

4.11 Noise and Vibration

This section describes the environmental and regulatory settings and discusses potential impacts associated with construction and operation of the proposed 115-kilovolt (kV) Valley-Ivyglen Subtransmission Project (proposed Valley-Ivyglen Project) and the proposed Alberhill System Project (proposed Alberhill Project) with respect to noise and vibration.

During scoping of the Valley-Ivyglen and Alberhill projects, comments were received about the potential for increased noise levels due to construction and operation of new and modified transmission and subtransmission lines, particularly those that would be routed through residential areas. For the Alberhill Project, commenters also noted the potential increase of ambient noise levels as a result of increased truck traffic and operation of the proposed Alberhill Substation. In addition, during past scoping processes conducted in 2012 and 2011 for the Alberhill Project, a number of commenters also noted that increased noise levels from the Alberhill Project would affect livestock and wildlife. These comments are addressed in this section with the exception of impacts on wildlife. The effects of noise and vibration on wildlife are discussed in Section 4.4, “Biological Resources.”

4.11.1 Environmental Setting

The proposed projects would be built along rural and residential areas in unincorporated western Riverside County and the cities of Lake Elsinore, Perris, Wildomar, Menifee, and Orange in Southern California. The Alberhill Project would also involve temporary worker and/or truck transportation in additional jurisdictions, such as fill materials transportation from the City of Corona (Soil Import Option 2), installation of a microwave telecommunications dish antenna on U.S. Forest Service land (Santiago Peak Communications site), and telecommunication system upgrades at various substations.

Climate, topographical features, and man-made structures affect noise characteristics (amplitude and attenuation) within the project area. Meteorological factors include temperature changes, Santa Ana winds, and the amount and duration of rain. Topographical features include the Santa Ana Mountains, Elsinore Mountains, the surrounding local valleys, and the rolling hills throughout much of the area. Man-made features within the projects area include buildings and structures, agricultural fields, and roadways (City of Lake Elsinore 2011).

The projects’ noise setting is influenced by multiple sources, including mobile, stationary, and construction-related sources. In particular, roadway traffic has been identified as the most common noise source in the project area (County of Riverside 2014a, City of Menifee 2013, and City of Lake Elsinore 2011). Major roadways that contribute to noise in the projects area include Interstate 15, Interstate 215 (I-215), State Route 74, and several other arterial roadways located immediately adjacent to or in the proximity of proposed project components. Additional sources of noise along the proposed project area include airports, industrial facilities, schools, and commercial operations (County of Riverside 2014a).

4.11.1.1 Noise Fundamentals

Sound is a pressure wave transmitted through the air and is measured by decibels (dB), frequency of pitch, and duration. Because the human ear can detect a large range of intensities, the dB scale is based on multiples of 10, according to the logarithmic scale. Each interval of 10 dB indicates a sound energy level 10 times greater than the previous level and is perceived by the human ear as being roughly twice as loud. To account for the fact that human hearing does not process all frequencies equally, an A-weighted decibel (dBA) scale was developed. The dBA scale deviates from the “linear” dB weighting curve

1 appropriately for specific frequency values. Therefore, the “A-weighted” noise scale is used for
 2 measurements and standards involving the human perception of noise. It is widely accepted that the
 3 average human ear can perceive changes of 3 dBA, and a change of 5 dBA is readily perceptible. Noise is
 4 defined as objectionable or unwanted sound. Table 4.11-1 shows the relationship of various noise levels
 5 to commonly experienced noise events.
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Table 4.11-1 Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110	Rock band
Jet fly-over at 1,000 feet (300 meters)	100	
Gas lawn mower at 3 feet (1 meter)	90	
Diesel truck at 50 feet, at 50 mph (80 km/h)	80	Food blender at 3 feet
Noisy urban area, daytime gas lawn mower at 100 feet	70	Vacuum cleaner at 10 feet
Commercial area heavy traffic at 300 feet	60	Normal speech at 3 feet
Quiet urban daytime	50	Large business office dishwasher in next room
Quiet urban nighttime	40	Theater, large conference room (background)
Quiet suburban nighttime	30	Library
Quiet rural nighttime	20	Bedroom at night, concert hall (background)
	10	Broadcast/recording studio
Lowest threshold of human hearing	0	Lowest threshold of human hearing

Source: Caltrans 2009.

Key:

- dBA = A-weighted decibel
- km/h = kilometers per hour
- mph = miles per hour

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 8 Noise level descriptors are commonly used to characterize the average ambient noise environment in a
 9 given area. The Sound Equivalent Level, or L_{eq} , is generally used to characterize the average sound
 10 energy that occurs during a relatively short period of time, such as an hour. Two other descriptors, the
 11 Day-Night Level (L_{dn}) and Community Noise Equivalent Level (CNEL), are used for an entire 24-hour
 12 period. The value of the L_{dn} and CNEL are generally within 1 dB of each other and therefore are often
 13 used interchangeably in noise analysis. Both the L_{dn} and CNEL noise level descriptors are used to place a
 14 stronger emphasis on noise that occurs during nighttime hours (10:00 p.m. to 7:00 a.m.) by applying a 10-
 15 dB “penalty” to those hours, but the CNEL also applies a 5-dB “penalty” to the evening hours of 7:00
 16 p.m. to 10:00 p.m.

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 18 Noise levels in communities usually relate to the intensity of nearby human activity. Noise levels are
 19 generally considered to be low at levels below 45 dBA, moderate in the 45 to 60 dBA range, and high
 20 above 60 dBA. In wilderness areas, the L_{dn} noise levels can be below 35 dBA. In small towns or wooded
 21 and lightly used residential areas, the L_{dn} is more likely to be around 50 to 60 dBA (EPA 1978).
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23 Sound from a small localized source (approximating a “point” source) radiates uniformly outward as it
 24 travels away from the source in a spherical pattern. The sound level attenuates or drops off at a rate of 6
 25 dBA when the distance is doubled. Natural terrain features such as hills and dense woods, as well as
 26 fabricated features such as buildings and walls, can alter noise levels. Wind, temperature, and other
 27 atmospheric effects could also alter the path of sound.
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1 **4.11.1.2 Vibration Fundamentals**
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3 Another community annoyance related to noise is vibration. As with noise, vibration can be described by
4 both its amplitude and frequency. Vibration can be felt outdoors, but the perceived intensity of vibration
5 impacts is much greater indoors, due to the shaking of structures. Factors that influence levels of ground-
6 borne vibration and noise are the vibration source; soil conditions (type, rock layers, soil layering, and
7 depth of water table); and factors related to the vibration receiver (foundation type, building construction,
8 and acoustical absorption). Human response to vibration is difficult to quantify because vibration can be
9 perceived at levels below those required to produce any damage to structures. Table 4.11-2 shows
10 common human and structural response to vibration levels.
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12 Vibration is an oscillatory motion that can be described in terms of displacement, velocity, or
13 acceleration. Vibratory motion is commonly described by identifying peak particle velocity (PPV), which
14 is generally accepted as the most appropriate descriptor for evaluating building damage. However, human
15 response to vibration is usually assessed using amplitude indicators (root-mean square) or vibration
16 velocity levels measured in inches per second or in decibels (VdB). The background velocity level in
17 residential areas is usually 50 VdB, and the human threshold of perception is 65 VdB. Special care also
18 should be taken when vibration occurs close to historically important structures and very sensitive
19 manufacturing or research equipment. Historical structures usually require lower vibration limits. High-
20 resolution electronic equipment is also typically sensitive to vibration (FTA 2006).
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Table 4.11-2 Human and Structural Response to Typical Levels of Vibration

Human/Structural Response	Vibration Velocity Level (VdB) ^a	Typical Sources
Threshold, minor cosmetic damage to fragile buildings	100	Blasting from construction projects
Difficulty with tasks (e.g., reading a screen)	90	Bulldozers and other heavy tracked construction equipment
Residential annoyance, transient events	80	Commuter rail, upper range
Residential annoyance, continuous events	70	Rapid transit, typical
Human threshold of perception and limit for vibration sensitive equipment	65	Bus or truck, typical
No human response	50	Typical background vibration

Source: FTA 2006.

Note:

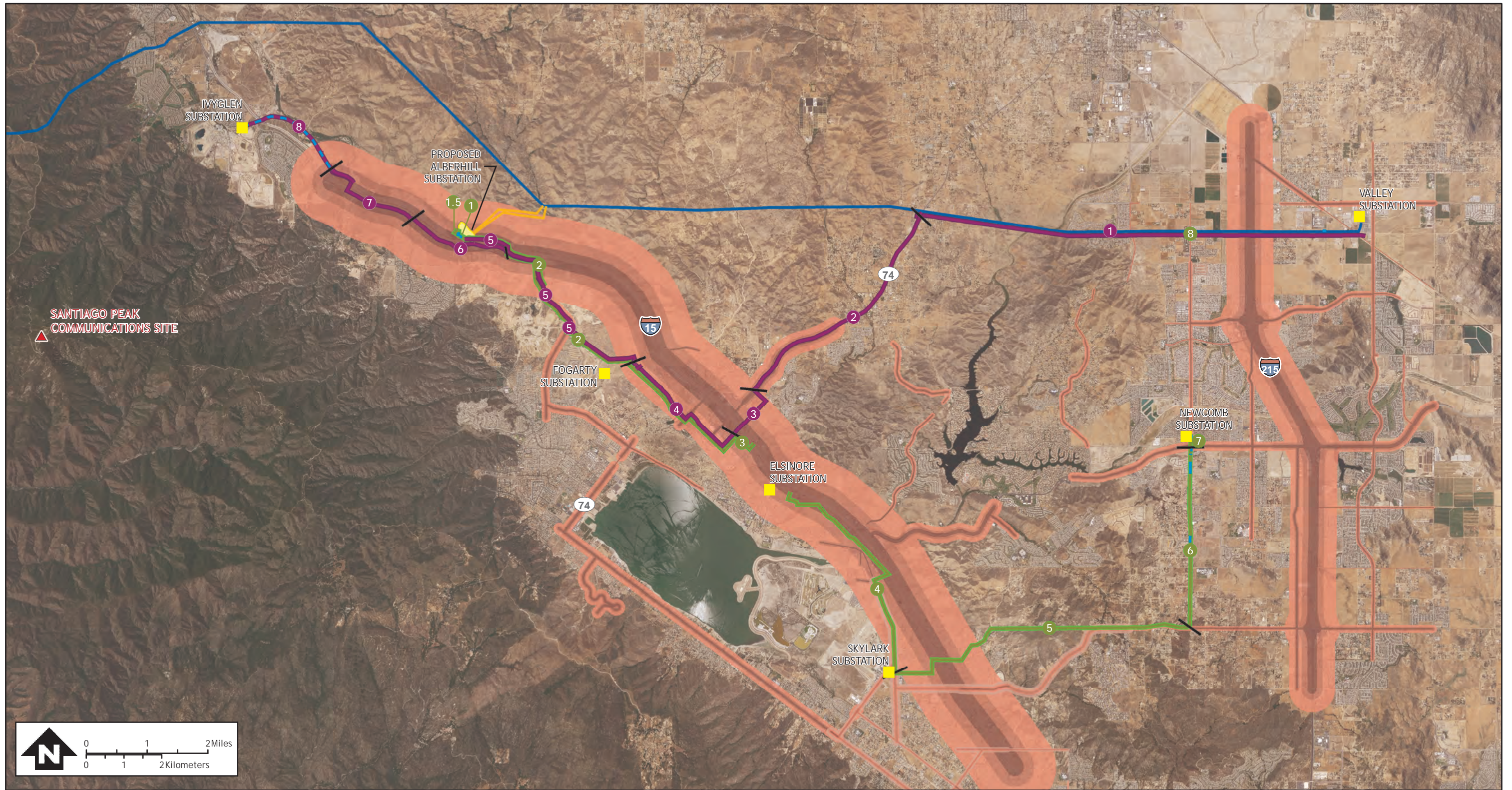
^a Root-mean square vibration velocity level in VdB is equivalent to 10⁻⁶ inches per second.

Key:

VdB = decibels of vibration velocity

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23 **4.11.1.3 Existing Noise Levels**
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25 The proposed projects include 115-kV subtransmission line and telecommunication segments that would
26 for the most part be located along existing roadways. Noise contours published by the City of Lake
27 Elsinore, City of Menifee, and City of Wildomar indicate that the existing day-night average noise levels
28 along major roadways in the proposed project area are between 60 and 70 decibels dBA, as shown in
29 Figure 4.11-1. In addition, noise measurements reported by the County of Riverside and the applicant
30 within the projects area indicate that roadways adjacent to the proposed projects components emit noise
31 range between 60 to 67 dBA, as indicated in Table 4.11-3, with the average noise level of 65 dBA during
32 daytime hours.
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Source: BLM Geocommunicator 2009, RCHCA 2007, SCE 2011, 2013

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|--------|------------|--------|
| 1 VIG1 | 1 ASP1 | 5 ASP5 |
| 2 VIG2 | 1.5 ASP1.5 | 6 ASP6 |
| 3 VIG3 | 2 ASP2 | 7 ASP7 |
| 4 VIG4 | 3 ASP3 | 8 ASP8 |
| 5 VIG5 | 4 ASP4 | |
| 6 VIG6 | | |
| 7 VIG7 | | |
| 8 VIG8 | | |

- Existing Substations
- Proposed Alberhill Substation
- Proposed 500-kV transmission lines
- 500-kV Serrano Valley Transmission Line

- Segment begin / end
- Underground Segment

- Noise Contours
- 55 CNEL
 - 60 CNEL
 - 65 CNEL
 - 70 CNEL

Figure 4.11-1
 Noise Contours within
 the City of Lake Elsinore, the City of
 Menifee, and the City of Wildomar
 Alberhill and Valley-Ivyglen Projects
 Riverside County, California

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Table 4.11-3 Background Noise Levels within the Proposed Projects Area

Location ^a	Noise level (dBA, L _{eq}) ^b		Closest Project Component	
	Daytime	Nighttime	Proposed Valley-Ivyglen Project	Proposed Alberhill System Project
North of Temescal Canyon Road, near Corona Lake	66	56 ^c	115-kV Segments VIG6 and VIG7	N/A
Intersection of Collier Road and Central Avenue	65	55 ^c	115-kV Segment VIG4 and Storage Area VIG6	115-kV Segment ASP3
Temescal Canyon Road, adjacent to proposed Alberhill Substation property line	67	55	115-kV Segments VIG5	Proposed Alberhill Substation and 115-kV Segment ASP1
Closest residence to the proposed Alberhill Substation	60	50 ^c	115-kV Segments VIG5	Proposed Alberhill Substation and 500-kV Line SA
South of Bundy Canyon Road	62	52 ^c	N/A	115-kV Segment ASP5
East of Murrieta Road, near intersection of Bundy Canyon and Scott Road	65	55 ^c	N/A	115-kV Segment ASP6
South of McCall Boulevard, near intersection with Murrieta Road	65	55 ^c	N/A	115-kV Segments ASP7 and ASP8

Sources: County of Riverside 2014b, SCE 2011a.

Notes:

- ^a Locations reported in this table include results from a background noise survey conducted by the applicant at the substation property line (SCE 2011) and measurements reported in the Riverside County General Plan, Appendix I (County of Riverside 2014b), from a noise study conducted in 1999. Population in Riverside County and the City of Lake Elsinore has increased since 1999, increasing the potential that current noise levels are higher.
- ^b Maximum daytime and minimum nighttime noise levels reported. Measurements reported for the location adjacent to the substation site were taken on an hourly basis.
- ^c Estimated values assuming a 10 dBA reduction during nighttime hours.

Key:

dBA = A-weighted decibel

kV = kilovolt

L_{eq} = Sound Equivalent Level

N/A = Not applicable. The measurement location is located more than 500 feet from any of the proposed projects components.

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4.11.1.4 Sensitive Receptors

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Noise sensitive receptors are generally defined as locations where people reside or where the presence of unwanted sound or vibration could adversely affect the designated land uses. Typically, sensitive receptors on noise-sensitive lands include residences, hospitals, places of worship, libraries and schools, nature and wildlife preserves, and parks. Several land uses are especially sensitive to vibration, including concert halls, hospitals, libraries, vibration-sensitive research facilities, residential areas, schools, and offices. Tables 4.11-4 and 4.11-5 present the closest sensitive receptors to each of the proposed projects components.

Table 4.11-4 Sensitive Receptors Located Near the Proposed Valley-Ivyglen Project Components

Project Component	Nearest Sensitive Receptor	Distance from Project Component (feet)	Jurisdiction(s)
Subtransmission Line Segments (Overhead and Underground)			
Segment VIG1: New single-circuit 115-kV subtransmission line	Residences on McLaughlin Road (Dawson Road)	152	Menifee
	Residential unit on Caldera Street (multiple units)	49	Perris
	Residence on East SR-74, south Ethanac Road	267	Unincorporated Riverside County
Segment VIG1 Blasting: Removal of 2,240 cubic yards	Residences near access road between Structures 144 and 147	47	Perris
Segment VIG2: New single-circuit 115-kV subtransmission line	Residence on SR-74	37	Unincorporated Riverside County
	Residences on Central Avenue with Allan Street	180	Lake Elsinore
Segment VIG2 Blasting: Removal of 400 cubic yards	Residences near Structures 212–214, 219, 221, 224, 230, and 251–253 (10 structures)	47	Perris
Segment VIG3: New single-circuit 115-kV subtransmission line	Residence on Conard Avenue	20	Lake Elsinore
Segment VIG4: New single-circuit 115-kV subtransmission line	Residence on Baker Street	77	Lake Elsinore
Segment VIG5: New single-circuit 115-kV subtransmission line	Residence on Lake Street, near Temescal Canyon Road	310	Lake Elsinore
Segment VIG5 Blasting: Removal of 107 cubic yards	Residences near Structures 32 to 35 (4 structures)	848	Lake Elsinore
Segment VIG6: New single-circuit 115-kV subtransmission line	Residence on Horse Thief Canyon Road	405	Unincorporated Riverside County
Segment VIG6 Blasting: Removal of 107 cubic yards	Residences near Structures 527–530 (4 structures)	1,019	Corona
Segment VIG7: New single-circuit 115-kV subtransmission line	Residence on De Palma Road	31	Unincorporated Riverside County
Segment VIG8: New single-circuit 115-kV subtransmission line	Residence north of Temescal Canyon Road (on Wrangler Way)	158	Unincorporated Riverside County
Segment VIG8 Blasting: Removal of materials at each underground vault location	Residences near each underground vault location	172	
Telecommunications (Underground Segments)			
Segment VIG1: New underground conduits near Valley Substation	Residence on McLaughlin Road with Dawson Road	2,250	Menifee
Segment VIG2: New underground conduit along SR-74 from Ethanac Road to Festus Circle	Residence east SR-74, on Festus Circle	344	Unincorporated Riverside County
Segment VIG3: New Underground conduit along Third Street and across Collier Avenue	Riverside Recovery Center (Health facility on Collier Avenue with Third Street)	608	Lake Elsinore
Segment VIG4: New Underground conduit along Collier Avenue, Third Street, Pasadena Avenue, and Baker Street	Residence on Baker Street	86	Lake Elsinore

Table 4.11-4 Sensitive Receptors Located Near the Proposed Valley-Ivyglen Project Components

Project Component	Nearest Sensitive Receptor	Distance from Project Component (feet)	Jurisdiction(s)
Segment VIG-5: New underground conduit across Nichols Road to Old Lake Street	Boys & Girls Club of America (3711 Nichols Road)	423	Lake Elsinore
Segment VIG 7: New underground conduit along De Palma Road, east of the intersection of Campbell Ranch Road and Santiago Canyon Road	Residence on Glen Eden Road	990	Unincorporated Riverside County
Segment VIG8: New underground conduits from Campbell Ranch Road to Ivyglen Substation	Residence north of Temescal Canyon Road (Wrangler Way)	160	Unincorporated Riverside County
Staging Areas			
Staging Area VIG2 ^a	Residence east of Menifee Road, multiple units (N. Bay Lane)	996	Menifee
Staging Area VIG3	Residence on Ethanac Road	86	Unincorporated Riverside County
Staging Area VIG4	Residence on Festus Circle	282	Unincorporated Riverside County
Staging Area VIG5	Residence across SR-74, on Carla Court	179	Lake Elsinore
Staging Area VIG6	Riverside Recovery Resources	585	Lake Elsinore
Staging Area VIG8	Elsinore Valley Cemetery	1,026	Lake Elsinore
Staging Area VIG9	Residence on Horse Thief Canyon Road	130	Unincorporated Riverside County
Staging Area VIG10	Residence on Rouse Road	1,410	Unincorporated Riverside County
Staging Area VIG11	Residence on El Toro Cut Off Road	986	Lake Elsinore
Staging Area VIG12	Residential Building Ardenwood Way	122	Lake Elsinore
Staging Area VIG13	Educations Buildings on Education Way	71	Lake Elsinore

Source: E & E 2015a, SCE 2014.

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Table 4.11-5 Sensitive Receptors Located Near the Proposed Alberhill Project Components

Project Component	Nearest Sensitive Receptor	Distance from Project Component (feet)	Jurisdiction(s)
Alberhill Substation			
New 1,120 MVA 500/115-kV substation expandable to 1,680 MVA 34 to 40 acres within a 124-acre property ^(a) . Construction includes landscaping and access roads.	Closest residence to substation property line	1,126	Unincorporated Riverside County
	• Distance to proposed transformer banks'	2,874	
	Closest residence to the 5.2-Acre Source Area (Soil Import Option 1)	1,200	City of Corona
Closest residences to soil haul route (Soil Import Option 2)	3,125		

Table 4.11-5 Sensitive Receptors Located Near the Proposed Alberhill Project Components

Project Component	Nearest Sensitive Receptor	Distance from Project Component (feet)	Jurisdiction(s)
500-kV Transmission Lines^(b)			
Line SA: New 500-kV transmission line to connect the proposed Alberhill Substation to existing Serrano-Valley 500-kV Transmission Line	Closest residence to ROW	338	Unincorporated Riverside County
	Closest residence to Tower SA-1 ^(c)	1,197	
	Closest residence to Tower SA-2 ^(c)	900	
	Closest residence to Tower SA-3 ^(c)	691	
	Closest residence to Tower SA-4 ^(c)	2,096	
Line VA: New 500-kV transmission line to connect the proposed Alberhill Substation to existing Serrano-Valley 500-kV Transmission Line (overhead)	Closest residence to ROW	23	Unincorporated Riverside County
	Closest residence to Tower VA-1 ^(c)	1,110	
	Closest residence to Tower VA-2 ^(c)	736	
	Closest residence to Tower VA-3 ^(c)	668	
	Closest residence to Tower VA-4 ^(c)	2,132	
VA2 Access Road	Closest residence	322	Unincorporated Riverside County
VA3 Access Road	Closest residences	266	
Potential Helicopter Platform Locations (500-kV transmission Line Helicopter Construction Method)			
Helipad 1	Residence northeast of Black Powder Road (northeast of proposed Alberhill Substation site)	704	Unincorporated Riverside County
Helipad 2	Same as Helipad 1	567	Unincorporated Riverside County
Helipad 3	Same as Helipad 1	1,978	Unincorporated Riverside County
Helipad 4	Same as Helipad 1	2,020	Unincorporated Riverside County
Helipad 5	Same as Helipad 1	3,410	Unincorporated Riverside County
115-kV Subtransmission Lines^(b)			
Segment ASP1: New double-circuit 115-kV subtransmission line at proposed substation site	Residence on Hostettler Road (across Corona Freeway)	801	Unincorporated Riverside County
	Closest residence to Alberhill Substation	1,125	
Segment ASP1.5: New double-circuit 115-kV subtransmission line and removal of existing single-circuit section of Valley-Elsinore-Fogarty-Ivyglen 115-kV line	Residence on Hostettler Road (across Corona Freeway)	278	Unincorporated Riverside County
Segment ASP2: Double-circuit Valley-Ivyglen 115-kV line segment	Residences on Baker Street	37	City of Lake Elsinore
Segment ASP3: New double-circuit 115-kV line segment and removal of existing single-circuit section of Valley-Elsinore-Fogarty-Ivyglen 115-kV line	Residences on Collier Avenue and 2 nd Street	181	City of Lake Elsinore

Table 4.11-5 Sensitive Receptors Located Near the Proposed Alberhill Project Components

Project Component	Nearest Sensitive Receptor	Distance from Project Component (feet)	Jurisdiction(s)
Segment ASP4: New double-circuit 115-kV subtransmission line and removal of existing single-circuit sections of Ivyglen–Newcomb–Skylark and Elsinore–Skylark 115-kV lines	Residences on E Hill Street, E Pottery Street, Casino Drive, Malaga Road, and Mission Trail	20	City of Lake Elsinore
Segment ASP5: New double-circuit 115-kV subtransmission line segment and removal of existing single-circuit section of Valley–Newcomb–Skylark 115-kV line	Residences on Waite Street, Lemon Street, Lost Road, Beverly Street, and Bundy Canyon Road	35	City of Wildomar
Segment ASP6: New single-circuit 115-kV subtransmission line segment along existing distribution line route	Residences on Murrieta Road	55	City of Menifee
Segment ASP7: New double-circuit 115-kV subtransmission line segment and removal of existing single-circuit section of Valley–Newcomb–Skylark 115-kV line	Residences on Murrieta Road (near Newcomb Substation)	398	City of Menifee
Segment ASP8: Connect Valley–Ivyglen and Valley–Newcomb single-circuit 115-kV lines	Residences Murrieta Road (intersection with McLaughin Road)	20	City of Menifee
Telecommunications			
New microwave tower at Alberhill Substation	Closest residence to substation property line	1,126	Unincorporated Riverside County
New microwave dishes at Serrano Substation and Santiago Peak Communication Site	Serrano Substation: Residences	753	City of Orange
	Santiago Peak Communication Site	>100 ^(d)	Cleveland National Forest, Trabuco Ranger District
New overhead ground wires installed on 500-kV Lines SA and VA	Same as Lines VA and SA receptors	Same as Line VA and SA	Unincorporated Riverside County
New fiber optic telecommunication line installed on two 115-kV line taps into the proposed Alberhill Substation	Same as Alberhill Substation receptors	Same as Alberhill Substation	Unincorporated Riverside County
New fiber optic telecommunication line installed on 115-kV Segments ASP1, ASP 1.5, ASP5, ASP6, and ASP7	Residences	20	Unincorporated Riverside County
Staging Areas			
Staging Area ASP1	Closest residence to substation property line	1356	Unincorporated Riverside County
Staging Area ASP2	None identified (within 0.25-mile radius)	None	
Staging Area ASP3	Closest residence	237	City of Lake Elsinore
Staging Area ASP4	Closest residence	338	

Table 4.11-5 Sensitive Receptors Located Near the Proposed Alberhill Project Components

Project Component	Nearest Sensitive Receptor	Distance from Project Component (feet)	Jurisdiction(s)
Staging Area ASP5	Mission Valley Medical School	370	City of Wildomar
Staging Area ASP6	Closest residence	365	City of Wildomar
Staging Area ASP7	Closest residence	655	City of Menifee

Source: E & E 2015a, SCE 2011; 2014.

Notes:

- a If the applicant elects to excavate a 5.2 acres of land adjacent to the northeast corner of the proposed substation site to obtain fill required for grading, then the land required for construction of the proposed substation would increase from 34 to 40 acres. See Section 2.4.6.2, "Fill, Grading, and Surface Materials."
- b Maximum disturbance widths for construction of the proposed transmission or subtransmission lines, respectively.
- c Distances to closest sensitive receptors in the proximity of the 500-kV lines SA and VA towers are included in this table due to the potential noise impacts associated with the construction and operation of each tower structure.
- d Santiago Peak is a designated communications site located in the Elsinore Place, in the Trabuco Ranger District of the Cleveland National Forest. Although the majority of developed recreation sites (campgrounds and picnic areas) and special-use authorizations on the Trabuco Ranger District are located within the Elsinore Place, the United States Forest Service reports that only a few hiking trails are available for recreational users in the Elsinore Place. For the purposes of this environmental impact report, it has been assumed a minimum safety distance of 100 feet from recreational users to the installation and operation of satellite dish antennas in the Santiago Peak Communications site.

Key:

- kV = kilovolt
- MVA = megavolt-ampere

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Livestock

Although not defined as a sensitive receptor under federal, state, or local guidance, excessive noise would also affect livestock. The closest location with presence of livestock in the proposed projects area is the De Jong’s Cash & Carry Dairy, which is located in the City of Wildomar, adjacent to the Skylark Field Airport and approximately 1,300 feet from the interconnection of the proposed 115-kV subtransmission segments ASP4 and ASP5 at Skylark Substation. According to a recent updated publication on behavioral principles of livestock handling, cattle and sheep are more sensitive than people to high frequency noises. The auditory sensitivity of cattle is greatest at 8,000 hertz (Hz) and sheep at 7,000 Hz. For comparison, the human ear is most sensitive at 1,000 to 3,000 Hz. Unexpected loud or novel noises can be highly stressful to livestock (Grandin 1989). However, animals readily adapt to reasonable levels of continuous sound, such as white noise and miscellaneous sounds. Additional studies conducted to evaluate behavioral and physiological response to noise have reported signs of habituation to noise over 5-day-exposure trials (Waynert et al. 1999).

4.11.1.5 Airports and Airstrips

General aviation aircraft operations related to the local airports also contribute to the existing noise environment within the proposed projects area:

- **Skylark Field Airport (a private use airport):** located at the southern limits of the City of Lake Elsinore, approximately 1,000 feet from proposed 115-kV Segments ASP4 and ASP5.
- **Perris Valley Airport (a public use airport):** located in Central Perris, approximately 1.5 miles from 115-kV Segments ASP8 and VIG1.

1 **4.11.2 Regulatory Setting**

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3 **4.11.2.1 Federal**

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5 There are no federal noise standards that directly regulate community noise. Regulating noise is generally
6 a responsibility of local governments. However, several federal agencies have developed community
7 noise guidelines.

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9 The United States Environmental Protection Agency published guidelines on recommended maximum
10 noise levels to protect public health and welfare with adequate margins of safety. A noise level of 70
11 dBA equivalent sound level over a 24-hour period was identified as the level of environmental noise that
12 could lead to hearing loss over a 40-year period (EPA 1978). In addition, noise levels of 55 dBA L_{dn}
13 outdoors and 45 dBA indoors were identified as noise thresholds that would prevent activity interference
14 or annoyance (FTA 2006). Workers' exposure to noise is regulated by the federal occupational noise
15 regulations established by the Occupational Safety and Health Administration in 29 Code of Federal
16 Regulations 1910.95.

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18 In regard to groundborne vibration and groundborne noise, agencies such as the Federal Transportation
19 Administration (FTA) and the U.S. Bureau of Mines have extensively studied the effects of ground
20 vibration and damage on structures. The FTA has established construction vibration damage criteria of a
21 PPV of 0.12 inches per second or 90 VdB for buildings extremely susceptible to vibration damage.

22
23 ***Cleveland National Forest Land Management Plan (Alberhill Project only)***

24 The Cleveland Forest Land Management Plan does not provide specific standards for noise within the
25 National Forest. However, the Cleveland National Forest does enforce a sound limit of 101 dBA for off-
26 highway vehicles throughout the forest (USFS n.d.).

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28 ***Occupational Safety and Health Act of 1970***

29 Worker exposure to noise is regulated by the federal Occupational Safety and Health Administration,
30 which established occupational noise regulations in 29 CFR 1910.95.

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32 **4.11.2.2 State**

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34 ***California Code of Regulations, Title 8, Section 5096***

35 Worker noise exposure is regulated statewide by the California Code of Regulations, Title 8, Section
36 5096 "Exposure Limits for Noise." This regulation establishes a maximum permissible sound level of 90
37 dBA for worker exposure during an 8-hour period and limits exposure to higher sound levels during
38 shorter periods of time. When employees are subjected to sound levels exceeding those listed in this
39 regulation, feasible administrative or engineering controls shall be utilized. If such controls fail to reduce
40 sound levels within permissible levels, personal protective equipment shall be provided and used to
41 reduce sound levels within the levels listing in the regulations.

1 **4.11.2.3 Regional and Local**

2
3 **County of Riverside**

4 The Noise Element of the County of Riverside General Plan establishes parameters for noise by land use
5 designation. The maximum normally acceptable noise exposure level is 60 dBA (CNEL/L_{dn}) for low-
6 density residential and 75 dBA for industrial, utilities, and agricultural land uses (County of Riverside
7 2014a). The General Plan contains the following policies that are relevant to the proposed projects and
8 intended to reduce noise in the proximity of sensitive receptors during construction and operation:

- 9
- 10 • **Policy N 4.1** *Prohibit facility-related noise, received by any sensitive use, from exceeding the*
11 *following worst-case noise levels:*
 - 12 - 45 dBA-10-minute L_{eq} between 10:00 p.m. and 7:00 a.m.
 - 13 - 65 dBA-10-minute L_{eq} between 7:00 a.m. and 10:00 p.m.
 - 14 • **Policy 11.1** *Utilize natural barriers such as hills, berms, boulders, and dense vegetation to assist*
15 *in noise reduction.*
 - 16 • **Policy N 12.1** *Minimize the impacts of construction noise on adjacent uses within acceptable*
17 *practices.*
 - 18 • **Policy N 12.2** *Ensure that construction activities are regulated to establish hours of operation in*
19 *order to prevent and/or mitigate the generation of excessive or adverse noise impacts on*
20 *surrounding areas.*
 - 21 • **Policy N 12.4** *Require that all construction equipment utilizes noise reduction features (e.g.,*
22 *mufflers and engine shrouds) that are no less effective than those originally installed by the*
23 *manufacturer.*

24
25 The Riverside County General Plan also provides guidelines for controlling groundborne vibration that
26 are relevant to the proposed projects, such as:

- 27
- 28 • **Policy N 15.2** *Consider the following land uses sensitive to vibration:*
 - 29 - Hospitals;
 - 30 - Residential areas;
 - 31 - Concert halls;
 - 32 - Libraries;
 - 33 - Sensitive research operations;
 - 34 - Schools; and
 - 35 - Libraries.

36
37 Additionally, Appendix I of the County of Riverside General Plan includes a memorandum addressing
38 the requirements for determining and mitigating non-transportation noise source impacts to residential
39 properties, which could be relevant during permanent operation of the proposed Alberhill Substation.
40 This memorandum establishes the requirements for determination of community noise impacts and it is
41 applicable in the event a local resident files a noise complaint (County of Riverside 2009).

The County also regulates construction noise through Ordinance No. 847 (as amended through 847.1). Ordinance 847 exempts private construction projects from the general sound level standards as long as they occur 0.25 miles or more from existing inhabited dwellings. For private construction projects located within 0.25 miles of an inhabited dwelling, construction noise is exempted from noise standards if work occurs between 6:00 a.m. and 6:00 p.m. from June through September and between 7:00 a.m. and 6:00 p.m. from October through May. Work occurring outside the allowable hours would be subject to the general sound level standards presented in Section 4 of the ordinance. However, Section 7 of Ordinance No. 847 establishes that construction-related exceptions may be requested from the general sound level standards (County of Riverside 2007).

City of Lake Elsinore

The City of Lake Elsinore General Plan, Chapter 3.0 Public Safety and Welfare (City of Lake Elsinore 2011) provides the following goal relevant to the proposed projects:

- *Goal 7 Maintain an environment for all City Residents and visitors free of unhealthy, obtrusive, or otherwise excessive noise conditions.*

The City of Lake Elsinore Zoning Code Chapter 17.176 (Noise Control) prohibits construction on weekdays between the hours of 7:00 p.m. and 7:00 a.m. or at any time on weekends and holidays. The code also states that “where technically and economically feasible,” construction activities shall be conducted in such a manner that the maximum noise levels at affected properties will not exceed those levels listed in Table 4.11-6 (City of Lake Elsinore 1987).

Table 4.11-6 Noise Restrictions at Affected Properties during Construction

Receptor Type	Construction Equipment Type and Schedule	Maximum Noise Level
Residential Properties	Mobile, nonscheduled, intermittent, short-term operation (less than 10 days), 7:00 a.m. to 7:00 p.m., excluding holidays and Sundays	<ul style="list-style-type: none"> • Single Family Residential: 75 dBA • Multifamily Residential: 80 dBA • Semi-Residential/Commercial: 85 dBA
	Stationary, repetitively scheduled and relatively long-term operation (10 days or more), 7:00 a.m. to 7:00 p.m., excluding holidays and Sundays	<ul style="list-style-type: none"> • Single Family Residential: 60 dBA • Multifamily Residential: 65 dBA • Semi-Residential/Commercial: 70 dBA
Business Properties	Mobile, nonscheduled, intermittent, short term operation, all hours and days	85 dBA
	Stationary, repetitively scheduled and relatively long-term operation, all hours and days	75 dBA

Source: City of Lake Elsinore 1987.

Note: Limitations listed in relevant part, as would be applicable to the proposed projects.

Key:

dBA = A-weighted decibel

The City of Lake Elsinore Exterior Noise Limit standards would be applicable during the proposed projects operations. These standards are presented in Table 4.11-7.

Table 4.11-7 City of Lake Elsinore Exterior Noise Standards

Receiving Land Use Category	Time Period	Noise Level (dBA)
Single-Family Residential	10:00 p.m. – 7:00 a.m.	40
	7:00 a.m. – 10:00 p.m.	50
Multiple Dwelling Residential	10:00 p.m. – 7:00 a.m.	45
	7:00 a.m. – 10:00 p.m.	50
Limited Commercial and Office	10:00 p.m. – 7:00 a.m.	55
	7:00 a.m. – 10:00 p.m.	60

Table 4.11-7 City of Lake Elsinore Exterior Noise Standards

Receiving Land Use Category	Time Period	Noise Level (dBA)
General Commercial	10:00 p.m. – 7:00 a.m.	60
	7:00 a.m. – 10:00 p.m.	65
Light Industrial	Anytime	70
Heavy Industrial	Anytime	75

Source: City of Lake Elsinore 1987.

Note:

a Levels not to be exceeded more than 30 minutes in any hour.

Key:

dBA = A-weighted decibel

1
2 Regarding vibration sources, the City of Lake Elsinore Municipal Code Section 17.176.80 (G) prohibits
3 operating or permitting any device that creates a vibration which is above the vibration perception
4 threshold of any individual at or beyond the property boundary of the source if on private property, or at
5 150 feet (46 meters) from the source if on a public space (City of Lake Elsinore 1987). The proposed
6 projects would not be subject to this regulation because the regulation exempts any activity that is
7 regulated by state law in a way that preempts regulation by the City (City of Lake Elsinore Municipal
8 Code Section 17.176.100 (J)). California Public Utilities Commission (CPUC) regulation preempts local
9 regulation, as discussed in Section 4.10, “Land Use.”

10
11 **City of Perris**

12 The City of Perris General Plan (2005) has noise policies related to new and future land uses and road
13 improvements; none of these policies are applicable to the proposed Valley-Ivyglen Project (City of
14 Perris 2005).

15
16 Chapter 7.34 of the Perris Municipal Code regulates noise in Perris. Section 7.34.060 regulates
17 construction noise and prohibits construction that creates disturbing, excessive, or offensive noise
18 between 7:00 p.m. and 7:00 a.m. and on legal holidays (except Columbus Day and Washington’s
19 Birthday) and Sundays. Further, construction noise cannot exceed 80 dBA in residential zones. The City
20 of Perris Municipal Code does not include provisions for construction-related exceptions.

21
22 **City of Menifee**

23 The City of Menifee General Plan Noise Element (2013) establishes the following applicable goal and
24 policies for the proposed projects:

- 25
26
- **Goal N-1:** *Noise-sensitive land uses are protected from excessive noise and vibration exposure.*
 - 27 • **Policy N-1.7** *Mitigate exterior and interior noises to the levels listed in Table 4.11-8 to the*
28 *extent feasible for stationary sources adjacent to sensitive receptors:*
 - 29 • **Policy N-1.13** *Require new development to minimize vibration impacts to adjacent uses during*
30 *demolition and construction.*
- 31

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Table 4.11-8 City of Menifee Stationary Source Noise Standards

Residential Land Use	Interior Standards	Exterior Standards
10:00 p.m. to 7:00 a.m.	40 dB L_{eq} (10 minute)	45 dB L_{eq} (10 minute)
7:00 a.m. to 10:00 p.m.	55 dB L_{eq} (10 minute)	65dB L_{eq} (10 minute)

Source: City of Menifee 2013.

Key:

L_{eq} = Sound Equivalent Level

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Chapter 9.09 of the Menifee Municipal Code regulates noise. It codifies the levels listed in Table 4.11-8. The code also allows for application of an exception for construction activities if construction activities occur more than 0.25 miles from an inhabited dwelling or if construction occurs within 0.25 miles of an inhabited dwelling and construction does not occur between 6:00 p.m. and 6:00 a.m. from June through September and between 6:00 p.m. and 7:00 a.m. from October through May. Construction activities on Sundays and national holidays are governed by time limits in Section 8.01.010 of the municipal code, which prohibits construction on those days unless approval is obtained from the City Building Official or City Engineer. Section 9.09.030 of the City of Menifee Municipal Code includes a provision for construction-related exceptions.

14

City of Wildomar

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At the time of preparation of this document, the City of Wildomar had not adopted a general plan. The City of Wildomar was incorporated in 2008 and adopted the County of Riverside’s general plan at that time. County ordinances remain in effect until the city enacts ordinances superseding them. Refer to the discussion of Riverside County’s General Plan and ordinances.

20

City of Orange

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22

The City of Orange General Plan Noise Element (City of Orange 2010) establishes the following applicable goal and policies for construction, maintenance, and industrial noise:

23

24

- **Goal 7.0:** *Minimize construction, maintenance vehicle, and nuisance noise in residential areas and near noise-sensitive land uses.*
- **Policy 7.2:** *Require developers and contractors to employ noise minimizing techniques during construction and maintenance operations.*
- **Policy 7.3:** *Limit the hours of construction and maintenance operations located adjacent to noise-sensitive land uses.*

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The City of Orange Municipal Code exempts construction from exterior noise standards if it occurs between 7:00 a.m. and 8:00 p.m. on days other than Sundays or federal holidays. All other noise is subject to standards outlined in Section 8.24.040 which regulates noise levels in residential areas. Limits are shown in Table 4.11-9.

Table 4.11-9 City of Orange Exterior Noise Standards per Orange Municipal Code

	Noise Level	Time Period
Hourly Average (L_{eq})	55 dB (A)	7:00 a.m.—10:00 p.m.
	50 dB (A)	10:00 p.m.—7:00 a.m.
Maximum Level	70 dB (A)	7:00 a.m.—10:00 p.m.
	65 dB (A)	10:00 p.m.—7:00 a.m.

Source: City of Orange 2010.

L_{eq} = Sound Equivalent Level

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City of Corona

If the proposed Alberhill Project Soil Import Option 2 is selected, construction of the proposed Alberhill Substation would require soil to be trucked in from a local quarry, such as Corona Rock and Asphalt, which is located under the jurisdiction of the City of Corona. During a 60-day period, a total of 92 daily truck trips would occur from the local quarry to the proposed substation site. The traffic noise related goals of the City of Corona General Plan pertain to roadway design and enforcement of motor vehicle noise standards. None of the goals would therefore be pertinent to the proposed Alberhill Project.

4.11.3 Methodology and Significance Criteria

Potential noise and vibration impacts were evaluated according to the following significance criteria. The criteria were defined based on the checklist items presented in Appendix G of the California Environmental Quality Act Guidelines. The proposed projects would cause a significant impact on visual resources if they would:

- a) Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- b) Expose persons to or generation of excessive groundborne vibration or groundborne noise levels;
- c) Cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- d) Cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- e) Expose people residing or working in the 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 two miles of a public airport or public use airport;
- f) Expose people residing or working in the project area to excessive noise levels, for a project within the vicinity of a private airstrip.

Evaluation of noise and vibration impacts from the proposed projects construction, operation and maintenance included the review of relevant city and county noise standards; the existing noise environment along the proposed projects area, and the projected noise levels from equipment, vehicles, and activities. County maps were reviewed to determine the proximity of the proposed projects to sensitive receptors and airports. In addition, land use plans and topographic and noise contours maps were researched for relevant information on the existing noise and vibration levels.

Noise Methodology

To evaluate potential noise impacts due to construction of the proposed projects, reference noise levels were obtained from the Federal Highway Administration (FHWA) Roadway Construction Noise Model User’s Guide (FHWA 2006) which provides a comprehensive assessment of noise level usage factors for construction equipment. Based on the list of equipment proposed for construction and typical noise levels for those pieces of equipment (see Table 4.11-10), maximum noise emission levels were identified in the guide to estimate combined noise levels at various distances.

Table 4.11-10 Equipment Types and Typical Unmitigated Noise Emission Levels

Equipment	Maximum Sound Level (Lmax, dBA) at 50 feet from source
Air Compressor	81
Backhoe	80
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Crane, Derrick	88
Crane, Mobile	83
Dozer	85
Generator	81
Grader	85
Impact Wrench	85
Jack Hammer	88
Loader	85
Paver	89
Pneumatic Tool	85
Pump	76
Rock Drill	98
Roller	74
Saw	76
Scarifier	83
Scraper	89
Truck	88

Source: FHWA 2006.

Note: Noise levels resulting from construction equipment are dependent on several factors including the number and type of equipment operating, the level of operation, and the distance between sources and receptors. The loudest equipment during construction would contribute to a composite average or equivalent site noise level.

Key:

dBA = A-weighted decibel

Lmax = Maximum Sound Level

1
2 Noise levels resulting from construction equipment are dependent on several factors including the
3 number and type of equipment operating, the level of operation, and the distance between sources and
4 receptors. Further, each piece of equipment would not be utilized at its maximum sound level for the
5 entire work period; a usage factor is therefore assigned to each piece of construction equipment. The
6 loudest equipment during construction would contribute to a composite average or equivalent site noise
7 level. The noise levels generated by construction were analyzed using a construction noise model to
8 determine projected noise levels at various distances and receptor locations during a typical hour of
9 construction. The model considers construction equipment noise specification data published by FHWA,
10 typical usage factors per type of equipment, and the relative distances measured from the source of noise
11 to the nearest sensitive receptor.

12 To analyze potential noise impacts during construction and operation and maintenance, composite noise
13 levels were estimated and compared with the existing ambient noise levels as well as with applicable
14 federal, state, and local noise standards, as appropriate, for the significance criterion in question. For
15 estimating noise reduction over distance, calculations were based on the general rule that airborne noise
16 decreases by 6 dBA with each doubling the distance.
17

1 **Vibration Methodology**

2 To evaluate potential annoyance or interference with vibration-sensitive activities, the estimated
3 vibration level at the nearest sensitive receptor was estimated using an equation that takes into account
4 the estimated vibration level at a selected reference distance and the distance to the nearest sensitive
5 receptor. The results were compared with the thresholds in Table 4.11-11. Residential annoyance (80
6 VdB) has been determined to be the significance threshold for this analysis.
7

Table 4.11-11 Human and Structural Response to Typical Levels of Vibration

Human/Structural Response	Vibration Velocity Level (VdB) ^a	Typical Sources
Threshold, minor cosmetic damage to fragile buildings	100	Blasting from construction projects
Difficulty with tasks (e.g., reading a screen)	90	Bulldozers and other heavy tracked construction equipment
Residential annoyance, transient events	80	Commuter rail, upper range
Residential annoyance, continuous events	70	Rapid transit, typical
Human threshold of perception and limit for vibration sensitive equipment	65	Bus or truck, typical
No human response	50	Typical background vibration

Source: FTA 2006.

Note:

^a Root-mean square vibration velocity level in VdB is relative to a one millionth part of an inch per second (1×10^{-6} inches/second).

Key:

VdB = decibels of vibration velocity

8
9 **4.11.4 Environmental Impacts and Mitigation Measures (Valley-Ivyglen Project)**

10
11 **4.11.4.1 Project Commitments (Valley-Ivyglen Project)**

12
13 The applicant has committed to the following as part of the design of the proposed Valley-Ivyglen
14 Project. See Section 2.6, “Project Commitments,” for a complete description of each project
15 commitment.
16

17 **Project Commitment H: Noise Control**

- 18 • All construction and general maintenance activities, except in an emergency, shall be limited
19 to the hours of 7:00 a.m. to 7:00 p.m. and prohibited on Sundays and all legally proclaimed
20 holidays. If the California Independent System Operator (CAISO) and/or Caltrans require
21 that conductor stringing over freeways or highways occur after 7:00 p.m., or on a Sunday,
22 SCE would obtain variances from all applicable jurisdictions.
- 23 • Construction equipment shall use noise reduction features (e.g., mufflers and engine shrouds)
24 that are no less effective than those originally installed by the manufacturer.
- 25 • Construction traffic shall be routed away from residences and schools where feasible.
- 26 • Unnecessary construction vehicle use and idling time shall be minimized to the extent
27 feasible. The ability to limit construction vehicle idling time is dependent upon the sequence
28 of construction activities and when and where vehicles are needed or staged. A “common
29 sense” approach to vehicle use shall be applied; if a vehicle is not required for use
30 immediately or continuously for construction activities, its engine should be shut off. Note:
31 certain equipment, such as large diesel-powered vehicles require extended idling for warm-
32 up and repetitive construction tasks.

- The applicant will notify all receptors within 500 feet of construction of the potential to experience significant noise levels during construction.
- During construction, the applicant will use sound walls, noise-reduction blankets, or other noise reduction measures prior to developing the project site in areas where sensitive receptors would be subjected to significant noise impacts.
- The applicant would shield small stationary equipment with portable barriers within 100 feet of residences.
- The applicant would minimize engine idling and turn off engines when not in use.
- Where blasting is required, the applicant would conduct additional pre-blast notification and coordination with residents, utilities, and others that may be affected by blasting operations.

4.11.4.2 Impacts Analysis (Valley-Ivyglen Project)

Impact NV-1 (VIG): 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.
LESS THAN SIGNIFICANT WITH MITIGATION

The proposed Valley-Ivyglen Project would occur in the cities of Menifee, Perris, Lake Elsinore, and unincorporated areas of western Riverside County. The following analysis discusses the potential exposure of persons to or generation of the applicable noise standards at each of these jurisdictions.

Construction

The proposed construction of subtransmission line segments and telecommunication components would be temporary, occurring over a total period of 27 months.

Project construction activities would cause noise on a temporary basis at every proposed structure location, primarily from heavy duty construction equipment use for subtransmission line and telecommunication installation, helicopter use for wire stringing operations, vehicles for worker commute, and trucks needed to bring materials to the construction sites. The overhead telecommunication line construction would also require the use of bucket truck and several crew trucks.

115-kV Segment VIG1

115-kV Segment VIG1 would be located in the cities of Menifee and Perris. The City of Perris prohibits construction that creates disturbing, excessive, or offensive noise from 7:00 p.m. to 7:00 a.m., on Sundays, and on legal holidays (except Columbus Day and Washington's Birthday). There is also a noise limit of 80 dBA in residential zones during times when construction is allowed.

The predicted noise level at the nearest sensitive receptor in the City of Perris (a residence on Caldera Street, 45 feet from the project area) would be 95 dBA (E & E 2015b, SCE 2014). In addition, a Hughes 500E helicopter would be used for wire stringing along segment VIG1, resulting in potential impacts during helicopter flyovers above residential areas. This type of helicopter produces a maximum sound level of 82.3 dBA, at a level fly over of 500 feet and 130 miles per hour (mph; FAA 1977). In addition, the applicant would use blasting at certain locations along segment VIG1, specifically near structure 131 and between structures 144 and 147, in the City of Perris. Blasting would result in high instantaneous noise levels of 94 dBA at 50 feet per blasting event (FHWA 2006). The nearest sensitive receptors to

1 blasting sites are located at 47 feet from work areas, resulting in levels above the 80-dBA threshold during
2 blasting events.

3
4 The City of Menifee Municipal Code exempts construction activities that occur more than 0.25 miles from
5 an inhabited dwelling or if construction occurs within 0.25 miles of an inhabited dwelling and
6 construction does not occur between 6:00 p.m. and 6:00 a.m. from June through September and between
7 6:00 p.m. and 7:00 a.m. from October through May. Also, Section 9.09.030 of the City of Menifee
8 Municipal Code allows for construction-related exceptions. The nearest sensitive receptor in the City of
9 Menifee (located near the intersection of Dawson Road and McLaughlin Road) is located 150 feet from
10 the proposed VIG1 alignment¹.

11
12 Construction along segment VIG 1 may occur outside of allowed hours and would exceed the 80-dBA
13 threshold for the City of Perris and also may occur within non-exempt hours and distances from inhabited
14 dwellings in the City of Menifee. Impacts on noise standards within the City of Perris and the City of
15 Menifee would be significant.

16
17 The applicant will implement Project Commitment H, which limits all construction and general
18 maintenance activities, except in an emergency, between 7:00 a.m. and 7:00 p.m., and prohibited on
19 Sundays and all legally proclaimed holidays. The applicant would also obtain variances from local
20 jurisdictions, if CAISO and/or Caltrans require that conductor stringing over freeways or highways occur
21 after 7:00 p.m., or on a Sunday. Current City of Perris regulations do not provide exemptions or special
22 variances for construction works conducted outside allowed hours. The only freeway crossing within the
23 City of Perris would be located at the intersection of McLaughlin Road with I-215, along the city limit
24 between the City of Perris and the City of Menifee. The closest sensitive receptor to the freeway crossing
25 in the City of Perris would be located on Trumble Road, approximately 1,600 feet from the proposed I-
26 215 crossing. The closet residential receptors to the proposed I-215 crossing are in the City of Menifee,
27 which allows for construction-related exceptions in the event temporary construction work occurs outside
28 allowed hours.

29
30 In addition, implementation of Project Commitment H would provide the following construction noise
31 reduction:

- 32
33
- Mufflers and engine shrouds in combustion engines: 8 dBA²;
 - Sound walls and noise reduction blankets surrounding equipment: 5 dBA³; and
 - Enclosures in small stationary equipment: 8 dBA⁴.
- 34
35
36

37 Project Commitment H would reduce impacts related to the timing of construction to less than significant
38 levels in the City of Menifee. Significant impacts related to the timing of construction in the City of
39 Perris would still occur. Implementation of MM NV-1 will require the applicant to implement a noise
40 control plan, which would require the applicant to provide a written justification for the need of work

¹ The City of Menifee also limits exterior noise from stationary sources is 65 dBA L_{eq} (10 minute) from 7:00 a.m. to 10:00 p.m. Construction noise within the City of Menifee would be transient and not stationary; therefore, this standard is not applicable.

² Minimal transmission loss (decibels) reported for reactive silencers or mufflers in industrial applications (Ray 2013).

³ Value recommended by FHWA for calculating shielding from heavy vinyl noise curtain materials (FHWA 2006).

⁴ Value recommended by FHWA for calculating shielding from noise sources completely enclosed, or completely shielded with a solid barrier located closed to the source.

1 outside of regularly scheduled construction hours for CPUC approval. Impacts related to the level of
2 noise during construction would be less than significant in the City of Menifee, as construction noise is
3 exempt, as discussed above. Impacts related to the level of noise during construction would be significant
4 in the City of Perris. Implementation of Project Commitment H would reduce noise levels by about 8
5 dBA, but impacts related to construction noise levels would remain significant (i.e., above 80 dBA) in
6 the City of Perris. Mitigation Measure (MM) NV-1 would require the applicant to implement noise-
7 reduction strategies, such as limiting timeframes for use of heavy-duty equipment and reducing the
8 number of pieces of equipment operating concurrently to reduce noise to that required under the City of
9 Perris Municipal Code or to the extent technologically and economically feasible. Implementation of
10 MM NV-1 would reduce noise to levels that are in compliance with the City of Perris noise ordinance.
11 Impacts on noise standards in the City of Perris would be less than significant after mitigation.
12

13 *115-kV Segments VIG2, VIG6 through VIG8; Staging Areas VIG3, VIG4, and VIG9*

14 115-kV Segments VIG2 and VIG6 through VIG8 as well as Staging Areas VIG3, VIG4, and VIG9 would
15 be located in unincorporated Riverside County. Riverside County exempts private construction projects
16 from the general sound level standards as long as they are located 0.25 miles or more from an inhabited
17 dwelling. For project construction sites located within 0.25 miles of an inhabited dwelling, the County
18 requires construction work to occur between 6:00 a.m. and 6:00 p.m. from June through September and
19 between 7:00 a.m. and 6:00 p.m. from October through May. Construction activities may take place
20 outside of these times, which would require compliance with the Riverside County general sound level
21 standards and result in a significant impact, unless a construction-related exception is filed. Project
22 Commitment H would limit construction activities from 7:00 a.m. to 7:00 p.m. and require the applicant
23 to obtain variances from all applicable jurisdictions when construction work would occur outside allowed
24 hours. Section 7 of the Riverside County Ordinance No. 847 provides construction-related exceptions for
25 activities subject to the general sound level standards. Implementation of Commitment H would reduce
26 impacts to less than significant.
27

28 *115-kV Segments VIG3 through VIG5; Staging Areas VIG5 through VIG8*

29 115-kV Segments VIG2 (partially), and VIG3 through VIG5 and Staging Areas VIG5 through VIG8
30 would be located in Lake Elsinore. Wire stringing operations along segments VIG4 and VIG5 would
31 require the use of a Hughes 500E helicopter, this type of helicopter produces a maximum sound level of
32 82.3 dBA, at a level fly over of 500 feet and 130 mph (FAA 1977). In addition, construction of segment
33 VIG5 would involve blasting at specific locations. Blasting would result in noise levels of 94 dBA at 50
34 feet per blasting event (FHWA 2006) and perceived as 69 dBA at the nearest sensitive receptor
35 (residences near structures 32 to 35).
36

37 Construction is prohibited in Lake Elsinore on weekdays between the hours of 7:00 p.m. and 7:00 a.m. or
38 at any time on weekends and holidays. Further, the city requires mitigating noise to certain noise levels
39 where feasible, as described in Table 4.11-6. The predicted noise levels at the nearest sensitive receptors
40 to these project segments are listed in Table 4.11-12.
41

Table 4.11-12 Noise Levels at Closest Sensitive Receptors in Lake Elsinore

Project Component	Closest Receptor	Receptor Distance (feet)	Predicted Noise level (dBA)	Lake Elsinore Noise Standard	Exceeds standard?
115-kV Segment VIG2	Residence on Central Avenue, near Allan Street	184	83	75	Yes
115-kV Segment VIG3	Residence on Conard Avenue	20	102	75	Yes
115-kV Segment VIG4	Residence on Baker Street	77	90	75	Yes
115-kV Segment VIG5	Residence on Lake Street, near Temescal Canyon Road	310	79	75	Yes
Staging Area VIG5	Residence across SR-74 on Carla Court, multiple units	179	69	60	Yes
Staging Area VIG6	Riverside Recovery Resources (Collier Avenue with Third Street)	585	59	60	No
Staging Area VIG8	Elsinore Valley Cemetery	1,026	55	N/A	No

Key:
dBA = A-weighted decibel
kV = kilovolt

1
2 As shown in Table 4.11-12, the Lake Elsinore numeric standards would be exceeded in several locations
3 during construction. Construction may take place outside of allowed times and may exceed the numeric
4 thresholds, causing a significant impact. As mentioned above, Project Commitment H would limit
5 construction activities from 7:00 a.m. to 7:00 p.m. and would also require the applicant to reduce noise
6 levels by using noise reduction devices, such as mufflers and engine shrouds in combustion engines,
7 sound walls and noise reduction blankets surrounding equipment, and enclosures in small stationary
8 equipment.

9
10 Cumulatively, noise would be reduced by about 8 dBA due to implementation of Project Commitment H.
11 Project Commitment H would reduce impacts related to the timing of construction to less than
12 significant. However, impacts related to the noise level would remain significant since the highest noise
13 level generated would be 94 dBA, far above the 75 dBA threshold. MM NV-1 would require the
14 applicant to implement noise-reduction strategies, such as limiting timeframes for use of heavy-duty
15 equipment and reducing the number of pieces of equipment operating concurrently to reduce noise to that
16 required under Lake Elsinore’s construction noise ordinance or to the lowest level technologically and
17 economically feasible. Implementation of MM NV-1 would reduce noise to levels that are in compliance
18 with the noise ordinance. Noise impacts in Lake Elsinore would be less than significant after mitigation.

19
20 **Operation and Maintenance**

21 The main operational noise source associated with the proposed Valley-Ivyglen Project will be corona
22 noise emitted by the proposed 115-kV subtransmission lines. The corona effect is the ionization of the air
23 that occurs at the surface of the energized conductor and suspension hardware due to very high electric
24 field strength at the surface of the metal during certain conditions. The corona discharge occurs at the
25 conductor surface, representing a small dissipation of heat and energy in the form of local pressure

1 changes that may result in audible noise or radio and television interference. Audible noise levels from
2 the 115-kV subtransmission line segments are expected to be relatively low, generally less than 34 dBA
3 in rainy conditions directly below the conductor. Corona noise would not cause a violation of any noise
4 standards.
5

6 Maintenance activities on the 115-kV subtransmission lines would be primarily for inspection and would
7 occur at least once per year by driving and/or flying the line routes, resulting in a temporary increase of
8 noise levels due to vehicle and helicopter use. Noise from these sources would be limited and short-term,
9 but have the potential to exceed noise standards in the City of Perris and City of Lake Elsinore, for those
10 activities occurring within 50 feet from sensitive receptors. Implementation of MM NV-1 would reduce
11 noise from maintenance activities to levels that are in compliance with the applicable noise ordinances.
12 Therefore, operation and maintenance noise impacts would be less than significant after mitigation.
13 Other maintenance activities include the inspection and repair of telecommunication components, which
14 would occur once per year at each substation. Impacts associated to inspection and repair of
15 telecommunication components would not exceed applicable noise standards.
16

17 ***Mitigation Measure***

18 **MM NV-1 Construction and Maintenance Noise Reduction Measures.** Prior the start of construction,
19 the applicant shall prepare and submit to the CPUC a Noise Control Plan, which shall detail the
20 frequency, location, and methodology for noise monitoring prior to and during the proposed construction
21 activities. The Noise Control Plan will shall also detail the actions and procedures that the applicant will
22 implement to avoid significant impacts from temporary ambient noise increases. Measures in the Noise
23 Control Plan shall include, but not be limited to the following:
24

- 25 • Limiting the timeframes for heavy-duty equipment usage to less than 4 hours per day,
- 26 • Reducing the number of pieces of equipment concurrently operating, as feasible.
- 27 • Using construction equipment specifically designed for low noise emissions (i.e., equipment that
28 is powered by electric or natural gas engines instead of diesel or gasoline reciprocating engines).
29 Electric engines have been reported to have lower noise levels than internal combustion engines.
- 30 • Compensating residents for temporary relocation during high-noise activities that cannot be
31 reduced to less than 75 dBA
- 32 • If noise from construction and maintenance equipment will result in noise levels in excess of 75
33 dBA at the closest residential receptor's property line, the applicant shall implement additional
34 noise reduction measures, including the use of portable noise absorption screens surrounding the
35 specific work area and a staggered construction work practice as needed, to ensure that noise
36 levels in areas close to sensitive receptors are within an acceptable range (i.e., 65 to 75 dBA, to
37 the extent technically and economically feasible).
- 38 • The applicant shall provide a written request to the CPUC regarding any construction that will
39 occur during the hours of 7:00 p.m. to 7:00 a.m. or on Sundays any legally proclaimed holidays.
40 The written request shall include justification of why work must occur during these hours/days,
41 and a detailed description of work activities and location to be performed. The applicant must
42 receive approval from the CPUC prior to any construction work occurring during these times.
- 43 • The applicant shall monitor construction and maintenance noise levels in hourly equivalent
44 averages Leq(h) before and during construction activities planned within 50 feet of noise
45 sensitive receptors. During the project construction period, noise measurements shall be taken on

1 a daily basis and reported to the CPUC on a monthly basis, within 15 days of the end of the
2 monitoring period.

3
4 The applicant shall submit the Noise Control Plan to the CPUC for review and approval at least 30 days
5 prior to the start of project construction. The applicant shall comply with all requirements of the
6 approved Noise Control Plan whenever it applies during construction and maintenance activities for the
7 projects.

8
9 **Impact NV-2 (VIG): Exposure of persons to or generation of excessive groundborne vibration or**
10 **groundborne noise levels.**
11 *LESS THAN SIGNIFICANT WITH MITIGATION*

12
13 **Construction**

14 Construction of the proposed Valley-Ivyglen Project would create perceptible groundborne vibration and
15 groundborne noise from blasting, the use of heavy-duty construction equipment (e.g., trucks, backhoes,
16 excavators, loaders, and cranes), the tamping or compacting of ground surfaces, the passing of heavy
17 trucks on uneven surfaces, and the excavation of trenches.

18
19 Vehicle and heavy duty truck use during the proposed Valley-Ivyglen Project construction would
20 generate a continuous but relatively low level of vibration. Typical vibration levels generated by
21 construction equipment are shown in Table 4.11-13.

22
Table 4.11-13 Vibration Levels from Typical Construction Equipment (Valley-Ivyglen Project)

Vibration Source	Reported Vibration Level at 25 feet (VdB)	Estimated Vibration Level at 50 feet (VdB)
Large bulldozer	87	78
Loaded trucks	86	77
Jackhammer	79	70
Small bulldozer	58	49
Criteria of residential annoyance for infrequent vibration events (FTA)	80	80
Exceeds threshold?	Yes	No

Sources: FTA 2006.

Key:

FTA = Federal Transit Administration.

VdB = decibels of vibration velocity

23
24 As shown in Table 4.11-13, the estimated groundborne vibration levels from construction equipment
25 would be below the FTA criteria for residential annoyance at receptors located at a minimum distance of
26 50 feet from heavy-duty equipment. However, certain residential receptors in Perris, Lake Elsinore, and
27 unincorporated Riverside County would be located within 25 feet of construction sites, as shown in Table
28 4.11-2, resulting in the potential to exceed thresholds of groundborne vibration at sensitive receptors.
29 Construction in these areas would occur during daytime hours, when residences are least sensitive.
30 Construction in these areas would also be temporary, and vibration would be intermittent. Vibration
31 impacts would be less than significant.

As described in Section 2.4.5.4, the applicant may use blasting in areas where rock is present and may preclude excavation using conventional construction equipment to install a number of structures along 115-kV Segments VIG1, VIG2, VIG5, VIG6, and VIG8. Blasting locations for 115-kV Segments VIG1, VIG2, and VIG5 would be located between 65 to 90 feet from sensitive receptors (see Table 2-10).

Typically, only a portion of the energy is consumed in breaking up and moving the rock when a blast is detonated. The remaining energy is dissipated in the form of seismic waves expanding rapidly outward from the blast, either through the ground (as vibration) or through the air (as air overpressure or airblast). Seismic waves from blasting dissipate rapidly with distance, normally by two-thirds for each doubling of distance from the source (Caltrans 2013). Table 4.11-14 shows the estimated unmitigated ground vibration levels at identified receptors.

Table 4.11-14 Unmitigated Blasting Vibration Levels at Sensitive Receptors (Valley-Ivyglen Project)

Segment	Nearest Sensitive Receptor	Typical Blasting Vibration Level at 50 feet (VdB)	Estimated Vibration Level at 25 feet (VdB)	Estimated Vibration Level at Receptor (VdB)
115-kV Segment VIG1	80 feet	100	109	94
115-kV Segment VIG2	65 feet	100	109	97
115-kV Segment VIG5	90 feet	100	109	92
115-kV Segment VIG6	None in proximity	N/A	N/A	N/A
115-kV Segment VIG8	None in proximity	N/A	N/A	N/A
Criteria of residential annoyance for infrequent vibration events (FTA)		80	80	80
Exceeds threshold?		Yes	Yes	Yes

Sources: FTA 2006, SCE 2014.

Key:

kV = kilovolt

N/A = not applicable

VdB = decibels of vibration velocity

As shown in Table 4.11-14, the proposed project's blasting activities have the potential to exceed the FTA human annoyance thresholds of human perception. As part of Project Commitment H, the applicant would conduct pre-blast notification and coordination with residents, utilities, and others that may be affected by blasting operations. However, notifications to residents would not reduce the potential for ground vibration impacts during blasting operations to less than significant. MM NV-2 would require the applicant to implement vibration control measures for blasts likely to result in blast levels with a PPV in excess of 2.0 inches/second or 80 VdB measured at the closest residential receptor's property line. Implementation of MM NV-3 would reduce impacts from blasting-induced groundborne vibration to less than significant.

Operation and Maintenance

Operation and maintenance activities would involve routine maintenance and emergency repairs. These activities would generate minimal groundborne vibration through use of trucks and potentially heavy equipment. Maintenance activities would be infrequent and temporary. Impacts would be less than significant.

1 **Mitigation Measure**

2 **MM VIG NV-2: Blasting Vibration Control Measures.** During final project design, the applicant shall
3 develop a blasting mitigation and monitoring plan to be implemented during blasting activities for the
4 Valley-Ivyglen project. The plan shall be submitted to the CPUC for review and approval at least 30 days
5 prior to the start of project construction. During plan development, applicant must assess distances to
6 sensitive receptors and include blasting procedures in the plan that ensure blasting operations will be
7 engineered safely and effectively. The plan shall include the following requirements for blasting
8 activities:

- 9
- 10 • Using blasting methods designed to reduce vibration and air overpressure;
- 11 • Using pre-blast warning signals prior to detonating the blast and after detonation, conducting
12 post-blast safety inspections;
- 13 • Conducting blast monitoring for all blasting operations. A daily log shall be maintained by the
14 blasting contractor for each blast detonated on each working day, including monitoring of ground
15 motions, peak particle velocity, and air blast levels;
- 16 • Implementing modifications to blasting procedures -- such as using different delay patterns,
17 reducing the size of individual blasts, using shorter and/or smaller diameter blast holes, closer
18 spacing of blast holes, reducing volume of explosives used, using protective measures (e.g.,
19 gravel or blasts mats) -- as necessary to control rock and debris that may be expelled from the
20 blast sites and sound walls or a combination of measures in the case that blasting would result in
21 vibration or blast levels with a PPV in excess of 2.0 inches/second or 80 VdB as measured at the
22 closest residential receptors property line;
- 23 • Limiting hours of blasting to daytime hours between 7:00 a.m. and 7:00 p.m., Monday through
24 Saturday;
- 25 • Implementing a public outreach program to provide alerts the affected public to the potential for
26 vibrations and noise associated with blasting not less than three and not more than ten days prior
27 to the commencement of blast activities; and
- 28 • Responding to and investigating complaints.
- 29

30 **Impact NV-3 (VIG): Substantial permanent increase in ambient noise levels in the project**
31 **vicinity above levels existing without the project.**
32 *LESS THAN SIGNIFICANT*

33
34 A substantial noise increase is defined as 10 dBA for the sake of this analysis because an increase of 10
35 dBA is perceived as a doubling in loudness. The average ambient noise level in the project area is 65
36 dBA. An increase would therefore be substantial if it increased ambient noise levels to 75 dBA.

37
38 **Construction**

39 Construction of the proposed Valley-Ivyglen Project would be temporary (a maximum period of 27
40 months) and would be transient along the subtransmission alignment. Construction would not be
41 permanent; therefore, construction would not cause a permanent increase in ambient noise levels in the
42 project vicinity. Construction of the proposed Valley-Ivyglen Project would have no impact under this
43 criterion.
44

Operation and Maintenance

Operation of the proposed project would generate corona noise. Corona noise levels would be approximately 34 dBA directly below the conductor. Existing noise levels in the project area range from 60 to 66 dBA in the daytime and 55 to 62 dBA at night. Corona noise would not be perceptible against the higher ambient noise levels.

Noise from vehicles and equipment used during routine maintenance activities would be infrequent and would not result in a permanent increase to ambient noise levels. Operation and maintenance of the proposed Valley-Ivyglen Project would have a less than significant impact on permanent ambient noise levels.

Impact NV-4 (VIG): Substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.
SIGNIFICANT AND UNAVOIDABLE

A substantial noise increase is defined as 10 dBA for the sake of this analysis because an increase of 10 dBA is perceived as a doubling in loudness. The average ambient noise level in the project area is 65 dBA. An increase would therefore be substantial if it increased ambient noise levels to 75 dBA.

Construction

Noise generated from construction equipment and vehicle and helicopter use would result in temporary contributions to the ambient noise levels in the project vicinity during the overall 27-month construction period. As shown in Tables 4.11-15 and 4.11-16, potential noise levels during the proposed Valley-Ivyglen Project’s construction would exceed reported ambient noise levels presented in Table 4.11-1 at closest sensitive receptors.

Table 4.11-15 Valley-Ivyglen Unmitigated Project Construction Noise Levels at Closest Sensitive Receptors

Project Component	Closest Sensitive Receptor	Distance from Project Component (feet)	Predicted Noise Level at Sensitive Receptor (dBA)	Exceeds threshold (75 dBA)?	Amount Exceeded (dBA)
Subtransmission Lines					
115-kV Segment VIG1	Residential unit on Caldera Street	49	95	Yes	20
115-kV Segment VIG2	Residence on SR-74	37	97	Yes	22
115-kV Segment VIG3	Residence on Conard Avenue	20	103	Yes	28
115-kV Segment VIG4	Residence on Baker Street	77	91	Yes	16
115-kV Segment VIG5	Residence on Lake Street, near Temescal Canyon Road	310	79	Yes	4
115-kV Segment VIG6	Residence on Horse Thief Canyon Road	405	76	Yes	1
115-kV Segment VIG7	Residence on De Palma Road	31	99	Yes	24

Table 4.11-15 Valley-Ivyglen Unmitigated Project Construction Noise Levels at Closest Sensitive Receptors

Project Component	Closest Sensitive Receptor	Distance from Project Component (feet)	Predicted Noise Level at Sensitive Receptor (dBA)	Exceeds threshold (75 dBA)?	Amount Exceeded (dBA)
115-kV Segment VIG8	Residence north of Temescal Canyon Road (Wrangler Way)	158	85	Yes	10
Blasting Sites					
Segment VIG1 Blasting: Removal of 2,240 cubic yards	Residence near access road between Structures 144 and 147	47	95	Yes	20
Segment VIG2 Blasting: Removal of 400 cubic yards	Residence near Structures 212–214, 219, 221, 224, 230, and 251–253 (10 structures)	47	95	Yes	20
Segment VIG5 Blasting: Removal of 107 cubic yards	Residences near Structures 32 to 35 (4 structures)	848	69	No	N/A
Segment VIG6 Blasting: Removal of 107 cubic yards	Residences near Structures 527–530 (4 structures) on Kicking Horse Drive and Caravan Circle	1,019	68	No	N/A
Segment VIG8 Blasting: Removal of materials at each underground vault location	Residences near each underground vault location	172	83	Yes	8
Staging Areas					
Staging Area VIG2	Residence east of Menifee Road (N. Bay Lane), multiple units	996	58	No	N/A
Staging Area VIG3	Residence on Etanac Road	86	79	Yes	4
Staging Area VIG4	Residence on Festus Circle	282	69	No	N/A
Staging Area VIG5	Residence across SR-74 on Carla Court, multiple units	179	73	No	N/A
Staging Area VIG6	Riverside Recovery Resources (Collier Avenue with Third Street)	585	63	No	N/A
Staging Area VIG8	Elsinore Valley Cemetery	1011	58	No	N/A
Staging Area VIG9	Residence on Horse Thief Canyon Road	130	76	Yes	1
Staging Area VIG10	Residence on Rouse Road	1410	55	No	N/A
Staging Area VIG11	Residence on El Toro Cut Off Road	986	58	No	N/A

Table 4.11-15 Valley-Ivyglen Unmitigated Project Construction Noise Levels at Closest Sensitive Receptors

Project Component	Closest Sensitive Receptor	Distance from Project Component (feet)	Predicted Noise Level at Sensitive Receptor (dBA)	Exceeds threshold (75 dBA)?	Amount Exceeded (dBA)
Staging Area VIG12	Residential Building Ardenwood Way	122	76	Yes	1
Staging Area VIG13	Educations Buildings on Education Way	71	81	Yes	6

Sources: E & E 2015b, SCE 2014, FHWA 2006.

Key:

dBA = A-weighted decibel

kV = kilovolt

1
2 Noise in any one work location along the 115-kV Segments would be short term; however, as shown in
3 Table 4.11-15, there would be a substantial temporary increase in noise (i.e. 10 dBA above ambient noise
4 levels) at nearest sensitive receptors identified along all 115-kV Segments, at three blasting sites, and at
5 Staging Areas VIG3, VIG9, VIG12 and VIG13.

6
7 Increases would be greater where blasting would occur, which could be along 115-kV Segments VIG1,
8 VIG2, VIG5, VIG6, and VIG8. Blasting would result in high instantaneous noise levels of 94 dBA at 50
9 feet per blasting event (FHWA 2006). The nearest sensitive receptors to blasting sites are located at 47
10 feet from segments VIG1 and VIG2, resulting in levels significantly above ambient noise levels during
11 blasting events. MM NV-2 would require the applicant to implement control measures that would reduce
12 potential groundborne vibration and associated noise effects from blasting. However, implementation of
13 this mitigation measure would not reduce noise levels to less than 10 dBA above ambient noise levels.
14 Although blasting events would be short-term and infrequent, impacts on ambient noise levels would be
15 significant and unavoidable for this specific activity.

16
17 The applicant would use light-duty helicopters during installation of 115-kV Segments VIG1 and VIG4
18 to VIG7. In general, helicopter operations (including takeoff and landing) would be limited to areas in
19 proximity to wire stringing sites or access roads and previously disturbed areas near construction sites
20 within the 115-kV Valley-Ivyglen General Disturbance Area, or the fueling, takeoff, and landing areas.
21 The applicant would use a small single-rotor helicopter such as the Hughes 500C. This type of helicopter
22 produces a maximum noise emission level of 80.7 dBA measured directly under the flight path and 82.3
23 dBA measured at 150 meters (45.7 feet) from the flight path⁵ (FAA 1977). The proposed helicopter
24 takeoff and landing areas would be limited to established helicopter landing areas, such as Skylark Field
25 Airport, Perris Valley Airport, or the applicant's Chino Air Operations Facility at Chino Airport. While
26 flying above residential areas, helicopter operations have the potential to create a temporary but
27 noticeable increase above ambient noise levels; however, it is anticipated that most of the noise effects
28 associated with helicopter used would occur at those receptors located in the vicinity of staging areas,
29 since these areas would be use for landing and take-off at a frequent basis. Impacts would be temporary
30 and significant and unavoidable for those sensitive receptors located along the flight paths in the
31 proximity to staging areas.

32
33 To address potential impacts from temporary increases of ambient noise levels during construction
34 (except blasting and helicopter use), the applicant would implement Project Commitment H, which
35 would reduce noise at sensitive receptors located in the proximity of construction sites. Table 4.11-16

⁵ Maximum noise emission levels reported by the Federal Aviation Administration during a Hughes 500C helicopter level flyover at 500 feet and 130 miles per hour.

1 compares the estimated composite noise levels from the proposed subtransmission line construction
2 activities with and without implementation of Project Commitment H.
3

Table 4.11-16 Valley-Ivyglen Project Construction Noise Scenarios (excluding blasting and helicopter use)

Construction Scenario	Estimated Construction Noise (dBA, Leq) at different receptor distances (feet)								
	20	40	50	100	200	400	800	1000	1500
Unmitigated Construction	102	96	94	88	82	76	69	68	64
With Project Commitment H	94	88	86	80	74	68	61	60	56
Threshold	75	75	75	75	75	75	75	75	75
Exceeds threshold?	Yes	Yes	Yes	Yes	No	No	No	No	No

Note: Implementation of Project Commitment H would lead to the following noise reduction factors:

- Mufflers and engine shrouds in combustion engines: 8 dBA⁶;
- Sound walls and noise reduction blankets surrounding equipment: 5 dBA⁷; and
- Enclosures in small stationary equipment: 8 dBA⁸.

Key:

dBA = A-weighted decibel

L_{eq} = Sound Equivalent Level

4
5 Temporary significant increases in ambient noise levels for those receptors located within about 200 feet
6 from construction would still occur after implementation of Project Commitment H. MM NV-1 would
7 require the applicant to implement noise control measures to reduce construction noise to levels below 75
8 dBA at those receptors located within 50 feet from work areas. Implementation of MM NV-1 would
9 further reduce short-term significant increases of ambient noise levels, but not to a level of less than
10 significant. Construction of the proposed Valley-Ivyglen Project would have significant and unavoidable
11 impacts from short-term increases to ambient noise levels.
12

13 **Operation and Maintenance**

14 Operation of the proposed Valley-Ivyglen Project would not result in any short-term increases to ambient
15 noise levels. However, maintenance activities would have similar impacts on short-term increases to
16 ambient noise levels as construction activities. Although maintenance activities would occur
17 infrequently, impacts would be significant and unavoidable after the implementation of MM NV-1.
18

19 **Mitigation Measure**

20 **MM NV-1 Construction and Maintenance Noise Reduction Measures.**

21
22 **MM NV-2 Blasting Vibration Control Measures.**
23

⁶ Minimal transmission loss (decibels) reported for reactive silencers or mufflers in industrial applications (Ray 2013).

⁷ Value recommended by FHWA for calculating shielding from heavy vinyl noise curtain materials (FHWA 2006).

⁸ Value recommended by FHWA for calculating shielding from noise sources completely enclosed, or completely shielded with a solid barrier located closed to the source.

1 **Impact NV-5 (VIG): Exposure of people residing or working in the project area to excessive**
2 **noise levels within an airport land use plan or, where such a plan has not**
3 **been adopted, within two miles of a public airport or public use airport.**
4 *LESS THAN SIGNIFICANT*
5

6 Perris Valley Airport is a public use facility located approximately 1.5 miles north of 115-kV Segment
7 VIG1. Construction and maintenance activities would be temporary in this location. This location is also
8 1.5 miles from the airport, which falls in Compatibility Zone E in the Riverside County Airport Land Use
9 Compatibility Plan for the Perris Valley Airport. Noise contours reflecting the ultimate activity levels on
10 an average day for Compatibility Zone E indicate a noise level of 55 dB CNEL (RCALUC 2004).
11 Finally, the airport is primarily used by lighter aircraft, which emit less noise. Therefore, the proposed
12 Valley-Ivyglen Project would not expose workers to excessive noise levels from nearby airport
13 operations. Impacts would be less than significant under this criterion.
14

15 **Impact NV-6 (VIG): Exposure of people residing or working in the project area to excessive**
16 **noise levels within the vicinity of a private airstrip.**
17 *NO IMPACT*
18

19 There are no private airports within 2 miles of the proposed Valley-Ivyglen Project. The proposed
20 Valley-Ivyglen Project would have no impacts related to private airstrips.
21

22 **4.11.5 Environmental Impacts and Mitigation Measures (Alberhill Project)**

23 **4.11.5.1 Project Commitments (Alberhill Project)**

24
25 The applicant has committed to the following as part of the design of the proposed Alberhill Project. See
26 Section 2.6, “Project Commitments,” for a complete description of each project commitment.
27

28 **Project Commitment H: Noise Control**

- 29 • All construction and general maintenance activities, except in an emergency, shall be limited to
30 the hours of 7:00 a.m. to 7:00 p.m. and prohibited on Sundays and all legally proclaimed
31 holidays. If the California Independent System Operator (CAISO) and/or Caltrans require that
32 conductor stringing over freeways or highways occur after 7:00 p.m., or on a Sunday, SCE would
33 obtain variances from all applicable jurisdictions.
- 34 • Construction equipment shall use noise reduction features (e.g., mufflers and engine shrouds)
35 that are no less effective than those originally installed by the manufacturer.
- 36 • Construction traffic shall be routed away from residences and schools where feasible.
- 37 • Unnecessary construction vehicle use and idling time shall be minimized to the extent feasible.
38 The ability to limit construction vehicle idling time is dependent upon the sequence of
39 construction activities and when and where vehicles are needed or staged. A “common sense”
40 approach to vehicle use shall be applied; if a vehicle is not required for use immediately or
41 continuously for construction activities, its engine should be shut off. Note: certain equipment,
42 such as large diesel-powered vehicles require extended idling for warm-up and repetitive
43 construction tasks.
- 44 • The Applicant will notify all receptors within 500 feet of construction of the potential to
45 experience significant noise levels during construction.

- During construction, the Applicant will use sound walls, noise-reduction blankets, or other noise reduction measures prior to developing the project site in areas where sensitive receptors would be subjected to significant noise impacts.
- The applicant would shield small stationary equipment with portable barriers within 100 feet of residences.
- The applicant would minimize engine idling and turn off engines when not in use.

4.11.5.2 Overview of Alberhill Project Construction and Operations Impacts

4.11.5.3 Impacts Analysis (Alberhill Project)

Impact NV-1 (ASP): 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.

LESS THAN SIGNIFICANT WITH MITIGATION

The proposed Alberhill Project would occur in the cities of Lake Elsinore, Wildomar and Menifee, and in portions of unincorporated Riverside County. For the purposes of analyzing noise impacts, the jurisdiction of the closest sensitive receptor was used to be most conservative.

Construction

Construction of the proposed Alberhill Substation, transmission lines, subtransmission line segments and telecommunication components would be temporary, occurring over a total period of 28 months (transmission, subtransmission and telecommunication lines installation would occur in 12-month periods). The Alberhill Project construction activities would cause noise on a temporary basis at every proposed location, primarily from on-road heavy construction equipment, grading and foundation installation, helicopter use for wire stringing operations in the 500-kV transmission line, vehicles for worker commute, trucks needed to bring materials to the construction sites, and wire stringing operations and telecommunication installation. The overhead telecommunication line construction would also require the use of bucket truck and several crew trucks.

Alberhill Substation, 500-kV Transmission Lines, 115-kV Segments ASP1 through ASP2; Staging Areas ASP1 and ASP3

The Alberhill Substation, 500-kV transmission lines, and 115-kV Segments ASP1 through ASP2 (partial) would be located in unincorporated Riverside County. Riverside County exempts private construction projects from the general sound level standards as long as they are located 0.25 miles or more from an inhabited dwelling. For project construction occurring within 0.25 miles of an inhabited dwelling, the County exempts construction noise from the general sound level standards as long as they occur between 6:00 a.m. and 6:00 p.m. from June through September and between 7:00 a.m. and 6:00 p.m. from October through May. When construction activities would take place outside of allowable hours, noise levels should comply with the Riverside County general sound level standards and result in a significant impact, unless a construction-related exception is filed. Project Commitment H would limit construction activities from 7:00 a.m. to 7:00 p.m. require the applicant to and obtain variances from all applicable jurisdictions when construction work would occur outside allowed hours. Section 7 of the Riverside County Ordinance No. 847 provides construction-related exceptions for activities subject to the general sound level standards. Implementation of Commitment H would reduce impacts to less than significant.

1 115-kV Segments ASP2 through ASP4, Staging Area ASP2, ASP4
 2 115-kV Segments ASP2 (partial through ASP4 and Staging Areas ASP2 and ASP4) would be located in
 3 Lake Elsinore. Construction is prohibited in Lake Elsinore on weekdays between the hours of 7:00 p.m.
 4 and 7:00 a.m. or at any time on weekends and holidays. Further, the city requires mitigating noise to
 5 certain noise levels where feasible, as described in Table 4.11-6. The predicted noise levels at the nearest
 6 sensitive receptors to these project segments are listed in Table 4.11-17.
 7

Table 4.11-17 Noise Levels at Closest Sensitive Receptors in Lake Elsinore (Alberhill Project)

Project Component	Closest Receptor	Receptor Distance (feet)	Predicted Noise Level (dBA)	Lake Elsinore Noise Standard	Exceeds standard?
115-kV Segment ASP2	Residences on Baker Street	37	89	75	Yes
115-kV Segment ASP3	Residences on Collier Avenue and 2 nd Street	181	75	75	No
115-kV Segment ASP4	Residences on E. Hill Street, E. Pottery Street, Casino Drive, Malaga Road, and Mission Trail	20	94	75	Yes
Staging Area ASP2	None identified (within 0.25-mile radius)	N/A	N/A	N/A	No
Staging Area ASP8	Closest residence to staging area	531	65	75	No

Key:
 dBA = A-weighted decibel
 kV = kilovolt

8
 9 As shown in Table 4.11-17, the Lake Elsinore numeric standards would be exceeded in several locations
 10 during construction. Construction may take place outside of allowed times and may exceed the numeric
 11 thresholds, causing a significant impact. Project Commitment H would limit construction activities from
 12 7:00 a.m. to 7:00 p.m. Implementation of Project Commitment H would lead to the following noise
 13 reduction factors:

- 14
- 15 • Mufflers and engine shrouds in combustion engines: 8 dBA⁹;
- 16 • Sound walls and noise reduction blankets surrounding equipment: 5 dBA¹⁰; and
- 17 • Enclosures in small stationary equipment: 8 dBA¹¹.
- 18

19 Cumulatively, noise would be reduced by about 8 dBA due to implementation of Project Commitment H.
 20 Project Commitment H would reduce impacts related to the timing of construction to less than
 21 significant. However, impacts related to the noise level would remain significant since the highest noise
 22 level generated would be 78 dBA. MM NV-1 would require the applicant to implement noise-reduction
 23 strategies, such as limiting heavy-duty equipment use duration and reducing the number of pieces of
 24 equipment operating concurrently to reduce noise to that required under Lake Elsinore’s construction
 25 noise ordinance or to the extent technologically and economically feasible. Implementation of MM NV-1
 26 would reduce noise to levels that are in compliance with the noise ordinance. Impacts on noise standards
 27 in Lake Elsinore would be less than significant after mitigation.

⁹ Minimal transmission loss (decibels) reported for reactive silencers or mufflers in industrial applications (Ray 2013).

¹⁰ Value recommended by FHWA for calculating shielding from heavy vinyl noise curtain materials (FHWA 2006).

¹¹ Value recommended by FHWA for calculating shielding from noise sources completely enclosed, or completely shielded with a solid barrier located closed to the source.

1
2 *115-kV Segment ASP5; Staging Areas ASP5 and ASP6*

3 115-kV Segment ASP5 would be constructed in Wildomar; Staging Areas ASP5 and ASP6 would be
4 located in Wildomar. Wildomar applies Riverside County's noise ordinance, as previously described.
5 Riverside County exempts private construction projects from the general sound level standards as long as
6 they are located 0.25 miles or more from an inhabited dwelling. For project construction occurring within
7 0.25 miles of an inhabited dwelling, the County exempts construction noise from the general sound level
8 standards as long as they occur between 6:00 a.m. and 6:00 p.m. from June through September and
9 between 7:00 a.m. and 6:00 p.m. from October through May. When construction activities would take
10 place outside of allowable hours, noise levels should comply with the Riverside County general sound
11 level standards and result in a significant impact, unless a construction-related exception is filed. Project
12 Commitment H would limit construction activities from 7:00 a.m. to 7:00 p.m. and require the applicant
13 to obtain variances from all applicable jurisdictions when construction work would occur outside allowed
14 hours. Section 7 of the Riverside County Ordinance No. 847 provides construction-related exceptions for
15 activities subject to the general sound level standards. Implementation of Commitment H would reduce
16 impacts to less than significant.

17
18 *115-kV Segment ASP6 through ASP8, Fiber Optic Lines on 115-kV Segments ASP6 through*
19 *ASP8, and Staging Area ASP7*

20 115-kV Segments ASP6 through ASP8 and fiber optic lines on 115-kV Segments ASP1 and ASP5
21 through ASP7 and Staging Area ASP7 would be located in the City of Menifee. The City of Menifee
22 Municipal Code exempts construction activities that occur more than 0.25 miles from an inhabited
23 dwelling or if construction occurs within 0.25 miles of an inhabited dwelling and construction does not
24 occur between 6:00 p.m. and 6:00 a.m. from June through September and between 6:00 p.m. and 7:00
25 a.m. from October through May. Also, Section 9.09.030 of the City of Menifee Municipal Code allows
26 for construction-related exceptions. Project Commitment H would limit construction activities from 7:00
27 a.m. to 7:00 p.m. and require the applicant to obtain variances from all applicable jurisdictions when
28 construction works would occur outside allowed hours. This would reduce impacts to less than
29 significant.

30
31 *Serrano Substation*

32 The proposed installation of microwave telecommunications dish antennas and telecommunications
33 equipment at the existing Serrano Substation would occur within the City of Orange. The City of Orange
34 Municipal Code exempts construction from exterior noise standards if it occurs between 7:00 a.m. and
35 8:00 p.m. on days other than Sundays or federal holidays. All other noise is subject to standards outlined
36 in Table 4.11-12. Project Commitment H would limit construction activities from 7:00 a.m. to 7:00 p.m.
37 Impacts on noise standards in the City of Orange would be less than significant.

38
39 *Santiago Peak Communication Site*

40 The proposed installation of microwave telecommunications dish antennas at the existing Santiago Peak
41 Communication Site would occur in the Cleveland National Forest, under the United States Forest
42 Service's (USFS's) jurisdiction. The USFS enforces a maximum level of 101 dBA for activities not
43 related to project construction. However, it is anticipated that noise from equipment used for microwave
44 dish antenna installation would be in the range of 85 dBA, below the USFS enforceable standard.
45 Impacts on noise standards in the Cleveland National Forest would be less than significant.

1 **Operation and Maintenance**

2 *Alberhill Substation*

3 Operation of the Alberhill Substation would create noise due to equipment running at the substation.
4 Continuous operation of the Alberhill Substation would also increase ambient noise levels as a result of
5 transformer “hum” and cooling fan noise. A noise modeling study conducted for the project predicts that
6 the noise contribution from the two 500/115-kV 560 megavolt-ampere (MVA) transformers would be
7 about 94 dBA at a distance of 3 feet from the transformer, being perceived at a level of 38 dBA at the
8 closest sensitive receptor. The substation perimeter wall surrounding the transformer and switching
9 equipment would attenuate noise by 10 dBA. Therefore, projected operational noise levels for the
10 proposed substation would not exceed the nighttime worst-case levels set by Policy N4.1 of the Noise
11 Element of the Riverside County General Plan (45 dBA-10-minute L_{eq}). With the proposed 2-transformer
12 configuration, potential impacts from operational noise at the proposed Alberhill Substation would be
13 less than significant.
14

15 Future expansion to a 1,680 MVA substation could occur at some future date depending on need, as
16 described in Chapter 2, “Project Description.” Such expansion would require one additional transformer
17 for a total of three. The addition of one identical source of noise have the potential to result in cumulative
18 noise levels above the nighttime levels set by Policy N4.1 of the Noise Element of the Riverside County
19 General Plan (45 dBA). With implementation of MM NV-3, potential impacts from operational noise at
20 the expanded Alberhill Substation would be reduced to less than significant.
21

22 *500-kV Transmission Lines*

23 The 500-kV transmission lines would emit corona noise during operation. Audible noise from the 500-kV
24 lines at the edge of the ROW would be in the range of 54 to 61 dBA during wet weather conditions, and
25 48 to 49 dBA during fair weather conditions. The 500-kV line would be outfitted with polymer insulators
26 that minimize the accumulation of surface contaminants and therefore reduce the potential for corona
27 noise to be generated at the insulators. Actual corona noise reduction levels from the use of this
28 insulation equipment are unknown. The closest receptor is 23 feet from the location of Transmission Line
29 VA, and there is a potential for the audible noise levels to exceed the nighttime standard set by Policy
30 N4.1 of the Noise Element of the Riverside County General Plan. The policy prohibits facility-related
31 noise levels, received by any sensitive use, from exceeding a standard of 45 dBA-10-minute L_{eq} between
32 10:00 p.m. and 7:00 a.m. This would be a significant impact. MM NV-4 would require the applicant to
33 use additional insulation equipment to reduce corona noise to levels in compliance with Riverside
34 County General Plan Policy N4.1. Impacts on noise standards from the operation of the 500-kV
35 transmission lines would be less than significant with implementation of MM NV-4.
36

37 *115-kV Subtransmission Line*

38 Audible noise levels from the 115-kV subtransmission line segments are expected to be relatively low,
39 generally less than 34 dBA in rainy condition directly below the conductor. Corona noise would not be
40 perceptible against applicable stationary source noise standards in Riverside County and City of Menifee
41 (45 dBA-10-minute L_{eq} from 10:00 p.m. to 7:00 a.m.). In addition, noise from vehicles used during
42 routine maintenance activities would be infrequent would not result in a noticeable increase in noise.
43 Noise from these sources would be limited and short-term, but have the potential to exceed noise
44 standards in the City of Lake Elsinore, for those activities occurring within 50 feet from sensitive
45 receptors. Implementation of MM NV-1 would reduce noise from maintenance activities to levels that are
46 in compliance with the applicable noise ordinances. Therefore, operation and maintenance noise impacts
47 would be less than significant after mitigation.
48

1 **Serrano Substation and Santiago Peak Communications Site**

2 Operation of the proposed microwave dish antennas at the existing Serrano Substation and Santiago Peak
3 Communication site would generate minimal noise, as this type of equipment generally produces very
4 little background noise in the air compared to those used in terrestrial communications. The City of
5 Orange establishes a maximum exterior noise standard of 70 dBA between 7:00 a.m. and 10:00 p.m. and
6 65 dBA from 10:00 p.m. to 7:00 a.m. The Cleveland National Forest enforces a noise limit of 100 dBA
7 within its jurisdiction. Operation of the proposed microwave antennas would be below limits established
8 by the City of Orange and Forest Service. Therefore, noise from microwave dish antennas would not
9 result in exposure to persons or generation of noise above applicable standards. Impacts would be less
10 than significant.

11
12 **Mitigation Measures**

13 **MM NV-1 Construction and Maintenance Noise Reduction Measures.**

14
15 **MM NV-3 Low-Noise Substation Equipment and Noise Barriers.** The applicant shall ensure that the
16 Alberhill Substation operational noise levels will not exceed 45 dBA-10-minute L_{eq} at the closest
17 sensitive receptor, as specified in Riverside County General Plan Policy N4.1. This shall be achieved
18 either through use of low-noise substation equipment or installation of noise barriers or both. The
19 applicant shall conduct monitoring and reporting of operational noise levels at the substation according to
20 the specifications in the Riverside County General Plan Appendix I and the Riverside County
21 Department of Public Health “Requirement for Determining and Mitigating Non-Transportation Noise
22 Source Impacts to Residential Properties.”

23
24 **MM NV-4 Corona Noise Reduction Insulators.** The applicant shall ensure that the Alberhill System
25 500-kV transmission line corona audible noise levels will not exceed 45 dBA-10-minute L_{eq} at the closest
26 sensitive receptor, as specified in Riverside County General Plan Policy N4.1. This shall be achieved by
27 the use of additional insulation equipment and additional technological solutions to reduce corona noise
28 levels during rainy and fair weather conditions. To verify the efficiency of the corona noise reduction
29 equipment, the applicant will measure operational noise levels at the closest sensitive residential
30 receptors from the Alberhill Substation during three rain events during the first two rainy seasons when
31 the substation is operating. Monitoring reports shall indicate the existing ambient noise levels and
32 weather conditions during measurements. The applicant shall conduct noise level measurements in
33 compliance with the County of Riverside requirements, as applicable. The applicant will submit results
34 of the monitoring to the CPUC annually. If the monitoring reports determine that the corona noise levels
35 exceed 45 dBA at sensitive residential receptors, the applicant will implement additional technological
36 solutions and installation equipment and will repeat the measuring of operational noise levels at the
37 closest sensitive residential receptors from the Alberhill Substation during three rain events during the
38 subsequent two rainy seasons, until the 45 dBA threshold is no longer exceeded during rain events.

39
40 **Impact NV-2 (ASP): Exposure of persons to or generation of excessive groundborne vibration or**
41 **groundborne noise levels.**

42 *LESS THAN SIGNIFICANT*

43
44 **Construction**

45 Construction of the proposed Alberhill Project would create perceptible groundborne vibration from use
46 of heavy-duty construction equipment (e.g., trucks, backhoes, excavators, loaders, and cranes), the
47 tamping or compacting of ground surfaces, the passing of trucks on uneven surfaces, and the excavation
48 of trenches.

1
2 Vehicle and heavy duty truck use during the proposed Alberhill Project construction would generate a
3 continuous but relatively low level of vibration. Typical vibration levels generated by construction
4 equipment are shown in Table 4.11-18.
5

Table 4.11-18 Vibration levels from typical construction equipment (Alberhill Project)

Vibration Source	Reported Vibration Level at 25 feet (VdB)	Estimated Vibration Level at 50 feet (VdB)
Large bulldozer	87	78
Loaded trucks	86	77
Jackhammer	79	70
Small bulldozer	58	49
Criteria of residential annoyance for infrequent vibration events (FTA)	80	80
Exceeds threshold?	Yes	No

Sources: FTA 2006.

Key:

FTA = Federal Transit Administration

VdB = decibels of vibration velocity

6
7 As shown in Table 4.11-18, the estimated groundborne vibration levels from construction equipment
8 would be below the FTA criteria for residential annoyance at receptors located at a minimum distance of
9 50 feet from heavy duty equipment. Certain residential receptors in Lake Elsinore, Wildomar, Menfief,
10 and unincorporated Riverside County would be within 25 feet of construction sites, as shown in Table
11 4.11-3, resulting in the potential to exceed thresholds of groundborne vibration at sensitive receptors.
12 Construction in these areas would occur during daytime hours, when residences are least sensitive.
13 Construction in these areas would also be temporary, and vibration would be intermittent. Vibration
14 impacts during construction would be less than significant.
15

Operation and Maintenance

17 Operation and maintenance activities would involve routine maintenance and emergency repairs. These
18 activities would generate minimal groundborne vibration through use of trucks and potentially heavy
19 equipment. Maintenance activities would be infrequent and temporary. Impacts would be less than
20 significant.
21

22 **Impact NV-3 (ASP): Substantial permanent increase in ambient noise levels in the project**
23 **vicinity above levels existing without the project.**
24 *LESS THAN SIGNIFICANT*
25

26 A substantial noise increase is defined as 10 dBA for the sake of this analysis because an increase of 10
27 dBA is perceived as a doubling in loudness. The average ambient noise level in the project area is 65
28 dBA. An increase would therefore be substantial if it increased ambient noise levels to 75 dBA.
29

Construction

31 Construction of the proposed Alberhill Project would be temporary (a maximum period of 28 months)
32 and would be transient along the transmission and subtransmission line segments. Construction noise
33 would not be permanent and therefore would not cause a permanent increase in ambient noise levels in

1 the project vicinity. Construction of the proposed Alberhill Project would have no impact under this
2 criterion.

3 4 **Operation and Maintenance**

5 *Alberhill Substation*

6 Operation of the Alberhill Substation would create noise due to equipment running at the substation.
7 Continuous operation of the Alberhill Substation would also increase ambient noise levels as a result of
8 transformer “hum” and cooling fan noise. A noise modeling study conducted for the project predicts that
9 the noise contribution from the two 500/115-kV 560 MVA transformers would be about 94 dBA at a
10 distance of 3 feet from the transformer and at the closest sensitive receptor would be perceived at a
11 level of 38 dBA. The substation perimeter wall surrounding the transformer and switching equipment
12 would attenuate noise by 10 dBA. A noise level of 38 dBA would not be perceptible against the existing
13 noise environment, which is about 60 dBA in the vicinity of the Alberhill Substation. Operation of the
14 proposed Alberhill Substation would have a less than significant impact on permanent ambient noise
15 levels.

16 17 *500-kV Transmission Lines*

18 The 500-kV transmission lines would emit corona noise during operation. Audible noise from the 500-kV
19 lines at the edge of the ROW would be in the range of 54 to 61 dBA during wet weather conditions, and
20 48 to 49 dBA during fair weather conditions. The 500-kV line would be outfitted with polymer insulators
21 that minimize the accumulation of surface contaminants and therefore reduce the potential for corona
22 noise to be generated at the insulators; however, the actual corona noise reduction levels from the use of
23 this insulation equipment are unknown. The nearest sensitive receptor to the proposed 500-kV
24 transmission VA Line would be located 23 feet from the ROW. Near this location, daytime ambient noise
25 levels range from 60 to 67 dBA, and from 50 to 55 dBA during nighttime hours (Table 4.11-1). As
26 explained above, a substantial noise increase is generally defined as 10 dBA or higher. Audible noise
27 from the 500-kV transmission VA Line would be perceived at the nearest receptor during wet weather
28 conditions; however, the estimated increase over existing ambient noise levels would be below 10 dBA.
29 Operation of the proposed 500-kV lines would have a less than significant impact on permanent ambient
30 noise levels.

31 32 *115-kV Subtransmission Lines*

33 The proposed project would generate corona noise during operation. Corona noise associated with
34 operation of the 115-kV subtransmission line segments is not anticipated to be generally audible in the
35 Alberhill Project vicinity. Corona noise levels would be approximately 34 dBA directly below the
36 conductor. Existing noise levels in the project area range from 60 to 66 dBA. Corona noise would not be
37 perceptible against the higher ambient noise levels. In addition, noise from vehicles used during routine
38 maintenance activities would be infrequent and would not result in a permanent increase to ambient noise
39 levels. Operation of the proposed 115-kV subtransmission lines would have a less than significant impact
40 on permanent ambient noise levels.

41 42 *Serrano Substation and Santiago Peak Communications Site*

43 Operation of the proposed microwave dish antennas at the existing Serrano Substation and Santiago Peak
44 Communication site would generate minimal noise, as this type of equipment generally produces very
45 little background noise in the air compared to those used in terrestrial communications. Therefore, noise
46 from microwave dish antennas would not result in a noticeable increase in noise. Operation of the
47 microwave dish antennas would have a less than significant impact on permanent ambient noise levels.

Noise from vehicles and equipment used during routine maintenance activities would be infrequent and would not result in a permanent increase to ambient noise levels.

Impact NV-4 (ASP): Substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.
SIGNIFICANT AND UNAVOIDABLE

A substantial noise increase is defined as 10 dBA for the sake of this analysis because an increase of 10 dBA is perceived as a doubling in loudness. The average ambient noise level in the project area is 65 dBA. An increase would therefore be substantial if it increased ambient noise levels to 75 dBA.

Construction

Noise generated from construction equipment and vehicle and helicopter use would result in temporary contributions to the ambient noise levels in the project vicinity during the overall 28-month construction period. As shown in Tables 4.11-19, potential noise levels during the proposed Alberhill Project’s construction would exceed reported ambient noise levels presented in Table 4.11-1 at closest sensitive receptors.

Table 4.11-19 Alberhill Project Unmitigated Construction Noise Levels at Closest Sensitive Receptors^a

Project Component	Closest Sensitive Receptor	Distance from Project Component (feet)	Predicted Construction Noise Levels at Receptor (dBA)	Exceeds threshold (75 dBA)?	Amount Exceeded (dBA)
Alberhill Substation					
42.9 acres within a 124-acre property	Closest residence to proposed substation site	1,126	65	No	N/A
	Closest residence to substation transformers’ bank location	2,874	57	No	N/A
	Closest residence to proposed borrow site (Soil Import Option 1)	1,200	59	No	N/A
	Closest residence to soil haul truck route (Soil Import Option 2)	3,125	44	No	N/A
500-kV Transmission Lines					
Line SA 1.6 miles long, 200-foot wide ROW	Closest residence to ROW	338	71	Yes	12
	Closest residence to Tower SA-1	1,197	60	No	N/A
	Closest residence to Tower SA-2	900	63	No	N/A
	Closest residence to Tower SA-3	691	65	No	N/A
	Closest residence to Tower SA-4	2,096	56	No	N/A

Table 4.11-19 Alberhill Project Unmitigated Construction Noise Levels at Closest Sensitive Receptors^a

Project Component	Closest Sensitive Receptor	Distance from Project Component (feet)	Predicted Construction Noise Levels at Receptor (dBA)	Exceeds threshold (75 dBA)?	Amount Exceeded (dBA)
Line VA 1.7 miles long, 200-foot wide ROW	Closest residence to ROW	23	95	Yes	20
	Closest residence to Tower VA-1	1,110	61	No	N/A
	Closest residence to Tower VA-2	736	65	No	N/A
	Closest residence to Tower VA-3	668	65	No	N/A
	Closest residence to Tower VA-4	2,132	55	No	N/A
VA2 Access Road	Closest residence	322	72	No	N/A
VA3 Access Road	Closest residence	266	73	No	N/A
Potential Helicopter Platform Locations (500-kV transmission Line Helicopter Construction Method)					
Helipad 1	Residence northeast of Black Powder Road (northeast of proposed Alberhill Substation site)	704	59	No	N/A
Helipad 2	Same as Helipad 1	567	61	No	N/A
Helipad 3	Same as Helipad 1	1,978	50	No	N/A
Helipad 4	Same as Helipad 1	2,020	50	No	N/A
Helipad 5	Same as Helipad 1	3,410	45	No	N/A
Subtransmission Lines					
115-kV Segments ASP1 and ASP1.5	Residence on Hostettler Road	813	62	No	N/A
115-kV Segment ASP2	Residences on Baker Street	37	89	Yes	14
115-kV Segment ASP3	Residences on Collier Avenue and 2 nd Street	181	75	No	N/A
115-kV Segment ASP4	Residences on E Hill Street, E Pottery Street, Casino Drive, Malaga Road, and Mission Trail	20	94	Yes	19
115-kV Segment ASP5	Residences on Waite Street, Lemon Street, Lost Road, Beverly Street, and Bundy Canyon Road	35	89	Yes	14
115-kV Segment ASP6	Residences on Murrieta Road	55	85	Yes	10
115-kV Segment ASP7	Residences on Murrieta Road (near Newcomb Substation)	398	68	No	N/A
115-kV Segment ASP8	Residences Murrieta Road (with McLaughin Road)	20	94	Yes	19

Table 4.11-19 Alberhill Project Unmitigated Construction Noise Levels at Closest Sensitive Receptors^a

Project Component	Closest Sensitive Receptor	Distance from Project Component (feet)	Predicted Construction Noise Levels at Receptor (dBA)	Exceeds threshold (75 dBA)?	Amount Exceeded (dBA)
Telecommunications					
New microwave tower at Alberhill Substation	Closest residence to substation property line	1,126	59	No	N/A
New fiber optic telecommunication line installed on 115-kV Segments ASP1, ASP 1.5, ASP5, ASP6, and ASP7	Residences near to underground construction sites	20	94	Yes	19
New microwave dishes	Residence close to Serrano Substation	753	62	No	N/A
	Santiago Peak Communication Site	>100	N/A	N/A	N/A
Staging Areas					
Staging Area ASP1	Residence on Concordia Property	1356	55	No	N/A
Staging Area ASP2	None identified (within 0.25-mile radius)	None	N/A	NA	N/A
Staging Area ASP3	Closest residence to staging area	237	70	No	N/A
Staging Area ASP4	Closest residence to staging area	338	67	No	N/A
Staging Area ASP5	Mission Valley Medical School	370	67	No	N/A
	Closest residence to staging area	365	67	No	N/A
Staging Area ASP6	Closest residence to staging area	655	62	No	N/A
Staging Area ASP7	Closest residence to staging area	531	63	No	N/A
Staging Area ASP8	Closest residence to staging area	237	70	No	N/A

Sources: E & E 2015b, SCE 2011b, FHWA 2006.

Note:

a Construction noise at staging areas assumes helicopter landing and takeoff as the main source of noise.

Key:

dBA = A-weighted decibel

kV = kilovolt

NA = not applicable

1 **Alberhill Substation**

2 Construction activities at the Alberhill Substation property would generate noise of up to 63 dBA (under
3 either soil import option) at the closest residence to the proposed substation site, as shown in Table 4.11-
4 19. This would not be a substantial increase in noise and at many times would not be perceptible against
5 the existing noise environment. Construction of the proposed Alberhill Substation would have a less than
6 significant impact on temporary ambient noise levels.

7
8 **500-kV Transmission Lines**

9 Construction of the 500-kV transmission lines would generate noise of up to 95 dBA at the closest
10 sensitive receptor, as shown in Table 4.11-20. This would be a substantial temporary increase in ambient
11 noise levels at the sensitive receptor, which would result in a significant impact. To address potential
12 impacts from temporary increases of ambient noise levels during construction, the applicant would
13 implement Project Commitment H, which would reduce noise at sensitive receptors located in the
14 proximity of construction sites.

15 **Table 4.11-20 Alberhill 500-kV Transmission Lines Project Construction Noise Scenarios**

Construction Scenario	Estimated Construction Noise (dBA, Leq) at Different Receptor Distances (feet)								
	20	40	50	100	200	400	800	1000	1500
Unmitigated Construction	103	97	95	89	83	77	71	69	65
With Project Commitment H	95	89	87	81	75	69	63	61	57
Threshold	75	75	75	75	75	75	75	75	75
Exceeds threshold?	Yes	Yes	Yes	Yes	No	No	No	No	No

Key:
dBA = A-weighted decibel
kV = kilovolt
Leq = Sound Equivalent Level

16 Temporary significant increases in ambient noise levels for those receptors located within about 200 feet
17 from construction along the 500-kV lines would still occur after implementation of Project Commitment
18 H. MM NV-1 would require the applicant to implement noise control measures during construction, such
19 as limiting timeframes for use of heavy-duty equipment and reducing the number of pieces of equipment
20 operating concurrently. Implementation of MM NV-1 would further reduce short-term significant
21 increases of ambient noise levels, but not to a level of less than significant.

22
23
24 For all sections of the 500-kV transmission lines, the applicant would also use a light-duty helicopter for
25 *sock-line threading*—the stringing of a lightweight pilot line (a sock line) between power line structures.
26 For the purposes of this EIR, the applicant has indicated that a small single-rotor helicopter such as the
27 Hughes 500E (also known as 369E) would be used. This type of helicopter produces a maximum sound
28 level of 80.7 dBA measured directly under the flight path and 82.3 dBA, at a level fly over of 500 feet
29 and 130 mph (FAA 1977).

30
31 The applicant may use a heavy-duty helicopter to facilitate construction in lieu of constructing new
32 access roads or where the proposed 500-kV transmission line towers would be located on terrain on
33 which a crane could not be used or some of the required equipment and materials could not be delivered
34 by truck (refer to Section 2.4.5.5). If a heavy-duty or medium-duty helicopter is required for construction
35 of the proposed 500-kV transmission lines as part of the Alberhill Project because of rough terrain, the

1 following or similar models would be used for up to five days (up to 12 hours per day or in accordance
2 with all applicable noise ordinances):

- 3
- 4 • Sikorsky S64 Skycrane twin-engine heavy-lift helicopter with Pratt and Whitney T73-P-1 engines
5 (heavy-duty); or
- 6 • Kaman K-MAX helicopter with a Lycoming T53 engine (medium-duty helicopter); or
- 7 • Hughes 500-530 helicopter.
- 8

9 Noise levels from the heavy-duty and medium-duty helicopters are generally higher than those reported
10 for light-duty, single rotor helicopters. For the purposes of this EIR, noise from heavy-duty and medium-
11 duty helicopters would be above 82.3 dBA at flyovers of 500 feet and 130 mph.

12 Helicopter takeoff and landing may also occur adjacent to wire stringing sites along the 500-kV
13 transmission line routes during wire-stringing activities or for materials delivery, adjacent to tower sites
14 for micropile foundation construction activities and tower erection, and at Staging Areas ASP1, ASP2,
15 and ASP3. Helicopter fueling may also occur at the proposed Alberhill Substation site or at Staging
16 Areas ASP1 or ASP3.

17 Temporary landing areas within staging areas, at wire-stringing sites, or along the 500-kV transmission
18 line routes would be approximately 100 feet wide by 100 feet long. The helicopter contractors selected
19 by the applicant for construction of the proposed projects may select helicopter operations facilities or
20 airports other than those listed in this document, which could result in the need for additional evaluation
21 pursuant to California Environmental Quality Act Guidelines. Helicopters would remain at local airports,
22 or the applicant's or helicopter contractor's air operations facilities, at night or when not in use.

23
24 Helicopter takeoff and landing areas would be limited to established helicopter landing areas (e.g.,
25 facilities at Skylark Field Airport) or at Staging Areas ASP1 or ASP3. The applicant would use best
26 management practices to minimize impacts caused by the use of helicopters including: using helicopters
27 with low-emitting engines to the extent practical; efficiently maximizing flight times; designating flight
28 paths away from residential areas; identifying sensitive receptors that might be disturbed by construction
29 noise and proving advance notice of upcoming work; and obtaining variances to local noise ordinances as
30 required. The helicopters would be used only during daylight hours consistent with applicable laws and
31 regulations; however, helicopters would increase ambient noise levels in 10 dBA or more during
32 landing/take-off operations at staging areas, and when flying over residential areas at a height of 500 feet.
33 Impacts from helicopters would be temporary, but significant and unavoidable.

34 *115-kV Subtransmission Lines*

36 Construction of the subtransmission lines would generate noise levels up to 86 dBA at immediately
37 adjacent residential areas and would result in a substantial temporary increase in noise along all segments
38 other than 115-kV Segments ASP1 and ASP1.5. As shown in Table 4.11-21, the substantial temporary
39 increase would be significant. To address potential impacts from temporary increases of ambient noise
40 levels during construction, the applicant would implement Project Commitment H, which would reduce
41 noise at sensitive receptors located in the proximity of construction sites.

1

Table 4.11-21 Alberhill 115-kV Subtransmission Lines Project Construction Noise Scenarios

Construction Scenario	Estimated Construction Noise (dBA, Leq) at Different Receptor Distances (feet)								
	20	40	50	100	200	400	800	1000	1500
Unmitigated Construction	94	88	86	80	74	68	62	60	56
With Project Commitment H	86	80	78	72	66	60	54	52	48
Threshold	75	75	75	75	75	75	75	75	75
Exceeds threshold?	Yes	Yes	Yes	No	No	No	No	No	No

Key:
dBA = A-weighted decibel
kV = kilovolt
Leq = Sound Equivalent Level

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Temporary significant increases in ambient noise levels for those receptors located within about 200 feet from construction along the 115-kV subtransmission lines would still occur after implementation of Project Commitment H. MM NV-1 would require the applicant to implement noise control measures during construction, such as limiting timeframes for use of heavy-duty equipment and reducing the number of pieces of equipment operating concurrently. Implementation of MM NV-1 would further reduce short-term significant increases of ambient noise levels, but not to a level of less than significant.

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16

Helicopters would be used for stringing a portion of 115-kV Segment ASP5. Noise impacts related to helicopter use for 115-kV line stringing on 115-kV Segment ASP5 would be the same as described for the 500-kV Transmission Lines. The applicant would use a small single-rotor helicopter such as the Hughes 500C. This type of helicopter produces a maximum noise emission level of 80.7 dBA measured directly under the flight path and 82.3 dBA measured at 150 meters (45.7 feet) from the flight path¹² (FAA 1977). Impacts due to helicopter noise would be temporary, but significant and unavoidable under this criterion.

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18

Telecommunications

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25

Construction of underground telecommunications components would require the use of a backhoe, which would create noise levels of 85 dBA at 50 feet, resulting in a temporary increase of approximately 20 dBA above ambient noise levels at nearest sensitive receptors (residences located within 20 feet from underground construction sites). The applicant would implement Project Commitment H to reduce noise at the nearest sensitive receptors, resulting in an overall 8 dBA reduction. However, temporary increases of noise would remain above 10 dBA compared to ambient noise levels. Therefore, impacts would be significant and unavoidable under this criterion.

26
27

Staging Areas, Serrano Substation, and Santiago Peak Communications Site

28
29
30

Noise impacts at staging areas, Serrano Substation, Santiago Peak Communications Site, and fiber optic lines would not result in a substantial temporary periodic increase in noise during construction, as shown in Table 4.11-19. Impacts would be less than significant.

31
32

Operation and Maintenance

¹² Maximum noise emission levels reported by the Federal Aviation Administration during a Hughes 500C helicopter level flyover at 500 feet and 130 miles per hour.

1 Operation of the proposed Alberhill Project would not result in any short-term increases to ambient noise
2 levels. However, maintenance activities would have similar impacts on short-term increases to ambient
3 noise levels as construction activities. Although maintenance activities would occur infrequently, impacts
4 would be significant and unavoidable after the implementation of MM NV-1.
5

6 **Mitigation Measure**

7 **MM NV-1 Construction and Maintenance Noise Reduction Measures.**

8
9 **Impact NV-5 (ASP): Exposure of people residing or working in the project area to excessive**
10 **noise levels within an airport land use plan or, where such a plan has not**
11 **been adopted, within two miles of a public airport or public use airport.**
12 *LESS THAN SIGNIFICANT*
13

14 Perris Valley Airport is a public use facility located approximately 1.5 miles north of 115-kV Segment
15 ASP8. Construction and maintenance activities would be temporary in this location. This location is also
16 1.5 miles from the airport, which falls in Compatibility Zone E in the Riverside County Airport Land Use
17 Compatibility Plan for the Perris Valley Airport. Noise contours reflecting the ultimate activity levels on
18 an average day for Compatibility Zone E indicate a noise level of 55 dB CNEL (RCALUC 2004).
19 Finally, the airport is primarily used by lighter aircraft, which emit less noise. Therefore, the proposed
20 Alberhill Project would not expose workers to excessive noise levels from nearby airport operation.
21 Impacts would be less than significant under this criterion.
22

23 **Impact NV-6 (ASP): Exposure of people residing or working in the project area to excessive**
24 **noise levels within the vicinity of a private airstrip.**
25 *LESS THAN SIGNIFICANT*
26

27 Skylark Field Airport is a private airport located approximately 1,000 feet from proposed 115-kV
28 Segments ASP4 and ASP5. This airport provides gliding and skydiving services to the community and
29 visitors. During construction of the proposed Alberhill Project, the Skylark Field Airport would also be
30 used as the helicopter staging and fueling area.
31

32 Although noise from light aircraft operations at the Skylark Field Airport could exist during construction,
33 the temporary nature of construction work along 115-kV Segment ASP4 would limit the amount of noise
34 exposure to workers. In addition, the expected routine maintenance and emergency repair activities
35 would only require the presence of personnel at the site on an infrequent basis. For all construction and
36 operations and maintenance activities, it is assumed that workers would utilize the appropriate noise
37 safety gear while at the subtransmission line sites and helicopter staging areas, in compliance with state
38 and federal occupational health regulations.
39

40 Given the transient nature of the construction and maintenance activities in the proximity of the Skylark
41 Field Airport, the temporary helicopter use anticipated for the 500-kV construction line, the small air
42 traffic capacity existing at this airstrip, and proper compliance of workers hearing protection, impacts
43 would be less than significant.
44
45

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