detail in Section 2, *Project Description*. The Environmental Impact Report (EIR) analysis of the Proposed Project is presented in three parts. The first two parts comprise the **Stagecoach Facilities** proposed by Aurora Solar, LLC and the third part includes the **SCE Calcite Facilities,** proposed by Southern California Edison (SCE). The analysis components are:

- The **Stagecoach Solar Generation Plant,** which would include the solar arrays and collector lines, ancillary project facilities, and the battery energy storage system, all located within the 3,570 acres of State-owned school lands managed by the CSLC
- The **Stagecoach Gen-tie Line** (located on State-owned lands, leased land, and purchased private land), which would run approximately 9.1 miles, connecting the Stagecoach Solar Generation Plant to the proposed SCE Calcite Facilities and the SCE electrical transmission system
- The **SCE Calcite Facilities,** which would be constructed, owned, and operated by SCE and would include a substation (referred to as the **SCE Calcite Substation**), a connection to distribution-level electric power, access roads, telecommunications facilities, and new transmission structures to interconnect with the existing transmission system

4.13.1 Environmental Setting

4.13.1.1 Geologic Setting

The geology of the Proposed Project area is described in Section 4.7.1, *Geology and Soils*, and summarized here. The Proposed Project is underlain by Quaternary debris flow deposits, alluvial fan and valley deposits, and eolian and dune deposits, and Mesozoic porphyritic and granitic rocks (Dibblee 2008, CGS 2012). The location of these units in relation to the Stagecoach Facilities and SCE Calcite Facilities is shown on Figure 4.7-1 (Geologic Map of the Stagecoach and SCE Calcite Facilities Project Area).

4.13.1.2 Prior Research in the Proposed Project Area

Paleo Solutions, Inc. performed paleontological surveys and prepared assessment reports with mitigation recommendations for the Coolwater-Lugo Transmission Line Project, which covers the Proposed Project footprint (Paleo Solutions 2013, 2014a, 2014b). Record searches were obtained from the San Bernardino County Museum (SBCM; Scott 2012), the Natural History Museum of Los Angeles County (LACM; McLeod 2012), and Robert Reynolds, former curator at the SBCM for that project.

4.13.1.3 Results of Paleontological Records and Literature Search

No fossils have been previously recovered from the Proposed Project area or from within 1 mile of the Proposed Project. Pleistocene fossils have only been found locally in association with Pleistocene lakebed and Mojave River deposits (Cox and Tinsley 1999, Sibbett 1999; Cox and Hillhouse 2000, and Cox et al. 2003). Fossils of an extinct Pleistocene horse and camel were discovered in sediments of Lucerne Dry Lake (Jefferson 2003a, Scott 2012). Other extinct animals including Harlan's ground sloth, cotton rat, short-faced bear, southern mammoth, Scott's horse, llama, and two species of camel have previously been recovered from the Mojave River sediments in Victorville, California (Jefferson 2003a, McLeod, 2012, Scott 2012). Table 4.13-1 presents a summary of Pleistocene fossils identified in the Proposed Project vicinity.

Table 4.13-1. Pleistocene Fossil Localities near to the Proposed Project

Common Name	Taxon	Location; Locality	Reference
Horse	*Equus* sp.*	Lucerne Dry Lake	Scott 2012
Horse	*Equus* sp.*	Lucerne Dry Lake, Rabbit Springs; SBCM 1.107.1	Jefferson 2003a
?Camel	?Camelidae*		
Shrew	Sorex sp.	Mojave River sediments, Victorville area multiple localities	Jefferson 2003a, Scott 2012
Harlan's ground sloth	*Paramylodon harlani**		
Jackrabbit	*Lepus* sp.		

Table 4.13-1. Pleistocene Fossil Localities near to the Proposed Project			
Common Name	**Taxon**	**Location; Locality**	**Reference**
cottontail rabbit	*Sylvilagus* sp.		
likely Antelope ground squirrel	cf. *Ammospermophilus leucurus*		
Townsend's ground squirrel	*Spermophilus townsendii*		
pocket gopher	*Thomomys* sp.		
pocket mouse	*Perognathus* sp.		
kangaroo rat	*Dipodomys* sp.		
likely desert woodrat	*Neotoma* cf. *N. lepida*		
cotton rat	*Sigmodon medius* or *S. minor**		
meadow vole	*Microtus* sp.		
likely short-faced bear	*Arctodus* sp. cf. *A. simus**		
southern mammoth	*Mammuthus meridionalis**		
likely Scott's horse	*Equus* sp. cf. *E. scotti**		
Llama	*Hemiauchenia* sp.*		
Camel	Camelops sp.*		
likely long-legged camel	cf. *Titanotylopus* sp.*		
Camel	*Camelops* sp.*	West of Spring Valley Lake in Victorville; LACM 1224	McLeod 2012
Mammoth	*Mammuthus* sp.*	west side of the Mojave River below the bluffs	McLeod 2012

* The taxon is extinct, although there may be living relatives in same genus or family.
Example of cf.: "*Gavia* sp. cf. *G. pacifica*" indicates that the specimen is a loon, and compares favorably to specimens of a Pacific loon.
? = Uncertain. Example of ?: "?Camelidae" indicates that this is a stronger uncertainty than cf.
sp.: Genus is known, species is not known.

A more complete view of the species present in the general Proposed Project region during the Pleistocene includes a review of fossil localities along the Mojave River from the Hesperia area through Lake Manix (Jefferson 2003a and 2003b, Scott 2012). Extinct animals present at localities in the region include the following: a cormorant, La Brea stork, two species of flamingo, Oregon gull, three species of ground sloth, cotton rat, dire wolf,

short-faced bear, two species of dirk-toothed cat, mastodon, two species of mammoth, at least two species of horse, llama, and at least three species of camel. These localities have been assigned to the Rancholabrean, Blancan, and late Irvingtonian North American Land mammal ages, which are estimated to be between 11,700 years to 1 million years old. Table 4.13-2 presents a list of vertebrates from localities in the general Proposed Project region along the Mojave River from the Hesperia to Lake Manix area.

Table 4.13-2. Composite List of Vertebrates Recovered from Pleistocene Localities along the Mojave River from Hesperia to Lake Manix

Group	Common Name	Taxon
Fish	Mohave tui chub	**Gila bicolor mojavensis*
	chub	*Gila* sp.
	three-spined stickleback	*Gasterosteus aculeatus*
Frogs and Toads	frog	*Rana* sp.
	toad	*Scaphiopus* sp.
	frog or toad	Anura
Lizards and Snakes	gecko	*Coleonyx* sp.
	likely desert night lizard	*Xantusia* sp. cf. *X. vigilis*
	whip-tailed lizard	*Cnemidophorus* sp.
	alligator lizard	*Gerrhonotus* sp.
	collared lizard	*Crotophytus* sp.
	possible desert iguana	*?Dipsosaurus dorsalis*
	long-nosed leopard lizard	*Gambelia wislizenii*
	desert horned lizard	*Phrynosoma platyrhinos*
	horned lizard	*Phrynosoma* sp.
	common chuckawalla	*Sauromalus ater*
	spiny lizard	*Sceloporus* sp.
	common side-blotched lizard	*Uta stansburiana*
	rosy boa	*Lichanura trivirgata*
	constricting snake	Colubridae
	rattlesnake	Crotalinae
Turtles and Tortoises	Western pond turtle	*Actinemys marmorata*
	desert tortoise	*Gopherus agassizii*
Birds	likely tundra swan	**Cygnus* sp. cf. C. columbianus
	Canada goose	**Branta canadensis*
	likely mallard	**Anas* sp. cf. *A. platyrhynchos*
	likely green-winged teal	**Anas* sp. cf. *A. crecca*

Table 4.13-2. Composite List of Vertebrates Recovered from Pleistocene Localities along the Mojave River from Hesperia to Lake Manix

Group	Common Name	Taxon
	diving duck	**Aythya* sp.
	likely common merganser	**Mergus* sp. cf. *M. merganser*
	ruddy duck	**Oxyura jamaicensis*
	quail	*Callipepla* sp.
	nightjar	Caprimulgidae
	roadrunner	*Geococcyx californianus*
	crane	**Grus* sp.
	likely American coot	**Fulica americana* sp. cf. F. a. shufeldti
	flamingo	**† Phoenicopterus minutus*
	flamingo	**† Phoenicopterus copei*
	likely eared grebe	**Podiceps* sp. cf. *P. nigricollis*
	western grebe	**Aechmophorus occidentalis*
	likely Oregon gull	**† Larus* sp. cf. *L. oregonus*
	gull	**Larus* sp.
	likely sandpiper	**cf. Actitis* sp.
	phalarope	**Phalaropodinae*
	likely Pacific loon	**Gavia* sp. cf. *G. pacifica*
	resembles American white pelican	**Pelecanus* sp. aff. *P. erythrorhynchos*
	double-crested cormorant	**Phalacrocorax auratus*
	cormorant	**† Phalacrocorax macropus*
	La Brea stork	**† Ciconia maltha*
	bald eagle	**Haliaeetus leucocephalus*
	golden eagle	**Aquila chrysaetos*
	great horned owl	**Bubo virginianus*
	owl	Strigidae
	flicker	*Colaptes* sp.
	tyrant fly-catcher	Tyrannidae
	horned lark	*Eremophila alpestris*
	possible wren	approx. Troglodytes
	likely robin	cf. *Turdus* sp.
	likely mockingbird	cf. *Mimus* sp.

Table 4.13-2. Composite List of Vertebrates Recovered from Pleistocene Localities along the Mojave River from Hesperia to Lake Manix

Group	Common Name	Taxon
	vireo	Vireonidae
	warbler	*Setophaga* sp.
	resembles sparrow	aff. *Zonotrichia* sp.
	sparrow	Emberizinae
	resembles grosbeak	aff. *Pheucticus* sp.
	resembles junco	aff. *Junco* sp.
	resembles hooded oriole	*Icterus* sp. aff. *I. cucullatus*
	resembles meadowlark	aff. *Sturnella* sp.
	likely yellow-headed blackbird	*Xanthocephalus* sp. cf. *X. xanthocephalus*
	blackbird	Icteridae
	cardueline finch	Carduelinae
	finch	Fringillidae
Shrews and Moles	ornate shrew	*Sorex ornatus*
	shrew	*Sorex* sp.
	desert shrew	*Notiosorex crawfordi*
	broad-footed mole	*Scapanus latimanus*
Bat	pallid bat	*Antrozous pallidus*
Ground Sloths	Jefferson's ground sloth	*† *Megalonyx jeffersonii*
	Shasta ground sloth	*† *Nothrotheriops shastensis*
	Harlan's ground sloth	† *Paramylodon harlanii*
	ground sloth	† Edentata
Rabbits	likely black-tailed jackrabbit	*Lepus* sp. cf. *L. californicus*
	jackrabbit	*Lepus* sp.
	desert cottontail	*Sylvilagus audubonii*
	brush rabbit	*Sylvilagus bachmani*
	cottontail	*Sylvilagus* sp.
Squirrels	Antelope ground squirrel	*Ammospermophilus leucurus*
	likely Antelope ground squirrel	cf. *Ammospermophilus leucurus*
	Townsend's ground squirrel	*Spermophilus townsendii*
	Mojave ground squirrel	*Xerospermophilus mohavensis*
	round-tailed ground squirrel	*Xerospermophilus tereticaudus*

Table 4.13-2. Composite List of Vertebrates Recovered from Pleistocene Localities along the Mojave River from Hesperia to Lake Manix

Group	Common Name	Taxon
	ground squirrel	*Xerospermophilus* sp.
	likely least chipmunk	*Tamias* sp. cf. *T. minimus*
Rodents	Botta's pocket gopher	*Thomomys bottae*
	pocket gopher	*Thomomys* sp.
	likely little pocket mouse	*Perognathus* sp. cf. *P. longimembris*
	pocket mouse	*Perognathus* sp.
	kangaroo rat	*Dipodomys* sp.
	deer mouse	*Peromyscus* sp.
	likely white-throated woodrat	*Neotoma* sp. cf. *N. albigula*
	desert woodrat	*Neotoma lepida*
	cotton rat	† *Sigmodon medius* or *S. minor*
	likely California meadow vole	*Microtus* sp. cf. *M. californicus*
	voles and relatives	Cricetidae
Carnivores	coyote	*Canis latrans*
	likely dire wolf	*† *Canis* sp. cf. *C. dirus*
	kit fox	*Vulpes macrotis*
	likely kit fox	*Vulpes* sp. cf. v. *macrotis*
	likely short-faced bear	† *Arctodus* sp. cf. *A. simus*
	likely bear	*cf. *Ursus* sp.
	dirk-toothed cat	*† *Homotherium* sp. cf. *H. crenatidens*
	dirk-toothed cat	*† *Homotherium* sp. cf. *H. serum*
	cat	**Felis* sp.
Mammoths and Relatives	mastodon	† *Mammut* sp.
	southern mammoth	† *Mammuthus meridionalis*
	possible Columbian mammoth	† *Mammuthus* sp. ? *M. columbi*
	mammoth	† *Mammuthus* sp.
	mammoth relative	† Proboscidea
Horses	Mexican horse	*† *Equus conversidens*
	likely Mexican horse	*† *Equus* sp. cf. *E. conversidens*
	likely Western horse	† *Equus* sp. cf. *E. occidentalis*

Table 4.13-2. Composite List of Vertebrates Recovered from Pleistocene Localities along the Mojave River from Hesperia to Lake Manix

Group	Common Name	Taxon
	Scott's horse	† *Equus scotti*
	horse	† *Equus* sp.
Camels	likely yesterday's camel	† *Camelops* sp. cf. *C. hesternus*
	resembles Minidoka camel	*† *Camelops* sp. aff. *C. minidokae*
	camel	*† *Camelops* sp.
	likely long-legged camel	† cf. *Titanotylopus* sp.
	llama	† *Hemiauchenia macrocephala*
Pronghorn	pronghorn	*Antilocapra* sp.
	pronghorn	Antilocapradae
Bovids	likely antique bison	*† *Bison* sp. cf. *B. antiquus*
Sheep	bovid	*Ovibovinae
	big-horned sheep	*Ovis canadensis*

Source: Jefferson, 2003a and 2003b.

Notes: * Indicates that this species has only been recovered from Lake Manix, although it could be found elsewhere along the Mojave River.
† The taxon is extinct, although there may be living relatives in same genus or family.
Example of cf.: "*Gavia* sp. cf. *G. pacifica*" indicates that the specimen is a loon, and compares favorably to specimens of a Pacific loon.
? = Uncertain. Example of ?: "?Camelidae" indicates that this is a stronger uncertainty than cf.
aff.: Specimen is related to the species listed; however, is clearly a different species.
sp.: Genus is known, species is not known.

4.13.1.4 Environmental Setting of the Stagecoach Solar Generation Plant

Although not completely mapped by Bedrossian et al. (2012), a modified combined geologic map of the Stagecoach Solar Generation Plant area, prepared using aerial map review and geologic mapping by Bedrossian et al. (2012) and Dibblee and Minch (2008), is presented in Figure 4.7-1. This area is underlain by Holocene to late Pleistocene windblown dune and alluvial fan deposits with minor amounts of late Holocene alluvial fan and landslide deposits (Bortugno and Spittler 1986, Bezore and Shumway 1994, Dibblee and Minch 2008). The Stagecoach Solar Generation Plant may also impact Mesozoic volcanic and plutonic igneous rocks (see Figure 4.7-1).

4.13.1.5 Environmental Setting of the Stagecoach Gen-tie Line

The Stagecoach Gen-tie Line is primarily underlain by Holocene to late Pleistocene young alluvial fan deposits with several small, narrow mapped areas of late Holocene alluvial fan deposits (see Figure 4.7-1).

4.13.1.6 Environmental Setting of the SCE Calcite Facilities

The SCE Calcite Facilities are mapped as underlain by Holocene to late Pleistocene young alluvial fan deposits (see Figure 4.7-1).

4.13.2 Regulatory Setting

The primary federal and state laws, regulations, and policies that pertain to the Proposed Project are summarized in Appendix A. Local laws, regulations, and policies are summarized below.

San Bernardino Countywide Plan: 2020 County Policy Plan

The 2020 County Policy Plan serves as the County's General Plan. It includes goals and policies related to the conservation of paleontological resources in the Cultural Resources Element of the Plan. The following goal and policies from the Cultural Resources Element are related to the preservation and conservation of 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.*
> - ***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.*

San Bernardino County 2007 Development Code (Amended 2019)

Paleontological resources are also protected by County ordinances. The County of San Bernardino (Development Code § 82.20.040) defines a qualified professional paleontologist as meeting the following criteria:

- *Education: An advanced degree (Masters or higher) in geology, paleontology, biology or related disciplines (exclusive of archaeology)*
- *Professional experience: At least 5 years professional experience with paleontological (not including cultural) resources, including the collection, identification and curation of the resources*

The County of San Bernardino (Development Code § 82.20.030) requires that paleontological mitigation programs include, but not be limited to:

- *(a) Qualified Supervisors: All paleontological work will be supervised by a qualified paleontologist*
- *(b) Field survey before grading: In areas of potential but unknown sensitivity, field surveys before grading shall be required to establish the need for paleontologic monitoring*
- *(c) Monitoring during grading: A project that requires grading plans and is located in an area of known fossil occurrence, or that has been demonstrated to have fossils present in a field survey, shall have all grading monitored by trained paleontological crews working under the direction of a qualified paleontologist, so that fossils exposed during grading can be recovered and preserved. Paleontological monitors shall be equipped and trained to salvage fossils as they are unearthed, to avoid construction delays, and to remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. Monitors shall be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. Monitoring is not necessary if the potentially-fossiliferous units described for the property in question are not present, or if present are determined upon exposure and examination by qualified paleontological personnel to have low potential for containing fossil resources.*
- *(d) Recovered specimens: Qualified paleontological personnel shall prepare recovered specimens to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates. Preparation and stabilization of all recovered fossils is essential in order to fully mitigate adverse impacts to the resources.*
- *(e) Identification and curation of specimens: Qualified paleontological personnel shall identify and curate specimens into the collections of the San Bernardino County Museum (SBCM) Division of Earth Sciences, an established, accredited museum repository with permanent retrievable paleontological storage. These procedures are also essential steps in effective paleontological mitigation and CEQA compliance. The paleontologist must have a written repository agreement in hand prior to the initiation of mitigation activities. Mitigation of adverse impacts to significant paleontological resources is not considered complete until curation into an established museum repository has been fully completed and documented.*
- *(f) Report of findings: Qualified paleontological personnel shall prepare a report of findings with an appended itemized of specimens. A preliminary report shall be submitted and approved before granting of building permits, and a final report shall be submitted and approved before granting of occupancy permits. The report and inventory, when submitted to the appropriate Lead Agency along with confirmation of the curation of recovered specimens into the collections of the San Bernardino*

County Museum (SBCM), will signify completion of the program to mitigate impacts to paleontological resources.

- *The SBCM is currently not accepting paleontological collections as they review their mission. Should fossils be recovered, the Natural History Museum of Los Angeles County or the Raymond M. Alf Museum in Claremont, California are recommended as a repository.*

4.13.3 Significance Criteria

Based on the State CEQA Guidelines[24] (Appendix G, Environmental Checklist), impacts to paleontology are considered significant if the Proposed Project would:

- Directly or indirectly destroy a unique paleontological resource or site

4.13.4 Environmental Impact Analysis and Mitigation

Impact Assessment Background and Methodology

The assessment of the value of paleontological resources requires is based on:

- Determination of paleontological resource values
- Species abundance and representative samples
- Paleontological sensitivity

Each of these issues is described below, followed by a discussion of impact assessment methodology.

Determination of Paleontological Resource Values

Only qualified, trained paleontologists with specific expertise in the type of fossils being evaluated can determine the scientific significance of paleontological resources. Fossils are considered to be scientifically significant if one or more of the following criteria apply:

1. The fossils provide information on the evolutionary relationships and developmental trends among organisms, living or extinct.
2. The fossils provide data useful in determining the age(s) of the rock unit or sedimentary stratum, including data important in determining the depositional history of the region and the timing of geologic events therein.
3. The fossils provide data regarding the development of biological communities or interaction between paleobotanical and paleozoological biotas.
4. The fossils demonstrate unusual or spectacular circumstances in the history of life.

[24] The “State CEQA Guidelines” refers to California Code of Regulations, Title 14, Chapter 3.

5. The fossils are in short supply and/or in danger of being depleted or destroyed by the elements, vandalism, or commercial exploitation, and are not found in other geographic locations.

As so defined, significant paleontological resources are determined to be fossils or assemblages of fossils that are unique, unusual, rare, uncommon, or diagnostically important. Significant fossils can include remains of large to very small aquatic and terrestrial vertebrates or remains of plants and animals previously not represented in certain portions of the stratigraphy. Assemblages of fossils that might aid stratigraphic correlation, particularly those offering data for the interpretation of tectonic events, geomorphologic evolution, and paleoclimatology are also critically important (Scott and Springer 2003, Scott et al. 2004).

Species Abundance and Representative Samples

The rarity or abundance of a species in a formation or in the fossil record is important to note, as it also plays a key in how significant a fossil is. For example, pollen, plankton (diatoms, foraminifera, fusulinids, etc.), marine bivalves, or marine snails are common in the fossil record. It is unusual for a fossil locality of marine bivalves and snails to produce any new information on the paleontological, paleoenvironmental, or temporal setting of an area. Marine bivalves and snails should typically be collected as representative samples, where only a few specimens of each species are collected. In these instances, estimates of what percentage each species is in the fauna should be recorded as part of the field notes (e.g., pecten species 1: 50 percent; pecten species 2: 30 percent; oyster: 20 percent). When a rare invertebrate species is observed, however, all specimens should be recovered. For example, abalone occur as far back as the Late Cretaceous, but only about one fossil has been recovered for every 2 million years of geological history (Geiger and Groves 1999).

Plant fossils and trace fossils may or may not be common, and each situation should be assessed separately. Root traces, plant hash, and other fossils that are not identifiable at least to family should not be collected. While dinosaur trackways are rare in California, Quaternary rodent burrows are not.

Vertebrates are much rarer in the fossil record, so all identifiable vertebrate remains should be collected.

Paleontological Sensitivity

Paleontological resources are considered to be significant if they provide new data on fossil animals, distribution, evolution, or other scientifically important information. Best current professional practice to characterize paleontological sensitivity utilizes the federal Potential Fossil Yield Classification (PFYC) system (BLM 2016f), which has a multi-level scale based on demonstrated yield of fossils, as summarized in Table 4.13-3. The PFYC system

provides additional guidance regarding assessment and management for different fossil yield rankings. Knowledge of the geological formations gleaned from geological maps and records of previous fossils recovered from the area were the basis for determining the paleontological sensitivity of the sediments found within the Proposed Project area.

Table 4.13-3. Potential Fossil Yield Classification Rank Descriptions

PFYC Class	PFYC Description
1	**Very Low**. Geologic units that are not likely to contain recognizable paleontological resources. Includes igneous or metamorphic and Precambrian or older rocks. Further assessment of paleontological resources is usually unnecessary.
2	**Low.** Sedimentary geologic units that are not likely to contain vertebrate fossils or scientifically significant nonvertebrate fossils. Includes rock units too young to produce fossils, sediments with significant physical and chemical changes (e.g., diagenetic alteration) and having few to no fossils known. Paleontological mitigation is only necessary where paleontological resources are known or found to exist.
3	**Moderate.** Sedimentary geologic units where fossil content varies in significance, abundance, and predictable occurrence. The existence of significant paleontological resources is known to be low; mitigation strategies are developed based on the nature of the proposed activity.
4	**High.** Geologic units containing a high occurrence of significant fossils. Fossils must be abundant per locality. Vertebrate fossils or scientifically significant invertebrate or plant fossils are known to occur and have been documented, but may vary in occurrence and predictability. If impacts to significant fossils can be anticipated, on-the-ground surveys prior to authorizing the surface disturbing action will usually be necessary. On-site monitoring or spot-checking may be necessary during construction activities.
5	**Very High.** Highly fossiliferous geologic units that consistently and predictably produce vertebrate fossils or scientifically significant invertebrate or plant fossils. Vertebrate fossils or scientifically significant invertebrate fossils are known or can reasonably be expected to occur in the impacted area. On-the-ground surveys prior to authorizing any surface disturbing activities will usually be necessary. On-site monitoring may be necessary during construction activities.

Source: Bureau of Land Management (BLM) 2016f

The impact analysis has been based on the geologic formations present, knowledge of the paleoenvironment of those formations (e.g., alluvial fan, river, lake, etc.), and the locations and paleoenvironments of known fossil localities of the age in the region. Using this information, the PFYC for formations underlying the Proposed Project can be assigned.

Impact Assessment Methodology

Geologic units are classified with the PFYC system according to the relative abundance of vertebrate fossils or scientifically significant invertebrate or plant fossils and their sensitivity to adverse impacts within the known extent of the geological unit. Although significant localities may occasionally occur in a geologic unit, a few widely scattered important fossils or localities do not necessarily indicate a higher PFYC class; instead, the relative abundance of localities is intended to be the major determinant for the class assignment.

All sedimentary deposits increase or decrease in fossiliferous potential depending on how coarse the sediments are. Sediments that are close to their source rock are typically coarser; those farther from the source are finer. The chance of fossils being preserved greatly increases once the average size of the sediment particles is reduced to 5 mm or less in diameter. Moreover, fossil preservation also greatly increases with rapid burial in floodplains, rivers, lakes, oceans, etc. Remains left on the ground surface become weathered by the sun or consumed by scavengers and bacterial activity, usually within 20 years or less. As a result, sands, silts, and clays of floodplains, rivers, lakes, and oceans are the most likely sediments to contain fossils.

In the Victorville-Barstow region, fossils of extinct Pleistocene animals have all been associated with Pleistocene lakebed and Mojave River deposits (Cox and Tinsley 1999, Sibbett 1999, Cox and Hillhouse 2000, Cox et al. 2003, Jefferson 2003a and 2003b, Scott 2012). Locally no fossils have been recovered from any alluvial fan or eolian dune sediments similar to those found within the Proposed Project boundaries. These are assigned a low (PFYC Class 2) sensitivity (Table 4.13-4). Landslide deposits do not typically retain their stratigraphic context and Holocene deposits are too young to contain fossils, so these sediments are assigned a very low potential for fossil resources (PFYC Class 1). Plutonic rocks and volcanic dikes have no possibility to contain fossils, so are also assigned a very low potential for fossil resources (PFYC Class 1).

Table 4.13-4. Project Potential Fossil Yield Classification Rankings

Geologic Unit	Map Symbol	PFYC Classes				
		5: Very High	4: High	3: Moderate	2: Low	1: very low
Alluvial fan deposits, late Holocene	Qf				X	
Landslide deposits, late Holocene	Qls					X
Young eolian and dune deposits, Holocene to late Pleistocene	Qye				X	
Young alluvial fan deposits, Holocene to late Pleistocene	Qyf				X	
Quartz monzonite, Late Cretaceous	qm					X
Porphyritic felsite, Late Jurassic	pf					X
Granite and quartz monzonite, Middle Jurassic	gqm					X

Excavation ranging from 3 feet to about 10 feet would be required for the following Proposed Project components:

- Solar panel metal pile foundations
- Electrical collection system
- Power conditioning station foundations and drilled piles
- Foundations for substation structures
- Operation and maintenance (O&M) building foundation
- SCE Calcite Substation foundation

For the Stagecoach Gen-tie Line and the SCE Calcite transmission structures, depth of foundations is expected to be between 30 and 60 feet deep, depending on tower type.

4.13.4.1 Impacts of the Stagecoach Solar Generation Plant

Impact PAL-1: The Proposed Project could destroy a unique paleontological resource or site.

Construction of the Stagecoach Solar Generation Plant has the potential to impact non-renewable fossil resources in portions of the Proposed Project site. **(Less than Significant with Mitigation)**

Impact Discussion

Construction. The Stagecoach Solar Generation Project area is predominantly underlain by Holocene to late Pleistocene young alluvial fan and eolian and dune deposits, with minor amounts of late Holocene alluvial fan and landslide deposits, and Mesozoic igneous rocks (see Figure 4.7-1). All late Holocene to late Pleistocene formations are given a low (PFYC Class 2) to very low (PFYC Class 1) potential for fossils, while all Mesozoic igneous rocks are given a very low (PFYC Class 1) potential for fossils (see Section 4.13.4 and Table 4.13-4).

Although it is unlikely that fossil resources will be impacted, the potential for destruction of an important fossil resource would result in a significant impact. Implementation of Mitigation Measure (MM) PAL-1a and MM PAL-1b would ensure that impacts to fossil resources would be less than significant.

Operation and Maintenance. No impacts to paleontological resources are expected to occur during this phase, since new ground disturbance is not anticipated.

Mitigation Measures

MM PAL-1a: Paleontological Worker Environmental Awareness Program. A County of San Bernardino qualified professional paleontologist shall be retained by the project prior to beginning construction. They shall have an advanced degree (Masters or higher) in geology, paleontology, biology, or related disciplines (exclusive of archaeology). Additionally, they shall have at least 5 years professional experience with paleontological (not including cultural) resources, including the collection, identification, and curation of the resources (County of San Bernardino Development Code § 82.20.040).

The qualified professional paleontologist shall prepare a Paleontological Worker Environmental Awareness Program (WEAP), and training shall be provided for all staff who will be onsite during excavations. The WEAP shall show what local Pleistocene fossils look like in general, where they may appear in the project, and how to proceed should material suspected to be a fossil is encountered. If COVID-19 protocols are in place, a digital presentation which workers may view on their phones is recommended.

MM PAL-1b: Unanticipated Fossil Discovery. Should fossils be encountered, construction work within 25 feet of the find(s) shall be halted and directed away from the discovery until the qualified professional paleontologist (defined in MM PAL-1a) can be contacted and come to the site to assess the significance of the resource. Where warranted, fossils will be excavated or otherwise recovered. Field data forms shall be used to record pertinent geologic data; stratigraphic sections shall be measured, and appropriate sediment samples will be collected and submitted for analysis from each fossil locality. Recovered fossils shall be prepared to the point of curation, identified by qualified experts, listed in a database to facilitate analysis, and deposited in a County of

San Bernardino designated paleontological curation facility. Reporting shall be to CEQA standards (County of San Bernardino Development Code § 82.20.030).

4.13.4.2 Impacts of the Stagecoach Gen-tie Line

Impact PAL-1: The Proposed Project could destroy a unique paleontological resource or site.

Construction of the Stagecoach Gen-tie Line has the potential to impact non-renewable fossil resources. **(Less than Significant with Mitigation)**

Impact Discussion

Construction. This area is mapped as underlain by Holocene to late Pleistocene young alluvial fan deposits with minor amounts of late Holocene alluvial fan deposits (see Figure 4.7-1). These sediments are both assigned a low (PFYC Class 2) potential for fossils (see Section 4.13.4 and Table 4.13-4). Although it is unlikely that fossil resources will be impacted during construction, implementation of MMs PAL-1a and PAL-1b would ensure that impacts to fossil resources would be less than significant.

Operation and Maintenance. No impacts to paleontological resources are expected to occur during O&M for the Stagecoach Gen-tie Line, since new ground disturbance is not anticipated.

Mitigation Measures

MM PAL-1a: Paleontological Worker Environmental Awareness Program

MM PAL-1b: Unanticipated Fossil Discovery

4.13.4.3 Impacts of the SCE Calcite Facilities

Impact PAL-1: The Proposed Project could destroy a unique paleontological resource or site.

Proposed Project activities at the SCE Calcite Facilities have a potential to impact non-renewable fossil resources. **(Less than Significant with Mitigation)**

Impact Discussion

Construction. This area is mapped entirely as underlain by Holocene to late Pleistocene young alluvial fan deposits (see Figure 4.7-1). These sediments are assigned a low (PFYC Class 2) potential for fossils (see Section 4.13.4 and Table 4.13-4). Although it is unlikely that fossil resources will be impacted by construction, implementation of MMs PAL-1a and PAL-1b would reduce potential impacts to fossil resources to less than significant.

Operation and Maintenance. No impacts to paleontological resources are expected during O&M at the SCE Calcite Facilities, since new ground disturbance is not anticipated.

Mitigation Measures

MM PAL-1a: Paleontological Worker Environmental Awareness Program

MM PAL-1b: Unanticipated Fossil Discovery

4.13.5 Cumulative Impacts

4.13.5.1 Geographic Scope

All projects in the cumulative scenario that would be located on the same geologic units as the Proposed Project, and in southwestern San Bernardino County, are considered within the geographic scope of analysis with respect to potential cumulative impacts on paleontological resources. This is because the ground disturbance caused by individual projects in the cumulative scenario, if not properly mitigated, could combine to cause a cumulative loss of scientific information through disturbance or destruction of potentially significant fossil resources. All projects listed in Section 3.1 could cause impacts that may combine with those of the Proposed Project.

Paleontological resources are non-renewable; any loss or physical damage to these resources is permanent. They would be subject to direct impacts primarily during Proposed Project construction; however, impacts could also occur during any ground-disturbing activities associated with operation and maintenance and decommissioning. Projects in the cumulative scenario could affect paleontological resources regardless of their construction timing.

4.13.5.2 Cumulative Impact Analysis

<u>Impact PAL-1: Destroy a Unique Paleontological Resource or Site</u>

Development in southwestern San Bernardino County has the potential to destroy paleontological resources, particularly during earth moving activities such as grading and excavation. Where these activities occur in areas containing Pleistocene sediments, which contain a high potential for significant paleontological resources, resource destruction is more likely to occur. In areas of high potential for significant paleontological resources collection of fossil materials, dislodging of fossils from their preserved environment, and/or physical damage of fossil specimens could also adversely affect paleontological resources. Together these potential impacts associated with development in the cumulative scenario could result in a cumulatively significant impact to paleontological resources.

As discussed in Section 4.14.4, there is a low potential for paleontological resources to be impacted during ground disturbing activities associated with the Proposed Project. With the

implementation of MMs PAL-1a and PAL-1b, any paleontological resource impacts would be reduced to a less than significant level. This mitigation for the Proposed Project would reduce the potential for impacts to paleontological resources in accordance with provisions of CEQA, as well as with regulations currently implemented by San Bernardino County and the guidelines of the federal Potential Fossil Yield Classification system.

Should paleontological resources be discovered during construction-related activities associated with current and future projects, they would be subject to legal requirements designed to protect them and would likely implement mitigation measures similar to MMs PAL-1a and PAL-1b, thereby reducing the effects of their impacts. Therefore, the incremental contribution of the Stagecoach Facilities and the SCE Calcite Facilities to cumulative impacts for paleontological resources would not be cumulatively considerable.

4.13.6 Mitigation Measure Summary

Table 4.13-5 summarizes the mitigation measures identified in this EIR to reduce or avoid potentially significant impacts to paleontological resources. These mitigation measures apply to impacts for the Stagecoach Facilities and the SCE Calcite Facilities.

Table 4.13-5. Impact and Mitigation Measure Summary

Impact	Mitigation Measures
Impact PAL-1: The Proposed Project could destroy a unique paleontological resource or site	**MM PAL-1a:** Paleontological Worker Environmental Awareness Program **MM PAL-1b:** Unanticipated Fossil Discovery

4.14 POPULATION AND HOUSING

This section describes the population and housing setting of the Proposed Project vicinity and evaluates the type and significance of potential impacts that may occur related to population growth or displacement of housing as a result of the Proposed Project.

The Proposed Project is described in detail in Section 2, *Project Description*. The Environmental Impact Report (EIR) analysis of the Proposed Project is presented in three parts. The first two parts comprise the **Stagecoach Facilities** proposed by Aurora Solar, LLC and the third part includes the **SCE Calcite Facilities,** proposed by Southern California Edison (SCE). The analysis components are:

- The **Stagecoach Solar Generation Plant,** which would include the solar arrays and collector lines, ancillary project facilities, and the battery energy storage system, all located within the 3,570 acres of State-owned school lands managed by the CSLC
- The **Stagecoach Gen-tie Line** (located on State-owned lands, leased land, and purchased private land), which would run approximately 9.1 miles, connecting the Stagecoach Solar Generation Plant to the proposed SCE Calcite Facilities and the SCE electrical transmission system
- The **SCE Calcite Facilities,** which would be constructed, owned, and operated by SCE and would include a substation (referred to as the **SCE Calcite Substation**), a connection to distribution-level electric power, access roads, telecommunications facilities, and new transmission structures to interconnect with the existing transmission system

4.14.1 Environmental Setting

This discussion applies to the Stagecoach Facilities (consisting of the Stagecoach Solar Generation Plant and Stagecoach Gen-tie Line) and the SCE Calcite Facilities. The Proposed Project is located in the western portion of the Mojave Desert in San Bernardino County, California. The majority of the land within and around the Proposed Project area is undeveloped desert land and is sparsely populated, with scattered residences in the vicinity. There are no communities or population centers located within 5 miles of the Stagecoach Solar Generation Plant. The nearest major communities are Barstow, approximately 15 miles to the north, and the unincorporated community of Lucerne Valley, approximately 12 miles to the southwest. The following sections describe the environmental settings pertaining to the Stagecoach Facilities and SCE Calcite Facilities.

4.14.1.1 Environmental Setting of the Stagecoach Facilities

The Stagecoach Solar Generation Plant would be located on State-owned school lands, approximately 10 miles east of Interstate 15 (I-15), approximately 15 miles south of the I-15 and Interstate 40 (I-40) intersection in Barstow, and approximately 1.5 miles west of

State Route 247 (SR-247, or Barstow Road). Lucerne Valley Cutoff divides the Stagecoach Solar Generation Plant into two separate components.

Several unpaved roads provide access to and from Lucerne Valley Cutoff to private, state, and Bureau of Land Management (BLM)-owned parcels surrounding the Stagecoach Solar Generation Plant. There is private property along the entire eastern boundary of the solar field, but residences are very dispersed. The closest residences to the solar field are located on parcels immediately adjacent to the State land boundary on Meander Road and Gazelle Road (within 100 feet of the property line). These residences appear to be single-family homes, generally on parcels of 20 or 40 acres.

The approximately 9.1-mile-long Stagecoach Gen-tie Line begins at the approximate center of the Stagecoach Solar Generation Plant boundary and follows the Lucerne Valley Cutoff before following a generally southerly route on private lands in a southerly direction to tie into the proposed SCE Calcite Facilities.

4.14.1.2 Environmental Setting of the SCE Calcite Facilities

The SCE Calcite Facilities would be located on an approximately 75-acre parcel that extends on the west and east sides of SR-247, directly north of Haynes Road in San Bernardino County. The SCE Calcite Facilities are approximately 5.5 miles south of the Stagecoach Solar Generation Plant and approximately 7 miles north of the unincorporated community of Lucerne Valley. The SCE Calcite Facilities are located in an area with sparse residential development on private land to the east (see Table 4.11-1, Stagecoach Solar Generation Plant: Potential Residences, in 4.11, *Land Use and Planning*). The nearest homes are within 100 feet of the State land property line.

The Granite Mountain Corridor Area of Critical Environmental Concern (ACEC) is located directly west of the SCE Calcite Facilities, and as such, no development exists or is allowed in this area. The nearest residential community is Lucerne Valley, which includes residential and commercial development approximately 7 miles south.

4.14.1.3 Regional Setting for Population and Housing

The Stagecoach Generation Facilities are proposed entirely within lands owned by the State, and the Stagecoach Gen-tie Line would be located on rights-of-way (ROW) across private land.

The Proposed Project and its surrounding communities (Barstow and Lucerne Valley) would be located within the County's Desert Planning Region, which includes a significant portion of the Mojave Desert. San Bernardino County experienced substantial population growth between 1990 and 2021 (increasing from 1,418,380 to a projected 2,206,750 for a 56 percent increase) (World Population Review 2021). However, the Desert Planning Region is projected to grow at the slowest pace compared with the other Valley and Mountain Planning Regions (San Bernardino County 2007). Housing and population

growth are likely increasing faster in the Valley Planning Region of the County due to its access to employment, entertainment, other services, and proximity to other developed areas in neighboring counties.

Population Characteristics

Table 4.14-1 presents the population characteristics of San Bernardino County, including the current and projected population in the County. As shown in the table, San Bernardino County is expected to experience an increase in population at a rate that decreases over time.

Table 4.14-1. San Bernardino County Current and Forecasted Population

Year	Population
2020	2,217,398
2040 Projected	2,529,068
2050 Projected	2,611,732

Source: CA DOF 2020a

Employment Characteristics

Table 4.14-2 presents the labor force characteristics of San Bernardino County. As shown in Table 4.14-2, trade, transportation, and utilities, collectively, account for the largest single sector of employment in San Bernardino County.

Table 4.14-2. Employment Profile of San Bernardino County, 2019 Annual Average

Industry	Labor Force
Farming	2,000
Construction	37,600
Education and Health Services	125,000
Financial Activities	21,600
Government	127,100
Information	4,900
Leisure and Hospitality	76,500
Manufacturing	56,900
Logging and Mining	800
Professional and Business Services	80,100
Trade, Transportation, Utilities	214,800
Other Services	23,000
Total Employed	***770,300***
Unemployment Rate	***3.8%***

Source: CA EDD 2020a

Housing Characteristics

Table 4.14-3 provides employment and housing characteristics specific to San Bernardino County, the nearby communities of Barstow and Apple Valley, and the unincorporated Lucerne Valley area.

The Proposed Project would be located in the central portion of San Bernardino County. There are only a few scattered residences within a mile of the Proposed Project boundaries.

Table 4.14-3. Population, Housing, and Employment Data

Location	Population	Housing Units		Employment	
		Total Units	Vacancy Rate	Total Employed[1]	Unemployment Rate
San Bernardino County	2,180,537	726,680	11.1%	930,700	3.8%
City of Barstow	24,268	9,645	11.5%	8,400	5.2%
Town of Apple Valley	74,394	27,077	7.5%	27,900	4.5%
City of Victorville	126,432	38,297	8.1%	43,600	5.5%
Lucerne Valley	6,239	3,282	20.6%	1,280	2.7%

[1] Accounts for population greater than 16 years of age and in Labor Force
Source: CA DOF 2020b, CA EDD 2020b, Research 2020

4.14.2 Regulatory Setting

There are no major federal or state laws, regulations, or policies relevant to population and housing. Local policies are summarized below.

San Bernardino Countywide Plan: 2020 County Policy Plan

The 2020 County Policy Plan serves as the County's General Plan. The Housing Element of the Plan contains goals, policies, and programs to address the state law requirements and the needs of unincorporated communities (San Bernardino County 2020b).

Goal H-2, Governmental Development Regulations. An efficient administrative process that recognizes the need for efficient and timely review of residential projects while also ensuring and valuing the need for quality design, environmental review, and planning.

- ***Policy H-2.4 Incentives.*** *Maintain incentives that can be offered when projects provide benefits to the community such as exceptional design quality, economic advantages, environmental sustainability, or other benefits that would not otherwise be realized.*

Goal H-3, Housing and Neighborhood Quality. Neighborhoods that protect the health, safety, and welfare of the community, and enhance public and private efforts in maintaining, reinvesting in, and upgrading the existing housing stock.

- ***Policy H-3.1 Public services, amenities, and safety.*** *We support the provision of adequate and fiscally sustainable public services, infrastructure, open space, nonmotorized transportation routes, and public safety for neighborhoods in the unincorporated area.*

Goal H-5, Implementation and Monitoring. A planning and monitoring system whereby housing, employment, environmental, and other program data are integrated in a cohesive manner to implement the County's housing vision.

- ***Policy H-5.2 Local and regional infrastructure.*** *We support the integrated planning and provision of appropriate infrastructure (including water, sewer, stormwater, and roadways) to create more livable residential environments. These efforts will contain:*
    - *Cooperation with the San Bernardino Local Agency Formation Commission and service providers in service planning*
    - *Coordination of capital improvement planning efforts with cities and through the San Bernardino County Transportation Authority*
    - *Review minimum improvement standards for rural areas in the update of the County development code*
    - *Coordination with the Southern California Association of Governments to include transportation improvements into the regional transportation plan*

4.14.3 Significance Criteria

The following significance criteria for population and housing are derived from Appendix G of the State California Environmental Quality Act (CEQA) Guidelines. Impacts to population and housing are considered significant if the Proposed Project would:

- Cause substantial population growth in an area, either directly or indirectly
- Displace substantial numbers of people and/or existing housing, necessitating the construction of replacement housing elsewhere

4.14.4 Environmental Impact Analysis and Mitigation

The impacts of the Stagecoach Solar Generation Plant are presented in Section 4.14.4.1, and the Stagecoach Gen-tie Line and SCE Calcite Substation are analyzed in Sections 4.14.4.2 and 4.14.4.3, respectively.

Scoping comments included concerns regarding the potential reduction of residential uses in the vicinity of the Proposed Project area, reduction of property values, and potential loss of tourism and tax revenue. The potential for these impacts to occur is speculative, and no supporting data was provided. These comments are not addressed in the impact analysis.

4.14.4.1 Impacts of the Stagecoach Solar Generation Plant

Impact POP-1: Project construction and operation would induce substantial population growth in an area, either directly or indirectly.

The temporary influx of workers to the Proposed Project area would not result in substantial population growth in the surrounding communities in the Proposed Project vicinity. **(Less than Significant)**

Impact Discussion

Construction. Construction of the Stagecoach Solar Generation Plant would require approximately 400 workers per day during the peak construction period, which would last for approximately 12 months. An estimated average daily workforce of 175 workers would be present at the construction site. Solar project workers generally commute from communities within San Bernardino County, which has over 37,000 persons employed in the construction industry (see Table 4.14-2), and other areas within a 90-minute commute. As such, the Proposed Project's workforce is expected to already reside in San Bernardino County and adjacent areas, so would not substantially increase the local population. Furthermore, these workers would be in the area only temporarily during the duration of Proposed Project construction. As shown in Table 4.14-3, the nearby communities of Barstow, Apple Valley, Victorville, and Lucerne Valley have a total population base of over 230,000 people, and many workers would likely commute from these neighboring communities.

Some specialized workers may require temporary lodging in the surrounding communities during the construction period, particularly if they reside farther away, but this small number of workers is not anticipated to create pressure on lodging supplies. As shown in Table 4.14-2, the workforce in the Leisure and Hospitality industry consists of approximately 76,500 workers in 2020, and as such, the availability of temporary lodging and hospitality services in San Bernardino County is expected to remain sufficient for the specialized workers who may need it. Furthermore, the vacancy rates of the County and its surrounding communities, particularly Lucerne Valley, indicate a relatively high supply of available housing, which also provides opportunities for workers to find short-term rentals for temporary lodging (see Table 4.14-3).

The temporary increase in workers in the immediate Proposed Project area is not anticipated to indirectly result in a substantial influx of other workers in related industries (such as food and other services) in the neighboring communities. Due to the presence of other past, ongoing, and planned solar projects in San Bernardino County, neighboring communities are likely able to support the variations in construction worker populations. Therefore, construction of the Stagecoach Solar Generation Plant would not induce substantial population growth. Impacts would be less than significant.

Operation and Maintenance. During operation and maintenance (O&M) of the Stagecoach Solar Generation Plant, up to 10 employees would work onsite. Employees may include a plant manager, engineers, technicians, and security staff. These employees may already reside within San Bernardino County, but even if they move to the surrounding communities, the small number would have no effect on the regional population. As such, operation of the Proposed Project's Stagecoach Solar Generation Plant would not induce a substantial population growth in the surrounding communities, and impacts would be less than significant.

Mitigation Measures

No mitigation would be required.

Impact POP-2: Project construction and operation would displace substantial numbers of people or existing housing, necessitating the construction of replacement housing elsewhere.

The temporary influx of workers to the Proposed Project area would not displace local residents or existing housing in the surrounding communities in the Proposed Project vicinity. **(Less than Significant)**

Impact Discussion

Construction. Construction of the Stagecoach Solar Generation Plant would occur exclusively on undeveloped State-owned school lands parcels, and no existing dwelling units would be removed or displaced as a result of the Project. During the peak construction period, which would last approximately 12 months, an estimated maximum of 400 workers per day (average of 175 workers) would work on site to install trackers, modules, and other Proposed Project components for the Stagecoach Solar Generation Plant. As described in Impact POP-1, the majority of these workers are expected to already reside within commuting distance of the Proposed Project. As shown in Table 4.14-3, San Bernardino County and the communities neighboring the Proposed Project area have relatively high housing vacancy rates, suggesting that the supply of housing would be sufficient for the construction workers desiring short-term relocation to the area. Impacts to housing would be limited and temporary, resulting in a less than significant impact.

Operation and Maintenance. O&M at the Stagecoach Solar Generation Plant would require an operational workforce of up to 10 employees to conduct maintenance as needed. Because operational employees would have permanent jobs, they would be more likely than construction workers to seek permanent housing in the County, but the small number of staff, as compared with housing vacancies, would not displace people or existing housing. As such, operation of the Stagecoach Solar Generation Plant would not displace existing residents, housing, or necessitate the construction of replacement housing, and impacts would be less than significant.

Mitigation Measures

No mitigation would be required.

4.14.4.2 Impacts of the Stagecoach Gen-tie Line

Impact POP-1: Project construction and operation would induce substantial population growth in an area, either directly or indirectly.

The temporary influx of workers to the Proposed Project area would not result in substantial population growth in the surrounding communities in the Proposed Project vicinity. **(Less than Significant)**

Impact Discussion

Construction. Construction of the Stagecoach Gen-tie Line would be completed by the same pool of workers proposed for construction of the Stagecoach Solar Generation Plant. A portion of the daily workforce for the Stagecoach Solar Generation Plant (a maximum of up to 400 workers, and an average of 175 workers) would construct the gen-tie line. As stated for the Stagecoach Solar Generation Plant in Impact POP-1, the majority of workers are anticipated to reside in San Bernardino County or nearby communities and commute to the Proposed Project site. As a result, the Proposed Project would not cause substantial population growth in neighboring communities.

Because the gen-tie line construction workers would be from the same workforce for the Stagecoach Solar Generation Plant, impacts would be the same as those stated in Section 4.14.4.1, Impact POP-1. The impacts associated with gen-tie construction would be less than significant.

Operation and Maintenance. O&M of the Stagecoach Gen-tie Line would be done by the same workforce performing maintenance at the Stagecoach Solar Generation Plant, which would consist of up to 10 employees. Similar to the construction workforce, these employees are likely to reside in the surrounding communities. Even if all 10 employees were to relocate to the area for the Project, this would not be significant considering the County's population of over 2.2 million residents as of 2020 (see Table 4.14-1). As such, operation of the Stagecoach Gen-tie Line would not result in substantial population growth in the surrounding communities of the Proposed Project vicinity, and impacts would be less than significant.

Mitigation Measures

No mitigation would be required.

Impact POP-2: Project construction and operation would displace substantial numbers of people or existing housing, necessitating the construction of replacement housing elsewhere.

The temporary influx of workers to the Proposed Project area would not displace local residents or existing housing in the surrounding communities in the Proposed Project vicinity. **(Less Than Significant)**

Impact Discussion

Construction. The Stagecoach Gen-tie Line would run approximately 9.1 miles on State-owned school land, Applicant-owned land, and ROWs across other private land to connect the Stagecoach Solar Generation Plant to the SCE Calcite Facilities. The new access road that would follow the line would not encroach or displace existing housing along its route. No other new roads would be required for construction of the Stagecoach Gen-tie Line.

Construction of the Stagecoach Gen-tie Line would also require the same workforce as the Stagecoach Solar Generation Plant, and as such, would have the same impacts as those described in Impact POP-1. As a result, the use of housing by construction workers for the gen-tie line would result in a less than significant impact.

Operation and Maintenance. Operation of the Stagecoach Gen-tie Line would be completed by the same workforce required for operation of the Stagecoach Solar Generation Plant, which would include up to 10 employees. These employees would work on site in the operation and maintenance (O&M) building at the Stagecoach Solar Generation Plant. As stated in Section 4.14.4.1, the quantity of operational workers is not a substantial amount that would displace existing residents and homes. Therefore, operation of the Stagecoach Gen-tie Line would not displace substantial numbers of people or existing housing or necessitate the construction of replacement housing elsewhere, and impacts would be less than significant.

Mitigation Measures

No mitigation would be required.

4.14.4.3 Impacts of the SCE Calcite Facilities

Impact POP-1: Project construction and operation would not induce substantial population growth in an area, either directly or indirectly.

The temporary influx of workers to the Proposed Project area would result in no population growth in the surrounding communities in the Proposed Project vicinity. **(No Impact)**

Impact Discussion

Construction. Construction of the SCE Calcite Facilities would require approximately 30 construction personnel on any given day and may occur concurrently with construction of the Stagecoach Facilities (a maximum of approximately 18 months). It is anticipated that construction of the SCE Calcite Facilities may occur over a shorter period of time depending on County permitting, material availability, and construction scheduling. The construction workers at the SCE Calcite Facilities will likely include SCE employees and specialty contractors. These workers would likely already reside within commuting distance to the SCE Calcite Facilities site. Specialized workers may be required for construction, but due to the short construction timeframe, they are very unlikely to relocate closer to the SCE Calcite Facilities area. There would be no population growth resulting from substation construction.

Operation and Maintenance. The SCE Calcite Facilities would be owned and operated by SCE. Once operational, transmission lines would be controlled remotely through SCE control systems and manually in the field as required. Regular inspection and maintenance activities of overhead transmission facilities and telecommunication facilities would occur once per year at a minimum, concurrent with SCE's maintenance of its other facilities, including the adjacent Pisgah-Lugo transmission corridor facilities. No additional SCE workers are expected to be hired for O&M. Therefore, operation of the SCE Calcite Facilities would not result in any impact on population growth in the surrounding communities in the Proposed Project vicinity.

Mitigation Measures

No mitigation would be required.

Impact POP-2: Project construction and operation would displace substantial numbers of people or existing housing, necessitating the construction of replacement housing elsewhere.

The temporary influx of workers to build or operate the SCE Calcite Facilities would not displace local residents or existing housing in the surrounding communities in the Proposed Project vicinity. **(No Impact)**

Impact Discussion

Construction. The SCE Calcite Facilities would be constructed entirely on private land (see Figure 2-3). The construction of the SCE Calcite Facilities' components would not require removal or displacement of existing housing or the construction of replacement housing, as the site does not contain any residences. Therefore, the construction of the SCE Calcite Facilities would not displace housing or residents.

As described in Impact POP-1, construction workers for the SCE Calcite Facilities would be either SCE employees or specialty contractors. All are likely to reside in communities within commuting distance. The few workers who may temporarily relocate would not substantially displace any local residents, as San Bernardino County and neighboring communities have vacancy rates that indicate a sufficient supply of housing. Therefore, construction of the SCE Calcite Facilities would not displace current residents or affect housing for existing residents.

Operation and Maintenance. O&M of the SCE Calcite Facilities would be part of SCE's ongoing regional inspection and maintenance activities, conducted by SCE workers. No housing or facilities would be required for O&M workers. As such, operation of the SCE Calcite Facilities would have no effect on local residents or existing housing supplies.

Mitigation Measures

No mitigation would be required.

4.14.5 Cumulative Impacts

This section evaluates the impacts of past, present, and reasonably foreseeable projects with the Proposed Project's incremental effects to determine if the Proposed Project would have a significant cumulative impact on Population and Housing. Section 3.0, *Cumulative Scenario*, presents Figure 3-1 that illustrates the locations of each cumulative project in the vicinity of the Proposed Project. Tables 3-1, 3-2, and 3-3 indicate there are seven cumulative projects within 10 miles of the Proposed Project, 13 cumulative projects more than 10 miles from the Proposed Project, and 18 existing solar developments in San Bernardino County, respectively. All 38 projects are considered for their potential cumulative effects on Population and Housing, as the region is generally remote, and these workers are likely to commute to and from these communities or use housing within them.

4.14.5.1 Geographic Scope

The geographic scope of the cumulative analysis for Population and Housing includes a radius of approximately 16 miles from the Proposed Project. This includes the neighboring communities in San Bernardino County, which include Barstow, Apple Valley, Victorville, and the unincorporated community of Lucerne Valley. This geographic scope was determined based on the assumption that the majority of workers on each project listed in Table 3-1 would likely reside in and commute from these communities, as these are the most populated communities in the Desert Planning Region of San Bernardino County.

4.14.5.2 Cumulative Impact Analysis

Impact POP-1: Cause Substantial Population Growth

Given the vacancy rates in the surrounding communities (see Table 4.14-3), cumulative impacts would be unlikely to occur even if all cumulative projects were to occur simultaneously with the Proposed Project, because the availability of housing would likely be sufficient for workers who may relocate to the region. Population growth would occur under this criterion if simultaneous construction activities resulted in workers moving permanently to the region (as opposed to using temporary or transient housing during construction periods only). As indicated in Table 3-1 and Table 3-2 (Section 3), these projects are at varying stages of planning, permitting, and development and are unlikely to be constructed simultaneously with the Proposed Project.

The existing projects identified in Table 3-3 would not contribute to cumulative impacts because they are already operational and no longer need a construction workforce.

Other projects, such as the Camp Rock Solar Farm LLC and Ned Araujo are substantially smaller than the Proposed Project and other cumulative projects (20 acres or less; see Table 3-2). These smaller projects would have substantially fewer workers and shorter construction timeframes. It is assumed that most workers associated with these projects would already reside in San Bernardino County or would commute to the project sites from nearby areas of Riverside or Los Angeles Counties. As such, these projects would not increase the population growth in the area.

Each project would be required to undergo CEQA review, which would include analysis of the project's impacts to Population and Housing. Any individual project that has potentially significant impacts would require mitigation, reducing adverse effects associated with substantial population growth. Given the information on the other projects, and because the Proposed Project would not result in substantial population growth on its own, its small contribution toward increasing population growth would not result in a cumulatively considerable impact.

Impact POP-2: Displace Substantial Numbers of People or Existing Housing

Cumulative impacts would occur if the Proposed Project, combined with effects of the cumulative projects listed in Section 3, would displace a substantial number of people and existing housing, necessitating the construction of replacement housing elsewhere. The cumulative projects, most of which would occupy large areas of land, would not displace existing housing and development. Like the Proposed Project, construction workers associated with the cumulative projects would likely come from communities in or around San Bernardino County, and workers who may relocate to these communities would likely only stay temporarily during the short construction timeframes. As a result, it is highly unlikely that any of these projects, in combination with the Proposed Project, would

introduce workers such that they would displace existing residents or housing. Table 4.14-3 displays the housing vacancy rates of neighboring communities that indicate a sufficient supply of housing for workers who may relocate to these areas. The contribution from the Proposed Project toward cumulatively displacing substantial numbers of people or existing housing would not be cumulatively considerable.

4.14.6 Mitigation Measure Summary

No mitigation would be required.

4.15 PUBLIC SERVICES, UTILITIES, AND SERVICE SYSTEMS

This section describes the public services, utilities, and service systems in the Proposed Project vicinity, evaluates the type and significance of impacts that may occur as a result of the construction and operation of the Proposed Project, and identifies any measures to avoid or substantially lessen any impacts found to be potentially significant. Because they are inter-related, this section combines two separate issue areas identified in State California Environmental Quality Act (CEQA) Guidelines Appendix G: sections XIV. Public Services and XVII. Utilities/Service Systems.

The Proposed Project is described in detail in Section 2, *Project Description*. The Environmental Impact Report (EIR) analysis of the Proposed Project is presented in three parts. The first two parts comprise the **Stagecoach Facilities** proposed by Aurora Solar, LLC and the third part includes the **SCE Calcite Facilities,** proposed by Southern California Edison (SCE). The analysis components are:

- The **Stagecoach Solar Generation Plant,** which would include the solar arrays and collector lines, ancillary project facilities, and the battery energy storage system (BESS), all located within the 3,570 acres of State-owned school lands managed by the CSLC
- The **Stagecoach Gen-tie Line** (located on State-owned lands, leased land, and purchased private land), which would run approximately 9.1 miles, connecting the Stagecoach Solar Generation Plant to the proposed SCE Calcite Facilities and the SCE electrical transmission system
- The **SCE Calcite Facilities,** which would be constructed, owned, and operated by SCE and would include a substation (referred to as the **SCE Calcite Substation**), a connection to distribution-level electric power, access roads, telecommunications facilities, and new transmission structures to interconnect with the existing transmission system

4.15.1 Environmental Setting

Physical impacts to public services, utilities, and service systems are usually associated with population increase and growth, which may increase the demand for a particular service, potentially leading to the need for expanded or new facilities. As noted in Section 2, *Project Description*, and 4.14, *Population and Housing*, the Proposed Project would create a substantial number of jobs during the estimated 18-month construction period. Construction would require up to 400 workers per day. Depending on the stage of construction, an average daily workforce of up to 175 workers would be present at the construction site. Subsequently, during ongoing operation and maintenance (O&M), up to 10 staff would work from the O&M facility at the solar generation plant site.

4.15.1.1 Regional Setting

Public Services

Police Protection

The Proposed Project site is policed by the San Bernardino County Sheriff's Department, which provides service to unincorporated areas of San Bernardino County. The Sheriff's Department central station is at 655 East 3rd Street, San Bernardino. There are about 3,900 paid personnel and 1,800 volunteers within the Sheriff's Department, which has eight County and 14 contract patrol stations located throughout the County. The Barstow patrol station is the nearest station to the Proposed Project site, located about 20 miles to the north (San Bernardino County Sheriff's Department 2020).

The California Highway Patrol's (CHP) Inland Division is the primary law enforcement agency for State highways in the Proposed Project vicinity. The division's headquarters is at 847 East Brier Drive, San Bernardino. The CHP's Victorville office is responsible for patrolling the Lucerne Valley. The Victorville CHP area encompasses approximately 1,700 square miles and includes portions of Interstate 15, State Routes 2, 18, 138, 173, and State Route 247 (SR-247, or Barstow Road), US 395, and hundreds of miles of unincorporated County roadways within San Bernardino County (CHP 2020).

Fire Protection

The Proposed Project site is within the jurisdiction of the San Bernardino County Fire Department, which provides service to 24 incorporated cities and the unincorporated areas of San Bernardino County. There are 1,070 County Fire personnel and 48 professionally staffed stations located throughout the County.

The two nearest County fire stations to the Proposed Project area are Lucerne Valley Station #8 (33269 Old Woman Springs Road, Lucerne Valley), approximately 13 road miles from the solar field site, and Hinkley Station #56 (37284 Flower Road, Hinkley), approximately 35 miles from the solar field site. The nearest incorporated city, Barstow, has its own fire department that protects the city and nearby communities from two stations. The Barstow Fire Protection District Headquarters Station is at 861 Barstow Road, Barstow (San Bernardino County Fire 2019).

Schools

There are 3 school districts in the Proposed Project region, but the Lucerne Valley Unified school district would serve the Proposed Project area itself:

- Lucerne Valley Unified (4 schools)
- Barstow Unified (12 schools)
- Apple Valley Unified (15 schools)

Hospitals

Four main hospitals are located within roughly 20 miles of the Proposed Project site, and all provide 24-hour emergency care:

- Barstow Community Hospital at 820 East Mountain View Street, Barstow is nearest to the Proposed Project site. The hospital is a 30-bed facility with 360 personnel and provides inpatient and outpatient services and medical, surgical, and emergency care (Barstow Community Hospital 2020).
- St. Mary Medical Center is located at 18300 Highway 18, Apple Valley. The medical center has 213 beds and over 300 medical staff. Wellness and prevention programs and diagnostic, medical, and surgical procedures are provided (St. Mary Medical Center 2020).
- Victor Valley Global Medical Center is located at 15248 11th Street, Victorville. The 101-bed acute care medical center has an urgent care center and provides physical therapy and diagnostic, medical, and surgical procedures (Victor Valley Global Medical Center 2020).
- Desert Valley Hospital is located at 16850 Bear Valley Road, Victorville. The acute care hospital has 148 beds and provides critical care and diagnostic, medical, and surgical services (Desert Valley Hospital 2017).

Solid Waste Facilities

The County of San Bernardino Solid Waste Management Division is responsible for the operation and management of the County's solid waste disposal system, which consists of five regional landfills and nine transfer stations. The Solid Waste Management Division administers the County's solid waste handling franchise program and the refuse collection permit program, which authorizes and regulates trash collection by private haulers in unincorporated areas. Table 4.15-1 describes the solid waste capacity of landfills serving San Bernardino County. The Barstow Landfill is closest, about 15 miles north of the Project area on SR-247.

These facilities are operated by Advance Disposal Company and Recycling Center, Benz Sanitation, Burrtec Waste Industries, Cal Disposal, City of Victorville, and the County of San Bernardino Solid Waste Management Division.

Table 4.15-1. San Bernardino County Landfill Solid Waste Capacity				
Facility Name	**Total Capacity (cu.yd.)**	**Remaining Capacity (cu.yd.)**	**Remaining Capacity**	**Maximum Throughput (tons/day)**
Victorville Sanitary Landfill	83,200,000	81,510,000	98%	3,000
Barstow Sanitary Landfill	80,354,500	71,481,660	89%	1,500
Mid-Valley Sanitary Landfill	101,300,000	61,219,337	61%	7,500
Landers Sanitary Landfill	13,983,500	11,148,100	80%	1,200
San Timoteo Sanitary Landfill	22,685,785	12,360,396	54%	2,000

Source: CalRecycle 2020a, 2020b, 2020c, 2020d, 2020e

Utilities and Services

Utility and services system facilities associated with electricity, domestic (potable) water, stormwater, communications, and natural gas are provided and maintained by a variety of local purveyors, including cities, counties, special districts, water agencies, and private companies. Utilities such as domestic water, wastewater and stormwater sewers, and natural gas are usually transmitted via underground pipelines or conduits. Electrical and telecommunication services can be installed underground or overhead on utility poles.

Table 4.15-2 summarizes the utilities providers serving San Bernardino County in the area of the Proposed Project.

Table 4.15-2. San Bernardino County Utility Providers in Project Region	
Utility	**Providers**
Natural Gas	Southern California Gas Company, Southwest Gas Corporation, Victorville Municipal Utilities Services
Electricity	Southern California Edison, Victorville Municipal Utilities Services
Water	Apple Valley Ranchos Water Company, County of San Bernardino Water & Sanitation Division, Hi-Desert Water District, Victorville Water District
Wastewater	Apple Valley Public Services, Barstow Community Services Department (Environmental Services Division), Hesperia Water District, Victorville Water District
Telecommunications	AT&T, Charter Communications, Comcast, Time Warner Cable, DirectTV, Dish, Frontier Communications, Golden Valley Cable and Communications, Hughes Net, Sprint, Verizon, ViaSat, Vonage

Source: San Bernardino County 2018a

4.15.1.2 Environmental Setting of the Stagecoach Solar Generation Plant, Stagecoach Gen-tie Line, and SCE Calcite Facilities

Public Services

Police Protection

The Proposed Project area is served by the San Bernardino County Sheriff's Department and the CHP Inland Division. The closest Sheriff's Department patrol station to the Proposed Project site is the Apple Valley Patrol Station. The patrol station is approximately 30 miles to the solar site and 25 road miles to the substation site. There are 51 officers and 13 general employees at the Apple Valley patrol station.

The nearest CHP office to the Proposed Project site is in Barstow, approximately 23.5 road miles from the solar site and 26.4 road miles from the SCE Calcite Facilities site. However, the area is the responsibility of the Victorville CHP office, approximately 40 road miles from the solar site.

Fire Protection

The Proposed Project area is under the jurisdiction of San Bernardino County Fire Division 5 (North Desert). Fire and rescue services would be provided from the Lucerne Valley Station 8, which is the closest fire station to the Proposed Project site. It is south of the Proposed Project area approximately 13.3 road miles from the solar site and 7.5 road miles from the substation site.

Schools

The Proposed Project site is in the region served by the Lucerne Valley Unified School District, which has an elementary school, a middle/high school, and Mountain View High School. The closest schools to the Proposed Project site are Lucerne Valley Middle/High School located at 33233 Rabbit Springs Road, Lucerne Valley, approximately 12 miles southeast of the Proposed Project site, and Lucerne Valley Elementary School, approximately 13 miles south of the Proposed Project site.

Hospitals

The Proposed Project site would be served by the four hospitals described above (Section 4.15.1.1).

Solid Waste Facilities

There are no solid waste facilities in the immediate vicinity of the Proposed Project. As shown in Table 4.15-1. (San Bernardino County Landfill Solid Waste Capacity), landfills in

the regional that could be used to handle project-related solid waste have large amounts of existing capacity.

Utilities and Service Services

SCE provides electricity to customers in the Proposed Project area (San Bernardino County 2018a), but there are no existing electricity distribution lines in the northern Lucerne Valley area.

Verizon provides telecommunications service (San Bernardino County 2018a). Burrtec Waste Industries provides limited trash collection in the Proposed Project area (San Bernardino County 2018a). Due to the remote nature of the Proposed Project site, there are no water and sewer providers in the area of the Stagecoach Solar Generation Plant. The Proposed Project would not be connected to a public sewer system so would not cause waste that would be treated in an existing wastewater treatment plant. A septic system and leach field would be located at the O&M building to serve the Proposed Projects' sanitary and wastewater treatment needs.

4.15.2 Regulatory Setting

The primary federal and state laws, regulations, and policies that pertain to the Proposed Project are summarized in Appendix A. Local policies are summarized below.

San Bernardino Countywide Plan: 2020 County Policy Plan

The 2020 County Policy Plan serves as the County's General Plan. It contains the Infrastructure & Utilities Element, which identifies the following goals and policies (San Bernardino County 2020b):

- *Provides guidance on where, when, and how infrastructure and utilities are improved and expanded*
- *Establishes goals and policies to maintain an adequate supply of potable water and the safe disposal, treatment, and recycling of wastewater, and the recycling and safe disposal of solid waste*
- *Provides direction on system integration, resource conservation, and the protection of the natural environment*

GOAL IU-1 WATER SUPPLY: Water supply and infrastructure are sufficient for the needs of residents and businesses and resilient to drought.

- ***Policy IU-1.3: Recycled water.*** *We promote the use of recycled water for landscaping, groundwater recharge, direct potable reuse, and other applicable uses in order to supplement groundwater supplies.*
- ***Policy IU-1.4: Greywater.*** *We support the use of greywater systems for non-potable purposes.*

- ***Policy IU-1.7: Areas vital for groundwater recharge.*** *We allow new development on areas vital for groundwater recharge when stormwater management facilities are installed onsite and maintained to infiltrate predevelopment levels of stormwater into the ground.*
- ***Policy IU-1.9: Water conservation.*** *We encourage water conserving site design and the use of water-conserving fixtures, and advocate for the adoption and implementation of water conservation strategies by water service agencies. For existing County-owned facilities, we incorporate design elements, building materials, fixtures, and landscaping that reduce water consumption, as funding is available.*

GOAL IU-3 STORMWATER DRAINAGE. A regional stormwater drainage backbone and local stormwater facilities in unincorporated areas that reduce the risk of flooding.

- ***Policy IU-3.2: Local flood control.*** *We require new development to install and maintain stormwater management facilities that maintain predevelopment hydrology and hydraulic conditions.*

GOAL IU-4 SOLID WASTE. Adequate regional landfill capacity that provides for the safe disposal of solid waste, and efficient waste diversion and collection for unincorporated areas.

- ***Policy IU-4.1: Landfill capacity.*** *We maintain a minimum ongoing landfill capacity of 15 years to serve unincorporated waste disposal needs.*
- ***Policy IU-4.3: Waste diversion.*** *We shall meet or exceed state waste diversion requirements, augment future landfill capacity, and reduce greenhouse gas emissions and use of natural resources through the reduction, reuse, or recycling of solid waste.*
- ***Policy IU-4.4: Landfill funding.*** *We require sufficient fees for use of County landfills to cover capital costs; ongoing operation, maintenance, and closure costs of existing landfills; the costs and liabilities associated with closed landfills.*

GOAL IU-5 POWER AND COMMUNICATIONS. Unincorporated area residents and businesses have access to reliable power and communication systems.

- ***Policy IU-5.1: Electricity and natural gas service.*** *We partner with other public agencies and providers to improve the availability and stability of electricity and natural gas service in unincorporated communities.*
- ***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 IU-5.4: Electric transmission lines.*** *We support the maintenance of existing and development of new electric transmission lines along existing rights-of-way and easements to maintain the stability and capacity of the electric distribution system in southern California.*

- ***Policy IU-5.5: Energy and fuel facilities.*** *We encourage the development and upgrade of energy and regional fuel facilities in areas that do not pose significant environmental or public health and safety hazards, and in a manner that is compatible with military operations and local community identity.*

The Personal and Property Protection Element of the County Policy Plan:

- *Promotes continuous improvement in the provision of public safety and administration of justice*
- *Supports coordinated and effective interagency response to emergencies and natural disasters*
- *Provides policy direction to engage communities and respond to identified needs*
- *Fosters collaboration among the Board of Supervisors-directed agencies and departments and the elected Sheriff and District Attorney*
- *Augments, rather than replaces, state- and federally-mandated goals and objectives*

GOAL PP-1 LAW ENFORCEMENT. Effective crime prevention and law enforcement that leads to a real and perceived sense of public safety for residents, visitors, and businesses.

- ***Policy PP-1.1: Law enforcement services.*** *The Sheriff's Department provides law enforcement services for unincorporated areas and distributes resources geographically while balancing levels of service and financial resources with continuously changing needs for personal and property protection.*

GOAL PP-3 FIRE AND EMERGENCY MEDICAL. Reduced risk of death, injury, property damage, and economic loss due to fires and other natural disasters, accidents, and medical incidents through prompt and capable emergency response.

- ***Policy PP-3.1: Fire and emergency medical services.*** *We maintain a sufficient number and distribution of fire stations, up-to-date equipment, and fully-trained staff to respond effectively to emergencies.*
- ***Policy PP-3.4: Fire prevention services.*** *We proactively mitigate or reduce the negative effects of fire, hazardous materials release, and structural collapse by implementing the California Fire Code, adopted with County amendments.*
- ***Policy PP-3.5: Firefighting water supply and facilities.*** *We coordinate with water providers to maintain adequate water supply, pressure, and facilities to protect people and property from urban fires and wildfires.*
- ***Policy PP-3.6: Concurrent protection services.*** *We require that fire department facilities, equipment, and staffing required to serve new development are operating prior to, or in conjunction with new development.*

- ***Policy PP-3.7: Fire safe design.*** *We require new development in the Fire Safety Overlay to comply with additional site design, building, and access standards to provide enhanced resistance to fire hazards.*
- ***Policy PP-3.8: Fire-adapted communities.*** *We inform and prepare our residents and businesses to collaboratively plan and take action to more safely coexist with the risk of wildfires.*
- ***Policy PP-3.9: Street and premise signage.*** *We require adequate street signage and premise identification be provided and maintained to ensure emergency services can quickly and efficiently respond.*
- ***Policy PP-3.11: Post-burn risks.*** *In areas burned by wildfire, we require new and reconstructed development to adhere to current development standards, and may require additional study to evaluate increased flooding, debris flow, and mudslide risks.*
- ***Policy PP-3.12: Fire protection and emergency medical resource allocation.*** *We use fire and emergency services data analysis and professional expertise to allocate resources, reduce fire risks, and improve emergency response.*

4.15.3 Significance Criteria

The following significance criteria for Public Services and Utilities/Service Systems are derived from Appendix G of the State CEQA Guidelines.[25]

Impacts to Public Services are considered significant if the Proposed Project would:

- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, in order to maintain acceptable service ratios, response times or other performance objectives for any public services:
    - Fire protection
    - Police protection
    - Schools
    - Parks
    - Other public facilities

Impacts to Utilities and Service Systems are considered significant if the Proposed Project would:

- Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects

[25] The “State CEQA Guidelines” refers to California Code of Regulations, Title 14, Chapter 3.

- Not have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years
- Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments
- Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure
- Not comply with federal, state, and local management and reduction statutes and regulations related to solid waste

These significance criteria are encompassed by the following two impact statements used in the environmental impact analysis (Section 4.15.4):

- Impact PSU-1: Project construction and operation would result in adverse physical impacts associated with the provision of or need for new or altered governmental facilities or would inhibit maintenance of acceptable service ratios and response times for public services
- Impact PSU-2: Project construction and operation would require new or relocated utilities and service systems and/or place demands on local water, wastewater, and solid waste facilities in excess of their capacities

4.15.4 Environmental Impact Analysis and Mitigation

The services and utilities impacts of the Stagecoach Solar Generation Plant are presented in Section 4.15.4.1, and the Stagecoach Gen-tie Line and SCE Calcite Facilities are analyzed in Sections 4.15.4.2 and 4.15.4.3, respectively.

4.15.4.1 Impacts of the Stagecoach Solar Generation Plant

Impact PSU-1: Project construction and operation would result in adverse physical impacts associated with the provision of or need for new or altered governmental facilities or would inhibit maintenance of acceptable service ratios and response times for public services.

The County's population would not increase due to construction and operation of the Proposed Project, and it would not create the need for new public service facilities. However, emergency response times may be severely inhibited by construction traffic. **(Significant and Unavoidable)**

Impact Discussion

Construction. This discussion considers two concerns: the potential for the Proposed Project to drive the need for new services or altered government facilities, and the potential for inhibition of response times for public services.

Need for New Services or Facilities. The period of construction would be 18-months. During construction, the peak labor force would be 400 persons, with a daily average of approximately 175 persons. It is assumed that most of the construction work force would be drawn from available workers in San Bernardino County and other nearby counties. Given the short construction timeframe, most workers are expected to commute to the worksite, resulting in few new residents moving to the region for the construction effort. Any population increase associated with the construction workforce would be minor. Therefore, there would be little change in the demand for recreation facilities and schools. No new public facilities would be required as a result of Proposed Project construction. This aspect of Impact PSU-1 would be less than significant.

Response Times for Public Services. As addressed in Section 4.17, *Traffic and Transportation* (Impact TRA-1), construction traffic would create a safety concern on local roads leading to the Proposed Project site. If each worker drove alone to the work site, during the peak of construction at the solar site this would result in 400 round trips. Combined with approximately 200 round trips for deliveries of materials and equipment, the total vehicle movements to and from the site per day could be 1,200 trips per day (600 vehicles daily driving to the site and 600 driving from the site). As noted in Section 4.17, *Traffic and Transportation* (see Table 4.17-1. Regional Roadway Characteristics and Existing Traffic Conditions), SR-247 north of SR-18 has an average daily traffic volume of 2,900 vehicles. All traffic to and from the site would need to use SR-247.

Because of the project-related construction traffic on SR-247 and required turns onto and off of Lucerne Valley Cutoff Road at SR-247, traffic controls and safety warnings would be required as part MM TRA-1 (Construction Traffic Control Plan), as described in Section 4.17, *Traffic and Transportation*. The need for traffic controls may require additional CHP and/or Sheriff Department patrols on SR-247 and may require engaging, at the Project Applicant's expense, off-duty officers to be present at peak times to ensure safety. Additional patrols may be required along principal travel routes at school zones during school opening/ closing times.

During construction, some emergency services (i.e., ambulance, fire, and Sheriff) are likely to be required at the Stagecoach Solar Generation Plant site. In addition, emergency services may be needed by residents of and visitors to the Lucerne Valley area during the construction timeframe. While these service demands would not likely drive the need for the County to add new permanent emergency service providers, the extent of construction traffic may hamper the ability of service providers to respond to emergencies in a timely manner. As discussed in Section 4.17, *Traffic and Transportation* (Section 4.17.4.1, Impact TRA-4), the volume of traffic required for the construction of the Stagecoach Solar Generation Plant is anticipated to reduce the speeds and response times of emergency vehicles travelling along the affected roadways during construction hours.

The demand for emergency services in the Proposed Project area is unlikely to affect response times for emergencies outside of the Lucerne Valley area or require new service

providers to be added. Deployment of off-duty officers at the project's expense would not affect the level of police services. However, given the number of construction vehicles on SR-18 and SR-247, there would likely be a delay in emergency response times for the residents of Lucerne Valley and for Project emergencies during construction. Effective implementation of MM TRA-1 (Construction Traffic Control Plan) would reduce the severity of the impact, but it would remain significant and unavoidable.

Operation and Maintenance. During O&M, the solar site would have a small staff, would be remotely monitored for security, and would incorporate required fire prevention and suppression technology into facility designs. Plans would be in place to reduce the chance for fire and required fire suppression devices would be incorporated as required. The Proposed Project does not include new housing or other long-term uses that would require an increase in or need for new public facilities. Any development in undeveloped areas increases the potential for the occurrence of wildfires; this is analyzed in Section 4.18, *Wildfire*.

Mitigation Measures

MM TRA-1: Construction Traffic Control Plan (Section 4.17, *Traffic and Transportation)*

Residual Impact

With the implementation of MM TRA-1, impacts related emergency response during construction of the Stagecoach Solar Generation Plant would be lessened but not eliminated. There would still likely be emergency service delays during construction. However, these impacts would cease upon completion of construction and would not occur during operation.

Impact PSU-2: Project construction and operation would require new or relocated utilities and service systems and/or place demands on local water, wastewater, and solid waste facilities in excess of their capacities.

Construction and operation of the Proposed Project would not require new utilities or public service facilities or exceed service system capacities. **(Less than Significant)**

Impact Discussion

The following impacts could occur during both construction and O&M.

Wastewater. During construction, portable toilet facilities would be provided and maintained at work sites by a contracted service company, with the waste disposed of at an approved wastewater facility. For O&M, an on-site leach field would be developed to accommodate sanitary waste from the O&M facility at the solar field. The gen-tie line and substation would not require sanitary facilities, as they would be visited only for routine inspection and

maintenance, and not be manned facilities. Impacts on wastewater facilities would be less than significant.

Water Supply. There is no municipal water service to the Project site. The effects of Proposed Project water use on the groundwater basin are addressed in Section 4.10. As discussed in Section 2, *Project Description*, and Section 4.10, *Hydrology and Water Quality*, construction of the Proposed Project would require the temporary use of large quantities of water, primarily for dust control during construction. During operation, water demand would be much lower, primarily for panel washing. Impacts associated with this issue of groundwater are addressed in Section 4.10, *Hydrology and Water Quality*.

Electricity. The solar generation plant would not be connected with the SCE electric distribution system, so power for the onsite facilities will come from the Project's solar generation and BESS. The O&M facility, Supervisory Control and Data Acquisition System (SCADA), MET towers, and security lighting will be provided with electricity via a line that taps the Stagecoach Gen-tie Line, which would also run to the substation. Two backup propane generators would be maintained.

The SCE Calcite Facilities would require construction of approximately 700 feet of 12 kV overhead electric distribution line and approximately 2,100 feet of underground distribution line (connecting the existing distribution system along Haynes Road to the SCE Calcite Facilities) to provide temporary power for construction and permanent substation light and power.

Natural Gas. No natural gas service would be required.

Telecommunications. Telecommunications would be provided using fiber optic cable installed as part of the Proposed Project. Personnel also would use wireless communication devices as needed.

Solid Waste. The California Integrated Waste Management Act of 1989, which emphasizes resource conservation through reduction, recycling, and reuse of solid waste guide solid waste management, requires that localities conduct a Solid Waste Generation Study (SWGS) and develop a Source Reduction Recycling Element (SRRE). Construction activities would be in accordance with these applicable Solid Waste Management Policy Plans by recycling materials as appropriate.

As described in Section 2.3.5.5 (Construction Waste Management), the Stagecoach Facilities would produce solid waste during construction. This may include paper, wood, glass, plastic packing material, waste lumber, insulation, scrap metal and concrete, empty nonhazardous containers, and vegetation waste. The waste would be segregated, where practical, for recycling. Non-recyclable waste would be placed in covered dumpsters and removed on a regular basis by a certified waste-handling contractor for disposal at a Class III landfill. Vegetation waste generated by site clearing and grubbing would be chipped/

mulched and spread on site or hauled off-site to an appropriate green waste facility. Most waste generated during O&M would be nonhazardous.

The specific landfill(s) to which solid waste would be taken is not known. However, as shown in Table 4.15-1, landfills serving the Proposed Project area have sufficient capacity to accommodate project construction solid waste disposal needs, and project solid waste disposal would not require the need for new or expanded landfill facilities. Therefore, the Proposed Project would comply with applicable statutes and regulations related to solid waste disposal limits and landfill capacities.

Construction and operation of the Stagecoach Solar Generation Plant would not require or result in the relocation or construction of new or expanded water, wastewater treatment, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects. Therefore, as described above, the impacts to utilities and service systems would be less than significant.

Mitigation Measures

No mitigation would be required.

4.15.4.2 Impacts of the Stagecoach Gen-tie Line

The Stagecoach Gen-tie Line would be constructed in the same geographic region as the solar generation plant and would have similar demands for public services, utilities, and service systems.

Impact PSU-1: Project construction and operation would result in adverse physical impacts associated with the provision of or need for new or altered governmental facilities or would inhibit maintenance of acceptable service ratios and response times for public services.

The County's population would not increase due to construction and operation of the Stagecoach Gen-tie Line, and it would not create the need for new public service facilities. However, emergency response times may be severely inhibited by construction traffic. **(Significant and Unavoidable)**

Impact Discussion

Construction. This analysis assumes that construction of the Stagecoach Gen-tie Line would be concurrent with construction of the Stagecoach Facilities. Construction would cause little change in the demand for recreation facilities and schools and no new public facilities would be required. This aspect of Impact PSU-1 would be less than significant.

However, construction of the Stagecoach Gen-tie Line would contribute to the significant and unavoidable impact on emergency response times due to the anticipated concurrent construction with the Stagecoach Solar Generation Plant components. This impact would

remain significant even with the implementation of MM TRA-1 (Construction Traffic Control Plan) because the large number of construction trips, even when mitigated, could substantially affect emergency vehicle response times along the affected rural roadway network.

Operation and Maintenance. During O&M, the Stagecoach Gen-tie Line would have no permanent staff and would be inspected periodically. The Stagecoach Gen-tie Line would not require new housing or other long-term uses that would require an increase in or need for new public facilities. The potential for the gen-tie line to affect wildfire frequency or firefighting response is analyzed in Section 4.18, *Wildfire*.

Mitigation Measures

MM TRA-1: Construction Traffic Control Plan (Section 4.17, *Traffic and Transportation)*

Residual Impact

With the implementation of MM TRA-1, impacts related emergency response during construction of the Stagecoach Gen-tie Line would be lessened but not eliminated. There would still likely be emergency service delays during construction. However, these impacts would cease upon completion of construction and would not occur during operation.

Impact PSU-2: Project construction and operation would require new or relocated utilities and service systems and/or place demands on local water, wastewater, and solid waste facilities in excess of their capacities.

Construction and operation of the Stagecoach Gen-tie Line would not require new utilities or public service facilities or exceed service system capacities. **(Less than Significant)**

Impact Discussion

Construction and Operation and Maintenance. Similar to the discussion in Section 4.15.4.1, construction and operation of the Stagecoach Gen-tie Line would not require or result in the relocation or construction of new or expanded water, wastewater treatment, or natural gas systems, the construction or relocation of which could cause significant environmental effects. The electrical and telecommunications support components of the gen-tie line would be installed by the Applicant as part of its facilities. Therefore, the impacts to utilities and service systems would be less than significant.

Mitigation Measures

No mitigation would be required.

4.15.4.3 Impacts of the SCE Calcite Facilities

The substation would be constructed in the same geographic region as the solar generation plant and would have similar demands for public services, utilities, and service systems.

Impact PSU-1: Project construction and operation would result in adverse physical impacts associated with the provision of or need for new or altered governmental facilities or would inhibit maintenance of acceptable service ratios and response times for public services.

The County's population would not increase due to construction and operation of the SCE Calcite Facilities, and it would not create the need for new public service facilities. However, emergency response times may be severely inhibited by construction traffic. **(Significant and Unavoidable)**

Impact Discussion

Construction. This analysis assumes that construction of the SCE Calcite Facilities would be concurrent with construction of the Stagecoach Facilities. Construction would cause little change in the demand for recreation facilities and schools and no new public facilities would be required. This aspect of Impact PSU-1 would be less than significant.

However, construction of the SCE Calcite Facilities would have a significant and unavoidable impact on emergency response times due to the anticipated concurrent construction with the Stagecoach Solar Generation Plant components. This impact would remain significant even with the implementation of MM TRA-1 (Construction Traffic Control Plan) because the large number of construction trips, even when mitigated, could substantially affect emergency vehicle response times along the affected rural roadway network.

Operation and Maintenance. During O&M, the SCE Calcite Facilities would have no permanent staff, would be remotely monitored for security, and would incorporate required fire prevention and suppression technology into facility designs. Plans would be in place to reduce the chance for fire and required fire suppression devices would be incorporated as required. The SCE Calcite Facilities do not include new housing or other long-term uses that would require an increase in or need for new public facilities. Any development in undeveloped areas increases the potential for the occurrence of wildfires; this is analyzed in Section 4.18, *Wildfire*.

Mitigation Measures

MM TRA-1: Construction Traffic Control Plan (Section 4.17, *Traffic and Transportation)*

Residual Impact

With the implementation of MM TRA-1, impacts related emergency response during construction of the SCE Calcite Facilities would be lessened but not eliminated. There would still likely be emergency service delays during construction. However, these impacts would cease upon completion of construction and would not occur during operation.

Impact PSU-2: Project construction and operation would require new or relocated utilities and service systems and/or place demands on local water, wastewater, and solid waste facilities in excess of their capacities.

Construction and operation of the SCE Calcite Facilities would not require new utilities or public service facilities or exceed service system capacities. **(Less than Significant)**

Impact Discussion

Construction and Operation and Maintenance. Similar to the discussion in Section 4.15.4.1, construction and operation of the SCE Calcite Facilities would not require or result in the relocation or construction of new or expanded water, wastewater treatment, or natural gas systems, the construction or relocation of which could cause significant environmental effects. The electrical and telecommunications support components of the SCE Calcite Facilities would be installed by SCE as part of its facilities. Therefore, as described above, the impacts to utilities and service systems would be less than significant.

Mitigation Measures

No mitigation would be required.

4.15.5 Cumulative Impacts

4.15.5.1 Geographic Scope

The geographic scope for cumulative effects on public services, utilities, and service systems is the area within about 40 miles of the Project site, including the western desert region of the County. Any potential expansion of services and facilities to serve the Proposed Project and the other projects on the cumulative projects list (Section 3.0) could occur within this region.

4.15.5.2 Cumulative Impact Analysis

<u>Impact PSU-1: Project Construction and Operation Would Require New or Altered Governmental Facilities or Would Inhibit Maintenance of Acceptable Service Ratios and Response Times for Public Services</u>

The Proposed Project would not require new or altered government facilities. However, given the number of construction vehicles traveling on SR-18 and SR-247, Proposed

Project construction would likely create a delay in emergency response times for the residents of Lucerne Valley and for Project emergencies during construction. Even with effective implementation of MM TRA-1 (Construction Traffic Control Plan), the Project impact would remain significant and unavoidable. The construction timeframes for the other solar projects in Table 3-1 (Cumulative Projects Within 10 Miles of the Proposed Stagecoach and SCE Calcite Facilities) are unknown at this time. However, if other projects' construction overlapped with those of the Proposed Project, given its size and the large number of construction workers, the Proposed Project's contribution to cumulative effects would be considerable.

Impact PSU-2: Project Construction and Operation Would Require New or Relocated Utilities and Service Systems or Place Excess Demands on Local Water, Wastewater, and Solid Waste Facilities

No public services would be provided for the Stagecoach Facilities. Construction and operation of the SCE Calcite Facilities would require that SCE extend its 12 kV electrical distribution lines to the SCE Calcite Substation. As a result, the Proposed Project would not contribute to demand for public services that may result from the other proposed projects in the Lucerne Valley area.

4.15.6 Mitigation Measure Summary

Table 4.15-3 summarizes the mitigation measures identified in this EIR to reduce or avoid impacts related to public services, utilities, and service systems. The impacts and mitigation measures apply to both the Stagecoach Facilities and the SCE Calcite Facilities.

Table 4.15-3. Impact and Mitigation Measure Summary

Impact	Mitigation Measures
Impact PSU-1: Project construction and operation would result in adverse physical impacts associated with the provision of or need for new or altered governmental facilities or would inhibit maintenance of acceptable service ratios and response times for public services	**MM TRA-1:** Construction Traffic Control Plan (Section 4.17, *Traffic and Transportation*)
Impact PSU-2: Project construction and operation would require new or relocated utilities and service systems and/or place demands on local water, wastewater, and solid waste facilities in excess of their capacities	No mitigation required

4.16 RECREATION

This section describes the recreation qualities of the Proposed Project vicinity, evaluates the type and significance of impacts that may occur as a result of the Proposed Project, and identifies measures to avoid or substantially lessen any impacts found to be potentially significant.

The Proposed Project is described in detail in Section 2, *Project Description*. The Environmental Impact Report (EIR) analysis of the Proposed Project is presented in three parts. The first two parts comprise the **Stagecoach Facilities** proposed by Aurora Solar, LLC and the third part includes the **SCE Calcite Facilities,** proposed by Southern California Edison (SCE). The analysis components are:

- The **Stagecoach Solar Generation Plant,** which would include the solar arrays and collector lines, ancillary project facilities, and the battery energy storage system, all located within the 3,570 acres of State-owned school lands managed by the CSLC
- The **Stagecoach Gen-tie Line** (located on State-owned lands, leased land, and purchased private land), which would run approximately 9.1 miles, connecting the Stagecoach Solar Generation Plant to the proposed SCE Calcite Facilities and the SCE electrical transmission system
- The **SCE Calcite Facilities,** which would be constructed, owned, and operated by SCE and would include a substation (referred to as the **SCE Calcite Substation**), a connection to distribution-level electric power, access roads, telecommunications facilities, and new transmission structures to interconnect with the existing transmission system

4.16.1 Environmental Setting

The Proposed Project area is in the central portion of San Bernardino County, approximately 15 miles south of the City of Barstow, and 12 miles northwest of the unincorporated community of Lucerne Valley. The Proposed Project would be located about 1.5 miles west of State Route 247 (SR-247, or Barstow Road), east of Interstate 15 and south of Interstate 40. The Proposed Project site is within the Bureau of Land Management (BLM) California Desert Conservation Area (CDCA).

The Stagecoach Solar Generation Plant would be located on state-owned land, under the jurisdiction of the California State Lands Commission (CSLC). The surrounding lands include BLM-administered federal lands, additional state lands, and private land.

4.16.1.1 Environmental Setting of the Stagecoach Solar Generation Plant

The area surrounding the Proposed Project is a mix of BLM-administered federal lands, State lands, and private lands. However, the recreational opportunities in the Proposed

Project area are exclusively on BLM lands, as illustrated on Figure 4.16-1. Recreation areas within 5 miles of the Proposed Project site are identified in Table 4.16-1 and discussed below.

Table 4.16-1. BLM Recreation Areas and Special Designations with Recreational Opportunities

Recreation Area	Approximate Size (acres)	Recreational Use
BLM Special Recreation Management Areas (SRMAs)		
Stoddard/Johnson SRMA	96,666	Mixed use
Stoddard Valley Off Highway Vehicle (OHV) Area	53,000	OHV use
Johnson Valley OHV Area	96,000	OHV use
Ord Mountain Route Network (within Stoddard/Johnson SRMA)	25-mile trail	OHV use
BLM Areas of Critical Environmental Concern (ACECs)		
Northern Lucerne Wildlife Linkage ACEC	21,900	Mixed use
Bendire's Thrasher ACEC	9,780	Mixed use
Granite Mountain Corridor Wildlife Linkage ACEC	39,290	Mixed use
Ord Rodman ACEC	204,860	Mixed use

BLM Special Recreation Management Areas (SRMAs)

SRMAs are designated areas on BLM-administered lands which are recognized for their recreation opportunities, unique value, and importance. These areas are managed to protect these values and prioritize outdoor recreation. Land use plans identify these public lands units to direct recreation funding and personnel.

The Stoddard/Johnson SRMA nearly surrounds the Proposed Project. This SRMA contain the Stoddard and Johnson Valley OHV areas to the north and southeast of the Proposed Project, respectively. This SRMA was developed and managed for intensive long-term OHV use and large-scale special events (e.g., off highway races) and commercial filming. The SRMA contains two OHV areas, as well as two popular rock-climbing areas, a campground, trails, petroglyphs, springs, mountain tops, and thousands of acres of open space (BLM 2016c).

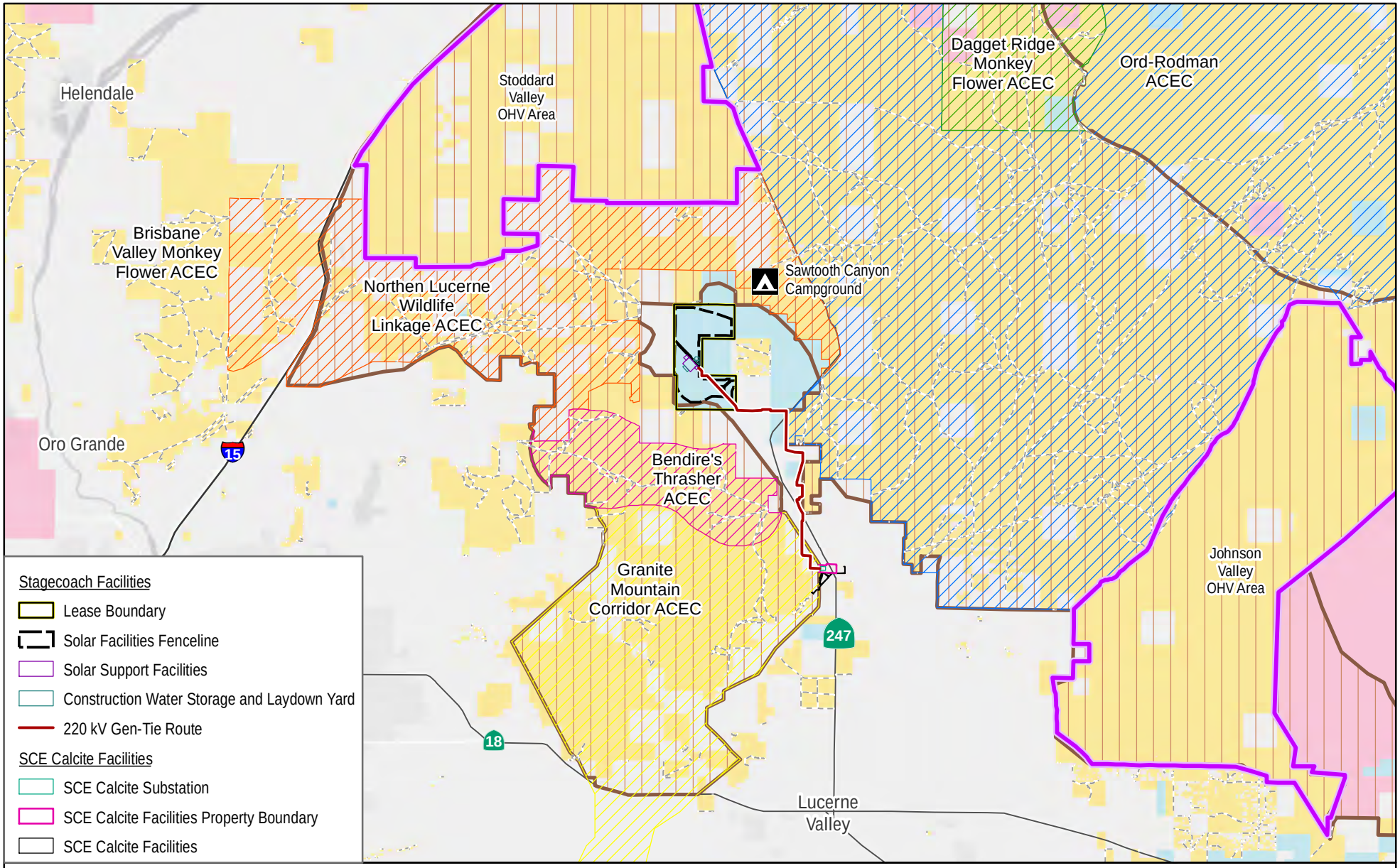


Figure 4.16-1

Recreation Areas in Project Area

The Stoddard/Johnson Valley SRMA is subdivided into four Recreation Management Zones (RMZs), each described below. All the RMZs are host to activities such as camping, walking, hiking, equestrian use, exploring, scramble hiking, mountain climbing and mountain bike riding and scrambling, OHV touring, geo-caching, star gazing, photography, small game hunting, picnicking, and scenic enjoyment (BLM 2016c).

Granite Mountain RMZ. This RMZ includes the land in the southwest portion of the SRMA, south of the Stoddard Valley OHV area, west of SR-247. The majority of recreation in this area is non-motorized. This land includes the Granite Mountains, which provide recreational opportunities such as camping at Sawtooth Campground and rock climbing (BLM 2016c).

Stoddard Valley RMZ. This RMZ includes the Stoddard Valley OHV Recreation Area, where riding OHVs is the primary activity, along with 4x4 exploring, scenic touring, camping, and hunting. This OHV area offers a medium sized range of terrain for different types of OHVs. Visitors use this area for casual recreation and competitive and non-competitive events, such as races and fun runs. This area is accessible from Interstate 15 (BLM 2016c).

Johnson Valley RMZ. This RMZ includes the Johnson Valley OHV Recreation Area within the southeast portion of the SRMA and includes the “Shared Use Area,” which is 488 acres jointly managed by the BLM and Department of Defense (DOD) (Marine Corps Air Ground Combat Center). The Shared Use Area is open to public recreation use for 10 months out of the year, and then for 2 months it is restricted to the DOD for military training. OHV riding is the primary activity within this RMZ due to the full range of terrain for different types of OHVs including key roads that provide access for longer distance scenic touring, as well as competitive and non-competitive OHV events (BLM 2016c).

Ord Rodman RMZ. This RMZ includes the Ord Mountains area between Stoddard and Johnson OHV areas as well as the Rodman Mountains north of Johnson Valley. This RMZ consists of the non-wilderness lands in the Ord and Rodman Mountains, with the primary activities being casual recreation, scenic touring, and exploring longer distance trails on OHVs and 4x4s. This RMZ is more popular for non-motorized activities and is also used for college class field trips and historical group outings (BLM 2016c).

Off-highway Vehicle Areas and Routes

The Proposed Project site is on state-owned undeveloped desert. As described above, the BLM land around the Proposed Project is the Stoddard/Johnson SRMA, and there are two large OHV areas in the area. OHV routes cannot be officially designated on state or private lands, but some routes cross federal public land, such as the Ord Mountain Route Network.

Recreational OHV use in this area is popular for both individual and group recreational activities (BLM 2016c). The Johnson and Stoddard OHV areas are located approximately 11 miles southeast and 3 miles north from the proposed solar generation plant, respectively.

The Johnson Valley OHV area includes a diverse range of geography from dry lakes to steep rocky mountain ranges. The Stoddard Valley OHV area offers a range of terrain for different types of off-highway vehicles. The BLM manages these lands primarily for OHV recreation since that is the primary use in these areas. Some other uses are allowed, such as primitive camping or wildlife viewing. Both Stoddard and Johnson OHV areas are designated as open areas, which means that motorized vehicles may be operated within their boundaries, as long as they comply with limitations that protect sensitive areas. For example, certain areas are fenced for protection of sensitive habitat and wildlife species and are closed to OHV use (BLM 2016c).

The CDCA plan, as amended, states that OHV areas are designated as Open, Limited, or Closed. Within Open areas, motorized vehicles may travel anywhere. Within Limited areas, travel is restricted to meet specific resource guidelines or objectives. Closed areas prohibit both motorized and mechanized vehicle transportation (BLM 2015a).

The Ord Mountain Route Network is a 25-mile network of unpaved roads that links the Stoddard and Johnson Valley open OHV areas. This route network allows travel between OHV areas. The route network also allows access to adjacent ACECs (described below) and allows visitors to access other sites to use for the range of recreation activities allowed on BLM land.

BLM Areas of Critical Environmental Concern

BLM designates Areas of Critical Environmental Concern (ACECs) for lands that have important historic, cultural, or scenic values, wildlife resources, and natural processes. These areas are designated in Land Use Plans or Plan Amendments and are managed to protect and prevent irreparable damage to the specific resources within the ACEC (BLM 2016b).

As shown on Figure 2-3 (Land Management and Ownership), there are four ACECs located within 5 miles of the Proposed Project facilities: Bendire's Thrasher ACEC, Northern Lucerne Wildlife Linkage ACEC, Granite Mountain Wildlife Linkage ACEC, and Ord Rodman ACEC. Recreational activities are not the purpose of these ACECs, but low-intensity recreation is allowed. The recreation that is allowed in each ACEC must be compatible with the protection of the resources for which the ACEC was established. These ACECs allow OHV use only on designated trails (BLM 2015b).

The four ACECs surrounding the Proposed Project are described below.

- Bendire's Thrasher ACEC. This ACEC overlaps with the Stoddard/Johnson SRMA. It provides habitat for a disjunctive population of Bendire's thrasher.[26]

[26] The Bendire's thrasher (*Toxostoma bendirei*) is a bird considered by the BLM to be "sensitive" and by the CDFW as a "species of special concern."

- Northern Lucerne Wildlife Linkage ACEC. This ACEC overlaps with the Stoddard/Johnson SRMA. The goals of this ACEC include protecting sensitive habitat from impacts associated with vehicle traffic. It allows vehicle traffic only on designated roads and trails.
- Granite Mountain Wildlife Linkage ACEC. This ACEC provides critical links for wildlife populations to the north and south of the Granite Mountains and overlaps with the Pacific Crest Trail and Stoddard/Johnson SRMAs.
- Ord Rodman ACEC. This ACEC overlaps with the Stoddard/Johnson ACEC and provides high density habitat and wildlife linkages for desert tortoise (*Gopherus agassizii*). It allows vehicle traffic only on designated roads and trails.

Other BLM-Administered Recreational Opportunities

Sawtooth Canyon Campground. This campground is also known by its nickname "New Jack City" and is located on BLM land. The campground has no use fee and has amenities such as vault toilets, sheltered tables, and firepits; however, there is no running water. The site includes 13 sites, four of which are near a rock-climbing site named "Boy Scout Wall." The campground originated as a destination for the community of rock climbers. It is within the Granite Mountain RMZ area of the Stoddard/Johnson SRMA. This area is used for camping, wildlife viewing, hunting, rock climbing, and picnicking.

Sawtooth Canyon is designated Multiple use and Limited use, as there are no open routes of travel in the campground area, and OHV vehicles must be trailered in and out of the area. Multiple use means that the area is used in multiple ways. Limited use ensures that there is minimal damage to soil, vegetation, wildlife, scenic values, and air quality by only allowing lower intensity, carefully controlled activity (BLM 2020c).

BLM Washes Open Zones. Unless an area is specifically designated as Limited or Closed, BLM considers Open zones "open." When used in this context, a "wash" is defined by BLM as having physical features that make passage of motorized vehicles possible, which establishes its navigability, in addition to having running or standing water, or being dry. Use of washes within these "washes open zones" is restricted to areas considered "navigable." In these Open zones, navigable washes are designated "open" as a class, and they are not individually designated unless they are a specific route (BLM 2002).

The specific washes in the area have not been inventoried or analyzed by BLM to determine their navigability. According to the definition above, portions of washes or all washes in the Lucerne Valley area may be considered navigable.

Recreational Access Across Northern Lucerne Valley

Access to recreational resources across Northern Lucerne Valley occurs via Lucerne Valley Cutoff Road. This road allows access from SR-247 to the recreational areas west of the

Proposed Project site, especially to the Stoddard Valley OHV area. Another road that allows access from SR-247 to recreational areas is Meander Road. This road intersects the Proposed Project site. Figure 4.16-2 shows these roads in relation to the Proposed Project site.

4.16.1.2 Environmental Setting of the Stagecoach Gen-tie Line

The 9.1-mile-long Stagecoach Gen-tie Line would be located on State lands and private lands. The adjacent lands are primarily private land, with a few miles of the gen-tie line adjacent to BLM-administered public lands that allow recreation. There are no recreational uses on the private lands, and other nearby recreational opportunities are the same as those described above for the Stagecoach Solar Generation Plant.

4.16.1.3 Environmental Setting of the SCE Calcite Facilities

The SCE Calcite Facilities would be located approximately 5 miles south-southeast of the Stagecoach Facilities. The substation would be located on land owned by SCE. The proposed substation parcel is located immediately adjacent to the Stoddard/Johnson SRMA, which also overlaps the Granite Mountain Corridor ACEC. The substation would be located on the west side of SR-247 and is about 1,300 feet away from the BLM land boundary. The SRMA boundaries cover some adjacent private land just west of the substation, but that land is not governed by the SRMA management provisions.

4.16.2 Regulatory Setting

The primary federal and state laws, regulations, and policies that pertain to the Proposed Project are summarized in Appendix A. Local policies are summarized below.

San Bernardino Countywide Plan: 2020 County Policy Plan

The 2020 County Policy Plan serves as the County's General Plan; it was revised and adopted in October of 2020. It creates a vision for the County's recreational resources within multiple elements of the general plan.

- ***Natural Resources Element:*** *This element contains Goal NR-3 which contains policies that support "a system of well-planned and maintained parks, trails, and open space that provides recreation opportunities for residents, attracts visitors from across the region and around the country and preserves the natural environment." (San Bernardino County 2020d)*

San Bernardino Countywide Plan: Lucerne Valley Community Action Guide (2020 Draft)

Please see the summary in Section 4.11.2, *Land Use and Planning*.

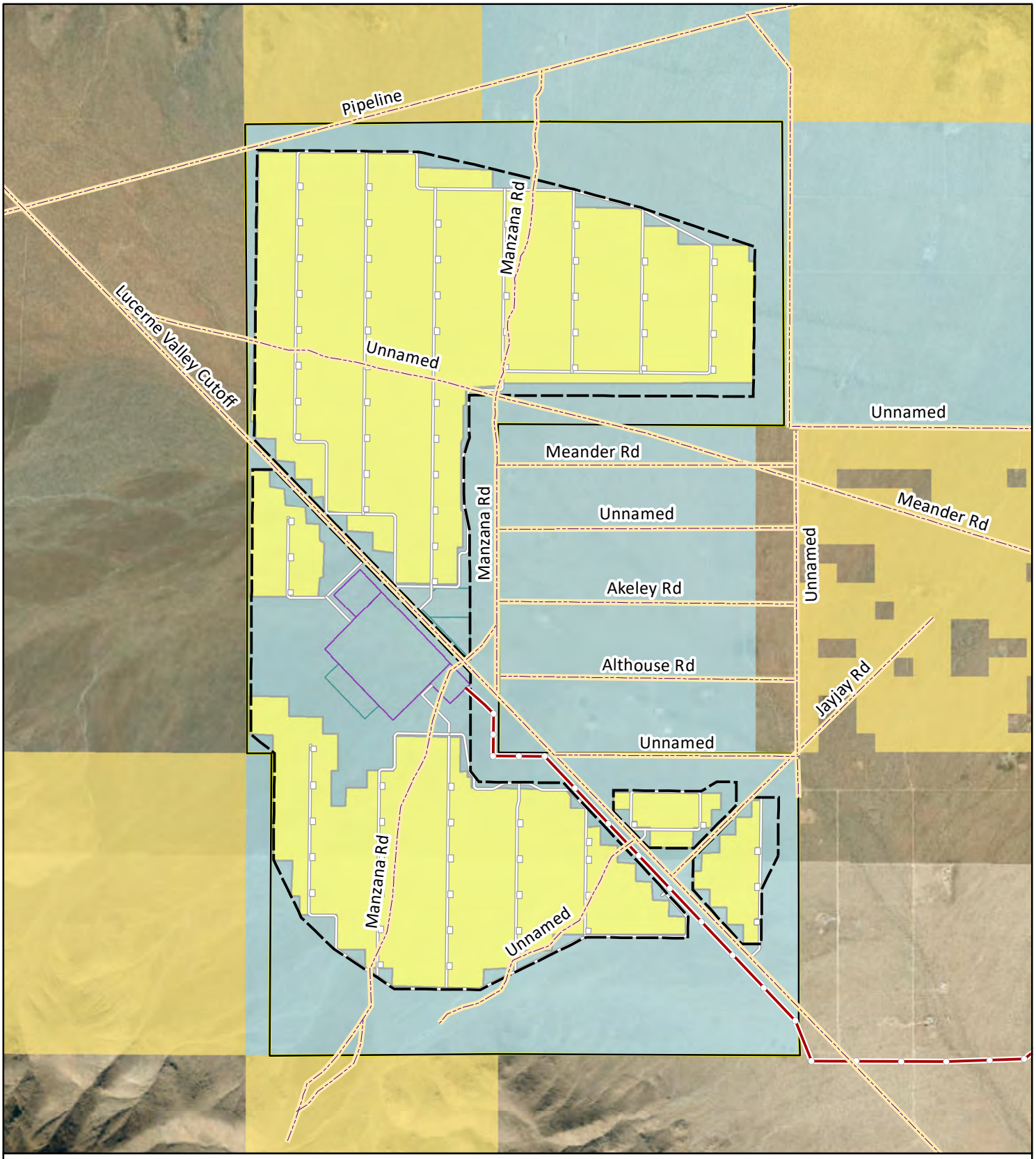


Figure 4.16-2

Unpaved Roads Near **Stagecoach** Solar **Generation Plant**

4.16.3 Significance Criteria

Significance criteria have been established for recreation, based on previous environmental documents and on the State California Environmental Quality Act (CEQA) Guidelines (Appendix G). Impacts to recreation are considered significant if the Proposed Project would:

- Increase the use of existing neighborhood and regional parks or other recreational areas such that substantial physical deterioration of the area would occur or be accelerated; or
- Disrupt or prevent access to designated recreational areas or disturb users of recreational resources

4.16.4 Environmental Impact Analysis and Mitigation

The impacts of the Stagecoach Solar Generation Plant are presented in Section 4.17.4.1, and the Stagecoach Gen-tie Line and SCE Calcite Facilities are analyzed in Sections 4.17.4.2 and 4.17.4.3, respectively.

4.16.4.1 Impacts of the Stagecoach Solar Generation Plant

Impact REC-1: Increase the use of recreational areas such that substantial physical deterioration of the area would occur or be accelerated.

Construction equipment could damage Lucerne Valley Cutoff Road. **(Less than Significant with Mitigation)**

Impact Discussion

Construction. The Proposed Project could cause physical deterioration of the Sawtooth Canyon Campground if construction workers heavily used the campground, or if construction traffic damaged Lucerne Valley Cutoff Road, which is used to access recreation areas.

During construction of the Proposed Project there would be up to 400 workers on the site, with an average of 175 workers per day. As shown on Figure 4.16-1, the Sawtooth Canyon Campground is approximately 1 mile northeast of the Proposed Project site. This campground operates on a first come first-served basis, has 13 camping spots, and is mainly used by rock climbers. If the campground were to be used by construction workers, its use by recreationists could be restricted.

Although the campground is very close to the Proposed Project site, there are numerous hotels located in Victorville, Apple Valley, Hesperia, and Barstow. These hotels are within a 30- to 60-minute drive of the site. Given that hotels are within an hour's drive of the Proposed Project site, and based on practices used during construction of other desert

solar projects, it is unlikely that the campground would be used by construction workers. Therefore, while the occasional worker might stay at the campground, the Proposed Project is not considered likely to cause increased use of the Sawtooth Canyon Campground that would result in substantial physical deterioration of the area.

The Proposed Project area is within a heavily used OHV area as shown in Table 4.16-1. These areas are not expected to experience an increase in use during construction or operation of the Proposed Project, because the Proposed Project is unlikely to induce an increase in visitation to these recreation areas due to the low number of permanent employees at the site (approximately 10 employees). An exception to this is the heavy use of Lucerne Valley Cutoff Road. This road would be the primary access road for solar generation plant construction, and it is also the main recreational connection between the Johnson Valley and Stoddard Valley OHV areas. The large number of construction vehicles using this road could make it difficult for recreational users to reach these OHV sites. In addition, damage to this roadway from heavy equipment and use by numerous vehicles could severely restrict recreational use of the road, causing a potentially significant impact. Mitigation Measure (MM) TRA-1 (Construction Traffic Control Plan) requires development and implementation of a plant to ensure roadway safety and to maintain traffic flow. In addition, TRA-3a (Repair Roadways Damaged by Construction Activities, presented in Section 4.17.4.1) would ensure that the road is properly maintained throughout construction, and that (as addressed in Impact REC-2), the road is always kept open to vehicle traffic during construction.

Operation and Maintenance. During operation of the Project, there would be up to 10 full-time employees at the site. These workers would likely live within commuting distance of the Proposed Project, so they would be very unlikely to cause increased use of the campground and create physical deterioration.

Mitigation Measures

MM TRA-1: Construction Traffic Control Plan (Section 4.17, *Traffic and Transportation*)

MM TRA-3a: Repair Roadways Damaged by Construction Activities (Section 4.17, *Traffic and Transportation*)

Impact REC-2: Disrupt or prevent access to designated recreational areas or disturb users of recreational resources.

Disruption or prevention of access to recreational areas is not likely, and disturbance to users of recreational resources is possible, but will be mitigated. **(Less than Significant with Mitigation)**

Impact Discussion

Construction. The Proposed Project site would be divided by Lucerne Valley Cutoff Road, with the Stagecoach Solar Generation Plant fenced on either side. This road currently serves as one of the connections between the region's two BLM OHV areas: Stoddard Wells and Johnson Valley OHV areas. However, both OHV areas are also accessible from other roads: Johnson Valley can be accessed from SR-247 about 13 miles east of the center of Lucerne Valley, and Stoddard Wells can be accessed either from I-15 (Wild Wash Road exit) or from SR-247 at the Stoddard Wells OHV Area (about 12 miles north of Lucerne Valley Cutoff).

Construction of the Proposed Project would typically occur between the hours of 7 a.m. and 7 p.m. Monday through Saturday for approximately 18 months. During construction, Lucerne Valley Cutoff Road would be heavily used, with up to 1,200 vehicles per day entering and leaving the site during construction. As a result, the use of the road is likely to be constrained or blocked by construction vehicles and equipment six days a week, which could result in limiting access to OHV areas.

MM TRA-1 (Construction Traffic Control Plan; see Impact REC-1 for discussion) would reduce the likelihood that Lucerne Valley Cutoff would be inaccessible due to construction traffic. Traffic control would improve the ability of OHV users to use this road to access both the Stoddard and Johnson OHV area (or to travel between them) on days when construction is in progress, but more likely, recreational users would use other available routes to access these OHV areas. Given the existence of multiple access routes to the major OHV areas, and with implementation of MM TRA-1, this impact would be less than significant. Implementation of MM TRA-3a (Repair Roadways Damaged by Construction Activities) would also help to ensure that Lucerne Valley Cutoff remains usable for access to recreation areas.

Permanent closure of existing roads. At least three existing unpaved roads that currently traverse the solar generation plant site would be permanently blocked due to the installation of Proposed Project facilities, as illustrated in Figure 4.16-2. Meander Road, which currently connects Lucerne Valley Cutoff with SR-247, is smaller and used less than Lucerne Valley Cutoff. The Proposed Project would block through access from SR-247 to Lucerne Valley Cutoff on this road. However, this road is not the only option for accessing Lucerne Valley Cutoff, as shown in Figure 4.16-2. Even with the blockage of this road, recreation resources would still be accessible via other roads. As a result, this impact would be less than significant, and no mitigation would be required.

Construction activity causing noise, dust, and traffic could disturb users of BLM Sawtooth Campground. Proposed Project construction would create noise, dust, and traffic that could disturb users of the Sawtooth Campground. Although there are intervening mountains between the Campground, its main rock-climbing area, and the Stagecoach Solar Generation Plant, these impacts may be considered a nuisance to

visitors of the campground. These disruptions may occur at various times during the 18-month construction timeframe. Access to the campground would not be affected by Proposed Project construction traffic because the access point is from SR-247 at a point more than 6 miles north of Lucerne Valley Cutoff. Due to the distance of the campground to the Proposed Project and intervening topography, the impact would be less than significant and no mitigation would be required.

Presence of the project disturbing recreationists, including OHV users passing through and campground users. The presence of the Stagecoach Solar Generation Plant would change the character of the area due to the presence of an industrial facility in a currently undisturbed area with open expansive views. This visual change is illustrated in the visual simulations presented in Section 4.1, *Aesthetics/Light and Glare*. The long-term visual change is evaluated in Section 4.1.4.1.

Mitigation Measures

MM TRA-1: Construction Traffic Control Plan (Section 4.17, *Traffic and Transportation*)

MM TRA-3a: Repair Roadways Damaged by Construction Activities (Section 4.17, *Traffic and Transportation*)

4.16.4.2 Impacts of the Stagecoach Gen-tie Line

Impact REC-1: Increase the use of recreational areas such that substantial physical deterioration of the area would occur or be accelerated.

The construction or operation of the gen-tie line would not increase the use of recreational areas. **(Less than Significant)**

Impact Discussion

Construction and Operation and Maintenance. The construction and O&M of the gen-tie line would not increase the use of recreational areas. There is a potential that the nearby Sawtooth campground would experience an increase in use by construction workers, but as described above, that is unlikely due to the proximity of the project area to multiple hotels and motels.

The gen-tie line is near two heavily used OHV areas as shown in Table 4.16-1. These areas are not expected to experience an increase in use during construction or operation of the gen-tie, because the facility is unlikely to induce an increase in visitation to these recreation areas due to the low number of permanent employees at the solar generation plant and associated infrastructure (approximately 10 employees). Therefore, the impact would be less than significant.

Mitigation Measures

No mitigation would be required.

Impact REC-2: Disrupt or prevent access to designated recreational areas or disturb users of recreational resources.

Construction or operation of the Stagecoach Gen-tie Line would not disrupt or prevent access to designated recreational areas or disturb users of recreational resources. **(Less than Significant)**

Impact Discussion

Construction. The impacts of the Stagecoach Gen-tie Line construction would be similar to the impacts of the solar generation plant, but less intense and spread across the 9.1-mile gen-tie route length. The construction of the gen-tie line would occur primarily along the gen-tie access road, so would not create noticeable disruption to recreational users in nearby SRMAs.

The gen-tie construction would not prevent access to designated recreational areas or create significant disturbance of users of recreational resources. The local road network providing access to recreational areas would not be blocked during construction (with the exception of very brief road closures during conductor stringing) and access to areas along the gen-tie line would remain unimpeded. The impact would be less than significant.

Operation and Maintenance. No impacts related to recreation access would occur during O&M.

Mitigation Measures

No mitigation would be required.

4.16.4.3 Impacts of the SCE Calcite Facilities

Impact REC-1: Increase the use of recreational areas such that substantial physical deterioration of the area would occur or be accelerated.

Construction or operation of the SCE Calcite Facilities would not increase the use of recreational areas nearby. **(Less than Significant)**

Impact Discussion

Construction and Operation and Maintenance. The construction, operation, or maintenance of the SCE Calcite Facilities would not increase the use of recreational areas. This facility would be one part of the large SCE transmission network in the region, so construction and maintenance workers are assumed to live in or commute to the project site.

During construction, it is possible that substation construction workers would find nearby lodging, but as described above, the SCE Calcite Facilities are relatively close to multiple hotels and motels. During operation, there would be no permanent employees at the SCE Calcite Substation. Impact REC-1 would be less than significant.

Mitigation Measures

No mitigation would be required.

Impact REC-2: Disrupt or prevent access to designated recreational areas or disturb users of recreational resources.

Construction or operation of the SCE would be confined to the immediate project area and would not affect recreation access or disturb users. **(Less than Significant)**

Impact Discussion

Construction and Operation and Maintenance. The SCE Calcite Facilities would be constructed and maintained from the immediately adjacent SR-247. This work would not disrupt or prevent access to designated recreational areas or disturb users of recreational resources. The impact would be less than significant.

Mitigation Measures

No mitigation would be required.

4.16.5 Cumulative Impacts

4.16.5.1 Geographic Scope

The geographic scope for cumulative effects to recreation is the Lucerne Valley and the immediately surrounding BLM-administered public lands, including the Stoddard-Johnson SRMA. This region is in the central portion of San Bernardino County, approximately 15 miles south of the City of Barstow, within 10 miles of the Proposed Project.

4.16.5.2 Cumulative Impact Analysis

Cumulative projects that would have the potential to be considered in a cumulative context with a project's incremental contribution, and that are included in the analysis of cumulative impacts relative to recreation, are identified in Table 3-1 and Figure 3-1 in Section 3.0. There are three other solar projects located within 10 miles of the Proposed Project, including the Sienna Solar Project; the Ord Mountain Solar Project; and the Calcite Solar I Project. There are four other (non-solar) projects located within 10 miles of the Proposed Project. These other existing or proposed projects would add to the cumulative impacts, but the solar generation plants would be the largest contributors to effects on recreation due to their size and the intensity of their construction activities.

Impact REC-1: Increased Use of Recreational Areas

The Proposed Project and the other proposed solar projects in the Lucerne Valley area would cause an increase in use of recreational areas only if construction workers used nearby camping areas during the construction period. The Proposed Project is not expected to result in a significant increase in use of campsites, and its contribution to this impact would not be considerable.

Impact REC-2: Disrupt or Prevent Access to Designated Recreational Areas or Disturb Users

There would be a large number of construction vehicles accessing the Proposed Project site, as well as those of other proposed solar projects (if constructed concurrently). However, access to nearby recreation areas would not be prevented, given the multiple access routes to recreation areas. The three other proposed solar projects area all located near the proposed SCE Calcite Substation. These solar projects would result in similar but less severe impacts to recreation as those described for the Proposed Project, because are all located on private land. This land does not provide access to recreation areas on public lands. In addition, the location of these projects would not affect access to popular recreation areas.

While the Lucerne Valley is surrounded by BLM-administered lands used for dispersed or OHV recreation, the presence of solar projects in the area would not create substantial direct disturbance due to the distance of each project from recreation areas. The contribution of the Proposed Project to the cumulative disruption of access to recreational areas or the disturbance of recreational users would not be considerable.

4.16.6 Mitigation Measure Summary

Table 4.16-2 summarizes the mitigation measures identified in this EIR to reduce or avoid potentially significant impacts to recreational resources.

Table 4.16-2. Impact and Mitigation Measure Summary

Impact	Mitigation Measures
Impact REC-1: Increase the use of recreational areas such that substantial physical deterioration of the area would occur or be accelerated *[Mitigation measures for Impact REC-1 are not applicable to the Stagecoach Gen-tie Line or SCE Calcite Facilities]*	**MM TRA-1:** Construction Traffic Control Plan (Section 4.17, *Traffic and Transportation*) **MM TRA-3a:** Repair Roadways Damaged by Construction Activities (Section 4.17, *Traffic and Transportation*)

Table 4.16-2. Impact and Mitigation Measure Summary	
Impact	**Mitigation Measures**
Impact REC-2: Disrupt or prevent access to designated recreational areas or disturb users of recreational resources *[Mitigation measures for Impact REC-2 are not applicable to the Stagecoach Gen-tie Line or SCE Calcite Facilities]*	**MM TRA-1:** Construction Traffic Control Plan (Section 4.17, *Traffic and Transportation*) **MM TRA-3a:** Repair Roadways Damaged by Construction Activities (Section 4.17, *Traffic and Transportation*)

4.17 TRAFFIC AND TRANSPORTATION

This section describes the traffic and transportation qualities of the Proposed Project vicinity, evaluates the type and significance of impacts that may occur as a result of the Proposed Project, and identifies measures to avoid or substantially lessen any impacts found to be potentially significant. This section focuses on the Proposed Project's potential to adversely impact capacity of the existing roadway system, impede the flow of emergency service vehicles, and create roadway/aviation hazards. In addition, existing laws and regulations relevant to transportation and circulation are described. Potential impacts related to adopted policies, plans, or programs supporting alternative transportation are also analyzed.

The Proposed Project is described in detail in Section 2, *Project Description*. The Environmental Impact Report (EIR) analysis of the Proposed Project is presented in three parts. The first two parts comprise the **Stagecoach Facilities** proposed by Aurora Solar, LLC and the third part includes the **SCE Calcite Facilities,** proposed by Southern California Edison (SCE). The analysis components are:

- The **Stagecoach Solar Generation Plant,** which would include the solar arrays and collector lines, ancillary project facilities, and the battery energy storage system, all located within the 3,570 acres of State-owned school lands managed by the CSLC
- The **Stagecoach Gen-tie Line** (located on State-owned lands, leased land, and purchased private land), which would run approximately 9.1 miles, connecting the Stagecoach Solar Generation Plant to the proposed SCE Calcite Facilities and the SCE electrical transmission system
- The **SCE Calcite Facilities,** which would be constructed, owned, and operated by SCE and would include a substation (referred to as the **SCE Calcite Substation**), a connection to distribution-level electric power, access roads, telecommunications facilities, and new transmission structures to interconnect with the existing transmission system

4.17.1 Environmental Setting

The environmental setting for the Proposed Project includes the roadways and other transportation facilities and operations that would be directly or indirectly affected by construction, operation and maintenance (O&M), and/or decommissioning of the Proposed Project. The following analysis defines the roads and highways that would be utilized by Proposed Project-related vehicles. The data presented includes the name of the roadway, the responsible jurisdiction, the number of lanes, and the average daily traffic (ADT) volumes (reported in number of vehicles per day).

In addition to roadways providing vehicle access to the Stagecoach Solar Generation Plant, there are several unpaved and/or unnamed rural roads that would also be affected by the Proposed Project, as they would be crossed by the Stagecoach Gen-tie Line. Aside from

individual roadways, information in this environmental setting discussion applies to the Stagecoach Solar Generation Plant, the Stagecoach Gen-tie Line, and the SCE Calcite Facilities.

The roadways in the Proposed Project area are shown in Section 2, *Project Description*, Figure 2-1, Figure 2-2a, and Figure 2-2b, and represent the surface transportation network discussed in the remainder of this section.

Stagecoach Solar Generation Plant. The solar generation plant would be located in the central portion of San Bernardino County, approximately 15 miles south of the City of Barstow, 14 miles northeast of the City of Victorville and community of Apple Valley, and 12 miles northwest of the unincorporated community of Lucerne Valley. Primary regional access to the site is provided by Interstate 15 (I-15), Interstate 40 (I-40), State Route 18 (SR-18), and State Route 247 (SR-247, or Barstow Road). Local access to the solar generation portion of the Proposed Project is provided by Lucerne Valley Cutoff Road, which connects directly with SR-247.

Stagecoach Gen-tie Line. Regional access to the gen-tie route would be the same as that for the solar generation plant site, with SR-247 providing direct regional access to the route. SR-247 would also be crossed twice by the proposed gen-tie route (refer to Figure 2-1). Rural residential roads that provide local access to the route and would be affected (crossed) by the transmission interconnect line alignment include, from north to south:

- Lucerne Valley Cutoff Road
- Millberry Street
- Meander Road
- Algoman Avenue
- Beaumont Street
- Selmadoph Street
- Acmite Street
- Brucite Street
- Cummings Road
- Palisade Avenue
- No End Road
- Waalew Road

The unpaved roadways listed above provide access to scattered rural residences located both east and west of SR-247 around the gen-tie route.

SCE Calcite Facilities. Regional access to the proposed SCE Calcite Facilities would be the same as that for the solar generation plant site, with SR-247 providing direct access to the site. The site includes parcels on the east and west sides of SR-247 (refer to Figure 2-1).

Rural residential roads that provide local access to the eastern portion of the site and would run adjacent to the substation include Haynes Road and Fern Road.

4.17.1.1 Traffic Conditions in the Project Area

The approach for collecting data relative to the transportation network was to analyze Google Earth images and maps reports and websites cited throughout this section, including from state and local agencies with jurisdiction for the management of roads and traffic conditions in the Project Area, i.e., the California Department of Transportation (Caltrans) and San Bernardino County. Traffic volume data were obtained from agency websites and reports that are cited at each use, with lane information obtained from Google Earth images and field reconnaissance. Information in this section applies to the Stagecoach Solar Generation Plant, the Stagecoach Gen-tie Line, and the SCE Calcite Facilities.

Regional Roadways

The existing roadway characteristics and traffic conditions for freeways providing regional access to the Proposed Project area are summarized in Table 4.17-1. The 2017 data presented in this table represents the most currently available traffic counts and is considered representative of current conditions on Proposed Project area roadways.

Table 4.17-1. Regional Roadway Characteristics and Existing Traffic Conditions

Roadway	Jurisdiction	Lanes	ADT[1]
I-15, North of SR-18	Caltrans	6	61,000
I-15, South of SR-18	Caltrans	6	91,000
I-40, East of I-15	Caltrans	4	21,000
SR-247, South of I-40/I-15 Junction (City of Barstow)	Caltrans	2	18,400
SR-247, North of SR-18	Caltrans	2	2,900
SR-18, East of I-15	Caltrans	2	40,000
SR-18, West of SR-247	Caltrans	2	6,300

[1] ADT: Average daily traffic volume (number of vehicles)
Source: Caltrans 2020c

Local Roadways

The existing roadway characteristics and traffic conditions for each of the Proposed Project area local roadways are summarized in Table 4.17-2. The data presented in this table represents the most currently available traffic counts and is considered representative of current conditions on Proposed Project area roadways. It should be noted that local

roadways crossed by the Proposed Project gen-tie line may also be used for vehicle access to the work areas during construction. With regard to traffic control devices in the local Proposed Project area, all of the intersections of local Proposed Project area roadways (identified in Table 4.17-2) with SR-247 are uncontrolled.

As the traffic volume data provided by San Bernardino County (as presented in Table 4.17-2) were collected in various years, volumes were adjusted to the present year of 2020 by applying a one percent annual growth rate, as recommended in "Traffic Volume Expansion Factors" (San Bernardino County 2014c).

Table 4.17-2. Local Roadway Characteristics and Existing Traffic Conditions

Roadway	Jurisdiction	Lanes	ADT[1]	Project Use
Stagecoach Solar Generation Plant				
Lucerne Valley Cutoff Road	San Bernardino County	2 Unpaved	68	Site Access
Stagecoach Gen-tie Line				
Millberry Street	San Bernardino County	2 Unpaved	N/A	Gen-tie Interconnection Crossing
Meander Road	San Bernardino County	2 Unpaved	N/A	Gen-tie Interconnection Crossing
Algoman Avenue	San Bernardino County	2 Unpaved	8	Gen-tie Interconnection Crossing
Beaumont Street	San Bernardino County	2 Unpaved	N/A	Gen-tie Interconnection Crossing
Selmadoph Street	San Bernardino County	2 Unpaved	N/A	Gen-tie Interconnection Crossing
Acmite Street	San Bernardino County	2 Unpaved	1	Gen-tie Interconnection Crossing
Brucite Street	San Bernardino County	2 Unpaved	151	Gen-tie Interconnection Crossing
Cummings Road	San Bernardino County	2 Unpaved	N/A	Gen-tie Interconnection Crossing
Palisade Avenue	San Bernardino County	2 Unpaved	N/A	Gen-tie Interconnection Crossing
No End Road	San Bernardino County	2 Unpaved	N/A	Gen-tie Interconnection Crossing
Waalew Road	San Bernardino County	2 Unpaved	35	Gen-tie Interconnection Crossing

Table 4.17-2. Local Roadway Characteristics and Existing Traffic Conditions				
Roadway	**Jurisdiction**	**Lanes**	**ADT[1]**	**Project Use**
SCE Calcite Facilities				
Spinel Street	San Bernardino County	2 Unpaved	152	Transmission Interconnection Crossing

N/A: Data not available.
[1] ADT: Average daily traffic volume (number of vehicles)
Source: San Bernardino County 2020e.

4.17.1.2 Vehicle Miles Travelled

A key transportation performance metric is vehicle miles traveled (VMT), which is a summation of the trip length for each vehicle trip multiplied by the number of trips. Table 4.17-3 presents the most recently published VMT for people traveling to job sites or offices within San Bernardino County as a whole. The table also presents data for the North Desert Region (which contains the Proposed Project site and vicinity, as well as the County north of Lucerne Valley) (San Bernardino County 2020b). As shown, employment VMT per person in the North Desert Region (rural) unincorporated areas of the County (where the Proposed Project is located) are higher than the Countywide data. This is likely due to the distance of the North Desert Region from employment centers.

Table 4.17-3. 2016 Employment VMT Per Person for San Bernardino County and North Desert Area		
Countywide	Total	18.0
	Unincorporated	24.1
	Incorporated	17.3
North Desert Region	Unincorporated	35.3
	Incorporated	15.2

Source: San Bernardino County 2019c

4.17.1.3 Public Transportation

Public transportation in the Proposed Project area is provided by the Victor Valley Transit Authority (VVTA), which is a bus transit operator that serves Adelanto, Apple Valley, Hesperia, and Victorville in western San Bernardino County. VVTA has 20 fixed bus routes that circulate through these areas as well as the BV Link that runs between Barstow and Victorville and the National Training Center (NTC) Commuter route that serves the Fort Irwin NTC. In the immediate vicinity of the Proposed Project site, VVTA operates Route 23,

the Lucerne Valley line, which runs along Central Road, Bear Valley Road, SR-18, and SR-247 between Apple Valley and Lucerne Valley (VVTA 2020).

4.17.1.4 Pedestrian and Bicycle Facilities

According to the San Bernardino County Non-Motorized Transportation Plan (SANBAG 2018) and field reconnaissance, Proposed Project area roadways do not contain dedicated bike lanes. However, bicycles are allowed on SR-247 and SR-18 (Caltrans 2017). Due to the rural nature of the local roadways affected by the Proposed Project, bicyclists either share the roadway with vehicular traffic or use the shoulder.

No sidewalks exist along the roadways in the Proposed Project area. Pedestrians on these roadways are expected to walk along the shoulder or the edge of the roadway.

4.17.2 Regulatory Setting

The primary federal and state laws, regulations, and policies that pertain to the Proposed Project are summarized in Appendix A. Regional and local policies are summarized below.

Regional planning for the Proposed Project area is conducted by the Southern California Association of Governments (SCAG), which is the designated Metropolitan Planning Organization for a six-county region, including San Bernardino County. SCAG is responsible for preparing the Regional Transportation Plan. Regional planning is also conducted by the San Bernardino Associated Governments (SANBAG). This agency administers the San Bernardino County Congestion Management Program, which is mandated by State of California law (SANBAG 2016). This law requires that the traffic generated by individual development projects be analyzed for potential impacts to the regional roadway system.

San Bernardino Countywide Plan: 2020 County Policy Plan

The 2020 County Policy Plan serves as the County's General Plan. The roadways in unincorporated San Bernardino County must be consistent with the Transportation and Mobility Element of the Countywide Plan, which presents goals and objectives for the County's transportation system and coordinates the transportation and mobility system with future land use patterns and projected growth (San Bernardino County 2020b).

The Plan's Transportation and Mobility Element presents policies related to roadway capacity, vehicular travel, traffic control, emergency services, and alternative modes of transportation such as public transit, bicycles, and pedestrians. The goals are as follows:

> ***Goal TM-1. Roadway Capacity:*** *Unincorporated areas served by roads with capacity that is adequate for residents, businesses, tourists, and emergency services.*
>
> ***Goal TM-2. Road Design Standards:*** *Roads designed and built to standards in the unincorporated areas that reflect the rural, suburban, and urban context as well as the regional (valley, mountain, and desert) context.*

Goal TM-3. Vehicle Miles Traveled: *A pattern of development and transportation system that minimizes vehicle miles traveled.*

Goal TM-4. Complete Streets, Transit, and Active Transportation: *On- and off-street improvements that provide functional alternatives to private car usage and promote active transportation in mobility focus areas.*

Goal TM-5. Goods Movement: *A road, rail, and air transportation system that supports the logistics industry and minimizes congestion in unincorporated areas.*

The operation of any vehicle on the public roadways is also subject to the regulatory requirements of the San Bernardino County Code of Ordinances, Division 5 (Highways, Traffic) (San Bernardino County 2020f).

4.17.3 Significance Criteria

Based on the State California Environmental Quality Act (CEQA) Guidelines, Appendix G Environmental Checklist, impacts to traffic and transportation are considered significant if the Proposed Project would:

- Conflict with a program plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities
- Conflict or be inconsistent with State CEQA Guidelines,[27] section 15064.3, subdivision (b)
- Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)
- Result in inadequate emergency access

4.17.4 Environmental Impact Analysis and Mitigation

The methodology used to assess the impacts on transportation and traffic conditions involves comparing the actions associated with the Proposed Project with the environmental setting presented in Section 4.17.1. These actions are evaluated using the significance criteria identified in Appendix G of the State CEQA Guidelines, which are summarized in Section 4.17.3. The Proposed Project would have a greater impact on the ground transportation system (roads) during construction than during O&M because there will be a minimal amount of vehicular activity required to operate and maintain a solar energy and battery storage facility, the gen-tie line, and the substation after construction is completed.

This section evaluates impacts associated with the addition of construction and permanent vehicle trips to the local circulation network. Construction-related temporary impacts would last for 18 months, with a 12-month peak period. During this time, there would be disruptions to lanes and pathways during construction, access restrictions, disruption to emergency

[27] The “State CEQA Guidelines” refers to California Code of Regulations, Title 14, Chapter 3.

vehicle access flow, disruptions to public transportation generated by the Proposed Project, and potential hazards to motorists and pedestrians/bicyclists.

CEQA Analysis of Transportation Impacts. Following years of development and public comment, the California Office of Planning and Research (OPR) and the Natural Resources Agency have issued new State CEQA Guidelines for analyzing transportation impacts. These new regulations represent a major shift in approach to analyzing transportation impacts under CEQA. Beginning July 1, 2020, all CEQA lead agencies must discontinue analysis of transportation impacts based on congestion effects tied to Level of Service (LOS). Rather, analysis of a project's transportation impacts must now be based on VMT. VMT analyzes the distance that vehicles will travel to and from a project, rather than congestion levels at intersections and along roadway segments. OPR's enacted new guidelines for assessing transportation impacts specify that traffic congestion can no longer be considered in assessing impacts under CEQA.

Impact TRA-1 addresses Project traffic volumes, including temporary road or travel lane closures, that could affect the circulation system. Analysis of VMT is presented in Impact TRA-2. As required by the revised State CEQA Guidelines, the analysis presented in Impact TRA-1 does not evaluate effects on congestion caused by the increase in ADT volumes during construction. Instead, this analysis focuses on the potential for the ADT generated during Proposed Project construction to affect roadway safety along affected rural segments of SR-18, SR-247, and Lucerne Valley Cutoff Road. Roadway safety would be impaired during construction, primarily due to the significant increase in ADT volumes over existing conditions.

The impacts of the Stagecoach Solar Generation Plant are presented in Section 4.17.4.1, and the Stagecoach Gen-tie Line and SCE Calcite Facilities are analyzed in Sections 4.17.4.2 and 4.17.4.3, respectively.

4.17.4.1 Impacts of the Stagecoach Solar Generation Plant

Impact TRA-1: Project traffic volumes, or temporary road or travel lane closures, would substantially affect the circulation system.

Temporary increases in traffic would occur during construction from commuting and equipment delivery. **(Significant and Unavoidable)**

Impact Discussion

Construction. Construction of the Stagecoach Solar Generation Plant would not require any temporary road or travel lane closures. Construction would employ up to 400 workers per day during the 12-month long peak construction period. Depending on the stage of construction, an average daily workforce of up to 175 workers would be present at the construction site. The estimated truck trips are presented in Table 2-3, Truck Deliveries. Based on these construction assumptions, it is estimated that peak construction of the

Stagecoach Solar Generation Plant could temporarily result in up to 1,200 vehicle trips per day (800 passenger vehicle trips and 400 truck trips, which assumes 2 trips per day for each vehicle).

Construction would result in workers traveling to/from the site as well as deliveries of equipment and materials generating temporary vehicle trips to the area. The estimated maximum addition of daily construction worker commute trips and truck deliveries would increase traffic volumes for 18 months (with a peak of 12 months) on the regional roadway network (I-15, I-40, SR-18) and would substantially increase ADT volumes on SR-247, which provides the only paved access to Lucerne Valley Cutoff, from which construction vehicles would access the Stagecoach Solar Generation Plant site.

While the commuting route for construction workers is not known with certainty, this analysis assumes that most will come to the site via I-15 and SR-18 from Victorville/Apple Valley. Therefore, the main roadways affected by Proposed Project construction trips would be SR-18 and SR-247 (under jurisdiction of Caltrans) and Lucerne Valley Cutoff Road (under jurisdiction of San Bernardino County). As I-15 is a 6-lane freeway, the addition of this volume of construction trips is not expected to significantly affect this freeway. The following are baseline ADT volumes for SR-18, SR-247, and Lucerne Valley Cutoff Road:

- **SR-18:** As shown in Table 4.17-1, SR-18 west of SR-247 (between Lucerne Valley and I-15) currently has 6,300 ADT. The potential addition of 1,200 daily construction trips would result in a 19 percent increase in daily traffic volumes. This increase would be especially apparent at the intersection of SR-18 and SR-247, which is a four-way stop, with construction-related vehicles needing to turn left (north) onto SR-247.
- **SR-247:** As shown in Table 4.17-1, SR-247 north of SR-18 (between Lucerne Valley and Barstow) has 2,900 ADT. All construction traffic would have to use this road, whether arriving at the Proposed Project site from the south or the north. The potential addition of 1,200 daily construction trips would result in a 41 percent increase in daily traffic volumes. This would be a substantial increase in ADT volumes. Additionally, the entirety of this increase would occur at the intersection of Lucerne Valley Cutoff Road at SR-247, which is an uncontrolled intersection at an easterly curve of SR-247. There are no turn lanes at this intersection. Most construction-related traffic would turn left from northbound SR-247 onto the unpaved Lucerne Valley Cutoff Road.
- **Lucerne Valley Cutoff Road:** As shown in in Table 4.17-2, Lucerne Valley Cutoff Road has 68 ADT. The addition of 1,200 daily construction trips would result in an extremely large (1700 percent) increase in ADT.

Conflict with Plan, Ordinance, or Policy. In accordance with the revised State CEQA Guidelines and the significance criteria presented in Section 4.17.3, a significant impact would occur if the Proposed Project conflicted with a program plan, ordinance, or policy

addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. Therefore, the following discussion analyzes applicable plans and ordinances pertaining to roadway safety.

SR-18

The *Transportation Concept Report for SR-18* is the most relevant Caltrans plan addressing this road, which is four lanes through Victorville and most of Apple Valley, then two lanes east of Central Road to its intersection with SR-247. A review of this report found no specific policies or thresholds of significance that would apply to evaluation of Proposed Project construction trips under CEQA. However, the Concept Report identifies the following as key corridor issues (Caltrans 2017):

> *Many portions of the corridor lack sidewalks, bicycle lanes and shoulders, which are vital to developing Complete Streets that are safe and accessible to users of all modes and abilities. It is important that Caltrans and local jurisdictions coordinate and collaborate on local developments that are proposed along SR-18 to ensure that the future facility will be a consistent, efficient, and safe corridor for all users.*

Given existing levels of traffic, the addition of up to 1,200 ADT generated during Proposed Project construction would significantly alter the safety of SR-18 for motorists, pedestrians, and bicyclists.

SR-247

The *Transportation Concept Report for SR-247* is the most relevant Caltrans plan addressing this road, which has two lanes between Lucerne Valley and the Barstow city limit. A review of this report found no specific policies or thresholds of significance that would apply to evaluation of Proposed Project construction trips under CEQA. However, according to this report, the primary purpose of SR-247 is to *provide for the safe and efficient, inter-regional movement of people and goods* (Caltrans 2017). The addition of traffic generated during Proposed Project construction would significantly alter the safety of SR-247 for motorists, pedestrians, and bicyclists.

Lucerne Valley Cutoff Road

Two plans are relevant to this road. First, the 2020 County Policy Plan is relevant to this local roadway. A review of the County Policy Plan found the following policy applies to Proposed Project construction trips under CEQA (San Bernardino County 2020b):

> ***Policy TM-4.1 Complete streets network.*** *We maintain a network of complete streets within mobility focus areas that provide for the mobility of all users of all ages and all abilities, while reflecting the local context.*

The addition of Proposed Project construction traffic would significantly impair the ability of other users of Lucerne Valley Cutoff Road to use the road. This change in condition is considered to be inconsistent with the local context (as defined in Policy TM-4.1). This would result primarily from the significant increase in ADT volumes on this roadway over existing conditions.

The second plan that pertains to Lucerne Valley Cutoff Road is the *Lucerne Valley Community Action Guide* (which is part of the County Policy Plan). A review of this Plan found the following policy applies to use of unpaved Lucerne Valley Cutoff Road (San Bernardino County 2020b):

> ***Action Statement C.1:*** *Coordinate with the County Public Works Department and Caltrans to prioritize local roads in need of improvement, to ensure regular maintenance of the road system, and to increase the safety of the community's roads.*

The traffic volumes generated during Proposed Project construction on the unpaved Lucerne Valley Cutoff Road would significantly reduce safety on this roadway.

Traffic Control Planning

In Section 2.3.5.2, *Construction Vehicles and Equipment*, the Applicant has committed to preparing a traffic control plan/strategy. In order to ensure that this plan is effective in maximizing reduction of traffic impacts and associated safety risks during construction, in efforts to comply with the applicable plans described above, Mitigation Measure (MM) TRA-1 (Construction Traffic Control Plan) would be required. MM TRA-1 would require the Applicant to prepare a Construction Traffic Control Plan for review and approval by the CSLC, Caltrans, and the San Bernardino County Department of Public Works. MM TRA-1 requires that a number of traffic control practices be studied and implemented to reduce potential safety impacts, decrease the number of temporary construction trips, control traffic ingress/egress, and ensure that any required permits for oversize vehicle trips associated with delivery of materials for the Stagecoach Solar Generation Plant are properly obtained and complied with.

However, even with the implementation of MM TRA-1, construction of the Stagecoach Solar Generation Plant would result in a significant and unavoidable impact during the 18-month construction period. This is because the significant increase in construction trips, even when mitigated, would substantially affect safety along the affected suburban and rural roadway networks (vehicles, pedestrians, and bicyclists) and be inconsistent with applicable plans that contain overall goals to maintain a safe roadway network.

Operation and Maintenance. O&M of the Stagecoach Solar Generation Plant is expected to generate minimal daily traffic volumes, with up to 10 employees onsite. Routine maintenance of the solar and energy storage facilities would be conducted by the plant

O&M staff, supported by outside contractors or third-party services. As a result, O&M is expected to generate a peak of 30 trips per day. The addition of these trips would result in negligible increases for ADT volumes for SR-18 and SR-247 (see Table 4.17-1). For Lucerne Valley Cutoff, the increase would be about 44 percent greater than the current average daily trips, but the current level is very low (averaging approximately 3 vehicles per hour). Due to the small number of daily O&M trips and limited nature of O&M activities, these trips and activities would not be likely to create safety concerns. As a result, the impact would be less than significant to an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system.

Mitigation Measures

MM TRA-1: Construction Traffic Control Plan. Prior to the start of construction, the Applicant shall submit a Construction Traffic Control Plan (CTCP) for review and approval by the CSLC, Caltrans, and San Bernardino County. The CTCP shall address all roads that would be directly affected by the construction activities or would require permits and approvals. The CTCP shall include consideration of the specific contents defined below, as applicable to each component of the Proposed Project. The components defined herein may be modified based on agency consultation and on the final construction schedule and staffing levels.

Stagecoach Solar Generation Plant:

- Employ a licensed Traffic Engineer to study the need for temporary intersection improvements at the intersections of SR-18/SR-247 and SR-247/Lucerne Valley Cutoff Road during project construction to improve safety and traffic flow, especially for vehicles turning left from northbound SR-247 onto Lucerne Valley Cutoff Road, but also considering vehicles turning right from southbound SR-247. The study shall be completed at least 90 days before the start of construction and shall be consistent with all Caltrans methodologies for determining roadway safety. The study shall be completed in coordination with Caltrans. Improvements studied shall include, but not be limited to:
    - Temporary four-way stop light at SR-18/SR-247 sequenced to facilitate efficient turning movements consistent with project worker commute shifts
    - Temporary three-way stop light at SR-247/Lucerne Valley Cutoff Road sequenced to facilitate turning movements consistent with project worker commute shifts
- Employ a licensed Traffic Engineer to study the need for and design of a paved transition zone and paved apron on Lucerne Valley Cutoff Road where it connects with SR-247. The purpose of this is to ensure safe vehicle ingress/egress at this intersection, and to allow for adequate speed and acceleration when transitioning to/from SR-247. The assessment shall be done consistent with all Caltrans and San Bernardino County Department of Public Works (or other) methodologies for determining roadway safety and include coordination with, and approval by, Caltrans

and San Bernardino County. This assessment shall be completed by the Applicant at least 90 days before the start of construction and shall be reviewed and approved by Caltrans and the County at least 30 days before construction.

- The Applicant shall implement all recommendations made by Caltrans and San Bernardino County as a result of the two studies identified above
- The Applicant shall install signage along Lucerne Valley Cutoff Road at appropriate intervals notifying drivers of the presence of construction traffic on those roadways
- If Lucerne Valley Cutoff Road is not paved, place steel shaker plates west of the entrance to SR-247 to reduce the potential for gravel, dirt, and debris to be deposited on SR-247
- The Applicant shall consult with the California Highway Patrol (CHP) to evaluate the potential safety benefit resulting from increased CHP patrol of SR-18 between I-15 and SR-247 and on SR-247 between SR-18 and Lucerne Valley Cutoff Road during at least the 12-month period of most intense construction activity. The consultation shall consider the potential cost and value of the Applicant paying for additional patrols and shall be documented in a letter to the CSLC, Caltrans, and the County. If determined by the CHP, Caltrans, and County to be beneficial, the precise number and timing of additional patrols shall be defined in consideration of the potential safety impacts presented by construction traffic.

For the Stagecoach Gen-tie Line, the CTCP shall include:

- The locations of all road or traffic lane segments that would be temporarily closed or disrupted due to construction activities
- The locations where guard poles, netting, or similar means to protect transportation facilities for any construction, conductor, or communication line installation work, may require an overhead crossing of a local street or highway
- Provisions for ensuring that detours enable safe movement of pedestrians and bicycles through all public roadways and/or sidewalk facilities temporarily closed or disrupted

Applicable to All Components (Stagecoach Solar Generation Plant, Stagecoach Gen-tie Line, and SCE Calcite Facilities) – the Applicant shall:

- Provide written notification to all property owners and tenants at properties affected by access restrictions to inform them about the timing and duration of obstructions and to arrange for alternative access if necessary. Initial notification defining the start of construction and the anticipated length of construction shall be included in the public notices defined in MM NOI-1b (Public Notification Process). Additional notices shall be provided if conditions or schedules change, at least one week prior to any change or road closures.

- Stagger shifts for construction workers to spread associated traffic over longer times in the morning and evening to improve traffic flow and safety challenges resulting from all workers having the same starting and ending times
- Restrict non-worker construction trips, to the maximum extent feasible, to outside the hours of 7:00-9:00 a.m. and 4:00-6:00 p.m. to increase safety and traffic flow through Apple Valley and Lucerne Valley during peak construction commuter hours.
- Coordinate with the Cities of Victorville, Apple Valley, and Barstow to identify locations for park-and-ride carpooling lots within their communities and establish project-supported buses or vanpools from these locations. The purpose of this measure is to increase safety and maintain traffic flow by decreasing the number of trips on rural roadway segments that have low baseline traffic volumes.
- Use flaggers, warning signs, lights, barricades, delineators, cones, arrow boards, etc., at key locations according to standard guidelines outlined in the Manual on Uniform Traffic Control Devices (FHWA 2021), the Standard Specifications for Public Works Construction (SFPUC 2021), and/or the California Manual on Uniform Traffic Control (Caltrans 2021) to ensure safe site ingress/egress and use of public roadways
- Implement a public outreach campaign (signage, direct mail, website, recorded telephone update line, newspaper notices, etc.) to notify the public of construction traffic routes and construction duration
- Install signage placed along the east and west shoulders of SR-247 at Sunset Road, Sunrise Road, and Rabbit Springs Road in the vicinity of Lucerne Valley Elementary School and Lucerne Valley Middle/High School notifying drivers of the school entrance and school traffic. Develop other provisions to ensure safe crossings of SR-247 by students at Lucerne Valley Elementary School and Lucerne Valley Middle/High School during peak Project commute hours and months.
- Submit to the CSLC, Caltrans, the CHP, and San Bernardino County a description of required oversize vehicles anticipated, permits from Caltrans, and means to follow all safety requirements such as flaggers, flashing lights, and/or the use of continuous traffic breaks operated by the CHP on state highways (if necessary)
- Develop plans to coordinate in advance with emergency service providers to avoid restricting the movements of emergency vehicles. Notify police departments and fire departments that serve the affected area in advance of the proposed locations, nature, timing, and duration of any roadway disruptions, areas of likely congestion, and access restrictions that could impact their effectiveness. At locations where roads will be blocked or constrained, provisions shall be ready at all times to accommodate emergency vehicles, such as immediately stopping work for emergency vehicle passage, providing short detours, and developing alternate routes in conjunction with the public agencies.

- Develop and implement a method for maintaining close coordination with San Bernardino County and other federal and local agencies responsible for approving major projects that may include significant traffic volumes on shared segments of regional and local roadways where the majority of Project-related trips would occur. This coordination would allow Lead Agencies to consider staggering project construction timeframes to minimize the potential for multiple simultaneous construction projects affecting shared portions of the circulation system.

Residual Impacts

With the implementation of MM TRA-1, impacts related to consistency with plans and policies related to the circulation system during construction of the Stagecoach Solar Generation Plant would be lessened but not eliminated. There would still likely be traffic congestion and delays during construction. However, these impacts would cease upon completion of construction. During operation, the Stagecoach Solar Generation Plant would create minimal traffic, not substantially different from existing levels, and operation of the Stagecoach Solar Generation Plant would be consistent with plans and policies related to the circulation system.

Impact TRA-2: Project activities would substantially increase vehicle miles travelled.

A temporary increase in VMT would occur during construction. Operation would result in VMT similar to the existing baseline. **(Less than Significant)**

Impact Discussion

Construction. As discussed in State CEQA Guidelines section 15064.3, subdivision (b.3), a qualitative analysis of construction traffic vehicle miles travelled (VMT) is appropriate unless otherwise specified by the CEQA lead agency. The 18-month construction effort for the Stagecoach Solar Generation Plant would result in vehicle trips that would generate temporary VMT. Many workers needed for construction of the Stagecoach Solar Generation Plant would travel from within a 60- to 90-minute commute time of the site. However, it is possible that some specialized construction workers would come from outside a reasonable commute area and seek temporary housing in the Apple Valley, Barstow, or Victorville areas.

Based on the typical worker VMT for unincorporated areas of San Bernardino County (refer to Table 4.17-3), construction may result in temporary construction workers having longer than normal commute VMT. This is due to the remote location of the Stagecoach Solar Generation Plant site. This increase in VMT would be temporary, lasting throughout the duration of the 18-month construction period.

The majority of truck trips associated with materials and equipment deliveries would likely come from within San Bernardino and Los Angeles Counties because they are readily

available in the region and would likely be more cost efficient compared with further locations. Some materials trips would likely originate from the Ports of Long Beach and Los Angeles or potentially from the other states due to the specialized nature of the solar arrays.

While some construction truck trips may require high VMT to access the Stagecoach Solar Generation Plant site, such trips would be necessary to deliver specialized equipment and materials that are not available locally. Upon completion of construction, nearly all worker commute trips and truck trips would cease. Therefore, construction trips are not considered to require a substantial or permanent increase in VMT compared to regional averages for rural construction projects of a similar scale, nor would they result in temporary emission increases that could impact plans and policies related to the reduction of greenhouse gas emissions by reducing VMT. Therefore, while construction of the Stagecoach Solar Generation Plant may include temporary trips with VMT exceeding normal employment commute VMT of the County, the increase in VMT is not permanent and the Stagecoach Solar Generation Plant is not a use that would affect public transit use or corridors and are presumed to cause a less than significant transportation impact.

Operation and Maintenance. O&M of the Stagecoach Solar Generation Plant would generate minimal daily traffic volumes. As discussed under Impact TRA-1, operation of the Stagecoach Solar Generation Plant would include up to 10 permanent on-site employees which would generate a peak of 30 trips per day, with VMT likely being similar to other existing workers in the area.

The California Office of Planning and Research has developed screening thresholds to indicate when a detailed VMT analysis is needed. Absent substantial evidence indicating that a project would generate a potentially significant level of VMT, or inconsistency with a Sustainable Communities Strategy (SCS) or general plan, projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less than significant transportation impact (OPR 2018). Because operation of Stagecoach Solar Generation Plant would only generate 20 trips per day, VMT of these trips would not generate excessive VMT that could affect existing transit uses or corridors and are presumed to cause a less than significant transportation impact.

Mitigation Measures

While mitigation is not required to reduce or avoid a significant VMT impact, the implementation of MM TRA-1 would reduce the overall number of trips associated with construction of the Stagecoach Solar Generation Plant and therefore reduce VMT.

Impact TRA-3: Project activities or features would substantially increase roadway hazards from roadway damage or incompatible uses.

Traffic volumes and oversize vehicles would damage roadway surfaces during construction. **(Less than Significant with Mitigation)**

Impact Discussion

Construction. Access to the Stagecoach Solar Generation Plant would occur from SR-247 to Lucerne Valley Cutoff Road. As discussed in Impact TRA-1, construction would result in the addition of up to 1,200 vehicles per day travelling on Lucerne Valley Cutoff Road, which is unpaved. This volume of trips, particularly large truck trips, would not be typical and is expected to damage the affected portion of Lucerne Valley Cutoff Road and the SR-247 apron connecting to Lucerne Valley Cutoff Road. This damage may increase hazards on these roadways. MM TRA-1 (Construction Traffic Control Plan) would improve traffic flow and reduce safety concerns. In addition, MM TRA-3a is proposed to ensure damage and deterioration attributed to the Proposed Project would be repaired.

Operation and Maintenance. The Stagecoach Solar Generation Plant would include new internal access roads between power conversion stations and along outer edges of PV arrays, as well as serving up to 5 meteorological stations located throughout the solar field. The proposed access roads within the boundaries of the Stagecoach Solar Generation Plant would be approximately 16 feet in width. Typical access road construction will consist of a compacted subgrade, placement of Geotextile product depending on geotechnical investigation results, and then topped off with 6 to 8 inches of coarse aggregate. The use of these internal access roads would not increase hazards due to design features, as these access roads would be private and not accessible to the public. Additionally, as discussed in Impact TRA-1, operation and maintenance of the Stagecoach Solar Generation Plant would generate minimal daily traffic volumes. These minor traffic volumes, primarily on-site worker passenger vehicle trips, would not substantially increase roadway damage at the site entrance from SR-247 to Lucerne Valley Cutoff Road or be considered incompatible uses. Operational impacts of the Stagecoach Solar Generation Plant would not create significant traffic hazards, and no mitigation would be required.

Mitigation Measures

MM TRA-1: Construction Traffic Control Plan

MM TRA-3a: Repair Roadways Damaged by Construction Activities. If roadways, sidewalks, medians, curbs, shoulders, or other such features are damaged by the Project's construction activities, as determined by the affected public agency, such damage shall be repaired and streets restored to their pre-project condition by the Project applicant. Prior to construction, the Project applicant shall confer with agencies having jurisdiction over the roads anticipated to be directly affected by delivery vehicles and equipment. At least 30 days prior to construction, the Project applicant shall

photograph or video record the affected portions of Lucerne Valley Cutoff Road, SR-247 between SR-18 and Lucerne Valley Cutoff Road, and a 2,000-foot segment of SR-18 west of SR-247 and shall provide the CSLC, Caltrans, and San Bernardino County with a copy of these images and videos.

At least 15 days prior to construction, the Project applicant shall provide a letter or email to the CSLC confirming that the mitigation measure has been executed. This communication shall identify persons or agencies contacted, contact information, and the date of contact, and shall summarize discussions and/or agreements reached.

At the end of major construction, the Project applicant shall coordinate with each affected jurisdiction to confirm what repairs are required. Any damage is to be repaired to the pre-construction condition within 60 days from the end of construction, or on a schedule mutually agreed to by the Project applicant and the affected jurisdiction. The Project applicant shall provide the CSLC written and visual (photo or video) documentation when the coordination has been completed and when the repairs have been completed.

Impact TRA-4: Project activities requiring temporary road or travel lane closures would affect emergency vehicle response.

Construction of the Stagecoach Solar Generation Plant would reduce emergency vehicle movements and response times. **(Significant and Unavoidable)**

Impact Discussion

Construction. Construction of the Stagecoach Solar Generation Plant would occur within the site and would not encroach within any public roadway or access route utilized during emergency vehicle response. However, as discussed in Impacts TRA-1 and TRA-3, construction would introduce a high volume of daily vehicle trips, some of which may be oversize vehicles. The addition of up to 1,200 daily trips and use of unpaved Lucerne Valley Cutoff Road is anticipated to reduce the speeds and response times of emergency vehicles travelling along the affected roadways during construction hours. As presented in Impact TRA-1, proposed MM TRA-1 would require the applicant to prepare a Construction Traffic Control Plan to be reviewed by Caltrans and San Bernardino County and requires the applicant to provide plans to coordinate in advance with emergency service providers to avoid restricting the movements of emergency vehicles.

However, even with the implementation of MM TRA-1, construction of the Stagecoach Solar Generation Plant is considered to have a significant and unavoidable impact during the 18-month construction period. This is because the significant increase in construction trips, even when mitigated, would substantially affect emergency vehicle movements along the affected rural roadway network.

Operation and Maintenance. As discussed under Impact TRA-3, internal access roads would be constructed to provide access to the Stagecoach Solar Generation Plant and

within the site. These roads would be designed to provide adequate emergency vehicle response within the site. While the Stagecoach Solar Generation Plant would be behind locked gates, emergency services would have immediate access into the site when needed via Knox boxes (or a comparable system). In addition, only 10 operational employees would be working on the site so there is no traffic congestion expected during this timeframe. Less than significant impacts to emergency vehicle response would occur from operation of the Stagecoach Solar Generation Plant.

Mitigation Measures

MM TRA-1: Construction Traffic Control Plan

Residual Impacts

With the implementation of MM TRA-1, impacts to the movement of emergency service vehicles during construction would be reduced but remain significant. Ongoing residual impacts would cease upon completion of construction. Once operational, the Stagecoach Solar Generation Plant would not significantly affect emergency service vehicle movements or response times.

4.17.4.2 Impacts of the Stagecoach Gen-tie Line

Impact TRA-1: Project traffic volumes, or temporary road or travel lane closures, would substantially affect the circulation system.

Temporary impacts would occur during construction from vehicle trips and disruption to travel lanes. **(Significant and Unavoidable)**

Impact Discussion

Construction. It is likely that gen-tie line construction would be concurrent with the construction of the solar generation plant. As a result, the high volume of vehicle traffic described for Impact TRA-1 in Section 4.17.4.1 would be ongoing during gen-tie line construction.

Construction of the Stagecoach Gen-tie Line would result in workers traveling along the gen-tie line right-of-way (ROW), as well as to and from staging areas at the Stagecoach Solar Generation Plant. Stagecoach Gen-tie Line construction would also require deliveries of equipment and materials along its 9.1-mile route, generating vehicle trips along the route. Gen-tie construction of the would require brief closures of SR-247 and the local roadways identified in Section 4.17.1 while conductors are being installed across these roadways.

To reduce the severity of the construction-related impacts associated with the gen-tie line, MM TRA-1 is recommended to require the Applicant prepare a Construction Traffic Control Plan (see discussion in Section 4.17.4.1). MM TRA-1 requires a number of traffic control

practices to reduce the number of temporary construction trips, the impacts of temporary access issues associated with temporary lane disruptions, and notifications to affected residents and jurisdictions that may be affected by construction-related trips and activities.

In accordance with the significance criteria presented in Section 4.7.3, a significant impact for Impact TRA-1 for the gen-tie line would occur if the Proposed Project conflicted with a program plan, ordinance, or policy addressing the circulation system. As discussed in Section 4.17.4.1, applicable plans and policies relate to overall effectiveness and safety of the transportation network. If the Stagecoach Gen-tie Line were being constructed on its own (and not concurrent with the solar generation plant), there would be a slight increase roadway safety issues. With the implementation of MM TRA-1 (Construction Traffic Control Plan), construction of the Stagecoach Gen-tie Line alone would have a less than significant impact to applicable plans, ordinances, or policies establishing measures of effectiveness or safety of the circulation system, including public transportation. This is primarily because the local roadways affected by temporary lane disruptions/closures, as identified in Table 4.17-2, contain very low daily traffic volumes which greatly decreases the chances for motorist collisions or conflicts.

However, the Stagecoach Gen-tie Line would most likely be constructed concurrent with the Stagecoach Solar Generation Plant. MM TRA-1 (Construction Traffic Control Plan) would require a number of traffic control practices be studied and implemented to reduce potential safety impacts, decrease the number of temporary construction trips, control traffic ingress/egress, and ensure that any required permits for oversize vehicle trips associated with delivery of materials are properly obtained and complied with. As described in Section 4.17.4.1 for Impact TRA-1, even with the implementation of MM TRA-1, construction of the Stagecoach Solar Generation Plant would result in a significant and unavoidable impact during the 18-month construction period. This is because the significant increase in construction trips, even when mitigated, would substantially affect safety along the affected suburban and rural roadway networks and be inconsistent with applicable plans that contain overall goals to maintain a safe roadway network. Therefore, given the likely concurrent construction timeframes, Impact TRA-1 is considered to be significant and unavoidable, even with implementation of MM TRA-1.

Operation and Maintenance. The Stagecoach Gen-tie Line would require no permanent staff and regular maintenance would not result in conflict with roadway safety goals. Maintenance would primarily include visual inspections that are expected to generate minimal daily traffic volumes. Additionally, maintenance would rarely require temporary lane disruptions or closures. As a result, O&M of the Stagecoach Gen-tie Line is considered to have less than significant impacts to an applicable plan, ordinance, or policy establishing measures of effectiveness or safety of the performance of the circulation system. No mitigation would be required for O&M.

Mitigation Measures

MM TRA-1: Construction Traffic Control Plan

Residual Impacts

With the implementation of MM TRA-1, impacts related to consistency with plans and policies related to the circulation system during construction of the Stagecoach Gen-tie Line would be lessened but not totally eliminated, especially when combined with those of the Stagecoach Solar Generation Plant. This would result in significant and unavoidable impacts during construction. However, these residual impacts would cease upon completion of construction. During operation, the gen-tie line would create minimal traffic, not substantially different from existing levels, so operation would be consistent with plans and policies related to the circulation system.

Impact TRA-2: Project activities would substantially increase vehicle miles travelled.

Temporary trip VMT would occur during construction. Operation would result in nominal VMT. **(Less than Significant)**

Impact Discussion

Construction. Construction of the Stagecoach Gen-tie Line would result in temporary traffic trips that would generate temporary VMT similar to that described for the Stagecoach Solar Generation Plant. While some construction trips may require high VMT, such trips would be necessary to deliver specialized equipment and materials that are not available locally. Upon completion of construction, all worker commute trips and truck trips would cease. Therefore, construction trips are not considered to require a substantial or sustained increase in VMT compared to regional averages for rural construction projects, nor would they result in temporary emission increases that could impact plans and policies related to the reduction of greenhouse gas emissions by reducing VMT. Therefore, while construction of the Stagecoach Gen-tie Line may include temporary trips with VMT exceeding normal employment commute VMT of the County, the increase in VMT is not permanent; construction of the Stagecoach Gen-tie Line is not a use that would affect public transit use or corridors and is presumed to cause a less than significant transportation impact.

Operation and Maintenance. The Stagecoach Gen-tie Line would require no permanent staff and require minimal maintenance. Therefore, O&M of the Stagecoach Gen-tie Line would not generate excessive VMT that could affect existing transit uses or corridors. No long-term VMT impacts would occur.

Mitigation Measures

While mitigation is not required to reduce or avoid a significant VMT impact, the implementation of MM TRA-1 would reduce the overall number of trips associated with construction of the Stagecoach Gen-tie Line and therefore reduce VMT.

Impact TRA-3: Project activities or features would substantially increase roadway hazards from roadway damage or incompatible uses.

Temporary lane closures and oversize vehicle trips during construction could increase potential hazards. Creation of new access roads along the gen-tie line could increase roadway hazards. **(Less than Significant with Mitigation)**

Impact Discussion

Construction. As discussed in Impact TRA-1, construction of the Stagecoach Gen-tie Line is expected to require temporary closures of road or travel lanes. These roadway disruptions, the presence of construction equipment adjacent to roads, and oversize vehicle trips could temporarily increase roadway hazards. MM TRA-1 is proposed and would require the Applicant prepare a Construction Traffic Control Plan. MM TRA-1 requires a number of traffic control practices associated with temporary lane disruptions and to ensure any oversize vehicle trips associated with delivery of materials for the Stagecoach Gen-tie Line are obtained and followed. With the implementation of MM TRA-1, construction of the Stagecoach Gen-tie Line would have a less than significant impact with respect to creating roadway hazards.

Operation and Maintenance. The Stagecoach Gen-tie Line would require minimal maintenance. However, new access roads adjacent to the gen-tie line would be needed for gen-tie line maintenance. While not designed to be public roads, because these roads could be accessed by the public, potential hazards created by these new access roads could include: increased accident potential should the roads not provide sufficient width, increased vehicle collision potential as these roads directly connect to gen-tie infrastructure, increased accident potential should these roads not be designed with proper ingress/ egress points with existing established roads, and potential conflicts with pedestrian or bicycle use of these roads if not property designed or signed.

To ensure these new access roads do not create any hazards to motorists, cyclists, or pedestrians MM TRA-3b is proposed and requires the Applicant to provide plans and gain approval for access road design from the San Bernardino County Department of Public Works. With the incorporation of MM TRA-3b, potential hazards associated with access roads serving the Stagecoach Gen-tie Line would be less than significant.

Mitigation Measures

MM TRA-1: Construction Traffic Control Plan

MM TRA-3b: Gen-tie Access Road Design Approval. Prior to construction of the Stagecoach Gen-tie Line, the Applicant shall provide designs and gain approval by the San Bernardino County Department of Public Works for all new permanent access roads that would be accessible to the public.

Impact TRA-4: Project activities requiring temporary road or travel lane closures would affect emergency vehicle response.

Construction would require temporary lane closures and could affect emergency vehicle response and movements. Operation of the Stagecoach Gen-tie Line would not require temporary road or travel lane closures. **(Significant and Unavoidable)**

Impact Discussion

Construction. Construction of the Stagecoach Gen-tie Line is expected to occur concurrent with construction of the Stagecoach Solar Generation Plant. Construction of the Stagecoach Gen-tie Line would require temporary closures of roads or travel lanes. In addition, the number of construction vehicles traveling on roads in the area would result in safety concerns (see Impact TRA-1) and slower than usual travel. These roadway disruptions could affect emergency vehicle movements and access to residences along the gen-tie route.

MM TRA-1 would require the Applicant prepare a Construction Traffic Control Plan. MM TRA-1 requires plans to coordinate in advance with emergency service providers to avoid restricting the movements of emergency vehicles. The measure requires that police departments and fire departments that serve the affected area be notified in advance of the proposed locations, nature, timing, and duration of any roadway disruptions, and be advised of any access restrictions that could impact their effectiveness. It also requires that, at locations where roads will be blocked, provisions be ready at all times to accommodate emergency vehicles, such as immediately stopping work for emergency vehicle passage, providing short detours, and developing alternate routes in conjunction with the public agencies. However, given the large number of construction vehicles and intensity of construction activity during the 18-month construction timeframe, even with the implementation of MM TRA-1, construction of the Stagecoach Gen-tie Line would result in a significant and unavoidable impact for emergency vehicle response.

Operation and Maintenance. The Stagecoach Gen-tie Line would require minimal maintenance, with normal inspections and maintenance not requiring temporary disruptions to any public roads. Therefore, operation the Stagecoach Gen-tie Line would not impact emergency vehicle access or movements.

Mitigation Measures

MM TRA-1: Construction Traffic Control Plan

4.17.4.3 Impacts of the SCE Calcite Facilities

Impact TRA-1: Project traffic volumes, or temporary road or travel lane closures, would substantially affect the circulation system.

Temporary impacts would occur during construction from vehicle trips. **(Significant and Unavoidable)**

Impact Discussion

Construction. Construction of the SCE Calcite Facilities would not require any temporary road or travel lane closures, except for a very brief closure of SR-247 when distribution line stringing across the highway is required. Construction would result in workers traveling to and from the site, as well as deliveries of equipment and materials generating temporary vehicle trips to the area. SCE anticipates a total of approximately 30 construction personnel working on any given day. Construction-related truck trips were estimated from Table 2-6, SCE Calcite Facilities Construction Equipment and Workforce Estimates by Activity to Construct 220 kV Substation & Access Road. Based on these construction assumptions, it is estimated that peak construction could temporarily result in up to 180 vehicle trips per day (60 passenger vehicle trips and 120 truck trips).

The estimated maximum addition of daily worker commute trips and daily truck deliveries during construction would temporarily increase traffic volumes on the regional roadway network (I-15, I-40, SR-18) and primarily SR-247, which provides direct access to the SCE Calcite Facilities site. When considering baseline ADT volumes of SR-247 (2,900 vehicles per day north of SR-18; 18,400 vehicles per day south of I-40/I-15 Junction), the temporary addition of up to 180 vehicles would not significantly impact performance of regional roadways.

However, it is likely that construction of the SCE Calcite Facilities would occur concurrently with the Stagecoach Facilities, resulting in a total of 1,380 total trips per day. Per the significance criteria provided in Section 4.7.3, an impact would occur if the Proposed Project conflicted with a program plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. As discussed in Section 4.17.4.1, applicable plans and policies relate to overall effectiveness and safety of the transportation network. Assuming concurrent construction, this level of traffic would be considered to conflict with the Caltrans Plans identified in the analysis of the Stagecoach Facilities applicable to SR-18 and-SR-247, resulting in a significant and unavoidable impact for the duration of construction. Construction of the SCE Calcite Facilities would also likely include oversize vehicles required to deliver substation equipment and components, which would also increase safety risks on these roads and be considered inconsistent with Caltrans Plans for SR-18 and SR-247.

To reduce the potential for temporary impacts, MM TRA-1 is proposed and would require the Proposed Project Applicant prepare a Construction Traffic Control Plan for review and

approval by Caltrans and San Bernardino County. MM TRA-1 requires a number of traffic control practices to reduce the number of temporary construction trips, control traffic ingress/egress, and ensure any oversize vehicle trips associated with delivery of materials for the SCE Calcite Facilities are obtained and followed.

However, even with the implementation of MM TRA-1, construction of the SCE Calcite Facilities would have a significant and unavoidable impact during the 18-month construction period. This is because of the very large number of construction trips when the SCE Calcite Facilities are combined with the Stagecoach Solar Generation Plant. Even when mitigated, this number of trips would substantially affect safety along the affected rural roadway network (vehicles, pedestrians, and bicyclists) and be inconsistent with applicable plans that contain overall goals to maintain a safe roadway network.

Operation and Maintenance. O&M of the SCE Calcite Facilities is expected to generate minimal daily traffic volumes. Routine maintenance would be conducted by SCE, and the substation facility would be unmanned. As a result, O&M is expected to generate only temporary trips that are nominal in volumes. The addition of these trips, primarily on SR-247 and other regional roadways (SR-18), would result in similar ADT volumes compared to existing conditions shown in Table 4.17-1. Due to the nominal number of O&M trips and limited nature of O&M activities, less than significant impacts would occur.

Mitigation Measures

MM TRA-1: Construction Traffic Control Plan

Residual Impacts

With the implementation of MM TRA-1, impacts related to consistency with plans and policies related to the circulation system during construction of the SCE Calcite Facilities would be lessened but not totally eliminated, resulting in significant and unavoidable impacts during construction. However, these residual impacts would cease upon completion of construction. During operation, the SCE Calcite Facilities would create minimal traffic, not substantially different from existing levels, and operation of the SCE Calcite Facilities would be consistent with plans and policies related to the circulation system.

Impact TRA-2: Project activities would substantially increase vehicle miles travelled.

Temporary trip VMT would occur during construction. Operation would result in nominal VMT. **(Less than Significant)**

Impact Discussion

Construction. Construction of the SCE Calcite Facilities would result in temporary traffic trips that would generate temporary VMT similar to that described for Stagecoach Solar Generation Plant. While some construction trips may require high VMT, such trips would be necessary to deliver specialized equipment and materials that are not available locally. Upon completion of construction, all construction worker commute trips and truck trips would cease. Therefore, construction trips are not considered to require a substantial or permanent increase in VMT compared to regional averages for rural construction projects of a similar scale, nor would they result in temporary emission increases that could impact plans and policies related to the reduction of greenhouse gas emissions by reducing VMT. Therefore, while construction of the SCE Calcite Substation may include temporary trips with VMT from outside the immediate area, these trips would not affect existing transit uses or corridors and are presumed to cause a less than significant transportation impact.

Operation and Maintenance. The SCE Calcite Facilities would require no permanent staff and require only minor volumes of temporary trips for maintenance. Therefore, operation of the SCE Calcite Facilities would not generate excessive VMT that could affect existing transit uses or corridors. No long-term VMT impacts would occur.

Mitigation Measures

While mitigation is not required to reduce or avoid a significant VMT impact, the implementation of MM TRA-1 would reduce the overall number of trips associated with construction of the Stagecoach Solar Generation Plant and therefore reduce VMT.

Impact TRA-3: Project activities or features would substantially increase roadway hazards from roadway damage or incompatible uses

Oversize vehicles would temporarily increase roadway hazards during construction. Nominal traffic volumes during operation would not increase roadway hazards. **(Less than Significant with Mitigation)**

Impact Discussion

Construction. Access to the SCE Calcite Facilities would occur from SR-247. As discussed in Impact TRA-1, some daily construction trips would likely include oversize vehicles, which could create hazards to motorists. To reduce impacts from temporary trips accessing the site and from oversize vehicle trips, MM TRA-1 is proposed and would require the Proposed Project Applicant prepare a Construction Traffic Control Plan for review and approval by Caltrans and San Bernardino County. MM TRA-1 requires a number of traffic control practices control traffic ingress/egress and ensure any oversize vehicle trips associated with delivery of materials for the SCE Calcite Facilities are obtained and followed. With the implementation of MM TRA-1, construction of the SCE Calcite Facilities would have a less than significant impact with respect to substantially increasing roadway hazards.

Operation and Maintenance. As discussed in Impact TRA-1, operation and maintenance of the SCE Calcite Facilities would generate minimal daily traffic volumes. These minor traffic volumes, primarily passenger vehicle trips for inspection and maintenance, would not substantially increase hazards at the site entrance on SR-247 or be considered incompatible uses. Operation impacts of the SCE Calcite Facilities would be less than significant.

Mitigation Measures

MM TRA-1: Construction Traffic Control Plan

Impact TRA-4: Project activities requiring temporary road or travel lane closures would affect emergency vehicle response.

Neither construction nor operation of the SCE Calcite Facilities would require temporary road or travel lane closures, but construction vehicle traffic would delay emergency vehicle response if construction is concurrent with Stagecoach Facilities. **(Significant and Unavoidable)**

Impact Discussion

Construction. Construction of the SCE Calcite Facilities would occur within the site and would not directly encroach within any public roadway or access route utilized during emergency vehicle response. However, as discussed in Impact TRA-1, construction would introduce a high volume of daily trips when combined with the Stagecoach Solar Generation Plant components, some of which may be oversize vehicles directly attributed to the SCE Calcite Facilities. The addition of these trips on rural segments of SR-18 and SR-247 is anticipated to reduce the speeds and responses times of emergency vehicles travelling along the affected roadways during construction hours. As presented in Impact TRA-1, proposed MM TRA-1 would require the applicant to prepare a Construction Traffic Control Plan to be reviewed by Caltrans and San Bernardino County and requires the applicant to provide plans to coordinate in advance with emergency service providers to avoid restricting the movements of emergency vehicles.

However, even with the implementation of MM TRA-1, construction of the SCE Calcite Facilities is considered to have a significant and unavoidable impact when combined with the 18-month construction period of the Stagecoach Solar Generation Plant components. This is because the significant increase in construction trips, even when mitigated, would substantially affect emergency vehicle movements along the affected rural roadway network.

Operation and Maintenance. The SCE Calcite Facilities would not have permanent staff. SCE employees would visit the site periodically to perform O&M, but their presence would have no impact on emergency vehicle movement.

Mitigation Measures

MM TRA-1: Construction Traffic Control Plan

Residual Impacts

With the implementation of MM TRA-1, impacts to the movement of emergency service vehicles during construction would be reduced, but would remain significant and unavoidable. Residual impacts would cease upon completion of construction. Once operational, the SCE Calcite Facilities would not significantly affect emergency service vehicle movements or response times.

4.17.5 Cumulative Impacts

4.17.5.1 Geographic Scope

The geographic scope of the cumulative analysis for the traffic and transportation analysis is the regional and local access roadways identified in Tables 4.17-1 and 4.17-2, respectively. This geographic area was selected because cumulative projects listed in Section 3, Tables 3-1 and 3-2 could have an impact on traffic volumes, VMT, and physical conditions on these roadways and other transportation facilities. While major projects outside this defined geographic area could have an effect on the transportation network shown in Tables 4.17-1 and 4.17-2, the impacts would be more from a regional perspective, and traffic volumes would likely be spread outside the cumulative geographic scope. The purpose of this cumulative analysis is to evaluate impacts from Project-related activities on roadway segments shared by cumulative projects listed in Section 3, Tables 3-1 and 3-2.

4.17.5.2 Cumulative Impact Analysis

<u>Impact TRA-1: Conflict with a Plan, Ordinance, or Policy Addressing the Circulation System</u>

Cumulative traffic impacts would occur on the roadways and other transportation facilities that would be affected by the Proposed Project if construction activities from cumulative projects were to be implemented simultaneously with the construction of the Proposed Project. Tables 4.17-1 and 4.1-2 list the roadways that would be used by the Proposed Project; the same roads would be used by a number of other projects, contributing to degraded traffic conditions during construction. These projects would include daily vehicle use of the same regional travel routes of Project construction-related vehicle trips. However, aside from SR-247, it is not expected that local roads crossed by the Stagecoach Gen-tie Line would also be crossed at proximate locations by any electrical transmission lines associated with cumulative projects.

With respect to Impact TRA-1, cumulative traffic impacts could be substantial if simultaneous construction activities resulted in significant trip volumes, roadway blockages, or other

transportation disruptions that affected a roadway to a greater extent than the Proposed Project alone. For example, if peak construction trip volumes of the Proposed Project overlapped with nearby cumulative projects that also utilized the same regional roadways at the same location and time (primarily SR-247 through the Proposed Project area), the cumulative impacts could be substantial, even if the construction activities and traffic management plans were coordinated and compatible.

Implementing MM TRA-1 (Construction Traffic Control Plan), presented in Section 4.17.4, would lessen the cumulative contribution of the Proposed Project, but would not reduce the impact to a level less than significant. The Construction Traffic Control Plan, which would be reviewed and approved by Caltrans and San Bernardino County, requires a number of measures and methods that the Proposed Project Applicant must implement to reduce the impact of construction trips to the circulation system, which would minimize direct cumulative impacts of the project should multiple simultaneous construction projects occur affecting shared portions of the circulation system. However, even with the implementation of this measure, the Proposed Project's contribution toward cumulative impacts from generated daily construction traffic would be significant during construction, and the Proposed Project is found to have a direct cumulative contribution toward non-compliance with applicable plans and policies that relate to overall safety and effectiveness of the circulation system.

Impact TRA-2: Increase Vehicle Miles Travelled

With respect to impact TRA-2, the addition of vehicle trips from cumulative projects in conjunction with Proposed Project construction-related trips would increase overall VMT in the area. The Proposed Project would primarily generate temporary construction-based VMT, which would cease upon completion of construction.

Operation of the Proposed Project includes nominal trips that would not significantly increase overall VMT of San Bernardino County or the Lucerne Valley area where the Proposed Project is located. Tables 4.17-1 and 4.17-2 list roadways that would be affected by a number of cumulative projects, including development of large renewable energy facilities and other infrastructure projects, in addition to the Proposed Project. Together, these projects could also generate temporary VMT. While cumulative development could generate long-term VMT increases in San Bernardino County, the contribution from Proposed Project operation toward cumulatively increasing VMT over existing levels would be less than significant.

Impact TRA-3: Substantially Increase Traffic Hazards Due to Design Features or Incompatible Uses

Cumulative roadway hazard impacts could be substantial if simultaneous construction activities resulted in oversize vehicle trips or roadway damage that affected safe use of a roadway or other surface transportation facility. MM TRA-1 would require the Proposed Project Applicant to prepare a Construction Traffic Control Plan for review and approval by

the CSLC, Caltrans, and San Bernardino County. MM TRA-1 requires a number of traffic control practices to control traffic ingress/egress and ensure any oversize vehicle trips associated with delivery of materials are obtained and followed. MM TRA-3a also requires the Proposed Project Applicant to repair roadway damage caused during Proposed Project construction. If other solar projects were constructed concurrently with the Proposed Project, each would contribute to creation of traffic hazards. However, with the incorporation of the mitigation measures defined above, the Proposed Project would have a less than significant contribution to cumulative physical hazard impacts on transportation facilities.

Impact TRA-4: Result in Inadequate Emergency Access

Cumulative impacts on emergency response could be substantial if simultaneous construction activities resulted in roadway blockages or other disruptions that affected emergency vehicle movements and access. MM TRA-1 (Construction Traffic Control Plan) requires the Proposed Project Applicant to define the methods to maintain close coordination, prior to and during construction, with all agencies responsible for approving major projects that may also require encroachment permits to minimize cumulative impacts of multiple simultaneous construction projects affecting shared portions of the circulation system. MM TRA-1 also requires the Proposed Project Applicant to coordinate in advance with emergency service providers and ensure adequate access and movement of emergency vehicles through work areas. Finally, the Plan would also ensure the Proposed Project Applicant provide written notification to property owners and tenants at properties affected by access restrictions. If other solar projects were constructed concurrently with the Proposed Project, their construction traffic would further degrade the ability of emergency service providers to reach local residents or project construction sites. Even with the incorporation of MM TRA-1, the Proposed Project would make the largest contribution to the cumulative impacts on emergency responder access and movements during construction, resulting significant cumulative impact.

4.17.6 Mitigation Measure Summary

Table 4.17-4 summarizes the mitigation measures identified in this EIR to reduce or avoid potentially significant impacts to traffic and transportation. Unless otherwise noted, all mitigation measures apply to both the Stagecoach Facilities and SCE Calcite Facilities.

Table 4.17-4. Impact and Mitigation Measure Summary

Impact	Mitigation Measures
Impact TRA-1: Project traffic volumes, or temporary road or travel lane closures, would substantially affect the circulation system	**MM TRA-1:** Construction Traffic Control Plan

Table 4.17-4. Impact and Mitigation Measure Summary	
Impact	**Mitigation Measures**
Impact TRA-2: Project activities would substantially increase vehicle miles travelled	No mitigation required
Impact TRA-3: Project activities or features would substantially increase roadway hazards from roadway damage or incompatible uses	**MM TRA-1:** Construction Traffic Control Plan **MM TRA-3a:** Repair roadways damaged by construction activities – *[Applies to Stagecoach Solar Generation Plant only]* **MM TRA-3b:** Gen-tie Access Road Design Approval – *[Applies to Stagecoach Gen-tie Line only]*
Impact TRA-4: Project activities requiring temporary road or travel lane closures would affect emergency vehicle response.	**MM TRA-1:** Construction Traffic Control Plan

4.18 WILDFIRE

This section describes the potential for wildfire to occur in the Proposed Project vicinity, evaluates the type and significance of wildfire impacts that may occur as a result of the Proposed Project, and identifies measures to avoid or substantially lessen any impacts found to be potentially significant.

The Proposed Project is described in detail in Section 2, *Project Description*. The Environmental Impact Report (EIR) analysis of the Proposed Project is presented in three parts. The first two parts comprise the **Stagecoach Facilities** proposed by Aurora Solar, LLC and the third part includes the **SCE Calcite Facilities,** proposed by Southern California Edison (SCE). The analysis components are:

- The **Stagecoach Solar Generation Plant,** which would include the solar arrays and collector lines, ancillary project facilities, and the battery energy storage system (BESS), all located within the 3,570 acres of State-owned school lands managed by the CSLC
- The **Stagecoach Gen-tie Line** (located on State-owned lands, leased land, and purchased private land), which would run approximately 9.1 miles, connecting the Stagecoach Solar Generation Plant to the proposed SCE Calcite Facilities and the SCE electrical transmission system
- The **SCE Calcite Facilities,** which would be constructed, owned, and operated by SCE and would include a substation (referred to as the **SCE Calcite Substation**), a connection to distribution-level electric power, access roads, telecommunications facilities, and new transmission structures to interconnect with the existing transmission system

4.18.1 Environmental Setting

The Proposed Project is located in the western portion of the Mojave Desert in San Bernardino County, California, in an area of undeveloped desert land and adjacent to scattered rural residences. The Proposed Project site and surrounding areas are located on flat to gently sloping alluvial fans and low hills with scattered low- and medium-lying scrub brush, Joshua trees, cacti, creosote bush, and occasional weeds.

Wildfires are known to occur and spread rapidly in the Mojave Desert under certain conditions, including the presence of high heat, wind, and availability of fuel. In August 2020, the Dome Fire was ignited by a lightning strike near Cima, California, and spread to more than 40,000 acres within the Mojave National Preserve near the California-Nevada border. Flammable conditions were exacerbated by a heat wave, sporadic and unpredictable wind patterns, and the expansive presence of Joshua trees, which are not adapted to wildfires (Desert Sun 2020). This recent example demonstrates the potential for destructive wildfires to occur in California’s desert region.

Wildfire protection in California is the responsibility of the state, local, or federal government depending on the location. Three agencies provide fire protection services in unincorporated areas of San Bernardino County: San Bernardino County Fire Department (SBCFD), Bureau of Land Management (BLM) Fire and Aviation Program, and California Department of Forestry and Fire Protection (CAL FIRE). These agencies work in cooperation as needed for fighting wildland fires in San Bernardino County.

San Bernardino County

San Bernardino County Fire Department. The SBCFD provides services to more than 60 communities and cities and all unincorporated areas of the County, including the North Lucerne Valley area. The SBCFD provides numerous services and programs, including fire prevention and protection and countywide emergency planning and response activities (SBCFD 2020a). The SBCFD Division 5 (North Desert Division) and Division 6 (High Desert Division) would be responsible for providing fire protection services to the Proposed Project site (SBCFD 2020b). The two nearest County fire stations to the Proposed Project area are Lucerne Valley Station #8 (33269 Old Woman Springs Road, Lucerne Valley) and Hinkley Station #56 (37284 Flower Road, Hinkley).

County Fire Risk Assessment. According to the San Bernardino County Fire Office of Emergency Services, high to very high fire hazard severity zones (FHSZ) are concentrated in the mountainous region of southwestern San Bernardino County (much of which is within the San Bernardino National Forest, about 30 miles south of the Proposed Project area). Fire risk in this mountainous area is further exacerbated by the presence of dense tree growth and high vegetation mortality due to factors such as bark beetle infestation and drought (San Bernardino County 2018b). The County has designated specific areas of the County that have highest fire risk, called Fire Safety Overlay[28] areas (San Bernardino County 2020g). The Proposed Project would not be in one of these areas. However, as described below, the Proposed Project would be within the CAL FIRE moderate Fire Hazard Severity Zone.

Bureau of Land Management Fire and Aviation Program

The BLM Fire and Aviation Program is responsible for fire management and protection of federal lands, identified as Federal Responsibility Areas (FRAs), within the United States. The Fire and Aviation program includes fire suppression, preparedness, predictive services, fuels management, fire planning, community assistance and protection, prevention and education, and public safety (BLM 2020). BLM establishes fire prevention orders and restrictions to assist with wildland fire prevention efforts throughout the public lands within

[28] The Fire Safety Overlay was established by San Bernardino County Code of Ordinances sections 82.01.020 (Land Use Plan and Land Use Zoning Districts) and 82.01.030 (Overlays) to provide greater public safety in areas prone to wildland brush fires, such as mountains, valley foothills, and desert regions designated by the Fire Authority as a wildfire risk area. Areas within the Fire Safety Overlay are subject to additional development standards to protect against wildland fire hazards (San Bernardino County 2017a).

the California Desert District, which consists of Inyo, Imperial, Kern, Mono, Los Angeles, San Bernardino, San Diego, and Riverside Counties.

CAL FIRE

CAL FIRE is responsible for fire protection within State Responsibility Areas (SRAs[29]). CAL FIRE has developed FHSZ maps for California using a fire hazard model that considers the following factors to determine areas of low, moderate, high, and very high FHSZs (CAL FIRE 2007a):

- Vegetation – Vegetation is "fuel" to a wildfire, and it changes over time. Fire hazard considers the potential vegetation over a 50-year time horizon
- Topography – Fire burns faster on steep slopes.
- Weather – Fire burns faster and with more intensity when air temperature is high, relative humidity is low, and winds are strong.
- Crown fire potential – Under extreme conditions, fires burn up into trees and tall brush.
- Ember production and movement – Firebrands are blown ahead of the main fire spreading the fire and getting into buildings and igniting.
- Likelihood of an area burning over a 30- to 50-year time period.

CAL FIRE divides San Bernardino County into four geographic regions. The Proposed Project would be located within the San Bernardino Northwest area, which encompasses the County's Mojave Desert area. The CAL FIRE FHSZ map for the Northwest San Bernardino County area displays FHSZ information for Local Responsibility Areas and FRAs located in the area. Although the Proposed Project site is located on state-owned school lands, the CAL FIRE FHSZ map does not identify any SRAs located in the Proposed Project area or on the Northwest San Bernardino FHSZ map (CAL FIRE 2007b).

Based on CAL FIRE's Northwest San Bernardino County FHSZ map, the Proposed Project is located entirely within a Local Responsibility Area (LRA[30]) and a moderate FHSZ, indicating that the Proposed Project area has a moderate risk of burning within a 30- to 50-year period. Because the Proposed Project is within an LRA, CAL FIRE would not be responsible for fire protection services to the Proposed Project site; responsibility falls to the County or cities. Because the Proposed Project is 15 miles south of an incorporated city (the City of Barstow), the County would be responsible for wildland fire protection in this area.

[29] State Responsibility Areas (SRAs) are the areas of California where the State of California is financially responsible for the prevention and suppression of wildfires. SRA does not include lands within incorporated city/town boundaries or in federal ownership (San Bernardino County 2020c).

[30] Local Responsibility Areas (LRAs) are the areas of California where local jurisdictions (e.g., county or city/ town fire departments, fire protection districts, and by CAL FIRE under contract to local government) are responsible for the prevention and suppression of wildfires. CAL FIRE does not contract with the County of San Bernardino (CAL FIRE 2020).

CPUC Wildfire Proceeding and Fire-Threat Mapping

The California Public Utilities Commission (CPUC) is responsible for reviewing and ensuring that wildfire mitigation plans prepared by the regulated investor-owned utilities (including SCE) incorporate procedures that mitigate wildfire risks. As required by SB 901 (Dodd), Chapter 626, Statutes of 2018, utilities are required to prepare wildfire mitigation measures if the utilities' overhead electrical lines and equipment are located in an area that has a significant risk of wildfire resulting from such equipment.

In January 2018, the CPUC adopted a Fire-Threat Map that delineates the boundaries of a new High Fire-Threat District where stricter fire safety regulations apply to investor-owned utilities. These districts were developed by CPUC in collaboration with CAL FIRE. The CPUC further improved the map in November 2019, defining risk zones:

- Tier 1 High Hazard Zones depict areas on the U.S. Forest Service-CAL FIRE joint map of Tree Mortality High Hazard Zones, which are in direct proximity to communities, roads, and utility lines, and are a direct threat to public safety. These areas are much more localized than Tier 2 and Tier 3 fire-threat areas and are concentrated in forested areas in Northern and Eastern California.
- Tier 2 fire-threat areas depict areas where there is an elevated risk (including likelihood and potential impacts on people and property) from utility associated wildfires
- Tier 3 fire-threat areas depict areas where there is an extreme risk (including likelihood and potential impacts on people and property) from utility associated wildfires

According to the CPUC Fire-Threat Map, the Proposed Project is not within any of these risk zones (CPUC 2019).

Southern California Edison's Wildfire Prevention and Mitigation Plan

SCE's proposal to construct the SCE Calcite Facilities is evaluated in this EIR. SCE's wildfire mitigation plan applies to its facilities only, and not to the Stagecoach Gen-tie Line (which would be owned and operated by Aurora Solar LLC).

SCE developed its proposed 2020-22 Wildfire Mitigation Plan that outlines areas of exploration and application of a variety of technologies to predict and prevent utility equipment failures that pose wildfire risks. The 2020-22 Wildfire Mitigation Plan builds on SCE's 2019 Wildfire Mitigation Plan, its successes, and lessons learned. The 2020-22 plan includes infrastructure hardening, vegetation management, detailed inspections and remediations, and emphasizes Public Safety Power Shutoff resilience and community engagement. The 2020-22 plan increases the use of data, advanced risk analytics, and innovative technologies to help SCE prioritize the activities with the greatest potential to mitigate wildfire risks and improve public safety, especially in SCE's High Fire Risk Areas.

SCE's High Fire Risk Areas are designated based on a combination of SCE's historical map boundaries based on past fire management and response experiences, CAL FIRE's FHSZ maps, and CPUC's High Fire-Threat District maps. According to Figure SCE 4-2 in the SCE 2020-22 Wildfire Mitigation Plan, the Proposed Project is not located within a High Fire Risk Area. SCE generally employs the same wildfire threat mitigation strategies, standards, programs, and activities in High Fire Risk Areas as CPUC's Tiers 1, 2, and 3 zones (SCE 2020). The Wildfire Mitigation Plan includes 69 specific activities that mitigate wildfire risks and improve community resilience (SCE 2020).

4.18.1.1 Environmental Setting of the Stagecoach Solar Generation Plant

The Stagecoach Solar Generation Plant area boundary encompasses a total of approximately 3,570 acres comprised of six undeveloped parcels of state-owned school lands managed by the CSLC. Within this area, the solar generation plant, ancillary project facilities, and BESS (collectively referred to as the Stagecoach Solar Generation Plant) would occupy approximately 1,975 acres.

The Stagecoach Solar Generation Plant is proposed on land with a variety of desert vegetation, including scattered low- and medium-lying scrub brush, Joshua trees, cacti, creosote bush, and scattered weeds. The area is slightly sloped and includes a series of alluvial fans. Scattered residences are located adjacent to the eastern portions of the Stagecoach Solar Generation Plant. The two nearest residences to the solar generation plant are within 200 feet of the Proposed Project boundary; about 10 residences are located within a mile of the Proposed Project boundary. The Stagecoach Solar Generation Plant would be located both north and south of Lucerne Valley Cutoff, which runs diagonally through the solar field, separating it into two major sections. Lucerne Valley Cutoff would serve as the access road to and from the Stagecoach Solar Generation Plant.

4.18.1.2 Environmental Setting of the Stagecoach Gen-tie Line

The Stagecoach Gen-tie Line would run approximately 9.1 miles on private and state-owned land, connecting the Stagecoach Solar Generation Plant to the SCE Calcite Facilities along a generally northwest to southeast path. The vegetation along the Stagecoach Gen-tie Line is similar to that of the Stagecoach Solar Generation Plant. Because the Stagecoach Gen-tie Line is a linear feature, its setting slightly varies depending on the location of its segments. The northernmost approximately 1.6 miles would be located adjacent to the Stagecoach Solar Generation Plant. The gen-tie line would then proceed easterly generally following Greastwood Lane past Meander Road and turn south where it would cross State Route 247 (SR-247, or Barstow Road) for the first time. More residences are located in the vicinity of the gen-tie line at its second point of intersection with SR-247. Residences range from approximately 600 feet to 5,100 feet away from the Stagecoach Gen-tie Line.

The distribution of vegetation becomes increasingly sparse as more roads and developed land increase in this area. The connection point of the Stagecoach Gen-tie Line and the SCE Calcite Facilities contains generally undisturbed vegetation similar to that of the Stagecoach Solar Generation Plant area.

4.18.1.3 Environmental Setting of the SCE Calcite Facilities

The proposed SCE Calcite Substation and its components (collectively referred to as the SCE Calcite Facilities) would be located approximately 5.5 miles southeast of the Stagecoach Solar Generation Plant. Like the solar generation plant area, the SCE Calcite Facilities area has scattered low- to medium-lying creosote scrub and other typical desert vegetation. SR-247 runs diagonally from the northwest to the southeast through the SCE Calcite Facilities parcel, although the substation and its interconnection with the existing 220 kV transmission line would be entirely on the west side of SR-247.

The landscape is relatively flat, and existing transmission lines and towers exist within and adjacent to the boundary. The nearest residences are approximately 2,100 feet from the SCE Calcite Facilities boundary.

4.18.2 Regulatory Setting

The primary federal and state laws, regulations, and policies that pertain to the Proposed Project are summarized in Appendix A. Local policies of the County of San Bernardino are summarized below.

San Bernardino Countywide Plan: 2020 County Policy Plan

Wildfire hazards are addressed in the Hazards Element and Personal & Property Protection Element in the 2020 County Policy Plan, which also serves as its General Plan (San Bernardino County 2020c).

Goal HZ-1, Natural Environmental Hazards. Minimized risk of injury, loss of life, property damage, and economic and social disruption caused by natural environmental hazards and adaptation to potential changes in climate.

- ***Policy HZ-1.2 New development in environmental hazard areas.*** *We require all new development to be located outside of the environmental hazard areas listed below. For any lot or parcel that does not have sufficient buildable area outside of such hazard areas, we require adequate mitigation, including designs that allow occupants to shelter in place and to have sufficient time to evacuate during times of extreme weather and natural disasters.*
    - *Fire: high or very high fire hazard severity zone*
- ***Policy HZ-1.6 Critical and essential facility location.*** *We require new critical and essential facilities to be located outside of hazard areas, whenever feasible.*

- ***Policy HZ-1.7 Underground utilities.*** *We require that underground utilities be designed to withstand seismic forces, accommodate ground settlement, and hardened to fire risk.*
- ***Policy HZ-1.12 Local hazard mitigation plan implementation.*** *We require adherence to the goals, objectives and actions in the Multi-jurisdictional Hazard Mitigation Plan and subsequent amendments to reduce and mitigate damages from hazards in the county.*
- ***Policy HZ-1.13 Fire protection planning.*** *We require that all new development in County-designated Fire Safety Overlay and/or CAL FIRE-designated Very High Fire Hazard Severity Zones meet the requirements of the California Fire Code and the California Building Code as amended by the County Fire Protection District, including Title 14 of the California Code of Regulations fire safety requirements for any new development within State Responsibility Areas, as well as provide and maintain a Fire Protection Plan or Defensible Space/Fuel Modification Plan and other pre-planning measures in accordance with the County Code of Ordinances.*
- ***Policy HZ-1.14 Long-term fire hazard reduction and abatement.*** *We require proactive vegetation management/hazard abatement to reduce fire hazards on existing private properties, along roadsides of evacuation routes out of wildfire prone areas, and other private/public land where applicable, and we require new development to enter into a long-term maintenance agreement for vegetation management in defensible space, fuel modification, and roadside fuel reduction in the Fire Safety Overlay and/or Very High Fire Hazard Severity Zones.*
- ***Policy HZ-1.15 Evacuation route adequacy.*** *We coordinate with CAL FIRE, California's Office of Emergency Services, and other local fire districts to identify strategies that ensure the maintenance and reliability of evacuation routes potentially compromised by wildfire, including emergency evacuation and supply transportation routes.*

Goal PP-3, Fire and Emergency Medical. Reduced risk of death, injury, property damage, and economic loss due to fires and other natural disasters, accidents, and medical incidents through prompt and capable emergency response.

- ***Policy PP-3.1 Fire and emergency medical services.*** *We maintain a sufficient number and distribution of fire stations, up-to-date equipment, and fully-trained staff to respond effectively to emergencies.*
- ***Policy PP-3.2 Fire District.*** *We support the expansion of the Fire District to serve additional incorporated jurisdictions, and the use of special funding and financing mechanisms to augment Fire District revenues to improve service and coverage.*
- ***Policy PP-3.4 Fire prevention services.*** *We proactively mitigate or reduce the negative effects of fire, hazardous materials release, and structural collapse by implementing the California Fire Code, adopted with County amendments.*

- ***Policy PP-3.5 Firefighting water supply and facilities.*** *We coordinate with water providers to maintain adequate water supply, pressure, and facilities to protect people and property from urban fires and wildfires.*
- ***Policy PP-3.6 Concurrent protection services.*** *We require that fire department facilities, equipment, and staffing required to serve new development are operating prior to, or in conjunction with new development.*

Goal PP-4, Emergency Preparedness and Recovery. A reduced risk of and impact from injury, loss of life, property damage, and economic and social disruption resulting from emergencies, natural disasters, and potential changes in climate.

- ***Policy PP-4.1 Emergency management plans.*** *We maintain, update, and adopt the Emergency Operations Plan, Continuity of Operations Plan, and the Multi-Jurisdictional Hazard Mitigation Plan. Plan updates are coordinated with wildfire hazard planning efforts of outside agencies, such as CAL FIRE Strategic Fire Plan, Community Wildfire Protection Plans, U.S. Forest Service, military institutions, California Fire Safe Council and other non-profit stakeholder groups, and other applicable local, state, and federal agencies.*

4.18.3 Significance Criteria

The following significance criteria for wildfire are derived from Appendix G of the State California Environmental Quality Act (CEQA) Guidelines.[31] Impacts related to wildfire are considered significant if the Proposed Project would:

- Require the installation or maintenance of infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment (Impact WIL-1)
- Exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire (Impact WIL-2)

CEQA Guidelines Appendix G also define two other potential impacts related to wildfire. These issues are not analyzed because they do not apply to the circumstances of the Proposed Project, as explained below.

Checklist Item (a): Substantially impair an adopted emergency response plan or emergency evacuation plan. As defined in the County's Emergency Evacuation Route Maps (San Bernardino County 2021c), evacuation routes are defined only for the San Bernardino Mountains. The desert areas have more open driving options, so no plans exist for the area of the Proposed Project.

Checklist Item (d): Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire

[31] The "State CEQA Guidelines" refers to California Code of Regulations, Title 14, Chapter 3.

slope instability, or drainage changes. The Stagecoach Facilities and the SCE Calcite Facilities are located on relatively flat terrain with no risk of post-fire landslides or downslope drainage effects. This is documented in Section 4.7.4.1, Geology and Soils, under Impacts GEO-4 (Seismically induced landslides or slope failures could damage project structures or expose workers to injury) and GEO-6 (Slope failures, such as landslides, could be triggered by project construction). These discussions demonstrate that landslides and slope failures are very unlikely due to the low annual rainfall, flat to low sloping topography, and distance from existing slope failures.

4.18.4 Environmental Impact Analysis and Mitigation

The impacts of the Stagecoach Solar Generation Plant are presented in Section 4.18.4.1, the Stagecoach Gen-tie Line in Section 4.18.4.2, and the SCE Calcite Facilities in Section 4.18.4.3. Scoping comments noted concerns regarding the presence of and potential increase of non-native invasive plant species that may exacerbate human-caused fires and consideration of wildfire risk created by the Proposed Project's power transmission infrastructure. These concerns are addressed in Impact WIL-2.

4.18.4.1 Impacts of the Stagecoach Solar Generation Plant

Impact WIL-1:	**Require the installation or maintenance of infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing increased wildfire risk.**
The Stagecoach Solar Generation Plant would temporarily increase fire risk during construction. During operation, fire risk would be reduced with implementation of mitigation. **(Less than Significant with Mitigation)**	

Impact Discussion

Construction. Construction activities associated with the Stagecoach Solar Generation Plant would require the installation of infrastructure that may exacerbate fire risk. Construction traffic would use SR-247 (paved) and the unpaved Lucerne Valley Cutoff Road, as well as new access roads constructed within the solar field and along outer edges of the PV arrays. Grading for installation of the Stagecoach Solar Generation Plant would require the transport and use of heavy equipment such as bulldozers, motor-graders, numerous water trucks, scrapers, and excavators. Although the Proposed Project site is in a moderate FHSZ as designated by CAL FIRE, use of these vehicles could pose a potential fire hazard. Construction vehicles use flammable fuels, such as diesel and gasoline, and would be operated in proximity to dry vegetation; their hot tailpipes or sparks from chains or other metal objects could ignite dry brush.

As described in Section 2.2.5 of the Project Description, the Applicant has committed to coordinating with the SBCFD to prepare a Fire Management and Prevention Plan (FMPP).

The intent of this plan would be to minimize fire hazards and address the control of fuel sources, reduction of ignition sources, and availability of emergency water. The Stagecoach Solar Generation Plant area would be cleared and graded to remove existing vegetation. This would result in the establishment of defensible space around project vehicles, minimizing the risk of ignition from construction equipment. Additionally, a fire suppression system may be placed in service if required by the SBCFD.

While the FMPP measures presented by the Applicant in Section 2.2.5 would be beneficial, the contents of the plan need to be more clearly defined in order to ensure that the risk of fire during construction would be effectively reduced. Therefore, MM WIL-1 is required to reduce the risk to less than significant levels.

Operation and Maintenance – Solar Field. Operation and maintenance (O&M) of the Stagecoach Solar Generation Plant would occur within an enclosed area with fencing that meets National Electrical Safety Code requirements for protective arrangements in electric supply stations. Maintenance would include routine preventative maintenance and corrective maintenance. Neither type of maintenance would require installation or construction of additional roads, power lines, emergency water, other utilities, or fuel breaks, as these components would have been established during construction.

A key component of routine maintenance of the Stagecoach Solar Generation Plant would be panel-washing to optimize solar generation. The use of a water truck and smaller panel-washing trucks would not exacerbate wildfire impacts because the access roads around the solar arrays would be kept clear of brush, minimizing the possibility of ignition of dry vegetation.

Additionally, an on-site water tank (as described in Section 2.4.3) would be available to facilitate maintenance and support fire suppression. General maintenance activities would reduce the likelihood of accidents that may cause wildfires, as regular inspections would identify and repair damaged or faulty components like wiring that could pose a fire hazard. Impacts related to the maintenance of infrastructure of the Proposed Project would be less than significant.

Operation and Maintenance – BESS. Once operational, the BESS would be monitored remotely to ensure proper functionality. The battery systems would likely operate autonomously with infrequent manual input needed. Routine maintenance would include equipment testing, repair, replacement, routine service, and standard preventative maintenance.

BESS facilities can pose fire safety hazards, as shown by recent lithium-ion battery-related fire safety incidents. The most recent and notable event occurred in Arizona in 2019 when a BESS facility fire and subsequent explosion injured eight firefighters (S&P Global 2019). Lithium cells can experience thermal runaway which causes the release of hot flammable toxic gases (FEMA 2020). Investigation of the Arizona incident found that there were

internal defects of the battery cells. Furthermore, the fire suppression system at the Arizona facility worked as designed but was inadequate to prevent or stop the thermal runaway (Energy Storage 2020). In large storage systems, failure of one lithium cell can cascade to include hundreds of individual cells, and the flammable gases can result in an explosion when exposed to heat, sparks, or oxygen (i.e., opening the door of a BESS enclosure experiencing thermal runaway will cause an explosion) (FEMA 2020).

BESS fires and explosions can be caused by a variety of factors: a lack of proper ventilation, inadequate monitoring system, internal defects, and high external temperatures (S&P Global 2019). Fire suppression options used today include automatic sprinkler systems, inert gaseous systems, water-spray systems, foam systems, and water-mist systems (Plumbing & Mechanical Engineer 2018). Recommended best practices include addressing battery cell quality, as defective cells can easily lead to thermal runaway. Additionally, features should be implemented to limit thermal runaway cascade events cell-to-cell or module-to-module and improve ventilation, cooling, and fire suppression (Energy Storage 2020). Because utilities, commercial entities, and fire response personnel are not completely familiar with the fire hazards of BESS, research and training continue today to determine the optimal design of BESS and emergency fire response (FEMA 2020). The Proposed Project would utilize the latest technology available during construction of the BESS.

The Proposed Project's BESS would be housed in noncombustible metal enclosures complete with heating, ventilation, and air conditioning and fire suppression equipment, and mounted on a concrete pad foundation located inside a perimeter fence. The risk of wildland fires from igniting or spreading would be reduced due to these protective measures involved in housing and placement of the BESS. The BESS would have the necessary setbacks between each piece of equipment consistent with local and state regulations, such as California Fire Code 2019 section 1206, to minimize spread of fire. Implementation of MM WIL-1 would further enhance the safety of the BESS and reduce the risk of fire. Sourcing high quality battery cells from certified manufacturers would minimize the likelihood of having defective cells that could cause thermal runaway. Regularly monitoring the temperature inside the BESS would alert operators of potentially dangerous increases in temperature, and regular inspections of fire suppression equipment would ensure that the fire suppression system can adequately contain a fire and prevent an explosion. Impacts associated with the operation of the BESS would be less than significant with implementation of MM WIL-1.

Mitigation Measures

MM WIL-1: Expand Fire Management and Prevention Plan. The Applicant (for the Stagecoach Facilities) and SCE (for SCE Calcite Facilities) shall expand their respective FMPPs to include additional standards for review and approval by the SBCFD, CSLC, and CPUC (for SCE Calcite Facilities) prior to initiation of construction. The draft Plan shall be provided to each listed agency at least 60 days before the start of any

construction activities. The final Plan shall be approved by the CSLC, the CPUC, and SBCFD at least 30 days prior to the initiation of construction activities. The Applicant and SCE shall fully implement the Plan during construction, operation, and decommissioning activities.

The expanded FMPP shall include, but not be limited to, the following elements:

- Safety and design elements and standards, including, but not limited to, signage near the entrance of the BESS stating that the enclosure contains energized battery systems, electrical circuits, and type of batteries; continuous monitoring of the temperature and temperature control systems within the BESS enclosure; use of certified battery cells; and regular inspections of fire suppression equipment. Combustible materials shall not be stored inside or within 10 feet of the BESS enclosures.
- Coordination with the local water supplier to ensure a sufficient on-site water supply
- Design shall ensure appropriate water pressure, equipment, and facilities for firefighting
- A fire suppression system shall be required, and fire suppression equipment shall be available to workers during construction, operation, and decommissioning
- An adequate number of Knox Boxes (or equivalent key boxes for emergency access) shall be available at main secured access areas to allow for rapid access for first responders
- Procedures for minimizing potential ignition, including, but not limited to, vegetation clearing, parking requirements/restrictions, idling restrictions, smoking restrictions, proper use of gas-powered equipment, and hot work restrictions
- Daily monitoring of weather conditions and implementing work restrictions during Red Flag Warnings and High to Extreme Fire Danger days
- All internal combustion engines used at the Project site shall be equipped with spark arrestors that are maintained in good working order
- Once initial two-track roads have been cut and initial fencing completed, light trucks and cars shall be used only on roads where the roadway is cleared of vegetation. Mufflers on all cars and light trucks shall be maintained in good working order.
- Fire rules shall be posted on the project bulletin board at the contractor’s field office and areas visible to employees
- Equipment parking areas and small stationary engine sites shall be cleared of all flammable materials
- Fire suppression equipment requirements when spark-generating work is being implemented

- Smoking shall be prohibited in all vegetated areas and within 50 feet of combustible materials storage and shall be limited to paved areas or areas cleared of all vegetation
- Each Project construction site (including gen-tie construction locations) and the proposed solar generation plant site shall be equipped with fire extinguishers and fire-fighting equipment sufficient to extinguish small fires
- The Applicant shall coordinate with the SBCFD to create a training component for emergency first responders to prepare for specialized emergency incidents (such as a fire at the BESS) that may occur at the Project site
- All construction workers, plant personnel, and maintenance workers visiting the facilities and/or transmission lines to perform maintenance activities shall receive training on fire prevention procedures; the proper use of fire-fighting equipment; the proper handling, storage, and disposal of flammable materials; initial attack firefighting; and fire reporting. Each worker shall carry at all times a laminated card listing pertinent telephone numbers for reporting fires and defining immediate steps to take if a fire starts. Information on contact cards shall be updated and redistributed to all crewmembers as needed, and outdated cards destroyed, prior to the initiation of construction activities on the day the information change goes into effect. Training records shall be maintained and be available for review by the SBCFD.
- Vegetation near all solar panel arrays, ancillary equipment, and access roads shall be controlled through periodic cutting or spraying of weeds, in accordance with the requirements of MM BIO-1d (Weed Management)
- The SBCFD shall be consulted during plan preparation and fire safety measures recommended by these agencies included in the plan
- The plan shall list fire prevention procedures and specific emergency response and evacuation measures that would be required to be followed during emergency situations
- All on-site employees shall participate in annual fire prevention and response training exercises with the SBCFD
- The plan shall list all applicable wildland fire management plans and policies established by state and local agencies and demonstrate how the Project will comply with these requirements
- The Applicant shall designate an emergency services coordinator from among the full-time, on-site employees who shall perform routine patrols of the site during the most active period of the fire season (defined as June 1 to October 31), equipped with a portable fire extinguisher and communications equipment. The Applicant shall notify the SBCFD of the name and contact information of the current emergency services coordinator in the event of any change.

- Remote monitoring of all major electrical equipment (transformers and inverters) will screen for unusual operating conditions. Higher than nominal temperatures, for example, can be compared with other operational factors to indicate the potential for overheating, which under certain conditions could precipitate a fire. Units could then be shut down or generation curtailed remotely until corrective actions are taken.
- Fires igniting onsite shall be immediately reported to the SBCFD.
- The Applicant shall develop a project-specific O&M guide, incorporating the relevant CAL FIRE principles from the 2021 *California Power Line Fire Prevention Field Guide* (CAL FIRE 2021), specifically to govern the O&M procedures to be implemented for the Stagecoach Gen-tie Line

The engineering, procurement, and construction contract(s) for the Project shall clearly state the requirements of this mitigation measure. The Plan shall include methods for verification that all protocols and requirements are being followed.

Impact WIL-2: Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires.

Coordination with the appropriate emergency response agencies would minimize the risk of loss, injury, or death involving wildland fires and BESS fire incidents. **(Less than Significant with Mitigation)**

Impact Discussion

Construction. Construction of the Stagecoach Solar Generation Plant would permanently disturb approximately 1,900 acres of land and temporarily disturb approximately 15 acres within a moderate FHSZ. Heavy equipment and vehicles would be used during construction that could potentially ignite vegetation adjacent to construction areas, exposing people and structures to risks associated with wildland fires. The Applicant has committed to coordinating with the SBCFD to prepare a FMPP to minimize fire hazards. The FMPP, along with MM WIL-1, would address issues including ignition sources such as vegetation and would include measures to reduce these sources.

A scoping comment expressed concerns about Proposed Project disturbance resulting in increases in the presence of non-native invasive plant species, which may exacerbate fire risks due to their high potential for flammability. Vegetation clearance would remove any non-native plant species prior to construction. In addition, Section 4.3, *Biological Resources*, presents MMs BIO-1d (Integrated Weed Management Plan) and BIO-1e (Vegetation Resources Management Plan) to minimize the likelihood that construction would allow increased growth of non-native plant species.

Hazardous materials used during construction, such as gasoline, diesel fuels, oils, and lubricants are flammable, and may pose a fire hazard if handled, stored, or disposed of improperly. MM WIL-1 requires that all construction workers and on-site personnel be

trained on the safe handling of these materials; this would minimize unintentional spills or ignition of flammable hazardous materials.

Operation and Maintenance. O&M of the Stagecoach Solar Generation Plant would occur in a moderate FHSZ. Solar arrays are fire-resistant, as they are constructed largely out of steel, glass, aluminum, and other non-flammable components and as such, are not likely to pose a fire risk. Operation of the electrical collection system, substation, and meteorological stations would also not contribute substantially to risk of loss, injury, or death associated with wildland fire risk.

All electrical equipment as part of the electrical collection system would be installed underground, would be outdoor-rated consistent with climatic conditions, or mounted within enclosures designed for outdoor installation, reducing ignition or spread of wildfire that would pose a safety hazard to people.

The substation would include switching and transformer equipment. Compliance with safety procedures would minimize transformer failure, but in the rare event of a failure, explosions may occur. In accordance with California Public Resources Code sections 4294 and 4293, the substation would have appropriate firebreaks and setbacks to minimize the low potential of explosions from igniting other flammable materials or structures. Transformers would be placed within a secondary containment area per local and state regulations to further increase safety measures. Additionally, the surface areas of the substation would be covered with a gravel layer to prevent growth of vegetation to avoid the risk of fire ignition.

As described in Impact WIL-1, the BESS poses a safety risk to people, as factors such as overheating and faulty battery cells have the potential to result in thermal runaway, leading to a fire or explosion. The BESS would be housed in metal enclosures complete with heating, ventilation, and air conditioning and fire suppression equipment, and mounted on a concrete pad foundation located inside a perimeter fence. The risk of wildland fires from igniting or spreading would be reduced due to these protective measures involved in housing and placement of the BESS. The BESS would have the necessary required design standards and setbacks between each piece of equipment consistent with California Fire Code 2019 section 1206 to minimize spread of fire. Implementation of MM WIL-1 would impose additional measures to increase fire safety of the BESS, such as monitoring the temperature within the BESS, using battery cells from certified manufacturers, and signage indicating the presence of energized batteries that would protect both Proposed Project employees and residents of the area from fire or explosion hazards during an emergency.

The likelihood of wildland fire ignition during O&M of the Stagecoach Solar Generation Plant area is low, as most vegetation would have been removed during construction. Regular inspections and repairs would eliminate faulty or worn wiring and other electrical components. The lack of substantial flammable material in the vicinity of electrical

components such as batteries, electrical wiring, and transformer would prevent the hazards associated with wildland fires during operation of the Proposed Project. O&M of the Stagecoach Solar Generation Plant would involve some maintenance vehicle travel within the site to inspect, clean, and repair solar components. Vehicles may ignite dry vegetation along access roads; however, regular maintenance would remove noxious weeds and vegetation across the site, and implementation of MM WIL-1 would outline parking, idling, and smoking restrictions to further reduce fire hazards and improve safety.

It is unlikely that the presence of the Stagecoach Solar Generation Plant would exacerbate a wildland fire that originated outside of the Proposed Project area. Flammable materials within Proposed Project boundaries would be minimized, and fire extinguishers, portable fire-fighting equipment, and additional water would be available on site to support fighting a nearby fire.

In conclusion, O&M of the Stagecoach Solar Generation Plant would have a significant wildfire safety risk associated with the BESS, but MM WIL-1 would reduce its impacts by implementing safety measures and training requirements. Therefore, the Stagecoach Solar Generation Plant would not expose people or structures, directly or indirectly, to risks involving wildland fires, and impacts would be less than significant with implementation of the mitigation measures defined below.

Mitigation Measures

MM WIL-1: Expand Fire Prevention and Management Plan

MM BIO-1d: Weed Management (Section 4.3, *Biological Resources*)

MM BIO-1e: Revegetation (Section 4.3, *Biological Resources*)

4.18.4.2 Impacts of the Stagecoach Gen-tie Line

This section evaluates the wildfire impacts associated with the construction, operation, and maintenance of the Stagecoach Gen-tie Line.

Impact WIL-1: Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing increased wildfire risk.

Construction of the Stagecoach Gen-tie Line would temporarily increase fire risk. During operation, the Stagecoach Gen-tie Line would not substantially exacerbate fire risk with implementation of MM WIL-1. **(Less than Significant with Mitigation)**

Impact Discussion

Construction. The Stagecoach Gen-tie Line would not require construction of new paved access roads, but existing roads may be improved if construction travel is not possible for use by construction equipment. Road improvement activities would involve brush clearing, grading, erosion control, and installation of culverts or riprap to maintain stormwater flows. Additionally, a new two-track road would be constructed parallel to the Stagecoach Gen-tie Line using heavy equipment to grade and compact the ground. The use of large equipment for road improvements and the two-track road, such as a motor grader or bulldozers for grading activities, may exacerbate fire risk and temporary impacts on the environment.

Construction of the Stagecoach Gen-tie Line would also include installation of steel transmission poles and conductors. Heavy equipment would be utilized to clear vegetation, grade surfaces, and install transmission pole foundations. Temporary tension and pulling sites would be established along the gen-tie route to install the transmission structures. Vegetation along the gen-tie route would be removed or reduced where appropriate to avoid ignition from sources such as motorized equipment and sparks.

The FMPP, as modified by MM WIL-1, includes specific fire prevention measures that would be implemented during construction, including availability of portable fire extinguishers and adequate water supply. The FMPP, as modified by MM WIL-1, would reduce the fire risk associated with roadwork and installation of transmission structures. MM WIL-1 includes additional required procedures to be included in the FMPP to minimize potential ignition such as clearing vegetation, restricting parking and idling locations, and prohibiting smoking in fire-prone areas. As a result, the potential for wildfire to occur as a result of construction activity would be less than significant.

Operation and Maintenance. During O&M, regular inspections and maintenance of the Stagecoach Gen-tie Line would be conducted to ensure service continuity and proper line function. CAL FIRE in its *California Power Line Fire Prevention Field Guide* (CAL FIRE 2021) defined the importance of appropriate inspection procedures to minimize wildfire risk. The major concerns defined by CAL FIRE are “hazard trees and vegetation,” which are risks not present in the desert environment along this gen-tie line route.

Risk of starting wildfires is greatest for distribution-level lines (due to their conductors being closer to the ground, their use of pole-mounted transformers, and their use of wood poles). Higher voltage lines like the Stagecoach Gen-tie Line are installed on steel poles, and no transformers are used. One study showed only 3 percent of fires were started by lines at the higher voltage. There is also a concern that the presence of a high-voltage line can inhibit firefighting, because using water to fight a fire near an energized line creates risk to firefighters. However, this risk is minor in the desert environment where vegetation is sparse and low.

As discussed above, the vast majority of wildfires caused by power lines were started by distribution lines (smaller lines carried on wood poles). However, the presence of an operating high-voltage transmission line (like the 220 kV Stagecoach Gen-tie Line) does create some risk related to wildfire (CPUC 2008a). These high voltage lines have started only a few wildfires; documented cases showed that conductors or poles failed. The 2021 CAL FIRE *California Power Line Fire Prevention Field Guide* is intended to reduce the risk of wildfires that may start from power lines. MM WIL-1 includes a requirement that the Applicant develop specific O&M procedures for the gen-tie line based on the CAL FIRE guide. These procedures would ensure the implementation of proper O&M activities that would minimize the likelihood that equipment failure on the gen-tie line would start a fire.

O&M of the Stagecoach Gen-tie Line would reduce the likelihood of failed equipment igniting a fire. In the event of a wildfire at any point along the gen-tie route, the new access road would provide improved access. Implementation of the FMPP defined in MM WIL-1 during operation would reduce the wildfire risk to a level that is less than significant.

Mitigation Measures

MM WIL-1: Expand Fire Prevention and Management Plan

Impact WIL-2: Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires.

Coordination with the appropriate emergency response agencies would minimize the risk of loss, injury, or death involving wildland fires. **(Less than Significant with Mitigation)**

Impact Discussion

Construction. Similar to the construction activities described in Impact WIL-2 for the Stagecoach Solar Generation Plant, construction of the Stagecoach Gen-tie Line would involve the use of heavy equipment during road improvement, grading, vegetation clearing, and pole/conductor installation activities. Vehicle use may pose a fire hazard if flammable materials are present, but on-site vegetation would be cleared or reduced prior to the use of heavy equipment. Workers would be trained to properly identify and handle flammable hazardous materials used during construction such as gasoline, diesel fuels, and oils for heavy equipment. The proper handling of flammable hazardous materials would substantially reduce the risk of fire. Additionally, implementation of the FMPP, as modified by MM WIL-1, would ensure that ignition sources are reduced, emergency water be made available, and firefighting systems be maintained. With this mitigation measure, construction of the Stagecoach Gen-tie Line would result in impacts that are less than significant.

Operation and Maintenance. The Stagecoach Gen-tie Line would be located in a similar environmental setting as the Stagecoach Solar Generation Plant, in a moderate FHSZ. The Stagecoach Gen-tie Line would deliver energy from the Stagecoach Solar Generation Plant to SCE's transmission network through the SCE Calcite Facilities. The transmission

lines would be supported by either tubular steel poles or lattice steel towers, and could pose a fire safety threat in the following ways:

- Vegetation contact with conductors (in areas with trees or other vegetation reaching conductor height)
- Exploding hardware such as transformers and capacitors
- Floating or wind-blown debris contact with conductors or insulators
- Conductor-to-conductor contact
- Dust or dirt on insulators
- Bullet, airplane, and helicopter contact with conductors or support structures
- Other third-party contact, such as Mylar balloons, kites, and wildlife

The 220 kV Stagecoach Gen-tie Line would be safely designed, operated, inspected, and maintained to minimize the likelihood of faulty hardware. A 150-foot right-of-way (ROW) would be maintained for the Stagecoach Gen-tie Line, and a two-track access road would parallel the line, providing access to emergency responders in the event of a fire. Furthermore, no other structures would be allowed to be constructed or installed within the ROW. Desert vegetation is low-growing and would not come in contact with the conductors, as the conductors would be installed at heights beyond the reach of this type of vegetation.

Natural occurrences, such as wind-blown debris and wildlife contact (most likely from birds) are expected to be rare and unlikely due to the height and size of the transmission structures. During strong wind events, transmission lines may be vulnerable to conductor-to-conductor contact, which occurs when extremely high winds force two conductors on a single pole to contact one another. This can result in sparks that can ignite nearby vegetation. However, this event occurs more readily to lower voltage transmission lines on wooden poles, which have a lower tolerance to wind loading. The Proposed Project's tubular steel poles or lattice steel towers would be designed to withstand a greater wind strength and are unlikely to fail during windy conditions. No tall trees would be present in the area that could fall and push over the transmission structures and ignite vegetation. Large birds have been known to cause wildfires when they perch on power poles or fly between poles, simultaneously contacting two conductors, causing an electrical flashover.[32] The electrocuted bird may catch fire and fall to the ground, igniting nearby vegetation. Although it is possible for birds to cause flashovers along transmission lines where conductors are spaced close enough for a large bird's wingspan to touch two conductors at the same time, this is a highly unlikely event for the Proposed Project, which includes 220 kV conductors at minimum separation distances of 12 vertical feet apart.

[32] A flashover is an unintended electric arc from a power line to the ground, a person, or equipment.

Vandalism from bullets has been a cause of power line ignitions. However, it would not be a substantial threat to the steel Stagecoach Gen-tie Line structures because they have greater structural integrity than lower-voltage transmission lines which are more often targets of such activities.

The Stagecoach Gen-tie Line structures would not pose a hazard to aviation, as they would not be located near an airport and would not be tall enough to encroach into airspace. Compliance with the applicable local, state, and federal regulations governing wildfire safety and proper design of electrical utilities would minimize the potential for wildfire hazards.

A scoping comment expressed concerns about non-native invasive plant species that may exacerbate fire risks due to their high potential for flammability. Vegetation brushing (i.e., trimming or shrub removal) would be part of the access road improvement and maintenance activities and would reduce or remove non-native plant species. Furthermore, Section 4.3, *Biological Resources*, presents MMs BIO-1d (Integrated Weed Management Plan) and BIO-1e (Vegetation Resources Management Plan) to minimize the likelihood that construction would allow increased non-native plant species.

In addition, MM WIL-1 would require implementation and expansion of procedures in the FMPP. Therefore, with this mitigation, operation of the Stagecoach Gen-tie Line would create a less than significant impact involving the exposure of people or structures, either directly or indirectly, to the risk of loss, injury, or death involving wildland fires.

Mitigation Measures

MM WIL-1: Expand Fire Prevention and Management Plan

MM BIO-1d: Weed Management (Section 4.3, *Biological Resources*)

MM BIO-1e: Revegetation (Section 4.3, *Biological Resources*)

4.18.4.3 Impacts of the SCE Calcite Facilities

This section evaluates the wildfire impacts associated with the construction, operation, and maintenance of the SCE Calcite Facilities, which include the substation, transmission interconnection from the substation into the regional transmission grid, an overhead and underground distribution line, and telecommunication lines.

Impact WIL-1:	**Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing increased wildfire risk.**
Construction and operation of the SCE Calcite Facilities would create risks of starting wildfires but implementing MM WIL-1 would effectively reduce wildfire impacts. **(Less than Significant with Mitigation)**	

Impact Discussion

Construction. Construction of the SCE Calcite Facilities would include the installation of infrastructure that would require the use of heavy equipment. The use of heavy equipment could pose a fire hazard during construction if equipment is used improperly near flammable vegetation. However, implementation of the FMPP, as modified by MM WIL-1, would ensure that workers are trained in fire prevention procedures, ignition sources are reduced, sufficient emergency water is made available, work is restricted during high fire risk conditions (e.g., high wind and/or temperature conditions), and firefighting systems are maintained. SCE would be responsible for establishing and following safety protocols and would prepare the construction site by clearing existing vegetation and installing a temporary chain-link fence to provide site security. Although the site is relatively remote, the additional chain-link fence would deter vandalism and reduce fire risk during construction. Construction impacts would be less than significant with mitigation.

Operation and Maintenance. Normal operation of the transmission lines would be controlled remotely through SCE control systems and manually in the field, as required. Because the majority of normal operation would be controlled remotely, the reduced need for physical travel for operation of the transmission lines would minimize the environmental impacts associated with transportation. The substation, transmission lines, distribution line, and access road would be regularly inspected, maintained, and repaired when needed, which would require maintenance vehicles to drive to the site. These vehicles would be a source of ignition if driven or idled too close to dry vegetation. However, adherence to the FMPP as expanded by MM WIL-1 would minimize this risk because the FMPP would include restrictions on parking and idling. Regular maintenance would be performed from existing access roads with no surface disturbance. Additionally, repairs would further reduce fire risk, as maintenance would include vegetation control, conductor damage repair, tree trimming, and washing or replacing insulators to prevent failure, breakage, or ignition.

SCE would inspect overhead transmission, distribution, and telecommunication facilities in a manner consistent with CPUC General Order (GO) 165 at least once per year. Operation and maintenance activities would include trimming or shrub removal along the access road and around pole and transmission tower pads to prevent ignition or spread of fires.

The SCE Calcite Facilities do include short segments of new electric distribution lines to serve the substation itself. Generally, distribution lines pose a greater fire risk than the Stagecoach Gen-tie Line, as distribution lines tend to be closer to the ground, are often supported by wooden structures instead of steel structures, and are closer to vegetation that can ignite during high wind events or other disturbances (EC Mag 2018; T&D World 2020). However, the SCE distribution line would not be located within a Very High or High FHSZ and would traverse a relatively flat area with low-lying desert vegetation. As such, the SCE distribution line is not likely to introduce a substantially increased risk of fire to the area.

Vegetation clearance areas would be accomplished in accordance with Public Resources Code section 4292. In addition to regular O&M activities, emergency repairs would be made in preparation or in response to hazardous conditions. Environmental impacts resulting from maintenance and repair of infrastructure would be generally short-term, localized, and interspersed. All maintenance activities for associated infrastructure would ensure proper operation of electrical components and minimize risk of fire, and as such, impacts would be less than significant.

Mitigation Measures

MM WIL-1: Expand Fire Prevention and Management Plan

Impact WIL-2: Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires.

Coordination with the appropriate emergency response agencies and compliance with applicable safety regulations would minimize the risk of loss, injury, or death involving wildland fires. **(Less than Significant with Mitigation)**

Impact Discussion

Construction. Although the SCE Calcite Facilities would not be located in a very high or high FHSZ, there are residents in the vicinity of the SCE Calcite Facilities that may be exposed to increased wildfire hazards associated with construction. However, the risk of construction activities creating exposure of people or structures to wildland fires would be very low, given the lack of substantial vegetation and relatively flat topography as well as implementation of the FMPP as modified by MM WIL-1.

Construction would require the use of heavy equipment that may ignite nearby dry vegetation. However, the SCE Calcite Facilities site would be cleared of existing vegetation prior to construction to minimize the potential for ignition. The potential for wildland fires to ignite on site during construction would be further reduced by compliance with the FMPP, as modified by MM WIL-1 which would include improved measures to safeguard human life, prevent personnel injury, preserve property, and minimize downtime due to fire or explosion. Measures would address fire-safe construction, reduction of ignition sources,

control of fuel sources, availability of emergency water, and proper maintenance of firefighting systems. Specific actions may include prohibiting smoking on site, ensuring an adequate supply of firefighting equipment such as fire extinguishers, and training workers on fire safety protocols. As a result, construction impacts would be less than significant with implementation of MM WIL-1.

Operation and Maintenance. The SCE Calcite Facilities are subject to CPUC oversight and under the jurisdiction of the Federal Energy Regulatory Commission. The transmission lines would be maintained in a manner consistent with CPUC GO 95 and GO 128, as applicable. Inspections would occur regularly at least once a year, and maintenance would be made to prevent failure and minimize risk of fire. Regular maintenance of the SCE Calcite Facilities would ensure all components work properly.

A scoping comment expressed concerns about non-native invasive plant species that may exacerbate fire risks due to their high potential for flammability. Vegetation brushing (i.e., trimming or shrub removal) would be part of the access road maintenance activities, and would reduce or remove non-native plant species. Furthermore, Section 4.3, *Biological Resources*, presents MM BIO-1d (Weed Management) and MM BIO-1e (Revegetation) to minimize the likelihood that construction would allow increased non-native plant species.

Because operation and maintenance activities must occur in compliance with federal and state-mandated safety standards and these protocols are designed reduce the likelihood of wildland fires, the likelihood of fire hazards associated with electrical failure would be extremely low. With implementation of MM WIL-1, the operation and maintenance of the SCE Calcite Facilities would have a less than significant impact on exposing people or structures to wildland fire hazards.

Mitigation Measures

MM WIL-1: Expand Fire Prevention and Management Plan

MM BIO-1d: Weed Management (Section 4.3, *Biological Resources*)

MM BIO-1e: Revegetation (Section 4.3, *Biological Resources*)

4.18.5 Cumulative Impacts

This section evaluates the cumulative impacts of reasonably foreseeable projects (presented in Section 3.0, *Cumulative Scenario*) with the Proposed Project's effects to determine if the Proposed Project would have a significant cumulative impact on wildfires. Figure 3-1 identifies the locations of each cumulative project in the vicinity of the Proposed Project. Tables 3-1, 3-2, and 3-3 indicate there are seven cumulative projects within 10 miles of the Proposed Project, 13 cumulative projects more than 10 miles from the Proposed Project, and 18 existing solar developments in San Bernardino County, respectively.

4.18.5.1 Geographic Scope

For the purposes of the cumulative impact analysis for wildfire hazards, Figure 3-1 shows only the three projects within the northern part of Lucerne Valley area that are located in an area where there is the potential for impacts related to wildfire to combine with those of the Proposed Project: Project 2 (Ord Mountain Solar), Project 3 (SCE Eldorado Lugo Mohave), and Project 6 (monastery improvements). Project 3 is under construction now, and will be completed before Proposed Project construction begins, so it is not further discussed. The cumulative projects located further away than these do not have the potential for wildfire impacts to combine with those of the Proposed Project.

4.18.5.2 Cumulative Impact Analysis

Impact WIL-1: Require the Installation or Maintenance of Infrastructure that May Exacerbate or Create Wildfire Risk

Project 6 (monastery improvements) would not develop new infrastructure that exacerbates fire risk. If Ord Mountain Solar (Project 2) is constructed and this construction occurs concurrently with that of the Proposed Project, the northern Lucerne Valley would have two large solar generation plants under construction, each with associated construction fire risk. However, each project would be required to coordinate with County fire protection agencies and comply with local, federal, and state laws and policies relating to the installation and maintenance of infrastructure. The separation of the solar fields by more than 5 miles, coupled with mitigation defined in Section 4.18.4.1 would ensure that the Proposed Project would not contribute to a cumulatively considerable increase in regional fire risk.

Impact WIL-2: Expose People or Structures to a Significant Risk of Loss, Injury, or Death Involving Wildland Fires

The Proposed Project is located within a moderate FHSZ and would result in less than significant impacts with mitigation regarding risk of loss, injury, or death involving wildland fires. The two relevant cumulative projects, Projects 2 and 6, are in the same FHSZ, and as defined in Impact WIL-1, would be required to develop and implement their own fire protection and risk reduction measures. Both projects would have electrical components that would comply with regulations governing safe and proper design standards and plans. With mitigation defined in Section 4.18.4, the Proposed Project would not create a cumulatively considerable contribution to the risks associated with wildland fires.

4.18.6 Mitigation Measure Summary

Table 4.18-1 summarizes the mitigation measures identified in this EIR to reduce or avoid potentially significant impacts related to wildfire. Unless otherwise noted, mitigation measures apply to the Stagecoach Facilities and the SCE Calcite Facilities.

Table 4.18-1. Impact and Mitigation Measure Summary	
Impact	**Mitigation Measures**
Impact WIL-1: Require the installation or maintenance of infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing increased wildfire risk	**MM WIL-1:** Expand Fire Management and Prevention Plan
Impact WIL-2: Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires	**MM WIL-1:** Expand Fire Management and Prevention Plan **MM BIO-1d:** Weed Management (Section 4.3, *Biological Resources*) **MM BIO-1e:** Revegetation (Section 4.3, *Biological Resources*)