

4.13 Noise

This section describes the noise in the area of the IC Project Alignment, as well as the potential impacts resulting from construction and operation of the IC Project and its Alternatives.

4.13.1 Environmental Setting

The IC Project Alignment is located in unincorporated Inyo County, Kern County, and San Bernardino County, and in the City of Barstow. IC Project-related construction activities would occur mainly in open space areas. However, some IC Project activities would be conducted in proximity to rural residences and residential areas, schools, and parks located near the existing subtransmission lines. Existing noise sources in proximity to these potentially noise-sensitive receptors include community noise and roadway and highway noise. The definition of a sensitive receptor varies by jurisdiction; for the purposes of this analysis, sensitive receptors include those defined in the San Bernardino County Development Code, Section 83.01.080: “Noise-sensitive land uses shall include residential uses, schools, hospitals, nursing homes, religious institutions, libraries, and similar uses.”

Few sensitive receptors are located along the IC Project Alignment; areas with sensitive residential receptors are generally found in the unincorporated communities of Wilkerson, Big Pine, Lone Pine, Cartago, Olancho, Inyokern, Randsburg, Hinkley, Lenwood, and Baker, and in and around the City of Barstow, with scattered rural residences along the IC Project Alignment. Hospitals, nursing homes, libraries, and religious institutions are largely centered in the City of Ridgecrest and the City of Barstow; none are located nearer than 1,000 feet from any IC Project component, including the alignment, material yards, and helicopter landing zones, and all other work areas associated with the IC Project. Individual and groupings of sensitive receptors are illustrated in Figureset 4.13-1; the distance from any IC Project component to each of these receptor locations is shown in Table 4.13-1.

Table 4.13-1: Distance from Sensitive Receptor Locations to IC Project Component

Location	Approximate Distance (feet)	Location	Approximate Distance (feet)
R1	65	R15	500
R2	250	R16	500
R3	725	R17	250
R4	200	R18/O-1	60
R5	125	R19	280
R6	780	R20/O-2	35
R7	520	R21	500
R8	120	R22/S-1	1,000
R9	260	R23	300
R10	400	R24	350
R11	750	R25	250
R12	55	R26/S-2	720
R13	200	R27	125
R14	185		

Note: R=Residential Receptor; S=School Receptor; O=Other Receptor

4.13.1.1 Ambient Noise

Ambient noise data are available from monitoring locations in the vicinity of the IC Project Alignment. Along the IC Project Alignment, vehicle traffic is identified in general plans and previous environmental impact analyses as the primary source of ambient noise, with additional ambient noise from railroad operations in the City of Barstow. For areas along the IC Project Alignment that are not adjacent to

roadways or railways, ambient noise has been reported to be approximately 55 dBA. (City of Barstow 2014; County of San Bernardino 2005; Inyo County 2014)

At locations in the vicinity of the IC Project Alignment in Segment 1, a mean day-night average sound level (L_{dn}) of 53.5 dBA (decibel A-weighted) has been recorded, with a range of L_{dn} measurements from 43.4 dBA to 61.1 dBA. (Inyo County 2014) In the vicinity of Inyokern Substation in Segment 2, daytime L_{eq} values have been recorded ranging from 40 to 44 dBA. (CEC 2010) Along Segment 3N west of Harper Lake, measurements indicate L_{eq} values ranging from 42.0 to 52.6 dBA. (Abengoa Solar 2009)

In the City of Barstow in Segment 3S, noise monitoring sites in the vicinity of the IC Project Alignment recorded L_{eq} levels of 65.3 dBA and 64.4 dBA, with L_{max} levels of 75.0 and 75.5 dBA. (City of Barstow 2014) In Segment 4, noise in the vicinity of the IC Project Alignment east of Coolwater Substation was measured at 54.9 dBA L_{eq} with an L_{max} level of 77.8 dBA, and near Baker Substation was measured at 55.4 dBA L_{eq} with an L_{max} level of 63.9 dBA. (County of San Bernardino 2005)

4.13.2 Regulatory Setting

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

4.13.2.1 Federal

4.13.2.1.1 U.S. Environmental Protection Agency

The United States Environmental Protection Agency has developed and published criteria for environmental noise levels with a directive to protect public health and welfare with an adequate margin of safety. (USEPA 1974) This USEPA criterion (Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety) was developed to be used as an acceptable guideline when no other local, county, or state standard has been established. However, the USEPA criterion is not meant to substitute for agency regulations or standards in cases where states and localities have developed criteria according to their individual needs and situations.

4.13.2.1.2 Federal Transit Administration

The Federal Transit Administration (FTA) has developed vibration impact thresholds for noise-sensitive buildings, residences, and institutional land uses. These thresholds are 80 VdB at residences and buildings where people normally sleep (e.g., nearby residences and daycare facilities) and 83 VdB at institutional buildings (e.g., schools and churches). These thresholds were developed to assess the potential impacts from the operation of mass transit systems (heavy and light rail, busses, etc.).

4.13.2.2 State

4.13.2.2.1 California Noise Control Act

The California Noise Control Act states that excessive noise is a serious hazard to public health and welfare, and that exposure to certain levels of noise can result in physiological, psychological, and economic damage. It also recognizes that continuous and increasing bombardment of noise exists in urban, suburban, and rural areas. This act declares that the State of California has the responsibility to protect the health and welfare of its citizens by the control, prevention, and abatement of noise. The Office of Noise Control in the Department of Health Services provides assistance to local communities developing local noise control programs, and works with the Governor's Office of Planning and Research to provide guidance for the preparation of the required noise elements in city and county general plans, pursuant to Section 65302(f) of the California Government Code.

4.13.2.3 Local

The California Public Utilities Commission (CPUC) has sole and exclusive state jurisdiction over the siting and design of the IC Project. Pursuant to CPUC General Order 131-D (GO 131-D), Section XIV.B, “Local jurisdictions acting pursuant to local authority are preempted from regulating electric power line projects, distribution lines, substations, or electric facilities constructed by public utilities subject to the CPUC’s jurisdiction. However, in locating such projects, the public utilities shall consult with local agencies regarding land use matters.” Consequently, public utilities are directed to consider local regulations and consult with local agencies, but the counties’ and cities’ regulations are not applicable as the counties and cities do not have jurisdiction over the IC Project. Accordingly, the following discussion of local land use regulations is provided for informational purposes only.

4.13.2.3.1 Inyo County Code of Ordinances

The Inyo County Code of Ordinances does not contain any standards or regulations applicable to the IC Project.

4.13.2.3.2 Inyo County General Plan, Public Safety Element

The Public Safety Element of the Inyo County General Plan contains the following definition, policies and implementation measure:

Noise Sensitive Land Uses (Receptors). Noise sensitive land uses (receptors) are defined to include residential areas, hospitals, convalescent homes and extended care facilities, schools, libraries, daycare centers, and other similar land uses as determined by the County.

Policy NOI-1.7 Noise Controls During Construction. Contractors will be required to implement noise-reducing mitigation measures during construction when residential uses or other sensitive receptors are located within 500 feet.

Implementation Measure 5.0: Construction activities within 500 feet of existing noise sensitive uses shall be limited to the hours of 7:00 a.m. to 7:00 p.m. Monday through Saturday. No construction shall occur on Sunday or federal holidays without a special permit from the County for unusual circumstances.

4.13.2.3.3 Inyo County Policy Plan and Airport Comprehensive Land Use Plan

The Inyo County Airport Land Use Commission adopted a Policy Plan and Airport Comprehensive Land Use Plan (CLUP) in December 1991, which guides the orderly development of each public use airport in the County.

4.13.2.3.4 Kern County Code of Ordinances

Title 8, Health and Safety, Chapter 8.36 – Noise Control, details prohibitions on the generation of construction noise in unincorporated Kern County:

Section 8.36.020 - Prohibited sounds.

It is unlawful for any person to do, or cause to be done, any of the following acts within the unincorporated areas of the county:

...

H. To create noise from construction, between the hours of nine (9:00) p.m. and six (6:00) a.m. on weekdays and nine (9:00) p.m. and eight (8:00) a.m. on weekends, which is audible to a person with average hearing faculties or capacity at a distance of one hundred fifty (150) feet from the

construction site, if the construction site is within one thousand (1,000) feet of an occupied residential dwelling except as provided below:

1. The development services agency director or his designated representative may for good cause exempt some construction work for a limited time.
2. Emergency work is exempt from this section.

4.13.2.3.5 Kern County General Plan, Noise Element

The major purpose of the Noise Element is to: (1) establish reasonable standards for maximum desired noise levels in Kern County, and; (2) develop an implementation program which could effectively deal with the noise problem. Section 3.2 of the Noise Element identifies the following as noise sensitive land uses: residential areas, schools, convalescent and acute care hospitals, parks and recreational areas, and churches.

The Noise Element of the Kern County General Plan does not establish standards for construction activities. Land use compatibility standards established in the Noise Element for new land uses are not relevant as the IC Project does not constitute a new land use.

4.13.2.3.6 Kern County Airport Land Use Compatibility Plan

The Kern County Airport Land Use Compatibility Plan established procedures and criteria by which the County of Kern and the affected incorporated cities can address compatibility issues when making planning decisions regarding airports and the land uses around them. The Plan serves as a guidance document for the regulation of land uses around the various public use airports found in the County.

4.13.2.3.7 San Bernardino County General Plan, Noise Element

The Noise Element in the County of San Bernardino 2007 General Plan contains specific goals and policies focused on reducing noise to a level consistent with health and quality of life goals. The following policies related to noise are relevant to the IC 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 1.5. 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.

4.13.2.3.8 San Bernardino County Development Code

Section 83.01.080 establishes standards concerning acceptable noise levels for both noise-sensitive land uses and for noise-generating land uses. The Section notes the following:

- (a) Noise measurement. Noise shall be measured: (1) At the property line of the nearest site that is occupied by, and/or zoned or designated to allow the development of noise-sensitive land uses;

(b) Noise impacted areas. Areas within the County shall be designated as “noise impacted” if exposed to existing or projected future exterior noise levels from mobile or stationary sources exceeding the standards listed in Subsection (d) (Noise standards for stationary noise sources) and Subsection (e) (Noise standards for adjacent mobile noise sources), below.

...

Noise-sensitive land uses shall include residential uses, schools, hospitals, nursing homes, religious institutions, libraries, and similar uses.

(c) Noise standards for stationary noise sources.

(1) Noise standards. Table 83-2 (Noise Standards for Stationary Noise Sources) describes the noise standard for emanations from a stationary noise source, as it affects adjacent properties:

**Table 83-2
Noise Standards for Stationary Noise Sources**

Affected Land Uses (Receiving Noise)	7:00 a.m. - 10:00 p.m. Leq	10:00 p.m. - 7:00 a.m. Leq
Residential	55 dB(A)	45 dB(A)
Professional Services	55 dB(A)	55 dB(A)
Other Commercial	60 dB(A)	60 dB(A)
Industrial	70 dB(A)	70 dB(A)

Leq = (Equivalent Energy Level). The sound level corresponding to a steady-state sound level containing the same total energy as a time-varying signal over a given sample period, typically one, eight or 24 hours.

dB(A) = (A-weighted Sound Pressure Level). The sound pressure level, in decibels, as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound, placing greater emphasis on those frequencies within the sensitivity range of the human ear.

Ldn = (Day-Night Noise Level). The average equivalent A-weighted sound level during a 24-hour day obtained by adding 10 decibels to the hourly noise levels measured during the night (from 10:00 p.m. to 7:00 a.m.). In this way Ldn takes into account the lower tolerance of people for noise during nighttime periods.

(2) Noise limit categories. No person shall operate or cause to be operated a source of sound at a location or allow the creation of noise on property owned, leased, occupied, or otherwise controlled by the person, which causes the noise level, when measured on another property, either incorporated or unincorporated, to exceed any one of the following:

(A) The noise standard for the receiving land use as specified in Subsection B (Noise-impacted areas), above, for a cumulative period of more than 30 minutes in any hour.

(B) The noise standard plus 5 dB(A) for a cumulative period of more than 15 minutes in any hour.

(C) The noise standard plus 10 dB(A) for a cumulative period of more than five minutes in any hour.

(D) The noise standard plus 15 dB(A) for a cumulative period of more than one minute in any hour.

(E) The noise standard plus 20 dB(A) for any period of time.

(d) Noise standards for adjacent mobile noise sources. Noise from mobile sources may affect adjacent properties adversely. When it does, the noise shall be mitigated for any new development to a level that shall not exceed the standards described in the following Table 83-3 (Noise Standards for Adjacent Mobile Noise Sources).

Table 83-3
Noise Standards for Adjacent Mobile Noise Sources

Land Use		Ldn (or CNEL) dB(A)	
Categories	Uses	Interior (1)	Exterior (2)
Residential	Single and multi-family, duplex, mobile homes	45	60 (3)
Commercial	Hotel, motel, transient housing	45	60
	Commercial retail, bank, restaurant	54	N/A
	Office building, research and development, professional offices	45	65
	Amphitheater, concert hall, auditorium, movie theater	45	N/A
Institutional/Public	Hospital, nursing home, school classroom, religious institution, library	45	65
Open Space	Park	N/A	65

Notes:

- 1 The indoor environment shall exclude bathrooms, kitchens, toilets, closets and corridors.
 - 2 The outdoor environment shall be limited to:
 - Hospital/office building patios
 - Hotel and motel recreation areas
 - Mobile home parks
 - Multi-family private patios or balconies
 - Park picnic areas
 - Private yard of single-family dwellings
 - School playgrounds
 - 3 An exterior noise level of up to 65 dB(A) (or CNEL) shall be allowed provided exterior noise levels have been substantially mitigated through a reasonable application of the best available noise reduction technology, and interior noise exposure does not exceed 45 dB(A) (or CNEL) with windows and doors closed. Requiring that windows and doors remain closed to achieve an acceptable interior noise level shall necessitate the use of air conditioning or mechanical ventilation.
- CNEL = (Community Noise Equivalent Level). The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of approximately five decibels to sound levels in the evening from 7 p.m. to 10 p.m. and 10 decibels to sound levels in the night from 10 p.m. to 7 a.m.

...

(g) Exempt noise. The following sources of noise shall be exempt from the regulations of this Section:

...

(3) Temporary construction, maintenance, repair, or demolition activities between 7:00 a.m. and 7:00 p.m., except Sundays and Federal holidays.

Section 83.01.090, Vibration, includes the following:

(a) Vibration standard. 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 two-tenths (0.2) inches per second measured at or beyond the lot line.

(c) Exempt vibrations. The following sources of vibration shall be exempt from the regulations of this Section.

...

(2) Temporary construction, maintenance, repair, or demolition activities between 7:00 a.m. and 7:00 p.m., except Sundays and Federal holidays.

4.13.2.3.9 City of Barstow General Plan, Noise Element

The City of Barstow’s Noise Element establishes policies and programs designed to reduce noise levels in the long term. The Element includes the following:

GOAL 2: Minimize adverse noise impacts of development anticipated under the General Plan.

POLICY 2.B: Minimize noise and ground vibration associated with project construction.

STRATEGY 2.B.1: Exempt construction activities from the operational noise standards set forth in Table N-1 between the hours of 7:00 a.m. and 7:00 p.m. and enforce the standards outside of these hours.

STRATEGY 2.B.2: Pursuant to San Bernardino County Ordinance 87.0910 vibration levels shall be limited to 0.2 inches per second at the property line (or nearest sensitive receptor).

Table N-1 from the General Plan is shown here:

Table N-1: State of California Interior and Exterior Noise Standards

Categories	Uses	CNEL (dBA)	
		Interior ¹	Exterior ²
Residential	Single-family, Duplex, Multi-family	45 ³	65
	Mobile Homes	--	65 ⁴
Commercial	Hotel, Motel, Transient Lodge	45	65 ⁵
	Commercial retail, Bank, Restaurants	55	--
	Office Building, R&D, Professional & Government Offices	50	--
	Amphitheater, Concert Hall, Auditorium, Meet Hall	45	--
Industrial	Gymnasium (multipurpose)	50	--
	Sports Club	55	--
	Manufacturing, Warehousing, Wholesale, Utilities	65	--
	Movie Theaters	45	--
Institutional	Hospitals, Schools, Classrooms	45	65
	Church, Library	45	--
Open Space	Parks and Outdoor Active and Passive Recreation Facilities	--	65

4.13.2.3.10 City of Barstow Municipal Code

The City of Barstow’s Municipal Code does not contain limitations on construction times or establish noise standards.

4.13.3 Significance Criteria

The significance criteria for assessing the impacts from noise are determined from the California Environmental Quality Act (CEQA) Environmental Checklist. According to the CEQA Checklist, a project causes a potentially significant impact if it would cause:

- Exposure of people 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
- Exposure of people to, or generation of, excessive groundborne vibration or groundborne noise levels
- A substantial permanent increase in ambient noise levels in the Proposed Project vicinity above levels existing without the Proposed Project

- A substantial temporary or periodic increase in ambient noise levels in the Proposed Project vicinity above levels existing without the Proposed Project
- Exposure of people residing or working in the Proposed Project area to excessive noise levels for a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport
- Exposure of people residing or working in the Proposed Project area to excessive noise levels for a project within the vicinity of a private airstrip

4.13.4 Impact Analysis

4.13.4.1 Would the project result in the 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?

4.13.4.1.1 Construction

Less than Significant Impact with Mitigation. There are no established noise level standards applicable to IC Project-related construction activities in Inyo County or Kern County; therefore, work in Inyo County and Kern County would not result in the exposure of persons to or generation of noise levels in excess of established standards.

Construction activities would require the temporary use of various types of noise-generating construction equipment; Table 4.13-2 provides a list of the typical construction equipment involved in IC Project activities, and Table 4.13-3 presents the noise generated by typical construction activities. Helicopter operations could be expected to generate noise levels of approximately 88 dBA at a distance of 150 feet. (U.S. Forest Service 2008)

Table 4.13-2: Typical Construction Equipment Noise Levels

Equipment	Noise Level (L_{max} dBA) at 50 feet
Backhoe	80
Concrete mixer	85
Pump truck	82
Crane, Mobile	85
Dozer	85
Excavator	85
Generator	82
Grader	85
Man lift	85
Loader	80
Paver	85
Roller	85
Scraper	85
Trucks	80-84
Light-duty Helicopter	81 (at 150 feet)
Medium-duty Helicopter	88 (at 150 feet)

Source: FHWA 2006

Table 4.13-3: Construction Activity Noise Generation

Construction Operations	Contour Distance (feet)				
	75 dBA L _{eq}	70 dBA L _{eq}	65 dBA L _{eq}	60 dBA L _{eq}	55 dBA L _{eq}
Conductor Removal	183	327	572	975	1,610
Existing Structure Removal	171	307	537	916	1,517
TSP Foundation Installation	173	309	539	924	1,534
TSP Assembly	134	243	428	739	1,240
TSP Erection	132	239	420	726	1,219
Conductor Installation	204	364	630	1,067	1,757
Material Yard	16	28	50	89	158

Noise standards established by San Bernardino County and the City of Barstow are presented in Table 4.13-4. In San Bernardino County, construction activities performed Monday through Saturday between the hours of 7:00 a.m. and 7:00 p.m. are exempt from noise standards established by the County. Outside of these times and on Sundays and holidays, the controlling thresholds for stationary sources of noise are 55 dBA between the hours of 7 a.m. and 10 p.m. and 45 dBA between the hours of 10 p.m. and 7 a.m., for residential land uses in San Bernardino County.

Table 4.13-4: Established Noise Standards, Residential Land Uses

Jurisdiction	Construction Period	Noise Standard
Unincorporated San Bernardino County	Sundays and Federal Holidays, 7 a.m. to 10 p.m.	55 dBA
Unincorporated San Bernardino County	Sundays and Federal Holidays, 10 p.m. to 7 a.m.	45 dBA
Unincorporated San Bernardino County	Monday through Saturday (inclusive), 7 a.m. to 7 p.m.	None; exempt
Unincorporated San Bernardino County	Monday through Saturday (inclusive), 7 p.m. to 10 p.m.	55 dBA
Unincorporated San Bernardino County	Monday through Saturday (inclusive), 10 p.m. to 7 a.m.	45 dBA
City of Barstow	Any day, 7 a.m. to 7 p.m.	None; exempt
City of Barstow	Any day, 7 p.m. to 7 a.m.	65 dBA

In the City of Barstow, construction activities performed on all days between the hours of 7:00 a.m. and 7:00 p.m. are exempt from noise standards established by the City. Outside of these times, the controlling threshold for noise is 65 dBA for noise sensitive land uses in the City of Barstow.

The IC Project crosses areas with designated residential land uses in both San Bernardino County and the City of Barstow. In these areas, construction would generally be limited to the exempted hours presented above. If construction activities are necessary on days or hours outside of what is specified by ordinance (for example, if existing lines must be taken out of service for the work to be performed safely and the line outage must be taken at night for system reliability reasons, or if construction needs require continuous work), SCE would provide notification, including a general description of the work to be performed, location, and hours of construction anticipated, to the CPUC, San Bernardino County, the City of Barstow. Further, SCE would route construction traffic and/or helicopter flight(s) away from residences, schools, and recreational facilities to the extent feasible.

In the event that the noise generated by a given construction activity would exceed the standards listed in Table 4.13-1 at a sensitive receptor, SCE would implement APM NOI-1; with implementation of this APM, impacts would be less than significant.

4.13.4.1.2 Operations

No Impact. As presented in Chapter 3, SCE is currently performing operation and maintenance (O&M) activities, including inspections, along the subtransmission lines that would be rebuilt and reconducted

under the IC Project. No material changes in O&M activities or the locations of these activities are anticipated with implementation of the IC Project, and therefore no impacts would be realized under this criterion during operations and maintenance.

4.13.4.2 Would the project result in the exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

4.13.4.2.1 Construction

Less than Significant Impact. Construction activities would not expose persons to or generation of excessive groundborne vibration or groundborne noise levels. Construction activities would generate groundborne vibration from geotech drill rigs, excavators, augers, dump trucks, backhoes, and other general construction equipment. The threshold of vibration perception for most humans is around 65 VdB, levels in the 70 to 75 VdB range are often noticeable but acceptable, and levels in excess of 80 VdB are often considered unacceptable. (FTA 2006) For human annoyance, there is some relationship between the number of events and the degree of annoyance caused by the vibration. More frequent vibration events, or events that last longer, would be more annoying to building occupants. To account for this effect, the Federal Transit Administration’s Guidance Manual includes higher VdB impact thresholds for infrequent events, noting that vibration of 85 VdB is “acceptable only if there are an infrequent number of events per day.” Based on the approach set forth in the FTA guidelines, and because activities at any single construction work area would be infrequent and temporary, this analysis adopts a threshold of significance of 85 VdB for groundborne vibration impacts for work in Kern County, Inyo County, and the City of Barstow, which have not established a threshold of significance.

Section 83.01.090 of the San Bernardino County Development Code states that “[n]o 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 two-tenths (0.2) inches per second measured at or beyond the lot line.” The Code also exempts from the regulations “[t]emporary construction, maintenance, repair, or demolition activities between 7:00 a.m. and 7:00 p.m., except Sundays and Federal holidays.” A particle velocity of 0.2 inches per second is equivalent to 106 VdB.

Vibration impacts associated with construction operations would primarily affect those receptors located closest to TSP and LWS pole installation sites, and those located near conductor removal/replacement locations. Vibration calculations based on the FTA guidelines are provided in Table 4.13-5.

Table 4.13-5: Vibration Source Levels for Typical Construction Equipment

Equipment	Vibration Level at 25 feet (VdB)
Large bulldozer	87
Jackhammer	79
Caisson drilling	87
Loaded trucks	86
Small bulldozer	58

Source: FTA 2006

Construction activities would occur as near as 35 feet to some residences in unincorporated San Bernardino County, although most activities would be performed at several times that distance in the vicinity of sensitive receptors. The data in Table 4.13-2 show that vibration levels associated with these activities are all below the 106 VdB threshold in unincorporated San Bernardino County.

In Inyo County, Kern County, and the City of Barstow, construction activities would occur as near as 50 feet to some residences. Screening-level calculations indicate that vibration levels associated with these activities would attenuate to a level of approximately 82 VdB at the nearest residence.¹⁹ This analysis shows that vibration levels at all identified sensitive receptors would be below the IC Project-specific threshold of 85 VdB given the distance from the construction activity to the sensitive receptor. Therefore, groundborne vibration impacts associated with construction activities would be less than significant.

4.13.4.2.2 Operations

No Impact. As presented in Chapter 3, SCE is currently performing operation and maintenance (O&M) activities, including inspections, along the subtransmission lines that would be rebuilt and reconducted under the IC Project. No material changes in O&M activities or the locations of these activities are anticipated with implementation of the IC Project, and therefore no impacts would be realized under this criterion during operations and maintenance.

4.13.4.3 Would the project result in a substantial permanent increase in ambient noise levels in the Proposed Project vicinity above levels existing without the Proposed Project?

4.13.4.3.1 Construction

No Impact. The IC Project includes the reconstruction and reconducting of existing subtransmission lines. Construction of the IC Project would be temporary, and thus would not result in a permanent increase in ambient noise levels. Therefore, there would be no impact.

4.13.4.3.2 Operations

No Impact. As presented in Chapter 3, SCE is currently performing operation and maintenance (O&M) activities, including inspections, along the subtransmission lines that would be rebuilt under the IC Project. No material changes in O&M activities or the locations of these activities are anticipated with implementation of the IC Project, and therefore no impacts would be realized under this criterion during operations and maintenance activities.

During operation of the rebuilt subtransmission lines, the new conductor would not increase the amount of corona noise (the crackling, hissing, or humming that can be heard from power lines) generated by operation of the subtransmission lines beyond the existing conditions; rather, installation of new conductor and associated hardware may reduce the amount of corona noise. No permanent increase in ambient noise levels would occur in the vicinity.

4.13.4.4 Would the project result in a substantial temporary or periodic increase in ambient noise levels in the Proposed Project vicinity above levels existing without the Proposed Project?

4.13.4.4.1 Construction

Less than Significant Impact. Noise associated with construction of the IC Project would exceed the ambient noise levels in the vicinity of the IC Project, and thus would result in a temporary increase in ambient noise levels. The magnitude of the increase would vary across the IC Project alignment, as the

¹⁹ The following equation estimates the vibration level L_v at any distance (D):
 $L_v(D) = L_v(25 \text{ feet}) - 30\text{Log}(D/25)$, where: $L_v(D)$ = vibration level at a given distance D (in feet).
 For a distance of 50 feet, $L_v(D) = 87 - 30\text{Log}(50/25) = 87 - 4.9 = 82.1$ VdB

ambient noise levels vary across the alignment. In general, areas with receptors that may be sensitive to temporary increases in ambient noise levels are characterized as those areas with the highest ambient noise levels, and thus the increase in ambient noise levels attributed to construction of the IC Project would be less than significant.

As shown by the activity durations listed in Table 3.7-8: Construction Equipment and Workforce, construction at any given location would not be sustained for more than a few days at a time and would generally occur within the time restrictions identified in local ordinances. Construction activities at any given location would be short-term, and thus would not represent a periodic increase in ambient noise levels. Due to the short-term and temporary nature of construction activities, and the limited number of noise sensitive receptors in the immediate vicinity of construction work areas along the IC Project alignment, the increase in ambient noise levels would not be substantial, and thus impacts would be less than significant.

Activities at material yards would generally occur over a period of months, and would represent a temporary increase in ambient noise levels. As presented above, noise associated with activities at material yards would not exceed established thresholds, and therefore would not result in a substantial increase in ambient noise levels.

Because construction of the IC Project would result in a temporary, non-substantial increase in ambient noise levels in the IC Project vicinity, impacts under this criterion would be less than significant.

4.13.4.4.2 Operations

No Impact. As presented in Chapter 3, SCE is currently performing operation and maintenance (O&M) activities, including inspections, along the subtransmission lines that would be rebuilt and reconducted under the IC Project. No material changes in O&M activities or the locations of these activities are anticipated with implementation of the IC Project, and therefore no impacts would be realized under this criterion during operations and maintenance.

4.13.4.5 For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Proposed Project expose people residing or working in the Proposed Project area to excessive noise levels?

4.13.4.5.1 Construction

No Impact. The southern portion of Segment 1 and the northwestern terminus of Segment 2 are located within two miles of Inyokern Airport (Kern County). Lone Pine Airport (Inyo County) is also found along the southern portion of Segment 1. Inyokern Airport is addressed in the Kern County Airport Land Use Compatibility Plan, and the Lone Pine Airport is included in the Inyo County Policy Plan and Airport Comprehensive Land Use Plan (CLUP). The Barstow-Daggett Airport, located east of the eastern termini of Segments 3N and 3S, and Baker Airport, located along Segment 4, are both covered under their respective airport comprehensive land use plans.

As described above, construction of the IC Project would not expose people residing in the area to noise levels in excess of standards established in a general plan or ordinance. Further, increases in noise levels in the vicinity of individual construction work areas during construction would be short term, intermittent, and temporary, and would not expose people residing near individual construction work areas to excessive noise levels. The IC Project is located outside the 60 dBA and 60 dBA CNEL noise contours

for all airports. Thus, project construction workers would not be exposed to excessive noise levels from airport operations.

Because construction of the IC Project would not expose people residing within two miles of a public airport and near individual construction work areas to excessive noise levels, and because construction of the IC Project would not expose workers to excessive noise levels, no impact would be realized under this criterion.

4.13.4.5.2 Operations

No Impact. As presented in Chapter 3, SCE is currently performing operation and maintenance (O&M) activities, including inspections, along the subtransmission lines that would be rebuilt and reconducted under the IC Project. No material changes in O&M activities or the locations of these activities are anticipated with implementation of the IC Project, and therefore no impacts would be realized under this criterion during operations and maintenance.

4.13.4.6 For a project within the vicinity of a private airstrip, would the Proposed Project expose people residing or working in the Proposed Project area to excessive noise levels?

4.13.4.6.1 Construction

No Impact. The IC Project is not within the vicinity of a private airstrip; therefore, there would be no impact under this criterion.

4.13.4.6.2 Operations

No Impact. As presented in Chapter 3, SCE is currently performing operation and maintenance (O&M) activities, including inspections, along the subtransmission lines that would be rebuilt and reconducted under the IC Project. No material changes in O&M activities or the locations of these activities are anticipated with implementation of the IC Project, and therefore no impacts would be realized under this criterion during operations and maintenance.

4.13.5 Applicant Proposed Measures

SCE has designed and incorporated APM NOI-1: Implement Best Management Practices for Construction Noise, into the IC Project to avoid or minimize potential impacts to noise sensitive receptors. The full text of the APM is presented in Section 5.1.

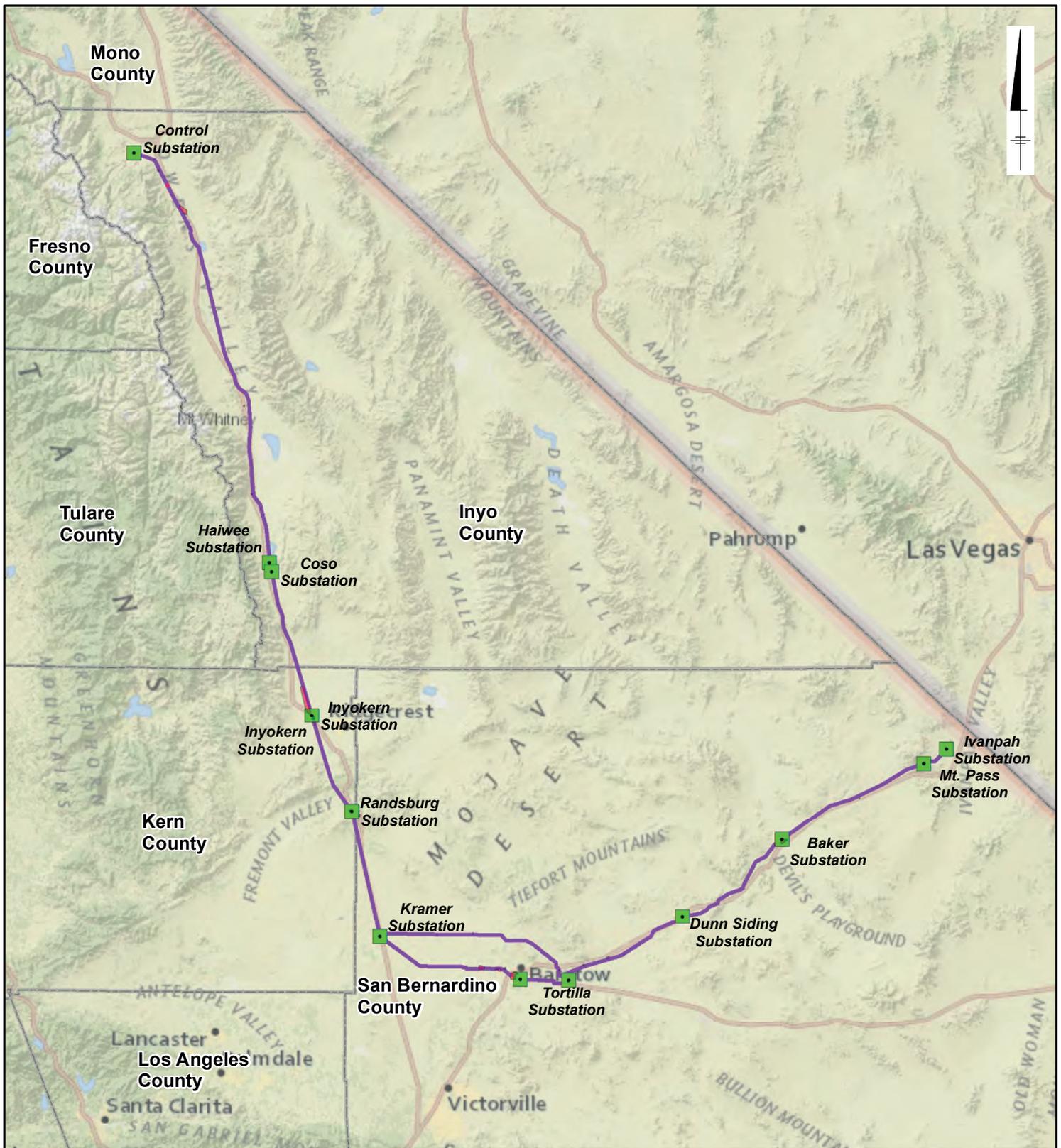
4.13.6 Alternatives

Alternatives to the IC Project are addressed in Section 5.2, Description of Project Alternatives and Impact Analysis.

4.13.7 References

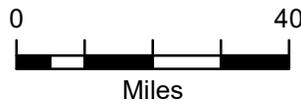
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Legend

- Substation
- Potential Sensitive Receptors
- IC Project Alignment
- County



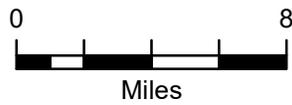
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POTENTIALLY SENSITIVE RECEPTORS	
FIGURESET 4.13-1	



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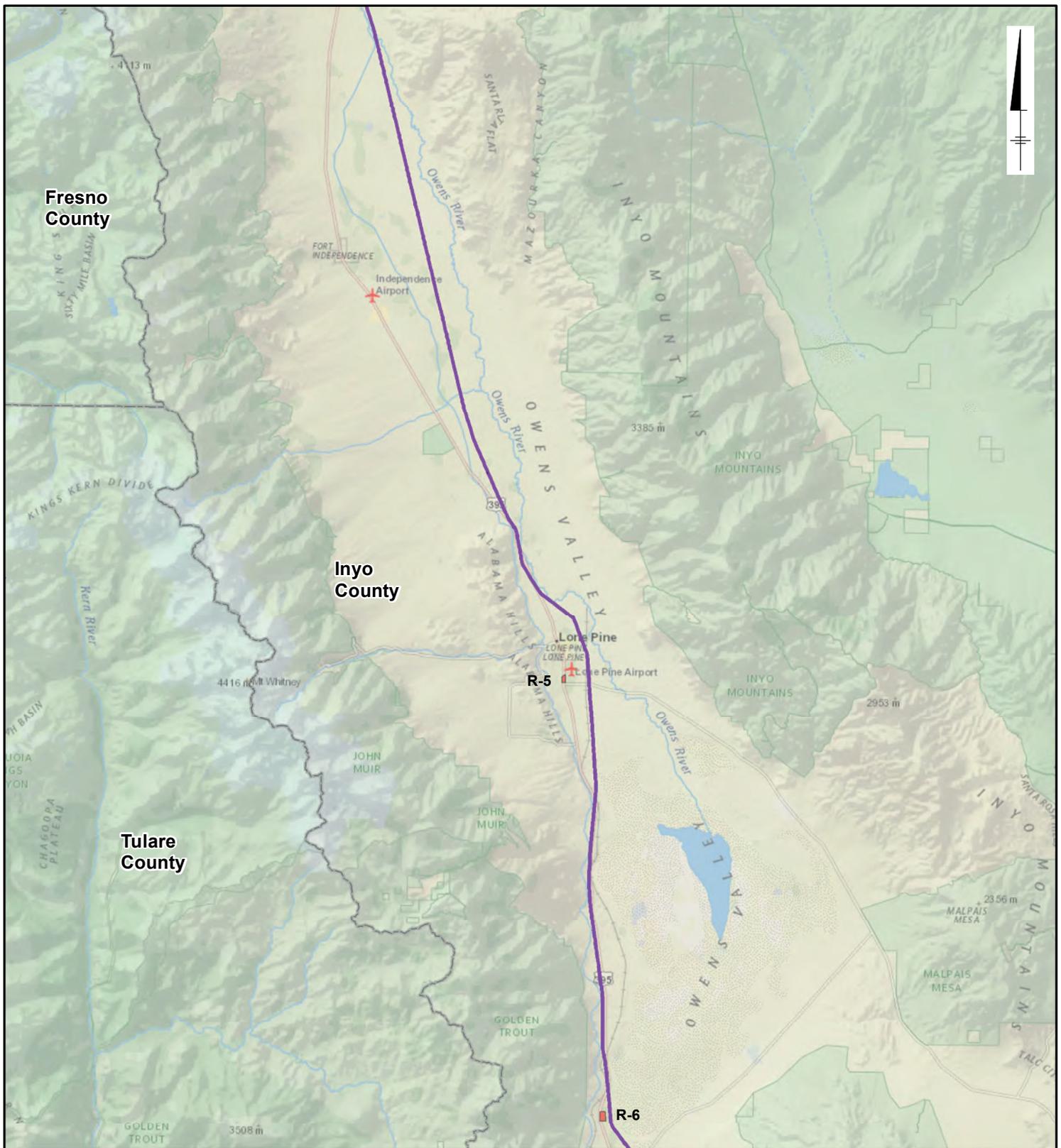
- Substation
- Potential Sensitive Receptors
- IC Project Alignment
- County

R-Residential; S-School; O-Other



IVANPAH-CONTROL PROJECT
POTENTIALLY SENSITIVE RECEPTORS

		FIGURESET 4.13-1
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Legend

- Substation
- Potential Sensitive Receptors
- IC Project Alignment
- County

R-Residential; S-School; O-Other



IVANPAH-CONTROL PROJECT
POTENTIALLY SENSITIVE RECEPTORS

		FIGURESET 4.13-1
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Legend

- Substation
- Potential Sensitive Receptors
- IC Project Alignment
- County

R-Residential; S-School; O-Other



IVANPAH-CONTROL PROJECT

POTENTIALLY SENSITIVE RECEPTORS



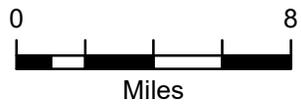
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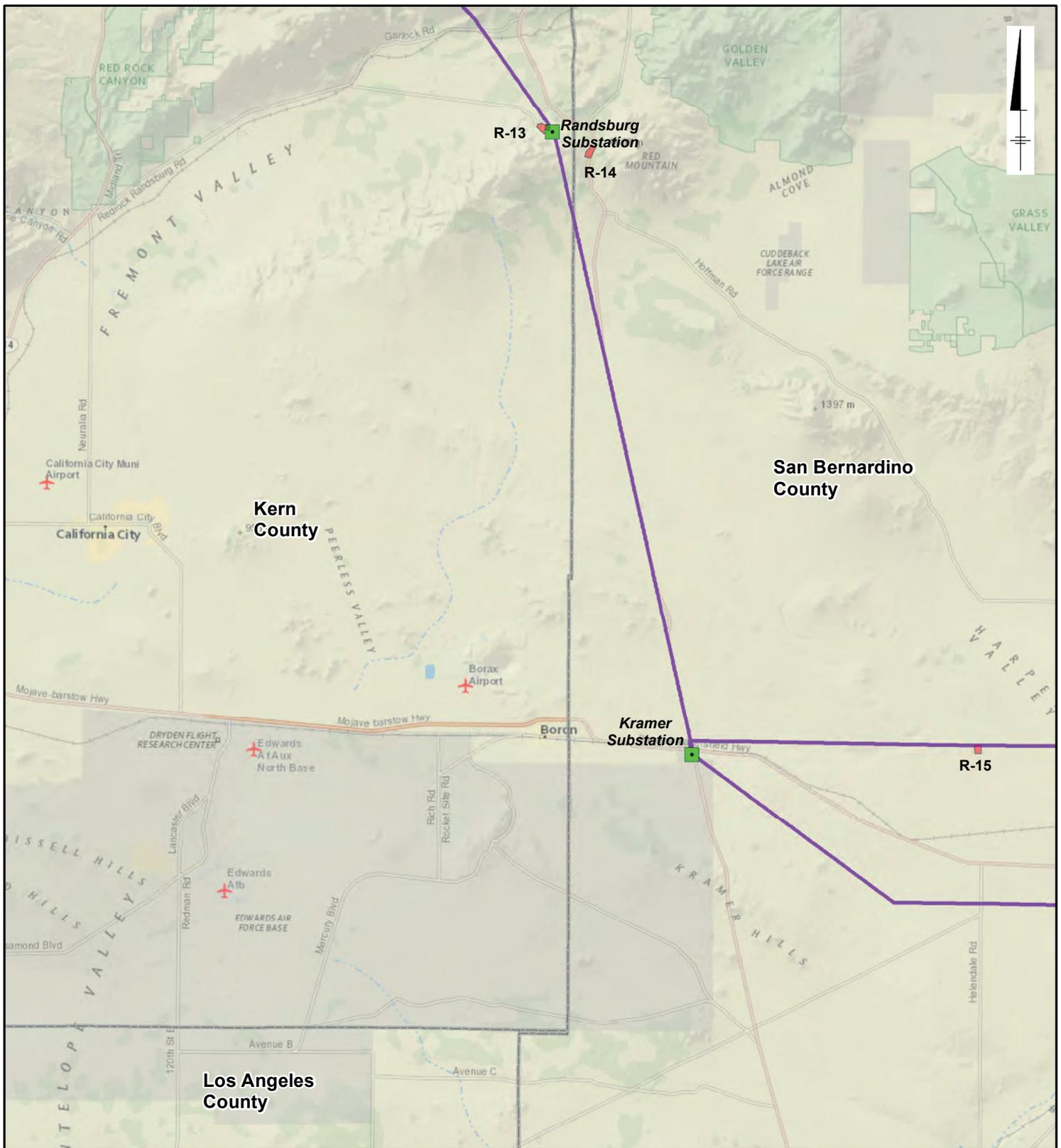
- Substation
- Potential Sensitive Receptors
- IC Project Alignment
- County

R-Residential; S-School; O-Other



IVANPAH-CONTROL PROJECT
POTENTIALLY SENSITIVE RECEPTORS

		FIGURESET 4.13-1
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Legend

- Substation
- Potential Sensitive Receptors
- IC Project Alignment
- County

R-Residential; S-School; O-Other



IVANPAH-CONTROL PROJECT

POTENTIALLY SENSITIVE RECEPTORS



FIGURESET 4.13-1



Legend

- Substation
- Potential Sensitive Receptors
- IC Project Alignment
- County

R-Residential; S-School; O-Other



IVANPAH-CONTROL PROJECT

POTENTIALLY SENSITIVE RECEPTORS



FIGURESET
4.13-1



Legend

- Substation
- Potential Sensitive Receptors
- IC Project Alignment
- County

R-Residential; S-School; O-Other



IVANPAH-CONTROL PROJECT
POTENTIALLY SENSITIVE RECEPTORS

	 <small>An EDISON INTERNATIONAL Company</small>	FIGURESET 4.13-1
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Legend

- Substation
- Potential Sensitive Receptors
- IC Project Alignment
- County

R-Residential; S-School; O-Other



IVANPAH-CONTROL PROJECT

POTENTIALLY SENSITIVE RECEPTORS



FIGURESET
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Legend

- Substation
- Potential Sensitive Receptors
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IVANPAH-CONTROL PROJECT

POTENTIALLY SENSITIVE RECEPTORS



FIGURESET
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