D.9 NOISE

Subsequent to publishing the noise analysis presented in the original Draft EIR in December 2007 (also referred to as Draft EIR) and the Final EIR on April 11, 2008, SCE supplied the CPUC with several data documents regarding corona noise levels generated by the existing 115 kV subtransmission line and those to be generated by the proposed El Casco System Project. The information provided by SCE clarifies that the existing 115 kV subtransmission line is in fact energized at all times, thus creating corona discharge noise as part of the ambient noise conditions of the area. The previously published Draft EIR assumed that the line was not energized and produced no corona discharge noise. In addition to the information regarding the existing 115 kV subtransmission line operational corona noise, SCE provided modeling results of the projected corona noise of the Proposed Project's new 115 kV subtransmission line. At the time the noise analysis was conducted for the previously published Draft EIR, noise modeling of projected operational corona discharge noise had not been completed and thus the Proposed Project was assumed to create a permanent new noise source over baseline conditions. Based upon this new information, presented within this section is a discussion on general characteristics of corona noise, updated information on ambient noise conditions in the vicinity of the Proposed Project alignment, and updates to the potential impacts associated with noise due to construction and operation of the Proposed Project. This section focuses on the evaluation of exposure of persons to or the generation of noise levels in excess of established standards and a potential permanent increase in ambient noise levels in the Project vicinity above levels existing without the Proposed Project. The additional documents utilized to update the noise analysis provided below are referenced within and at the end of this section.

D.9.1 Environmental Setting for the Proposed Project

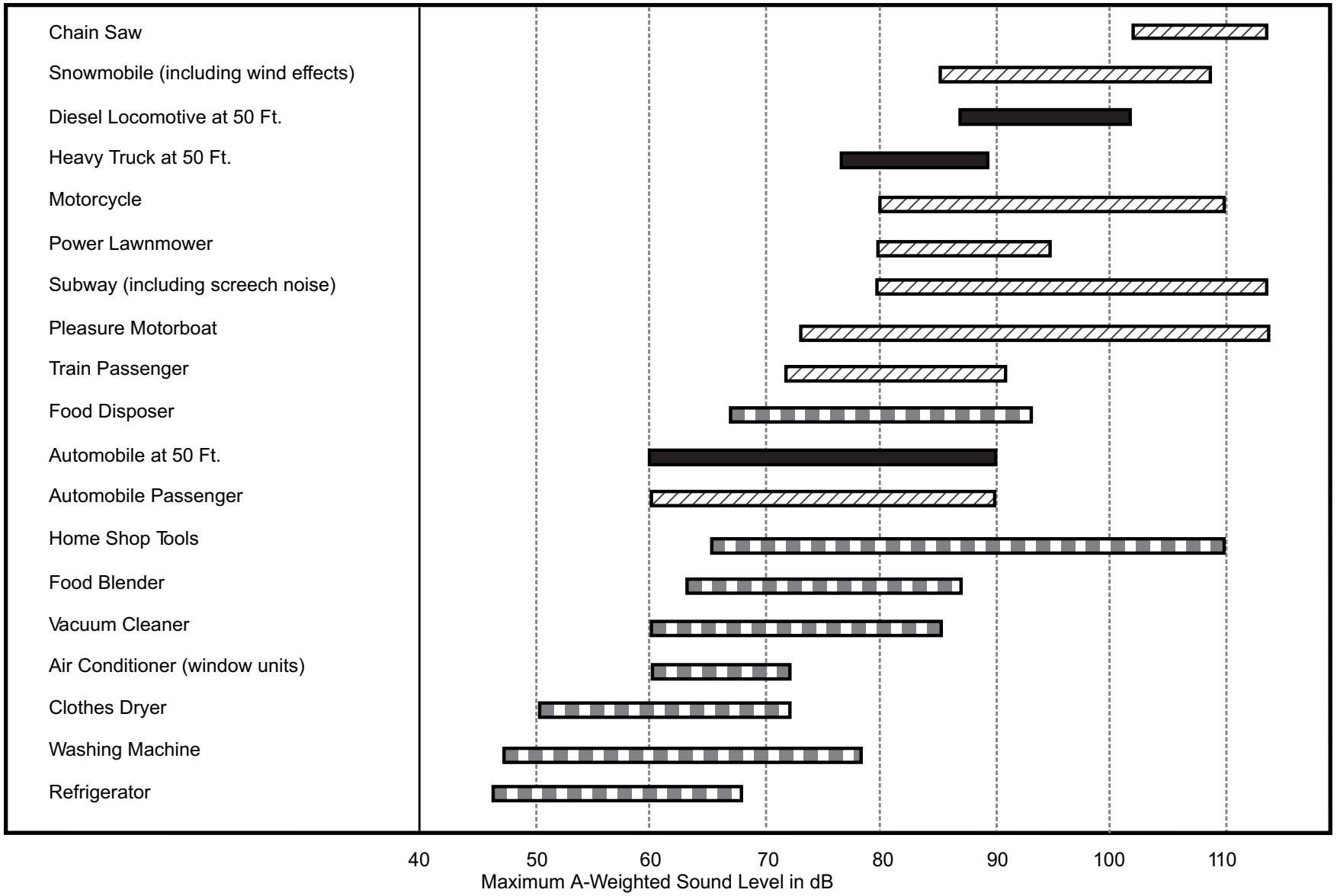
D.9.1.1 General Characteristics of Community Noise

A brief background in acoustics is helpful in understanding how humans perceive various sound levels. Some common acoustical definitions:

- *Acoustics* refers to the study of sound wave generation and transmission, both audible and inaudible.
- *Sound* is the physical oscillation or vibration of a medium, such as air, that can be perceived by an instrument, such as the human ear or a microphone.
- *Noise* has commonly been categorized as loud, disruptive sounds that can annoy or cause harm to people.
- *Background noise* is the aggregation of all perceptible, but not necessarily identifiable, sound sources (such as traffic, airplanes, and environmental sounds) that create a static ambient noise baseline.

Background noise, also known as environmental noise, is created by all sources generating noise at any particular location, such as roadway traffic, public noise, wind, etc. To describe environmental noise and to assess impacts on sensitive areas, a frequency weighting measure that simulates human perception is customarily used. The frequency weighting scale known as A-weighting best reflects the human ear's reduced sensitivity to extremely low and extremely high frequencies and correlates well with human perceptions of the "annoying" aspects of noise. The A-weighted decibel scale (dBA) is cited in most community noise standards. Decibels are logarithmic units representing sound pressure level that conveniently compare the wide range of sound intensities to which the human ear is sensitive. Figure D.9-1 illustrates typical ranges of common sounds heard in the community noise environment.

The community noise environment and the consequences of human activities cause noise levels to vary widely over time. For simplicity, sound levels are best represented by an equivalent level over a given time period (L_{eq}) or by an aggregated level occurring over a 24-hour day-night period (L_{dn}). The L_{eq}, or



Source: USEPA, 1978. Protective Noise Levels Condensed Version of EPA Levels Document

Figure D.9-1
Typical Range of Common Sounds Heard in the Environment

equivalent sound level, is the value that corresponds to the steady-state sound level containing the same total noise energy as a time-varying sound level over the same time period. Commonly used measurement periods are one, eight, and 24 hours. The L_{dn}, or day-night sound level, is equal to the 24-hour equivalent sound level (in dBA) with a 10 dBA weighting applied to the equivalent sound level occurring at night between 10:00 p.m. and 7:00 a.m. The community noise equivalent level (CNEL) is a metric similar to L_{dn} in that it is a 24-hour equivalent level in dBA that includes a 5 dBA weighting to evening sounds (between 7:00 p.m. and 10:00 p.m.) in addition to the 10 dBA nighttime weighting.

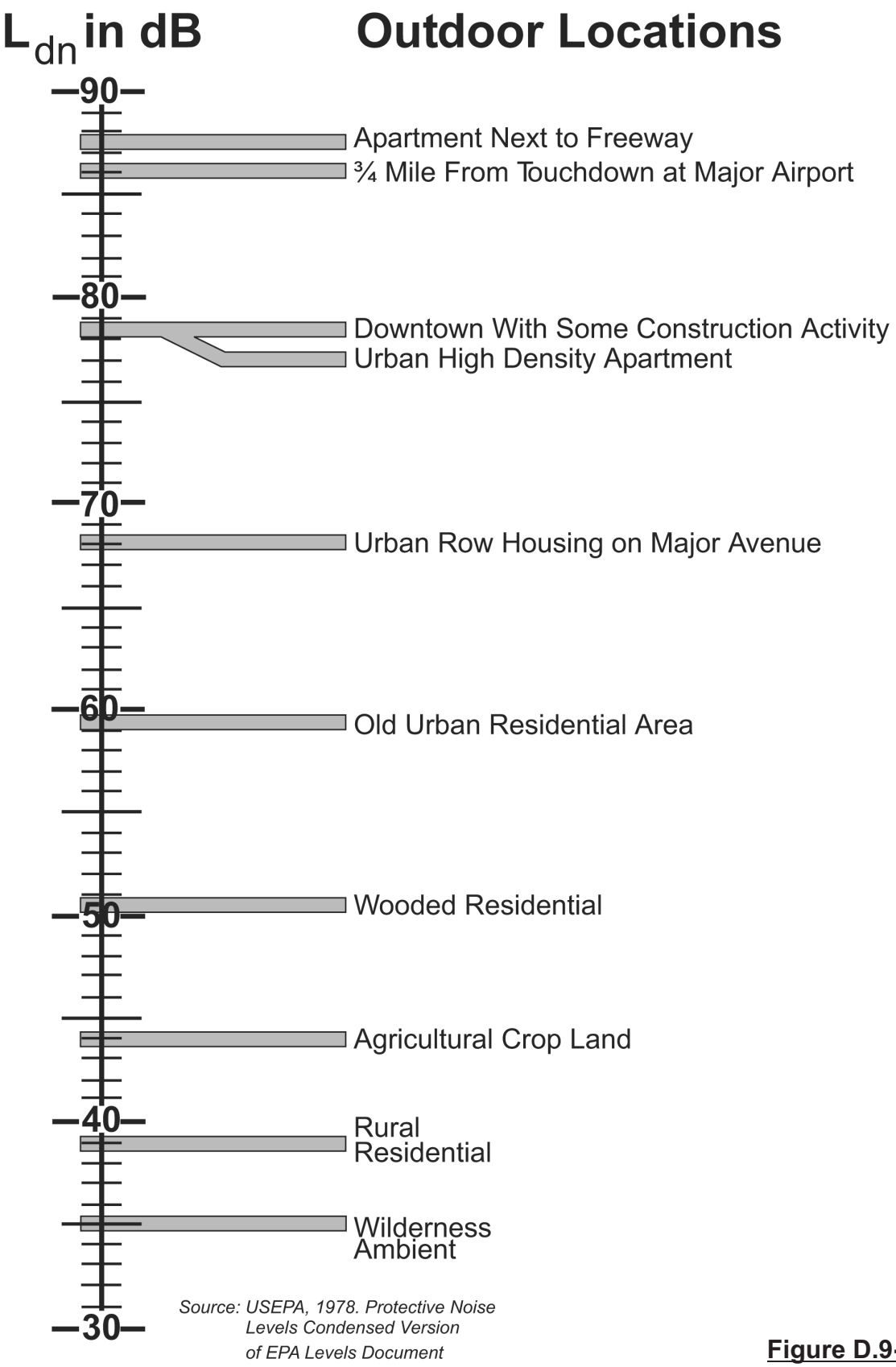
Community noise levels are usually closely related to the intensity of nearby human activity. Figure D.9-2 illustrates the typical noise levels of varying types of land use. Noise levels are generally considered low when ambient levels are below 45 dBA, moderate in the 45 to 60 dBA range, and high above 60 dBA. In pristine wilderness areas, the L_{dn} noise levels can be below 35 dBA. In small towns or wooded and lightly used residential areas, the L_{dn} is likely to be around 50 or 60 dBA. Levels around 75 dBA are more common in busy urban areas (e.g., downtown areas), and levels up to 85 dBA occur near major freeways and airports. Although people often accept the higher levels associated with very noisy urban residential and residential-commercial zones, these levels nevertheless are considered to be adverse to public health.

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

D.9.1.2 General Characteristics of Corona Noise

The following information is based upon corona noise information supplied by SCE (SCE, 2008a), which the CPUC has independently evaluated and found to be accurate. Corona is a phenomenon associated with all energized alternating current (AC) electrical lines. The Electric Power Research Institute (EPRI) has published several versions of their "AC Transmission Line Reference Book – 200 kV and Above" (commonly referred to as the "Red Book"). The most recent edition was published in 2005. The Red Book explains that under certain conditions, the localized electric field near an energized conductor can be sufficiently concentrated to produce a tiny electric discharge that can ionize air close to the conductors. This partial discharge of electrical energy is called corona discharge, or corona. Several factors, including conductor voltage, shape and diameter, and surface irregularities such as scratches, nicks, dust, or water drops can affect a conductor's electrical surface gradient and its corona performance.

Corona is well understood by utility engineers, and measures designed to minimize it are one of the major factors in transmission line design, particularly for extra high voltage transmission lines (i.e., 345 to 765 kV). Corona is usually not a design issue for power lines rated at 230 kV and lower because the conductor size selected for transmission line on these projects is of sufficient diameter to lower the localized electrical stress on the air at the conductor surface and would further reduce already low conductor surface gradients so that little or no corona activity would exist under most operating conditions.



Source: USEPA, 1978. Protective Noise Levels Condensed Version of EPA Levels Document

Figure D.9-2

Outdoor Day/Night Sound Levels in Different Areas

D.9.1.2.1 Factors Contributing to Corona Generation

Many factors affect the actual corona generation on electrical line conductors, including:

- Conductor Surface Electric Field (aka Conductor Surface Gradient): This is the most important parameter affecting conductor corona phenomena. It is a combined value of nominal voltage, conductor diameter, number of sub-conductors in a bundle (if more than one), average height of conductors above ground, and the distance between phases.
- Conductor Surface Conditions: Since audible noise is primarily a foul-weather phenomenon, potential for water droplet formation on the conductor surface is important. Conductors exhibiting a hydrophilic (affinity for water or "water loving") condition have a better audible-noise performance than those exhibiting a hydrophobic (repelling) surface condition (Note: The opposite is true for insulator corona phenomena). Any surface imperfections (i.e., small nicks or scratches) may also contribute to increased corona, though the impacts from these conditions are usually greater to radio interference than to audible noise.
- Conductor Diameter: For a constant voltage, the various corona phenomena decrease as the conductor diameter increases.
- Number of Conductors: In this case, probably due to the interaction with other sub-conductors, measurements have shown that audible noise may slightly increase as the number of conductors in a bundle increases, for a fixed electric field and a fixed diameter.
- Weather Conditions: Corona generation increases whenever moisture accumulates on the conductor. Generally, conductor heating due to current flow will discourage formation of water droplets during fog or high humidity. Therefore, audible noise levels are highest during heavy rain (or heavy wet snow). However, in many cases, the rain itself creates more noise than the corona, so the most critical period is in the quiet immediately following a significant rainfall. However, this is only a short-lived time period until the heat of the conductor evaporates the water droplets, as discussed previously.
- Air Density (altitude): At higher altitudes above sea level, corona inception occurs at lower conductor surface gradients. However, this is a minor variation compared to the other factors listed previously.

D.9.1.2.2 Audible Noise Calculation Methodologies

The "Red Book" describes two empirical techniques for calculating audible noise (AN) during rainy weather conditions. These are the EPRI and Bonneville Power Administration (BPA) methods. They both calculate the median AN level during measurable rain to determine corona noise levels during rainy weather conditions. The EPRI method also calculates the heavy rain AN. The BPA method suggests that if a designer needs to know the heavy rain AN level, then 3.5 dBA should be added to the median AN level. The EPRI method does not have a constant adder and accounts for the heavy rain AN as a function of the equation.

Corona noise is highest in wet weather; however, because the noise from rain is loud in and of itself, noise from rain is a factor in calculating AN levels. Knowing the heavy rain AN level is rarely important in determining the significance of impacts from corona noise for several reasons. First, heavy rain in itself is very noisy and likely to mask any corona noise it generates. Second, over a period of a year, heavy rain is a rare occurrence within the project area. Third, there are no noise regulations applicable to the project area based upon heavy rain.

The BPA method for calculating the median AN levels during measurable rain was developed from long-term measurements on a number of full-scale operating or test lines and is relatively straightforward. Calculating the AN level during fair weather for AC lines is not straightforward. The BPA method, based upon a number of long-term measurements in quiet areas, suggests that the median fair weather level is 25 dBA less than the median level during measurable rain for "normal lines".

Most noise regulations are based upon a mean or a median value. These noise regulations vary from country to country, from state to state and even local governments have their own noise regulations. Because of the statistical nature of AN levels, the acoustical industry has adopted the concept of

"exceedance levels." These are called L levels. For example an L_{50} level is a value where the AN level exceeds that value 50 percent of the time; and is less than that value 50 percent of the time. The L_{50} level is the median value. An L_{10} value is a level where 10 percent of the time it is exceeded and 90 percent of the time is not exceeded. The most common value in noise regulations is the L_{50} value, but these regulations are not defined in terms of weather.

D.9.1.3 Vibration

Vibrating objects in contact with the ground radiate energy through the ground. Ground vibration from large and/or powerful vibrating objects can be perceptible to humans and animals. The rumbling sound caused by the vibration of room surfaces is called ground-borne noise. The ground motion caused by vibration is measured as particle velocity in inches per second, and in the United States is referenced as vibration decibels (VdB) (USDOT, 1995).

The background vibration velocity level in residential and educational areas is usually approximately 50 VdB. The vibration velocity level threshold of perception for humans is approximately 65 VdB. A vibration velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for many people. Most perceptible indoor vibration is caused by sources within buildings such as the operation of mechanical equipment, movement of people, or the slamming of doors. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground-borne vibration from traffic is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings (USDOT, 1995).

D.9.1.4 Noise Environment

Multiple sources of noise occur near the Proposed Project route. The primary noise source in the vicinity of the Proposed Project right-of-way (ROW) is vehicle traffic on the roadways and freeways identified in Section D.11 (Transportation and Traffic), Tables D.11-1 and D.11-2. Surrounding land uses contribute many other noise sources, depending on their locations.

Noise-sensitive receptors are land uses or areas (e.g., residential areas, hospitals, schools, certain recreation areas, etc.) where excessive noise would conflict with the intended use, for example by conveying annoyance. Noise-sensitive areas encountered near the route and other work areas include homes, schools, and recreational/open space use areas.

The following describes existing ambient noise sources and sensitive receptors identified near the Proposed Project components:

D.9.1.4.1 El Casco Substation Site

The proposed El Casco Substation site is located within the boundaries of the Norton Younglove Reserve. Train traffic on the nearby Union Pacific railroad line dominates the overall ambient noise environment in the area of the proposed El Casco Substation site, with the typical noisy train pass-bys punctuating the otherwise relatively quiet levels of background noise. Other noise sources include traffic on San Timoteo Canyon Road and aircraft flying overhead. Several rural residences are located within approximately 1.0 mile of the proposed El Casco Substation site.

D.9.1.4.2 Banning Substation

The Banning Substation is located within the Banning city limits approximately 726 feet south of Interstate 10, and approximately 548 feet south of the freight railroad. Adjacent land uses are commercial and industrial. The predominant sources of noise in this area are freight railroad operations, vehicular traffic on Interstate 10, and vehicular traffic on adjacent surface streets. Aircraft operations associated with the

Banning Municipal Airport, located approximately 4,072 feet to the east of the substation, generate intermittent noise level increases from aircraft takeoffs and landings. Sparse residential development within the City of Banning is located within approximately 0.5 mile of the Banning Substation.

D.9.1.4.3 Zanja Substation

The Zanja Substation is located in the northwestern area of the City of Yucaipa. The area surrounding the substation is generally rural, though a small neighborhood of single-family homes is located adjacent to the site. The nearest two homes are located approximately 600 feet to the east. The area is fairly quiet with low traffic flow through the neighborhood and to San Bernardino National Forest.

D.9.1.4.4 115 kV Subtransmission Line Route

The existing single-circuit subtransmission line segment between Maraschino and Banning Substations is currently energized at 115 kV (SCE, 2008b). It serves as the emergency line to Maraschino Substation in the event that the preferred line is not operational. Therefore, the emergency line must stand ready at any time to carry load for Maraschino Substation if the preferred line is ever unable to do so. Under the Proposed Project, the existing subtransmission line would continue to operate at 115 kV.

Although its severity varies significantly due to a variety of factors as discussed in Section D.9.1.2.1, above, corona discharge phenomena can occur on any AC electrical line, regardless of the amount of current (load) flowing on the line (SCE, 2008b). Therefore, even a line that is energized but not carrying load may emit corona noise. Because the existing line is energized at 115 kV, it can be assumed that the line generates corona-induced audible noise (SCE 2008b).

As part of the Proposed Project, the southerly 115 kV subtransmission line would be routed through the Cities of Banning, Beaumont, and unincorporated portions of Riverside County. In general, the proposed 115 kV line route would pass through uninhabited areas with relatively low ambient noise levels. However in some areas, the proposed 115 kV line route would pass near or through residential neighborhoods. The following identifies sensitive residential receptors that are within approximately 0.25 mile (1,320 feet) of the proposed 115 kV subtransmission line ROW and their approximate locations:

- Isolated residential homes in the vicinity of the Maraschino Substation (City of Beaumont);
- Isolated residential homes near Manzanita Park Road (County of Riverside);
- Residential neighborhoods between Highland Springs Avenue and Highland Home Road (City of Banning); and
- Isolated residential homes south of the existing Banning Substation (City of Banning).

In addition, there are residential developments that are planned for construction, are currently under construction, and/or are recently inhabited. Most of the construction is geared toward single-family homes. Two planned nonresidential projects include a commercial park near Maraschino Substation and the widening of San Timoteo Canyon Road. The following identifies sensitive recreational receptors that are near the 115 kV subtransmission line ROW and their approximate locations:

- **Norton Younglove Reserve.** The proposed El Casco Substation, 115 kV subtransmission line, and 220 kV transmission lines looping into the El Casco Substation would utilize 28 acres of the Norton Younglove Reserve, which is used for hiking, biking, equestrian, and other non-motorized recreation uses.
- **Sun Lakes Country Club.** The Sun Lakes Country Club within the Sun Lakes community in the City of Banning offers a golf course with 18 holes, tennis courts, swimming pools, bocce ball courts, and other facilities. The proposed 115 kV El Casco-Banning subtransmission line would traverse the Sun Lakes Country Club golf course.
- **AC Dysart Equestrian Park.** The proposed 115 kV El Casco-Banning subtransmission line would run along the northern side of the AC Dysart Equestrian Park which regularly hosts the City of Banning's Stagecoach Days celebration and caters to rodeos, western events, and equestrian recreation.

- **Lion's Recreation Park.** The proposed 115 kV El Casco-Banning subtransmission line would run approximately 0.3 mile west of Lion's Recreation Park in the City of Banning.

D.9.1.4.5 Fiber Optic System

The proposed fiber optic system would consist of approximately 55 miles of fiber optic cable to be installed both overhead on existing poles or towers and underground in existing conduits and substructures from the El Casco Substation to Maraschino, Banning, Zanja, Mentone, Crafton Hills, and San Bernardino Substations. The route of the proposed fiber optic system would pass through a mixture of residential, commercial, industrial, and recreational/open space land uses. The existing ambient noise levels along the line vary from relatively low to levels comparable with those found near the proposed El Casco Substation site. The following identifies sensitive recreational receptors that are near the proposed fiber optic system ROW and their approximate locations:

- **PGA of Southern California Golf Club.** The proposed fiber optic cable upgrade would run along the southwestern side of the PGA of Southern California Golf Club.
- **Oak Valley Golf Club.** The proposed fiber optic cable upgrade would run approximately 0.3 mile southwest of the Oak Valley Golf Club.
- **Pass Valley Park.** Pass Valley Park is located approximately 0.25 mile east of the proposed fiber optic cable upgrade route.
- **Community Park.** The proposed fiber optic cable upgrade route runs along the north side of the City of Redlands Community Park, which includes 18.2 acres of parkland with lighted baseball fields, tennis courts, and picnic and playground facilities.
- **Yucaipa Community Park.** Yucaipa Community Park is located approximately 0.4 mile west of the proposed fiber optic cable upgrade route in the City of Yucaipa.
- **Flag Hill Veterans Memorial Park.** The proposed fiber optic cable upgrade route runs adjacent to the Flag Hill Veterans Memorial Park in the City of Yucaipa. Flag Hill Veterans Memorial Park is located at the corner of Yucaipa Boulevard and Fremont Street.

D.9.1.4.6 Mill Creek Communications Site

The Mill Creek Communications Site is located on a ridge in the San Bernardino National Forest to the north of the City of Yucaipa. The nearest home is located approximately 0.5 mile to the east. Noise levels within the area are generally quiet.

D.9.2 Applicable Regulations, Plans, and Standards

Regulating environmental noise is generally the responsibility of local governments. However, the United States Environmental Protection Agency (USEPA) once published guidelines on recommended maximum noise levels to protect public health and welfare (USEPA, 1974), and the State of California maintains recommendations for local jurisdictions in the General Plan Guidelines published by the Governor's Office of Planning and Research (OPR, 2003). The following summarizes the federal and State recommendations and the local requirements related to noise levels.

D.9.2.1 Federal

There are no federal noise standards that directly regulate environmental noise. Table D.9-1 provides a summary of recommended noise levels for protecting public health and welfare with an adequate margin of safety. With regard to noise exposure of workers, the federal Occupational Safety and Health Administration (OSHA) establishes regulations to safeguard the hearing of workers exposed to occupational noise (29 CFR Section 1910.95, Code of Federal Regulations).

Table D.9-1. Examples of Protective Noise Levels Recommended by USEPA		
Effect	Maximum Level	Exterior or Interior Area
Hearing loss	L_{eq}(24 hours) < 70 dB	All areas.
Outdoor activity interference and annoyance	L_{dn} < 55 dB	Outdoors in residential areas and farms and other outdoor areas where people spend widely varying amounts of time and other places in which quiet is a basis for use.
	L_{eq} (24) < 55 dB	Outdoor areas where people spend limited amounts of time, such as schoolyards, playgrounds, etc.
Indoor activity interference and annoyance	L_{dn} < 45 dB	Indoor residential areas.
	L_{eq}(24) < 45 dB	Other indoor areas with human activities such as schools, etc.

Source: USEPA, 1974

D.9.2.2 State

The State of California requires each local government to perform noise surveys and implement a noise element as part of their general plan (OPR, 2003). Table D.9-2 shows the State guidelines for evaluating the compatibility of various land uses as a function of noise exposure.

Table D.9-2. Land Use Compatibility for Community Noise Environment

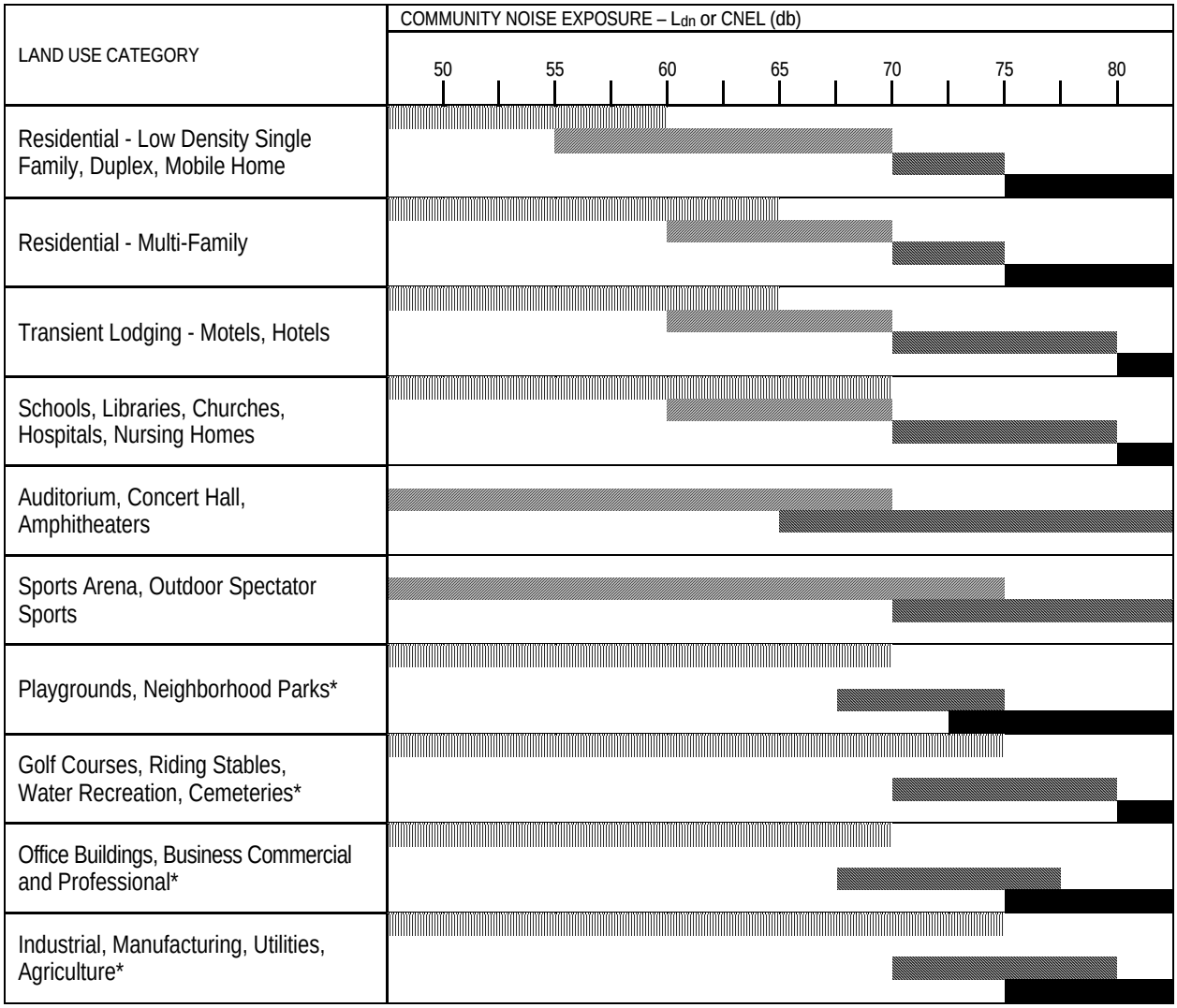


Table D.9-2. Land Use Compatibility for Community Noise Environment

	Normally Acceptable. Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
	Conditionally Acceptable. New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.
	Normally Unacceptable. New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
	Clearly Unacceptable. New construction or development should generally not be undertaken.

* These land use types do not include a conditionally acceptable level as defined by State of California General Plan Guidelines, Office of Planning and Research (OPR)
Source: OPR, 2003

D.9.2.3 Local

Each local government aims to protect its residents from intrusive noise. Many communities specifically restrict disturbing noises at night. The sections below summarize the applicable local rules and regulations that apply to the Proposed Project.

D.9.2.3.1 County of Riverside

The noise ordinance for Riverside County prohibits construction within one-quarter of a mile of an occupied residence unless it occurs between the hours of 6:00 a.m. and 6:00 p.m. (June through September) or between the hours of 7:00 a.m. and 6:00 p.m. (October through May). Exceptions to these standards are only allowed with the written consent of the building official (Ordinance No. 725, Chapter 1.16 of the Riverside County Code).

D.9.2.3.2 County of San Bernardino

The County of San Bernardino has developed noise level limits in its Noise Ordinance (Municipal Code Section 87.0901). The ordinance defines noise-sensitive land uses including residential uses, schools, hospitals, nursing homes, churches, and libraries.

The ordinance states that residential, commercial and industrial land uses shall not create, or be subjected to noise levels greater than 55 dB(A) L_{eq} from 7 am to 10 pm, and 45 dB(A) L_{dn} from 10 pm to 7 am for residential, 60 dB(A) L_{eq} at all times for commercial, and 70 dB(A) L_{eq} at all times for industrial. Any source that exceeds the standards for a period of 30 minutes or more shall be in violation of the noise ordinance.

The ordinance also establishes standards for maximum vibration levels. The ordinance states that no ground vibration shall be allowed which can be felt without the aid of instruments at or beyond the lot line, nor will any vibration be permitted which produces a particle velocity greater than or equal to 0.2 inch per second measured at or beyond the lot line.

Exempt noise and vibration sources include temporary construction, repair, or demolition activities which shall occur between 7:00 am and 7:00 pm except Sundays and federal holidays.

D.9.2.3.3 City of Banning

The City of Banning restricts noise affecting residential uses such that during any 15-minute period, daytime noise levels shall not exceed 60 dBA, and nighttime levels shall not exceed 50 dBA (City Ordinance #1138; Sec. 11D-05. Base ambient noise level). Exterior noise levels are not allowed to exceed 75 dBA at any time (City Ordinance #1138; Sec. 11D-08. Maximum nonresidential noise levels). Loud, unusual, and unnecessary noises are also prohibited, including equipment causing noise increases of more than 5 dBA over the ambient and back-up beepers that exceed 75 dBA.

The City of Banning allows construction activities to exceed noise ordinance limits between the hours of 7:00 a.m. and 6:00 p.m. provided that these activities do not at any time exceed 55 dBA for an interval of more than 15 minutes when measured in the interior of the nearest residence or school (Sec. 11D-09. Noises prohibited; unnecessary noise standard). The City Building Inspector may permit construction outside of these daytime hours if the official determines that public health and safety would not be impaired by the construction noise.

D.9.2.3.4 City of Beaumont

The City of Beaumont has adopted a Noise Ordinance, which is included in the Municipal Code. This ordinance limits activities occurring for any two-hour period that would affect residential land uses to a maximum daytime noise level of 70 dBA and a maximum nighttime noise level of 60 dBA. However, the ordinance allows construction activities to exceed these limits on weekdays between the hours of 7:00 a.m. and 6:00 p.m. (Section 9.02.070). The City Manager may elect to permit construction outside of these daytime hours if public health and safety would be protected.

D.9.2.3.5 City of Yucaipa

The Noise Ordinance for the City of Yucaipa contains maximum 24-hour noise level thresholds based on the affected land use (Section 87.09.05). For example, noise affecting residential land uses is not allowed to exceed 55 dB(A) over a 24-hour period. Minor deviations from this threshold are allowed based on shorter durations of noise (i.e. less than 30 minutes). Noise generated by temporary construction activities is exempt from these thresholds provided it occurs between the hours of 7 a.m. and 7 p.m. (not including Sundays and holidays). Emergency work by public utilities is exempt from this prohibition.

D.9.2.3.6 City of Calimesa

The City of Calimesa has developed noise level limits in its Noise Ordinance (Municipal Code Section 4.2.04). The ordinance states that single and low-density residential zones shall not be subjected to noise levels greater than 50 dBA L_{dn} and other residential uses shall not be subject to noise levels greater than 55 dBA L_{dn}. It also specifically states that electrical transmission lines are subject to these limits at or beyond six feet from the utility easement. The most stringent nighttime limit applicable to the Project is between 10 p.m. to 7 a.m. in single family and low-density residential zones where ambient noise levels must be below 40 dBA or 50 dBA L_{dn}.

The Calimesa Municipal Code (Section 4.2.08) includes exemptions from these limits for noise generated by construction activities, provided that the activities occur between 7:00 a.m. and 7:00 p.m. on weekdays or between 10:00 a.m. and 5:00 p.m. on weekends or holidays. No construction equipment is allowed to cause noise in excess of 75 dBA for more than eight hours during any 24-hour period when measured at a residential property line, and intermittent construction noise over 90 dBA during any 15-minute period is also prohibited.

D.9.2.3.7 City of Redlands

The City of Redlands has developed noise level limits in its Noise Ordinance (Municipal Code Chapter 8.06). The ordinance states that single- and multi-family residential districts shall not be subjected to exterior noise levels greater than 50 dBA between the hours of 10:00 p.m. and 7:00 a.m., and 60 dBA between the hours of 7:00 a.m. and 10:00 p.m. The ordinance also limits interior noise levels in residential districts to no more than 45 dBA anytime day or night. Commercial districts are limited to exterior noise levels of 60 dBA between the hours of 10:00 p.m. and 7:00 a.m., and 65 dBA between the hours of 7:00 a.m. and 10:00 p.m., while the maximum noise level in industrial districts is 75 dBA any time.

The City of Redlands Noise Ordinance also prohibits the operation of any device that creates a vibration that is above the vibration perception threshold of an individual at or beyond the property boundary of the source

if on private property, or at one hundred fifty (150) feet from the noise source if on a public space or public ROW.

The City of Redlands Municipal Code includes exemptions from these limits for noise generated by construction activities, provided that the activities occur between 7:00 a.m. and 6:00 p.m. on weekdays and Saturdays. All motorized equipment used in such activity must be equipped with functioning mufflers. No construction activities are allowed to take place at any time on Sundays or federal holidays. Also, the Noise Ordinance prohibits the operation of any tools or equipment used in construction, drilling, repair, alteration, or demolition work between the hours of 6:00 p.m. and 7:00 a.m., Monday through Saturday, such that the sound generated creates a noise disturbance across a residential or commercial real property line.

D.9.3 Environmental Impacts and Mitigation Measures for the Proposed Project

D.9.3.1 Significance Criteria

The noise significance criteria are based on the CEQA checklist in Appendix G of the State CEQA Guidelines, a review of the environmental documentation for other utility projects in California, as well as input from staff at the public agencies responsible for the environmental review. Noise impacts would be significant if one or more of the following conditions resulted from construction or operation of the Proposed Project:

- Expose persons to noise levels, or generation of noise levels in excess of, standards established in the local general plan or noise ordinance, or applicable standards of other agencies
- Cause a substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project
- Generate excessive groundborne vibration or groundborne noise levels
- Cause a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project
- For a Project located within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels

D.9.3.2 Applicant-Proposed Measures

Southern California Edison (SCE) has committed to implementing the three Applicant-Proposed Measures (APMs) presented in Table D.9-3 to reduce noise impacts associated with construction of the Proposed Project. These APMs are considered part of the Proposed Project and implementation of these measures would be monitored by SCE during construction, if the Project is approved.

Table D.9-3. Applicant-Proposed Measures to Reduce Noise Impacts

APM NOISE-1	All construction activities occurring in association with the Proposed Project would operate within the allowable construction hours as determined by the applicable local agency and presented earlier in this document.
APM NOISE-2	A noise control plan would be prepared for all work sites associated with the Proposed Project. The noise control plan would include, but not be limited to, the following: • Stockpiling and vehicle staging areas would be located as far away from occupied residences as possible, and screened from these uses by a solid noise attenuation barrier. • Temporary solid noise attenuation barriers constructed with ½-inch plywood (sound transmission coefficient rating of 20) would be used to break the line of sight between noise generating activities and the closest residential land uses. A noise attenuation barrier constructed in this fashion would attenuate noise by 8 to 12 db(A) depending on the distance of the barrier from the noise source and noise receptor. • All stationary construction equipment would be operated as far away from residential uses as possible. If this is not possible, the equipment shall be shielded with temporary sound barriers, sound aprons, or sound skins. • To the extent feasible, haul routes for removing excavated materials or delivery of materials from the site would be designed to avoid residential areas and areas occupied by noise sensitive receptors (e.g., hospitals, schools, convalescent homes, etc.). • Idling equipment would be turned off when not in use for periods longer than 20 minutes.
APM NOISE-3	SCE would notify all sensitive receptors within 500 feet of construction of the potential to experience significant noise levels during construction.

D.9.3.3 Proposed Project Impact Analysis

Impacts During Construction

Construction of the Project would require short-term use of cranes, augers, compressors, air tampers, generators, trucks, and other equipment, as identified in Section B (Project Description), Helicopters would be used at SCE's existing Mill Creek Communications Site within the San Bernardino National Forest for construction of the microwave system, and during installation of fiber optic cable at locations between the Cities of Redlands and Banning. Construction of foundations for new towers would require the use of a drill rig or large auger at most tower locations. During the anticipated 24 months necessary to fully construct the Proposed Project, concurrent activity would be necessary with multiple work crews at separate locations.

Typical noise levels at 50 feet for the types of construction equipment that would be used are listed in Table D.9-4. Construction activities within the Project ROW, staging areas, and substations would create both intermittent and continuous noises. Examples of intermittent construction noise would be the noise from passing trucks, loading operations, or moments of drilling, and continuous noise would be sustained by idling equipment or pumps and generators that operate at constant speeds. The maximum intermittent construction noise levels would range from 84 to 96 dBA at 50 feet during earthmoving for road construction or up to approximately 95 dBA during helicopter operations for installing the line or certain structures. Continuous noise levels from construction would be lower because most equipment would not be operated steadily. At 50 feet, continuous noise levels would reach a maximum of approximately 77 dBA. At 100 feet, these levels would range up to 71 dBA, and at 200 feet, 65 dBA. These levels would diminish over additional distance and could be reduced further by intervening structures and other noise sources within the area.

Construction would also cause noise off-site, primarily from commuting workers and from trucks and helicopters needed to bring materials to the construction sites. Staging for subtransmission tower construction and conductor pulling would be at El Casco Substation as well as the Banning Substation. From these points, some workers would drive or ride in construction vehicles to work areas along the subtransmission line ROW. Haul trucks would make trips to bring poles, conductor line, and other materials to the construction sites and remove excavated material and waste. The peak noise levels associated with passing trucks and commuting worker vehicles would be approximately 75 dBA at 50 feet.

Table D.9-4. Typical Noise Levels of Construction Equipment	
Equipment Type	Range of Noise Level (dBA at 50 ft.)
Earthmoving	
Front loaders	72-84
Backhoes	72-93
Tractors, Dozers	76-96
Scrapers, Graders	80-93
Pavers	86-88
Trucks	82-94
Materials Handling	
Concrete mixers/millers	75-88
Concrete pumps/spreaders	81-83
Cranes (movable)	75-86
Cranes (derrick)	86-88
Stationary	
Pumps	69-71
Generators	71-82
Compressors	74-86
Drill Rigs	70-85
Project-Specific	
Helicopters (in flight, at 150 feet)	92- 95
Pile Drivers	90-101

Source: FTA 1995

Impact N-1: Construction activities would temporarily increase local noise levels, impacting sensitive receptors and exceeding applicable noise regulations (Class III).

El Casco Substation. The nearest sensitive receptor is an existing residential unit located approximately 1,100 feet east of the site on the north side of San Timoteo Canyon Road. The area surrounding the site is generally rural and sparsely inhabited. Adjacent to the proposed substation site is a riparian area inhabited by two State and federally endangered species, the southwestern willow flycatcher and the least Bell's vireo. Noise impacts to endangered species are discussed in Draft EIR (December 2007) Section D.4, Biological Resources.

Although construction activities may periodically be audible at the nearest residential unit, construction noise levels would not reach a level that would be adverse due to the distance from the substation site. Additionally, construction activities occurring on the substation site would be limited to the allowable construction hours as defined by the County of Riverside's noise regulations. As discussed in Section D.9.3.2 (Applicant-Proposed Measures), SCE has committed to implementing the three APMs presented in Table D.9-3 to reduce noise impacts associated with construction. These APMs are considered part of the Proposed Project and implementation of these measures would be monitored by SCE during construction. The implementation of these APMs would reduce temporary construction noise impacts associated with the Proposed Project to a less-than-significant (Class III) level.

Banning Substation. Work conducted at the existing Banning Substation would involve upgrades to the existing equipment that would allow the integration of this facility into the new El Casco System. These improvements would require the transportation of materials to the site and the use of construction worker

crews, lifting equipment, graders, and loaders. As shown in Table D.9-4, these operations would likely generate short-term and intermittent noise of 78 to 93 dB(A) at the substation site for a period of up to eight months. Construction activities at the substation would not create a significant permanent increase in ambient noise levels.

However, construction noise-levels generated at the Banning Substation may be compounded by the existing vehicular traffic utilizing Interstate 10 (located approximately 700 feet north), the freight railroad (located approximately 550 feet north) and the intermittent twin-engine take-offs and landings from Banning Airport (end of runway is located approximately 4,100 feet to the east of the substation). The nearest residences are located approximately 600-800 feet away from the substation.

Based on the short term and intermittent noise levels generated by construction activities required at the existing Banning Substation, and compliance with the City of Banning's noise regulations, impacts are considered to be less than significant, even with the probable compounding of noise generators in the Project area. As discussed in Section D.9.3.2 (Applicant-Proposed Measures), SCE has committed to implementing the three APMs presented in Table D.9-3 to reduce noise impacts associated with construction. These APMs are considered part of the Proposed Project and implementation of these measures would be monitored by SCE during construction. The implementation of these APMs would reduce temporary construction noise impacts associated with the Proposed Project to a less-than-significant (Class III) level.

Zanja Substation. Similar to the construction activities occurring at the Banning Substation, upgrades to the existing infrastructure at the Zanja Substation would be required to allow for integration of the substation into the El Casco System. These improvements and upgrades would require the transportation of materials to the site, the use of construction worker crews, and the use of lifting equipment, graders, and loaders. As shown in Table D.9-4, these operations would likely generate short-term and intermittent noise of 78 to 93 dB(A) on the substation site for a period of up to six months. The nearest sensitive receptors to Zanja Substation are residences located approximately 600 feet to the southwest and southeast. Based on the short-term and intermittent noise levels generated by construction activities required at the existing Zanja Substation, and compliance with the City of Yucaipa's noise regulations, impacts are considered to be less than significant. As discussed in Section D.9.3.2 (Applicant-Proposed Measures), SCE has committed to implementing the three APMs presented in Table D.9-3 to reduce noise impacts associated with construction. These APMs are considered part of the Proposed Project and implementation of these measures would be monitored by SCE during construction. The implementation of these APMs would reduce temporary construction noise impacts associated with the Proposed Project to a less-than-significant (Class III) level.

Southerly 115 kV Subtransmission Line Route. Construction of the 115 kV subtransmission line would be completed within one year. Construction activities at individual locations would be completed in a matter of days to weeks. Therefore, construction activities would not create a long-term increase in ambient noise levels along the line route. Equipment operation would be the primary noise source associated with construction activities of the southerly 115 kV subtransmission line.

The transport and installation of subtransmission line support structures, conductors, and electrical loop-ins would require the use of heavy equipment. Grading would also be required for creating staging areas, foundation pads, and conductor pull areas. Noise levels resulting from construction would be dependent on several factors including the number and type of equipment operating, the level of operation, and the distance between sources and sound and vibration receptors. The use of this type of equipment would generate noise levels consistent with the noise levels identified in Table D.9-4. Noise levels at the closest sensitive receptors would be approximately 91 dBA at 50 feet, and 85 dBA at a distance of 100 feet away.

Residents and other sensitive receptors located near subtransmission line construction could be subjected to intermittent construction noise levels that could be considered significant if left unmitigated. Construction at any structure site would not be sustained for more than a few days and would last no more than ten hours

per day. Heavy construction equipment typically does not operate continuously in one position all day long, which would reduce the impacts to sensitive receptors. Average construction noise levels would cause significant noise impacts at distances less than 200 feet. Residents and sensitive receptors located at a distance greater than 200 feet would not experience significant impacts during typical construction activities. The Cities of Banning and Beaumont and the County of Riverside allow for construction activities within limited timeframes in their noise ordinances. Those local ordinances limit the generation of construction noise to the least sensitive hours of the day and week. As discussed in Section D.9.3.2 (Applicant-Proposed Measures), SCE has committed to implementing the three APMs presented in Table D.9-3 to reduce noise impacts associated with construction. These APMs are considered part of the Proposed Project and implementation of these measures would be monitored by SCE during construction. The implementation of these APMs would reduce temporary construction noise impacts associated with the Proposed Project to a less-than-significant (Class III) level.

Mill Creek Communications Site. Construction of the proposed communication tower at SCE's existing Mill Creek Communications Site would require the transport of materials, the use of construction crews, the limited use of heavy equipment such as lift trucks and cranes, and possibly the use of a helipcopter. These activities would generate temporary and intermittent noise levels of up to 95 dBA for approximately 45 days.

The Mill Creek Communications Site is located on a ridge within the San Bernardino National Forest. The nearest sensitive receptor (an existing residential unit) is located approximately 0.5 mile away to the east. A hillside to the southwest of the site would help block soundwaves from traveling to the nearest sensitive receptor. All construction at this location would be in compliance with the County of San Bernardino noise ordinance, which limits construction hours. As discussed in Section D.9.3.2 (Applicant-Proposed Measures), SCE has committed to implementing the three APMs presented in Table D.9-3 to reduce noise impacts associated with construction. These APMs are considered part of the Proposed Project and implementation of these measures would be monitored by SCE during construction. The implementation of these APMs would reduce temporary construction noise impacts associated with the Proposed Project to a less-than-significant (Class III) level.

Fiber Optic System. The proposed 55-mile-long fiber optic system would primarily be installed on existing poles in the cities of Beaumont, Calimesa, Yucaipa, Redlands, and unincorporated areas of Riverside and San Bernardino counties. A total of approximately eight miles of the fiber optic system would be installed within existing underground conduits in four locations. Construction (installation) of the fiber optic system would require bucket trucks, pick-up trucks, a drum puller, and a fork lift. Materials and supplies would be delivered to staging locations along the fiber optic system route. The use of this type of equipment would generate noise levels consistent with the noise levels identified in Table D.9-4.

Construction equipment typically generates noise levels up to approximately 91 dBA at 50 feet. Noise intensity dissipates with distance. Generally, airborne noise decreases by 6 dBA with each doubling of distance (FTA, 1995). Noise levels at the closest sensitive receptors would be approximately 91 dBA at 50 feet, and 85 dBA at a distance of 100 feet away.

Residents and other sensitive receptors closer to fiber optic system construction could be subjected to intermittent construction noise levels that could be considered significant if left unmitigated. Construction at any structure site would not be sustained for more than a few days and would last no more than ten hours per day. Heavy construction equipment typically does not operate continuously in one position all day long, which would reduce the impacts to sensitive receptors. Average construction noise levels would cause significant noise impacts at distances less than 200 feet. Residents and sensitive receptors located at a distance greater than 200 feet would not experience significant impacts during typical construction activities. As discussed in Section D.9.3.2 (Applicant-Proposed Measures), SCE has committed to implementing the three APMs presented in Table D.9-3 to reduce noise impacts associated with construction. These APMs are considered part of the Proposed Project and implementation of these measures would be monitored by SCE during construction. The implementation of these APMs would

reduce temporary construction noise impacts associated with the Proposed Project to a less-than-significant (Class III) level.

Construction Noise Summary. Receptors located directly adjacent to construction sites would experience temporary significant noise impacts from construction activities. Furthermore, construction-related traffic would result in temporary intermittent noise impacts along vehicle routes. However, as discussed in Section D.9.3.2 (Applicant-Proposed Measures), SCE has committed to implementing the three APMs presented in Table D.9-3 to reduce noise impacts associated with construction. These APMs are considered part of the Proposed Project and implementation of these measures would be monitored by SCE during construction. The implementation of these APMs would reduce temporary construction noise impacts associated with the Proposed Project to a less-than-significant (Class III) level.

Impact N-2: Ground-borne vibration could cause a temporary nuisance during construction (Class III).

Ground-borne vibration from heavy equipment transport, grading, tamping, and/or pile-driving activities may be perceptible to receptors immediately adjacent to the construction work. The peak vibration levels from pile driving activities at 50 feet would likely be perceptible for the brief moment of impact; and other construction activities such grading or a heavy truck passing over large potholes or bumps, could also produce perceptible vibration within about 50 feet. Although the detectability of ground-borne vibration is highly dependent on the soil type at the construction site, the type of equipment used, and the structure of the receptor, construction could cause annoyance for a sensitive receptor within about 50 feet of construction work. This impact could occur during construction of the Proposed Project, including the overhead subtransmission and fiber optic lines, underground fiber optic lines, or substation work.

El Casco Substation. Earth moving and compaction activities are the two most likely sources of ground vibrations associated with construction of the proposed substation. While there are no buildings on the proposed substation site, there are existing buildings (residential units) in the general Project area, with the nearest being approximately 1,100 feet from the site. At that distance, any ground vibration generated at the Project site would not be discernable. As discussed in Section D.9.3.2 (Applicant-Proposed Measures), SCE has committed to implementing the three APMs presented in Table D.9-3 to reduce noise impacts associated with construction. These APMs would also reduce temporary construction vibration impacts associated with the Proposed Project to a less-than-significant (Class III) level.

Banning Substation. Since construction activities occurring at the Banning Substation would cause very minor vibrations that would not be noticeable beyond the substation boundaries, it would not generate vibration levels that would harm buildings or cause irritation to sensitive individuals. As discussed in Section D.9.3.2 (Applicant-Proposed Measures), SCE has committed to implementing the three APMs presented in Table D.9-3 to reduce noise impacts associated with construction. These APMs would also reduce temporary construction vibration impacts associated with the Proposed Project to a less-than-significant (Class III) level.

Zanja Substation. Construction activities occurring at the Zanja Substation would cause very minor vibrations that would not be noticeable beyond the substation boundaries, thus it would not generate vibration levels that would harm buildings or cause irritation to sensitive individuals. As discussed in Section D.9.3.2 (Applicant-Proposed Measures), SCE has committed to implementing the three APMs presented in Table D.9-3 to reduce noise impacts associated with construction. These APMs would also reduce temporary construction vibration impacts associated with the Proposed Project to a less-than-significant (Class III) level.

Southerly 115 kV Subtransmission Line Route. Construction of the subtransmission line would require the use of an air tamp to compact the ground around the poles when they are erected. Vibration created from the air tamp would dissipate quickly and would not create impacts to sensitive receptors further than 50 feet from the area being compacted. However, there are pole sites located within 50 feet of sensitive receptors.

As discussed in Section D.9.3.2 (Applicant-Proposed Measures), SCE has committed to implementing the three APMs presented in Table D.9-3 to reduce noise impacts associated with construction. These APMs would also reduce temporary construction vibration impacts associated with the Proposed Project to a less-than-significant (Class III) level.

Mill Creek Communications Site. Since construction activities occurring at the Mill Creek Communications Site would cause very minor vibration that would not be noticeable beyond the site boundaries, it would not generate vibration levels that would harm buildings or cause irritation to sensitive individuals. Although the use of a helicopter at this construction location could generate vibration to nearby receptors, as discussed in Section D.11, Transportation and Traffic, Mitigation Measure T-9a (Helicopter Lift Plan) requires that SCE prepare a Helicoptor Lift Plan to be approved by the FAA prior to all "skycrane" construction helicopter operations. This mitigation measure requires SCE to coordinate with any potentially affected residents (providing a minimum of 30 days notice) to minimize the duration of the necessary work and any resultant inconvenience. Furthermore, as discussed in Section D.9.3.2 (Applicant-Proposed Measures), SCE has committed to implementing the three APMs presented in Table D.9-3 to reduce noise impacts associated with construction. These APMs would also reduce temporary construction vibration impacts associated with the Proposed Project to a less-than-significant (Class III) level.

Fiber Optic System. The fiber optic system requires the installation of four new poles in the vicinity of the El Casco Substation. Installation would require the use of an air tamp to compact ground around the poles. Vibration created from the air tamp would dissipate quickly and would not create impacts to sensitive receptors further than 50 feet from the area being compacted. However, pole sites may be located within 50 feet of sensitive receptors. As discussed in Section D.9.3.2 (Applicant-Proposed Measures), SCE has committed to implementing the three APMs presented in Table D.9-3 to reduce noise impacts associated with construction. These APMs would also reduce temporary construction vibration impacts associated with the Proposed Project to a less-than-significant (Class III) level.

Construction Vibration Summary. Receptors located directly adjacent to construction sites could experience temporary vibration impacts from construction activities. Furthermore, construction-related traffic would result in temporary intermittent vibration impacts along vehicle routes. However, as discussed in Section D.9.3.2 (Applicant-Proposed Measures), SCE has committed to implementing the three APMs presented in Table D.9-3 to reduce noise impacts associated with construction. These APMs are considered part of the Proposed Project and implementation of these measures would be monitored by SCE during construction. The implementation of these APMs would reduce temporary vibration noise impacts associated with the Proposed Project to a less-than-significant (Class III) level.

Impact N-3: Noise from operation of the overhead subtransmission line (Class III).

As the Banning Substation, Zanja Substation, and Mill Creek Communications Site are already in operation as unmanned facilities, the proposed modifications at the substations and communications site would not result in significant increases in noise generation. Operation of the proposed new El Casco Substation is expected to generate noise levels between 40 and 53 dBA in proximity to the substation (SCE, 2007a). When this noise level is compared to those levels identified in Table D.9-2 (Land Use Compatibility for Community Noise Environment), operational noise from the proposed El Casco Substation is considered acceptable and within all applicable noise ordinance regulations. Therefore, the operation of the El Casco Substation would not generate noise levels that would impact sensitive receptors. Therefore, operational noise impacts at the substations and communications site would be less than significant (Class III).

As discussed above in Section D.9.1.3 (Noise Environment), the southern portion of the 115 kV subtransmission line would be routed through the Cities of Banning, Beaumont, and unincorporated portions of Riverside County within approximately 0.25 mile (1,320 feet) of residential homes in the vicinity of the Maraschino Substation (City of Beaumont); residential homes near Manzanita Park Road (County of Riverside); residential neighborhoods between Highland Springs Avenue and Highland Home Road (City of

Banning); and isolated residential homes south of the existing Banning Substation (City of Banning). The Proposed Project would be located within an existing SCE ROW through these areas.

The permanent noise sources that would occur with operation of the 115 kV subtransmission line are limited to corona noise and routine inspection and maintenance of the line. SCE performed corona noise calculations for the El Casco System Project in the area between Banning and Maraschino Substations on May 29, 2008, using the BPA "Corona" program (for methodology see Section D.9.1.2.2, Audible Noise Calculations Methodologies) (SCE, 2008a).

The results of the corona noise calculations are shown in Figure D.9-3, which provides a comparison of the AN levels of the existing H-frame single-circuit 115 kV subtransmission line and the proposed new double-circuit 115 kV subtransmission line. As shown in Figure D.9-3, the proposed double-circuit 115 kV subtransmission line design actually produces less ambient noise compared to the existing H-frame single-circuit 115 kV subtransmission line design under the L_{50} rainy condition (SCE, 2008a). The decrease over existing conditions is attributed to the replacement of existing 115 kV conductor wire with larger conductor wire, which decreases corona noise generation. In addition, SCE plans to install polymer (Silicon Rubber) insulators when rebuilding the existing subtransmission lines (SCE, 2008c). This material is hydrophobic (i.e., repels water), and is able to transfer this hydrophobicity to surface contaminants (e.g., soot, dirt, etc.) (SCE, 2008c). This inhibits contaminant build-up on the insulators' surface, which reduces the potential for corona noise to be generated at the pole locations (SCE, 2008c). More specifically, the proposed double-circuit 115 kV design produces approximately 24 dBA directly under the centerline of the equipment, compared to approximately 31 dBA generated by the existing single-circuit 115 kV design (SCE, 2008a). As described earlier in Section D.9.1.2.1 (Factors Contributing to Corona Generation) and Section D.9.1.2.2 (Audible Noise Calculation Methodologies), corona noise generation increases whenever moisture accumulates on the conductor. Generally, conductor heating due to current flow will discourage formation of water droplets during fog or high humidity. Therefore, audible noise levels are highest during heavy rain (or heavy wet snow). Therefore, SCE calculated existing and estimated Proposed Project 115 kV line corona noise using the median AN level during measurable rain (per EPRI and BPA methods).

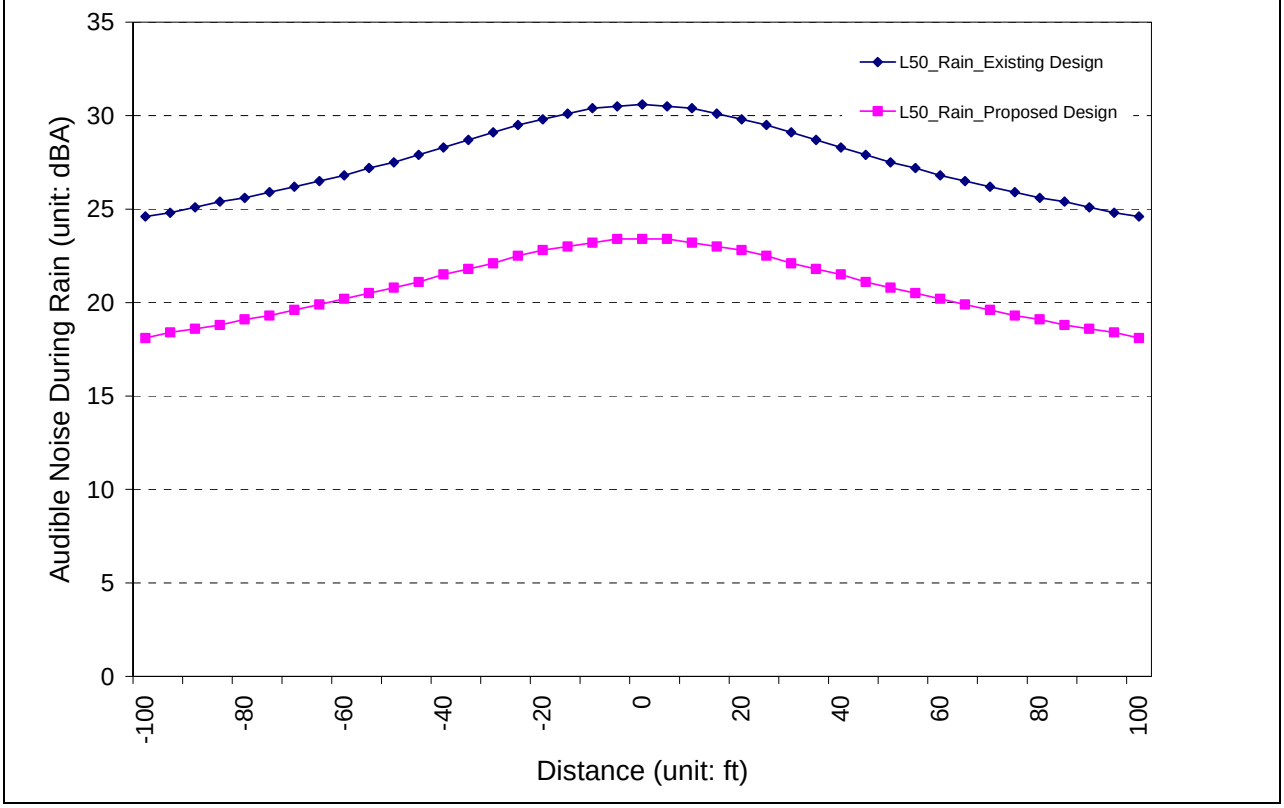
Despite differences in corona noise levels, both existing and proposed 115 kV subtransmission line designs contribute corona noise to the ambient noise levels that are significantly lower than typical outdoor day-night average values for a rural residential location, as determined by the USEPA (Figure D.9-2, above). As determined by the USEPA, average ambient noise levels for a typical rural residential location are higher than 31 dBA. Therefore the corona noise generated by the proposed subtransmission line would be significantly less than the existing baseline ambient noise levels.

In addition, it should be noted that expected corona noise from the Proposed Project in the vicinity of residential areas would not exceed current ambient noise levels adjacent to the ROW, and therefore would be in compliance with the various local general plan standards and noise ordinances. As such, corona noise generated by the Proposed Project would result in a less-than-significant impact (Class III).

Impact N-4: Noise from inspection and maintenance activities (Class III).

Routine inspection and maintenance of the subtransmission lines, substation facilities, and fiber optic communication facilities would be accomplished with ground access crews periodically. This would cause short-term or intermittent increases in noise along the routes and within substation boundaries. These inspections or maintenance expected as a result of the Proposed Project are not expected to be beyond the inspections and maintenance that is currently required within the ROW. Any noise associated with inspections and maintenance would be temporary and short term, and conducted in accordance with all applicable noise regulations. As such, the noise impact from these activities would be less than significant (Class III).

Figure D.9-3
Comparison of Audible Corona Noise Levels
(Existing H-Frame 115 kV Design vs. Proposed Double-Circuit 115 kV Design)



Source: SCE, 2008a
Note: Corona noise levels were modeled for the existing H-frame single-circuit 115 kV line and the proposed new double-circuit 115 kV line. Other sources of ambient noise were not modeled.

D.9.4 CPUC's Northerly Route Alternative Option 3

As shown in Draft EIR Figure C-1, CPUC's Northerly Route Alternative Option 3, the main difference between the CPUC's Northerly Route Alternative Option 3 (Route Alternative Option 3) and the Proposed Project is the routing of the 115 kV subtransmission line. The Route Alternative Option 3 would occur along a total of 21.8 miles and would require the acquisition of additional ROWs for a distance of approximately two miles along the northerly 115 kV subtransmission line route. This new route would result in a change to the receptors impacted by both construction and operational noise generated by the Route Alternative Option 3 as compared to the Proposed Project. In addition, because the Route Alternative Option 3 would be approximately 6.4 miles greater in length, it would increase the distance by which both construction and operational noise impacts would occur.

D.9.4.1 CPUC's Northerly Route Alternative Option 3 – Environmental Setting

The Route Alternative Option 3 noise settings would be identical to those described above in Section D.9.1.3, Noise Environment, for the following locations: El Casco Substation Site (Section D.9.1.4.1), Banning Substation (Section D.9.1.4.2), Zanja Substation (Section D.9.1.4.3), Mill Creek Communications Site (Section D.9.1.4.6), and the Fiber Optic System (Section D.9.1.4.5). However, the 115 kV subtransmission line route for the proposed Route Alternative Option 3 would result in a change to the existing ambient noise sources and sensitive receptors located along the proposed 115 KV subtransmission line route.

The Route Alternative Option 3 115 kV subtransmission line would be routed through the Cities of Banning, Beaumont, and Calimesa. In general, the proposed Route Alternative Option 3 115 kV line route would pass through uninhabited areas with relatively low ambient noise levels. However, in some locations, the proposed Route Alternative Option 3 115 kV line route would pass near or through residential neighborhoods. The following discusses ambient noise sources and sensitive residential receptors along each segment of the proposed Route Alternative Option 3 115 kV subtransmission line ROW based on their identification in Figure C-1, CPUC Northerly Route Alternative - Option 3.

D.9.4.1.1 Construction of the New El Casco to Banning Subtransmission Line - Segment 1 (Red Line shown on Figure C-1)

The primary noise source in the vicinity of the Route Alternative Option 3 new El Casco to Banning subtransmission line Segment 1 alignment (Red Line shown on Figure C-1) is vehicle traffic on roadways and freeways in the immediate vicinity of the ROW. As shown in Figure C-2, Location of Northerly Route Alternative 115 kV Subtransmission Lines within Existing SCE ROW, this segment of ROW currently contains three existing 220 kV lines, which are active and generate corona discharge noise within the ROW. Medium-density residential areas are located approximately 600 feet along the corridor in the City of Banning at the "Zanja Break-off" along Hillside Drive at Omar Street. In the City of Beaumont, increased residential density occurs, and the land uses that surround the corridor include residences (including mobile homes), Beaumont High School and Junior High, and Nobel Creek Park; all within approximately 650 feet of the ROW.

D.9.4.1.2 Construction of the New El Casco to Banning Subtransmission Line - Segment 2 (Grey Line shown on Figures C-1 and C-3)

The primary noise source in the vicinity of the Route Alternative Option 3 new El Casco to Banning subtransmission line Segment 2 alignment (Grey Line shown on Figures C-1 and C-3) is vehicle traffic on roadways and freeways in the immediate vicinity of the ROW. An additional noise source along this segment is a large mining operation located within the eastern portion of the City of Banning. In addition to on-site mining activity noise, this type of land use also generates noise through the use of large trucks along the roadways in the area. The Banning Airport, which may cause elevated noise levels near the ROW, is located approximately 0.5 mile southeast of the route, south of I-10 on the eastern side of Banning. This segment of ROW currently contains existing active 220 kV transmission, 115 kV subtransmission, and various distribution lines creating corona discharge noise within the ROW.

Medium-density residential areas are located within approximately 500 feet of the alignment along the route in the City of Banning, concentrated along Summit Drive, Blanchard Street, Hathaway Street, and Williams Street. Also located near this segment is the Gilman Ranch, which is listed on the National Register of Historic Places and the California Register of Historic Places, and contains significant historic and prehistoric resources and may be considered a sensitive noise receptor. In addition, there are residential developments that are planned for construction, are currently under construction, and/or are recently inhabited along this segment of ROW, particularly in the northern portion of the City of Banning.

D.9.4.1.3 Construction of the New El Casco to Banning Subtransmission Line - Segment 2 (Purple Line shown on Figures C-1 and C-3)

The primary noise source in the vicinity of the Route Alternative Option 3 new El Casco to Banning subtransmission line Segment 2 alignment (Purple Line shown on Figures C-1 and C-3) is vehicle traffic on roadways and freeways in the immediate vicinity of the ROW. The Banning Airport, which may cause elevated noise levels near the ROW, is located approximately 600 feet east of this segment. This portion of the route currently contains an existing 115 kV active line creating corona discharge noise within the ROW. Medium-density residential areas are located within approximately 500 feet along the corridor in the City of Banning, concentrated along East Barbour Street.

D.9.4.1.4 Upgrades to the Existing Banning to Maraschino Subtransmission Line (Yellow Line shown on Figure C-1)

The primary noise source in the vicinity of the proposed Banning to Maraschino subtransmission line upgrades (Yellow Line shown on Figures C-1 and C-3) is vehicle traffic on roadways and freeways in the immediate vicinity of the ROW. The Banning Airport, which may cause elevated noise levels near the ROW, is located approximately 600 feet east of this segment. This segment of ROW currently contains an existing single-circuit 115 kV subtransmission line energized at 115 kV (SCE, 2008b). It serves as an emergency line to Maraschino Substation in the event the preferred line is not operational. Therefore, the emergency line must stand ready at any time to carry load for Maraschino Substation if the preferred line is ever unable to do so. Since this line is energized, it generates corona-induced audible noise (SCE, 2008b). Medium-density residential areas are located within approximately 500 feet along the corridor in the City of Banning, concentrated along Charles Street, Wesley Street, and Porter Street.

D.9.4.1.5 Upgrades to the Existing Banning to Maraschino Subtransmission Line (Green Line shown on Figure C-1)

The primary noise source in the vicinity of the Route Alternative Option 3 Banning to Maraschino subtransmission line upgrades (Green Line shown on Figures C-1 and C-3) is vehicle traffic on roadways and freeways in the immediate vicinity of the ROW. This segment of ROW currently contains an existing single-circuit 115 kV subtransmission line energized at 115 kV (SCE, 2008b). It serves as an emergency line to Maraschino Substation in the event the preferred line is not operational. Therefore, the emergency line must stand ready at any time to carry load for Maraschino Substation if the preferred line is ever unable to do so. Since this line is energized, it generates corona-induced audible noise (SCE, 2008b). While the majority of this segment would pass through uninhabited areas, the alignment traverses one medium-density residential area within the City of Banning, referred to as the Sun Lakes Community. There is also one low-density residential area located within approximately 500 feet of the corridor in the City of Beaumont at the Maraschino Substation junction. Further sensitive receptors along this segment include the Sun Lakes Country Club, AC Dysart Equestrian Park, and Lion's Recreation Park. In addition, there are residential developments that are planned for construction, are currently under construction, and/or are recently inhabited along this segment of ROW.

D.9.4.1.6 Upgrades to the Existing Vista to Maraschino to San Bernardino 115 kV Subtransmission Lines (Blue Line shown on Figure C-1)

The primary noise source in the vicinity of the Route Alternative Option 3 Vista to Maraschino to San Bernardino subtransmission line upgrades (Blue Line shown on Figures C-1 and C-3) is vehicle traffic on roadways and freeways in the immediate vicinity of the ROW. In the southern portion of the City of Beaumont, the Union Pacific Railroad would create noise along the portion of the Route Alternative Option 3 alignment in proximity to the train lines. This segment of ROW currently contains an existing 115 kV active line creating corona discharge noise within the ROW. While the majority of this segment would pass through uninhabited areas, one low-density residential area is located within approximately 500 feet of the corridor in the City of Beaumont at the Maraschino Substation junction.

D.9.4.1.7 Applicable Regulations, Plans, and Standards

The Route Alternative Option 3 115 kV subtransmission line would be routed through the Cities of Banning, Beaumont, and Calimesa. The applicable local noise rules and regulations for these Cities are described above in Section D.9.2.3.3 (City of Banning), D.9.2.3.4 (City of Beaumont), and D.9.2.3.6 (City of Calimesa). These identified applicable noise regulations would apply to the Route Alternative Option 3.

D.9.4.2 CPUC's Northerly Route Alternative Option 3 – Environmental Impacts and Mitigation Measures

The Route Alternative Option 3 noise impacts would be identical to those described above in Section D.9.3.3, Proposed Project Impact Analysis, for the following locations: El Casco Substation Site, Banning Substation, Zanja Substation, Mill Creek Communications Site, and the Fiber Optic System. Therefore, the following analysis is focused on the new route for the proposed Route Alternative Option 3 115 kV subtransmission line. For this analysis, it is assumed that all SCE APMs, as presented in Section D.9.3.2, Applicant-Proposed Measures (Table D.9-3, Applicant-Proposed Measures to Reduce Noise Impacts), would be applicable to the proposed Route Alternative Option 3.

Impact N-1: Construction activities would temporarily increase local noise levels, impacting sensitive receptors and exceeding applicable noise regulations (Class III).

As the proposed Route Alternative Option 3 115 kV line is linear, construction activities at individual locations would be completed in a matter of days to weeks. Therefore, construction activities would not create a long-term increase in ambient noise levels along the line route. Heavy construction equipment operation would be the primary noise source associated with construction activities of the Route Alternative Option 3 115 kV subtransmission line. Receptors located directly adjacent to construction sites would experience temporary significant noise impacts from construction activities. Furthermore, construction-related traffic would result in temporary intermittent noise impacts along vehicle routes. However, as discussed in Section D.9.3.2 (Applicant-Proposed Measures), SCE has committed to implementing the three APMs presented in Table D.9-3 to reduce noise impacts associated with construction. These APMs are considered part of the Route Alternative Option 3 and implementation of these measures would be monitored by SCE during construction. The implementation of these APMs would reduce temporary construction noise impacts associated with Route Alternative Option 3 to a less-than-significant (Class III) level.

Impact N-2: Ground-borne vibration could cause a temporary nuisance during construction (Class III).

Ground-borne vibration from heavy equipment transport, grading, tamping, and/or pile-driving activities may be perceptible to receptors immediately adjacent to the location of construction work creating vibration. Receptors located directly adjacent to construction sites could experience temporary vibration impacts from construction activities. Furthermore, construction-related traffic would result in temporary intermittent vibration impacts along vehicle routes. However, as discussed in Section D.9.3.2 (Applicant-Proposed Measures), SCE has committed to implementing the three APMs presented in Table D.9-3 to reduce noise impacts associated with construction. These APMs are considered part of the Route Alternative Option 3 and implementation of these measures would be monitored by SCE during construction. The implementation of these APMs would reduce temporary construction generated vibration impacts associated with the Route Alternative Option 3 to a less-than-significant (Class III) level.

Impact N-3: Noise from operation of the overhead subtransmission line (Class III).

The permanent noise sources that would occur with operation of the Route Alternative Option 3 are limited to the corona effect of the 115 kV subtransmission line and routine inspection and maintenance of the line. As discussed above in Section D.9.4.1 (CPUC's Northerly Route Alternative Option 3 – Environmental Setting), the Route Alternative Option 3 115 kV subtransmission line would be routed through the Cities of Banning, Beaumont, and Calimesa with a number of residential homes and other sensitive receptors in the immediate vicinity of the proposed ROW.

Within the new El Casco to Banning subtransmission line Segment 1 (Red Line shown on Draft EIR Figure C-1), a new 115 kV subtransmission line would be created within an existing SCE 220 kV ROW. The

proposed new 115 kV subtransmission line would be located in existing SCE ROW between existing 220 kV lines, which are active and generate corona discharge noise within the ROW. It is unlikely that the corona noise generated by the new 115 kV line would increase the overall ambient noise conditions in the immediate area of the ROW to a significant level due to the level of noise presently generated by the existing higher voltage 220 kV lines and the internal location of the proposed 115 kV line between these existing lines.

Route Alternative Option 3 activities within the new El Casco to Banning subtransmission line Segment 2 (Grey Line shown on Draft EIR Figures C-1 and C-3) would result in 5.6 miles of existing 115 kV single-circuit subtransmission line to be replaced with new, higher capacity single-circuit 115 kV subtransmission line. Along this segment, support structures would be replaced within new structures in existing ROWs to increase the capacity of the new El Casco-Banning 115 kV. In several locations along this segment, new single-circuit 115 kV line would be overbuilt on existing City of Banning distribution poles containing active electrical line. As this is a different existing 115 kV line as that located within the Proposed Project ROW, due to the similarities in voltage and line configuration, it is assumed that the existing 115 kV line within this segment currently emits corona discharge noise similar to the existing 115 kV line, SCE provided existing corona noise level data to, as presented in Figure D.9-3. Furthermore, it is assumed that corona noise generated by this new 115 kV line proposed as part of Route Alternative Option 3 would be identical to that calculated for the Proposed Project as presented in Figure D.9-3. Therefore, receptors along this segment would be not be exposed to a permanent increase in ambient noise levels resulting from corona noise over existing conditions.

Operation of the Route Alternative Option 3 within the new El Casco to Banning subtransmission line Segment 2 (Purple Line shown on Draft EIR Figures C-1 and C-3) SCE would construct the new 115 kV subtransmission line where its existing 115 kV subtransmission line is within existing easements by rebuilding approximately 0.2 miles of existing double-circuit wood poles with double-circuit steel poles. From Williams Street, SCE would have to take the line across Interstate 10 freeway (I-10) to Banning Substation. As existing 115 kV subtransmission line occurs within this segment, the rebuilding of existing double-circuit wood poles with double-circuit steel poles would not generate a new permanent noise source along this segment of Route Alternative Option 3.

Route Alternative Option 3 activities within the existing Banning to Maraschino subtransmission line (Yellow Line shown on Draft EIR Figures C-1 and C-3) would include replacing approximately 0.7 mile of existing 115 kV single-circuit subtransmission lines with new, higher capacity double-circuit 115 kV subtransmission lines. Because this segment of Route Alternative 3 is the same as a segment of the Proposed Project route, the existing 115 kV line currently emits corona discharge noise identical to that described above, as presented in Figure D.9-3. Furthermore, it is anticipated that corona noise generated by this new 115 kV line would be identical to that calculated for the Proposed Project as presented in Figure D.9-3 because it would be carrying the same load. Therefore, receptors along this segment would not be exposed to a permanent increase in ambient noise levels resulting from corona noise over existing conditions.

Operation of the Route Alternative Option 3 existing Banning to Maraschino subtransmission line (Green Line shown on Draft EIR Figures C-1) would result in full-time use of the existing 115 kV line presently used to carry current only as an emergency backup system. Because this segment of Route Alternative 3 is the same as a segment of the Proposed Project route, the existing 115 kV line currently emits corona discharge noise identical to that described above, as presented in Figure D.9-3. Furthermore, it is anticipated that corona noise generated by this new 115 kV line would be identical to that calculated for the Proposed Project as presented in Figure D.9-3 because it would be carrying the same load. Therefore, receptors along this segment would not be exposed to a permanent increase in ambient noise levels resulting from corona noise over existing conditions.

Route Alternative Option 3 activities within the existing Vista to Maraschino to San Bernardino subtransmission lines (Blue Line shown on Draft EIR Figures C-1 and C-3) would consist of replacing approximately 5.8 miles of SCE's existing single-circuit 115 kV subtransmission line with new, higher

capacity single-circuit 115 kV subtransmission lines. The existing single-circuit wood poles would be replaced with single-circuit steel poles within existing SCE ROWs along the El Casco-Maraschino 115 kV line. As existing 115 kV subtransmission line occurs within this segment, the rebuilding of existing double-circuit wood poles with double-circuit steel poles would not generate a new permanent noise source along this segment of Route Alternative Option 3.

As described above, no segments of the Route Alternative Option 3 line would result in an increase to ambient noise levels over existing conditions as a result of corona discharge noise associated with the Route Alternative Option 3 115 kV line operation. Therefore, operational noise would be a less-than-significant impact of the Route Alternative Option 3 (Class III).

Impact N-4: Noise from inspection and maintenance activities (Class III).

Routine inspection and maintenance of the subtransmission line would be accomplished with ground access crews and would generate short-term or intermittent increases in noise along the route. Any noise associated with inspections and maintenance would be temporary and short term, and conducted in accordance with all applicable noise regulations. As such, the noise impact from these activities would be less than significant (Class III).

D.9.5 Partial Underground Alternative

This alternative would contain the same elements as the proposed El Casco System Project (see Section B, Project Description), except for the approximately one-mile portion of the alignment through the Sun Lakes community beginning just east of Highland Springs Avenue and ending just east of S. Riviera Avenue and west of S. Highland Home Road.

D.9.5.1 Partial Underground Alternative – Environmental Setting

The Partial Underground Alternatives noise settings would be identical to those described above in Section D.9.1.4, Noise Environment, for the Proposed Project. While the Partial Underground Alternative would route a portion of the proposed new 115 kV subtransmission line underground through the City of Banning for an approximately one-mile portion of the alignment through the Sun Lakes community (see Figure C-4, Partial Underground Alternative), the 115 kV subtransmission line would travel the identical alignment as the Proposed Project, thus resulting in identical existing noise conditions. Furthermore, the applicable local noise rules and regulations for entire route, including the City of Banning, as described above in Section D.9.2 (Applicable Regulations, Plans, and Standards), would apply to the Partial Underground Alternative.

D.9.5.2 Partial Underground Alternative – Environmental Impacts and Mitigation Measures

Noise impacts of the Partial Underground Alternative would be identical to those described above in Section D.9.3.3, Proposed Project Impact Analysis, for the following locations: El Casco Substation Site, Banning Substation, Zanja Substation, Mill Creek Communications Site, and the Fiber Optic System. Furthermore, it is assumed all SCE APMs, as presented in Section D.9.3.2, Applicant-Proposed Measures (Table D.9-3, Applicant-Proposed Measures to Reduce Noise Impacts), would be applicable to the proposed Partial Underground Alternative. Therefore, the following analysis is focused on the underground portion of the 115 kV subtransmission line route as proposed by the Partial Underground Alternative.

Impact N-1: Construction activities would temporarily increase local noise levels, impacting sensitive receptors and exceeding applicable noise regulations (Class III).

Heavy construction equipment operation would be the primary noise source associated with construction activities of the Partial Underground Alternative. Implementation of the Partial Underground Alternative

would result in a large amount of heavy construction equipment along the underground segment of the route, and receptors located directly adjacent to construction sites would experience temporary significant noise impacts from construction activities. Due to the large amount of trenching required in the underground segment of the proposed 115 kV line, heavy equipment use and an extended duration of construction would result in heavy construction noise to receptors located adjacent to the underground segment. However, these impacts would be considered temporary and short term in nature. As discussed in Section D.9.3.2 (Applicant-Proposed Measures), SCE has committed to implementing the three APMs presented in Table D.9-3 to reduce noise impacts associated with construction. These APMs are considered part of the Partial Underground Alternative and implementation of these measures would be monitored by SCE during construction. The implementation of these APMs would reduce temporary construction noise impacts associated with the Partial Underground Alternative to a less-than-significant (Class III) level.

Impact N-2: Ground-borne vibration could cause a temporary nuisance during construction (Class III).

Due to the large amount of trenching required in the underground segment of the proposed 115 kV line, vibration impacts would occur to receptors adjacent to this segment of the ROW. However, these impacts would be considered temporary and short term in nature. As discussed in Section D.9.3.2 (Applicant-Proposed Measures), SCE has committed to implementing the three APMs presented in Table D.9-3 to reduce construction noise impacts associated with construction. These APMs would also reduce construction-related vibration. The implementation of these APMs would reduce temporary construction-generated vibration impacts associated with the Partial Underground Alternative to a less-than-significant (Class III) level.

Impact N-3: Noise from operation of the overhead subtransmission line (Class III).

The permanent noise sources that would occur with operation of the Partial Underground Alternative are limited to the corona effect of the overhead subtransmission line and routine inspection and maintenance of the line. Operation of the Partial Underground Alternative would limit the amount of corona discharge noise from the proposed 115 kV subtransmission line to only those segments located above ground. For the segment of proposed new 115 kV subtransmission line to be located underground, no corona discharge noise would occur above ground. The remaining sections of the above ground subtransmission line would have identical existing and projected operational corona noise as that described for the Proposed Project, as presented in Figure D.9-3. Therefore, the Partial Underground Alternative would not result in an increase to ambient noise levels over existing conditions as a result of corona discharge noise. This impact would be less than significant for the Partial Underground Alternative (Class III). While the placement of a section of the 115 kV line underground would eliminate the less than significant corona noise from the existing above ground) line within the underground portion, corona discharge noise from the existing 115 kV line is well below the ambient noise conditions in the area of the underground segment (as described in Figure D.9-2 for rural residential) and based on the calculated corona noise levels generated by the existing 115 kV line (as presented in Figure D.9-3). Therefore, no beneficial impact would occur.

Impact N-4: Noise from inspection and maintenance activities (Class III).

Routine inspection and maintenance of the subtransmission line would be accomplished with ground access crews and would generate short-term or intermittent increases in noise along the route. The placement of a section of proposed 115 kV subtransmission line underground is not expected to increase the amount of inspections and maintenance beyond that currently required within the ROW, as existing SCE 115 kV line occurs within this segment of the ROW proposed for underground construction. While the existing 115 kV line within the proposed underground segment is used to carry current only as an emergency backup system, existing SCE maintenance and inspections still occur within this segment. Furthermore, any noise associated with inspections and maintenance would be temporary and short term, and conducted in

accordance with all applicable noise regulations. As such, the noise impact from these activities would be less than significant (Class III).

D.9.6 No Project Alternative

If the Proposed Project or an alternative to the Proposed Project would not be constructed, SCE would implement temporary operating procedures within the Vista and Devers Systems, which could include contracting local generation, temporarily transferring Vista and Devers Systems substations to adjacent 115 kV systems, and/or implementing rolling blackouts. Under the No Project Alternative, both temporary short-term construction noise and new permanent sources of corona discharge noise would occur to receptors as described below.

D.9.6.1 Environmental Impacts of the No Project Alternative

Without upgrades to the existing system, major construction activities associated with the Proposed Project or an alternative to the Proposed Project would not occur. However, to address the overload conditions in the Maraschino Substation service area, SCE would add a third 28 MVA transformer and two 12 kV distribution lines (each approximately 9 miles in length) at Maraschino Substation in 2007. In addition, switchrack rebuilds at Banning and Zanja Substations would need to be completed. These activities would generate short-term temporary construction noise impacts to surrounding receptors. It is assumed that APMs presented in Section D.9.3.2 (Applicant-Proposed Measures), to reduce noise impacts associated with construction would be implemented by SCE during construction of these required upgrades. Therefore, the implementation of these APMs would reduce temporary construction noise impacts associated with the No Project Alternative to a less-than-significant (Class III) level.

The No Project Alternative would require the construction of two 12 kV distribution lines (each approximately 9 miles in length) at Maraschino Substation. The line between Maraschino and Banning Substations would continue to be used as the emergency line to Maraschino Substation, where current only flows through the line when it is needed to serve loads. In the event the Proposed Project or an alternative to the Proposed Project would not occur, the existing single-circuit 115 kV line along this segment would have to carry load at all times. The existing 115 kV line currently emits corona discharge noise as described above, and presented in Figure D.9-3, which is below existing noise levels in the project area. The corona noise associated with the required new 12 kV distribution lines would be well below that calculated for the 115 kV line and insignificant. Therefore, receptors along this segment would not be exposed to a permanent increase in ambient noise levels resulting from corona noise over existing conditions. Therefore, the No Project Alternative would not result in any significant new permanent source of corona noise to receptors and is considered a less than significant (Class III) impact of the No Project Alternative.

D.9.7 Mitigation Monitoring, Compliance, and Reporting Table

Southern California Edison (SCE) has committed to implementing the three Applicant-Proposed Measures (APMs) presented in Table D.9-3 to reduce noise impacts associated with construction of the Proposed Project. These APMs are considered part of the Proposed Project and implementation of these measures would be monitored by SCE during construction, if the Project is approved. As discussed in Section D.9.3.3, Proposed Project Impact Analysis, no mitigation measures are required for temporary construction noise impacts or operational noise impacts associated with the Proposed Project. Table D.9-5 (Mitigation Monitoring Program – Noise) on the following page presents the APM monitoring activities to reduce potential noise impacts associated with the Proposed Project.

Table D.9-5. Mitigation Monitoring Program – Noise

Impact	Mitigation Measure	Location	Monitoring / Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
N-1: Construction Activities Would Temporarily Increase Local Noise Levels, Impacting Sensitive Receptors and Exceeding Applicable Noise Regulations (Class III)	APM NOISE-1: All construction activities occurring in association with the Proposed Project would operate within the allowable construction hours as determined by the applicable local agency and presented earlier in this document.	Entire Project site	Notify construction contractor of allowable hours of construction	Effectiveness can be monitored by construction not violating local plan construction hour regulations	SCE and Construction Contractor	During Construction
	APM NOISE-2: A noise control plan would be prepared for all work sites associated with the Proposed Project. The noise control plan would include, but not be limited to, the following: • Stockpiling and vehicle staging areas would be located as far away from occupied residences as possible, and screened from these uses by a solid noise attenuation barrier. • Temporary solid noise attenuation barriers constructed with ½-inch plywood (sound transmission coefficient rating of 20) would be used to break the line of sight between noise generating activities and the closest residential land uses. A noise attenuation barrier constructed in this fashion would attenuate noise by 8 to 12 db(A) depending on the distance of the barrier from the noise source and noise receptor. • All stationary construction equipment would be operated as far away from residential uses as possible. If this is not possible, the equipment shall be shielded with temporary sound barriers, sound aprons, or sound skins. • To the extent feasible, haul routes for removing excavated materials or delivery of materials from the site would be designed to avoid residential areas and areas occupied by noise sensitive receptors (e.g., hospitals, schools, convalescent homes, etc.). Idling equipment would be turned off when not in use for periods longer than 20 minutes.	Entire Project site	Noise Control Plan preparation	Effectiveness can be monitored through successful implementation of the Noise Control Plan	SCE and Construction Contractor	Prior to Construction
	APM NOISE-3: SCE would notify all sensitive receptors within 500 feet of construction of the potential to experience significant noise levels during construction.	Entire Project site.	Notify sensitive receptors	Effectiveness can be monitored through public outreach coordination	SCE and Construction Contractor	Prior to Construction

Table D.9-5. Mitigation Monitoring Program – Noise						
N-2: Ground-Borne Vibration Could Cause a Temporary Nuisance during Construction (Class III)	APM NOISE-1: All construction activities occurring in association with the Proposed Project would operate within the allowable construction hours as determined by the applicable local agency and presented earlier in this document.	Entire Project site	Notify construction contractor of allowable hours of construction	Effectiveness can be monitored by construction not violating local plan construction hour regulations	SCE and Construction Contractor	During Construction
	APM NOISE-2: A noise control plan would be prepared for all work sites associated with the Proposed Project. The noise control plan would include, but not be limited to, the following: • Stockpiling and vehicle staging areas would be located as far away from occupied residences as possible, and screened from these uses by a solid noise attenuation barrier. • Temporary solid noise attenuation barriers constructed with ½-inch plywood (sound transmission coefficient rating of 20) would be used to break the line of sight between noise generating activities and the closest residential land uses. A noise attenuation barrier constructed in this fashion would attenuate noise by 8 to 12 db(A) depending on the distance of the barrier from the noise source and noise receptor. • All stationary construction equipment would be operated as far away from residential uses as possible. If this is not possible, the equipment shall be shielded with temporary sound barriers, sound aprons, or sound skins. • To the extent feasible, haul routes for removing excavated materials or delivery of materials from the site would be designed to avoid residential areas and areas occupied by noise sensitive receptors (e.g., hospitals, schools, convalescent homes, etc.). Idling equipment would be turned off when not in use for periods longer than 20 minutes.	Entire Project site	Noise Control Plan preparation	Effectiveness can be monitored through successful implementation of the Noise Control Plan	SCE and Construction Contractor	Prior to Construction
	APM NOISE-3: SCE would notify all sensitive receptors within 500 feet of construction of the potential to experience significant noise levels during construction.	Entire Project site.	Notify sensitive receptors	Effectiveness can be monitored through public outreach coordination	SCE and Construction Contractor	Prior to and During Construction

D.9.8 Cumulative Impact Analysis – Noise

The cumulative impacts discussion below has been updated to incorporate the new information submitted by SCE, subsequent to publishing the Final EIR on April 11, 2008, regarding the ambient noise levels adjacent to the existing single-circuit 115 kV subtransmission line. This cumulative impact analysis replaces the analysis provided in Section F.1.5.8 of the original Draft EIR published in December 2007.

Projects

As discussed below, the geographic extent for the analysis of cumulative impacts related to noise is limited to the areas of simultaneous active construction and would generally be localized, mainly within approximately 600 feet from any noise source and rarely more than one-quarter mile (1,320 feet) away. Therefore, all of the projects located within 0.25 mile of the El Casco, Maraschino, and, Banning Substations, as well as within 0.25 mile of the Proposed Project ROW between El Casco and Banning Substations, as identified in Draft EIR Table F-2, El Casco System Project Cumulative Project List, and Draft EIR Figures F-1a and F1b (Cumulative Projects – Northeast and Southeast Figures) are considered in this analysis (Please refer to the original Draft EIR published in December 2007 for figures and tables. None of these figures or tables have been modified since that time.).

Projections

All of the municipalities traversed by the Proposed Project are expected to experience dramatic residential and commercial development over the next twenty years. Such development will involve many large-scale construction projects that would result in varying amounts of construction noise and new permanent noise sources on neighboring receptors. In addition, population growth predicted for the area based on the list of planning documents contained in Draft EIR Table F-3, Plans Consulted in Cumulative Analysis, would result in an increase to overall vehicle noise within the jurisdictions and areas determined below as the geographic extent for the cumulative noise analysis.

Geographic Scope

The geographic extent for the analysis of cumulative impacts related to noise is generally limited to areas within approximately 600 feet of the Proposed Project route and substation locations. However, to analyze all potential noise impacts, cumulative projects within 0.25 miles of all components of the El Casco System Project and Alternatives are evaluated. The route traverses both rural and medium-density residential areas of both incorporated cities and unincorporated land within San Bernardino and Riverside Counties. This area is defined as the geographic extent of the cumulative noise impact area because noise impacts would generally be localized, mainly within approximately 600 feet from any noise source and rarely more than one-quarter mile away.

Significance Criteria

Cumulative noise impacts would be considered significant if, within the geographic scope of the impact analysis, the El Casco System Project would:

- Expose persons to noise levels, or generation of noise levels in excess of, standards established in the local general plan or noise ordinance, or applicable standards of other agencies
- Cause a substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project
- Generate excessive groundborne vibration or groundborne noise levels
- Cause a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project

D.9.8.1 Analysis of Proposed Project

Noise levels would cumulatively violate local standards (Impact N-1). Residents and other sensitive receptors located near Proposed Project construction activities could be subjected to intermittent construction noise levels. Similarly, construction activities associated with other projects located within 0.25 mile of the El Casco, Maraschino, and, Banning Substations, as well as within 0.25 mile of the Proposed Project ROW between El Casco and Banning Substations, as identified in Draft EIR Table F-2, El Casco System Project Cumulative Project List, and Draft EIR Figures F-1a and F-1b (Cumulative Projects – Northeast and Southeast Figures), would potentially occur at the same time as the Proposed Project and contribute cumulatively to construction noise.

For the Proposed Project, SCE has committed to implementing the three APMs presented in Table D.9-3 to reduce noise impacts associated with construction. The implementation of these APMs would reduce temporary construction noise impacts associated with the Proposed Project. Although it would not be necessary to consider further mitigation, a potential additional mitigation measure to reduce cumulative noise impacts would be to coordinate with San Bernardino and Riverside Counties to stagger construction schedules to the extent feasible for construction projects occurring within 0.25 miles of one another. While such a mitigation measure would reduce the potential for cumulative increases in ambient noise levels during construction, it would result in potentially longer periods of construction noise nuisance, which may in effect be considered by the communities to be worse than higher noise levels over a shorter duration. Therefore, such a mitigation measure for cumulative noise impacts is not recommended. Therefore, the Proposed Project would result in a less than significant (Class III) cumulative contribution to noise impacts within the geographic scope area.

Construction noise could cumulatively result in a substantial temporary or periodic increase in ambient noise levels (Impact N-2). Receptors located directly adjacent to multiple construction sites would experience temporary noise impacts from construction activities. Furthermore, construction related traffic would result in temporary intermittent noise impacts along vehicle routes. However, as presented in Table D.9-3, SCE has committed to implementing three APMs to reduce noise impacts associated with construction. The implementation of these APMs would reduce temporary construction noise impacts associated with the Proposed Project, thus reducing the Proposed Projects cumulative contribution to substantial temporary or periodic increase in ambient noise levels to a less than significant (Class III) level.

Construction noise could cumulatively generate excessive groundborne vibration or groundborne noise levels (Impact N-3). Receptors located directly adjacent to multiple construction sites would experience temporary vibration impacts from construction activities. Furthermore, construction related traffic would result in temporary intermittent vibration impacts to receptors along vehicle routes. However, as presented in Table D.9-3, SCE has committed to implementing three APMs to reduce noise impacts associated with construction. The implementation of these APMs would reduce temporary construction vibration impacts associated with the Proposed Project, thus reducing the Proposed Projects cumulative contribution to substantial temporary or periodic increase in vibration or vibration noise levels to a less than significant (Class III) level.

Cumulatively result in a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project (Impact N-4). The proposed El Casco Substation would generate low level noise to the immediate area of the substation. However, no sensitive receptors are located immediately adjacent to the proposed El Casco Substation site. While this noise generated by the proposed new El Casco Substation is not significant, the addition of further development within 600 feet of these receptors could combine with this impact to further increase ambient noise levels. Due to the low levels of noise associated with the El Casco Substation, only cumulative projects within 600 feet could contribute to a cumulative increase in ambient noise levels. However, as shown in Draft EIR Figures F-1a and F-1b (Cumulative Projects – Northeast and Southeast Figures), no approved or pending projects are listed to be located within approximately 600 feet of the proposed El Casco Substation site. While there are several cumulative projects identified in Draft EIR Table F-2 (Cumulative Project List), and Draft EIR Figures F-1a

and F-1b (Cumulative Projects – Northeast and Southeast Figures), that could generate permanent noise in the Banning and Zanja Substation areas, as substation facilities already exist at these locations, the improvements at these substation sites associated with the Proposed Project would not result in a significant cumulative contribution to permanent noise levels in the area. Therefore, the operational cumulative noise impact at the Substations would be less than significant (Class III).

As discussed in Section D.9.3, permanent noise levels along the ROW would not increase due to corona noise from operation of the subtransmission lines. In fact, development of the Proposed Project would result in a decrease in corona noise along the ROW as compared to the corona discharge noise currently emitted by the existing 115 kV line. Residential receptors located directly adjacent to the Proposed Project ROW may be impacted by noise associated with additional development within 600 feet of these receptors; however, the Proposed Project would have no cumulatively considerable contribution to increasing ambient noise levels of the area. Therefore, the combined effect of operational corona noise combined with other proposed development projects located within close proximity to the proposed subtransmission line would be cumulatively less than significant (Class III).

Routine inspection and maintenance of the subtransmission lines, substation facilities, and fiber optic communication facilities would cause short-term or intermittent increases in noise along the routes and within substation boundaries. Any noise associated with inspections and maintenance would be temporary and short term, and conducted in accordance with all applicable noise regulations. Therefore, the temporary noise associated with Proposed Project maintenance in conjunction with cumulative projects in the immediate area of the Proposed Project as shown in Draft EIR Figures F-1a and F-1b (Cumulative Projects – Northwest and Southeast Figures), would result in a less than significant (Class III) permanent increase in ambient noise levels to the area.

D.9.8.2 Analysis of Alternatives

CPUC's Northerly Route Alternative Option 3

Noise levels would cumulatively violate local standards (Impact N-1). As identified in Draft EIR Table F-2, El Casco System Project Cumulative Project List, and Draft EIR Figures F-1a and F-1b (Cumulative Projects – Northeast and Southeast Figures), a number of projects are located near the Route Alternative Option 3 proposed subtransmission line routes that could potentially result in construction activities occurring at the same time as Route Alternative Option 3 construction. It is assumed that construction of Route Alternative Option 3 would include the three APMs presented in Table D.9-3 SCE has committed to implementing for the Proposed Project to reduce noise impacts associated with construction. Therefore, with the implementation of proposed APM's, Route Alternative Option 3 would result in a less than significant (Class III) cumulative contribution to construction noise impacts within the geographic scope area.

Construction noise could cumulatively result in a substantial temporary or periodic increase in ambient noise levels (Impact N-2). Should construction of Route Alternative Option 3 and any identified cumulative project within 0.25 mile of the Route Alternative Option 3 occur simultaneously, residents and other sensitive receptors located in close proximity would experience temporary cumulative noise impacts from construction activities. However, the implementation of APMs would reduce temporary construction noise impacts associated with Route Alternative Option 3, thus reducing the cumulative contribution to substantial temporary or periodic increase in ambient noise levels to a less than significant (Class III) level.

Construction noise could cumulatively generate excessive groundborne vibration or groundborne noise levels (Impact N-3). Should construction of Route Alternative Option 3 and any identified cumulative project within 0.25 mile of the Route Alternative Option 3 occur simultaneously, residents and other sensitive receptors located in close proximity would experience temporary cumulative vibration impacts from construction activities. However, the implementation of APMs would reduce temporary construction vibration impacts associated with Route Alternative 3, thus reducing the cumulative contribution to

substantial temporary or periodic increase in vibration or vibration noise levels to a less than significant (Class III) level.

Cumulatively result in a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project (Impact N-4). As discussed in Section D.9.4, permanent noise levels along the Route Alternative Option 3 ROW would not increase due to corona noise from operation of the subtransmission lines. In fact, development of Route Alternative Option 3 would result in a decrease in corona noise along certain segments of the ROW as compared to the corona discharge noise currently emitted by existing 115 kV line segments. Residential receptors located directly adjacent to the Route Alternative 3 ROW may be impacted by noise associated with additional development within 600 feet of these receptors; however, Route Alternative Option 3 would have no cumulatively considerable contribution to increasing ambient noise levels of the area. Therefore, the combined effect of operational corona noise combined with other proposed development projects located within close proximity to the Route Alternative Option 3 subtransmission line would be cumulatively less than significant (Class III).

Any noise associated with inspections and maintenance of Route Alternative Option 3 would be identical to that analyzed for the Proposed Project and would result in a less than significant (Class III) cumulative impact to permanent increase in ambient noise levels to the area.

Partial Underground Alternative

Noise levels would cumulatively violate local standards (Impact N-1). Due to the large amount of trenching required in the underground segment of the proposed 115 kV line, heavy equipment use and an extended duration of construction would result in heavy construction noise to receptors located adjacent to the underground segment. As shown in Draft EIR Table F-2, El Casco System Project Cumulative Project List, and Draft EIR Figures F-1a and F-1b (Cumulative Projects – Northeast and Southeast Figures), the nearest identified cumulative project to the proposed underground segment is located over 0.5 mile south. Therefore, construction noise at the underground segment would not combine with other construction projects in the area and would not subject receptors within the Sun Lakes Community near the proposed Partial Underground Alternative segment to cumulatively significant construction noise impacts (Class III).

Construction noise could cumulatively result in a substantial temporary or periodic increase in ambient noise levels (Impact N-2). As stated above, the nearest identified cumulative project to the proposed underground segment is located over 0.5 miles south. However, any receptors located directly adjacent to the remainder of the Partial Underground Alternative construction sites and within 0.25 mile of any identified cumulative project would experience temporary cumulative construction noise impacts should construction activities occur simultaneously. The implementation of APMs identified in Table D.9-3 would reduce temporary construction noise impacts associated with the Partial Underground Alternative, thus reducing the cumulative contribution to substantial temporary or periodic increase in ambient noise levels to a less than significant (Class III) level.

Construction noise could cumulatively generate excessive groundborne vibration or groundborne noise levels (Impact N-3). As stated above, the nearest identified cumulative project to the proposed underground segment is located over 0.5 mile south. However, any receptors located directly adjacent to the remainder of the Partial Underground Alternative construction sites and within 0.25 mile of any identified cumulative project would experience temporary cumulative construction vibration impacts should construction activities occur simultaneously. The implementation of APMs would reduce temporary construction vibration impacts associated with the Partial Underground Alternative, thus reducing the cumulative contribution to substantial temporary or periodic increase in vibration or vibration noise levels to a less than significant (Class III) level.

Cumulatively result in a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project (Impact N-4). As discussed in Section D.9.5, the permanent noise sources that would occur with operation of the Partial Underground Alternative are limited to the corona effect of the overhead subtransmission line and routine inspection and maintenance of the line.

Operation of the Partial Underground Alternative would limit the amount of corona discharge noise from the proposed 115 kV subtransmission line to those segments located above ground. For the segment of proposed new 115 kV subtransmission line to be located underground, residential receptors located along the one-mile portion of the alignment through the Sun Lakes community beginning just east of Highland Springs Avenue and ending just east of S. Riviera Avenue and west of S. Highland Home Road would not experience any operational corona discharge noise. The remaining sections of above ground subtransmission line would have identical existing and projected operational corona noise as that described for the Proposed Project, as presented in Figure D.9-3. Therefore, the Partial Underground Alternative would not result in an increase to ambient noise levels over existing conditions. While the placement of a section of the 115 kV line underground would eliminate all corona noise from the existing above ground line along that underground portion, it should be noted that corona discharge noise from the existing 115 kV line is well below the ambient noise conditions in the area of the underground segment (as described in Figure D.9-2 for rural residential), and based on the calculated corona noise levels generated by the existing 115 kV line (as presented in Figure D.9-3). Therefore, operation of the Partial Underground Alternative would have no cumulatively considerable contribution to the ambient noise levels of the area and the combined effect of operational corona noise combined with other proposed development projects located within close proximity to the proposed Partial Underground Alternative subtransmission line would be cumulatively less than significant (Class III).

Any noise associated with inspections and maintenance of the Partial Underground Alternative would be identical to that analyzed for the Proposed Project and would result in a less than significant (Class III) cumulative impact to permanent increase in ambient noise levels to the area.

No Project Alternative

Without upgrades to the existing system, to address the overload conditions in the Maraschino Substation service area, SCE would add a third 28 MVA transformer and two 12 kV distribution lines (each approximately 9 miles in length) at Maraschino Substation in 2007. In addition, switchrack rebuilds at Banning and Zanja Substations would need to be completed. These activities would generate short-term temporary construction noise impacts to surrounding receptors. As the location of the required new 12 kV ROWs is unknown, it is possible that construction noise associated with these new 12 kV lines could occur in close proximity to other construction projects and result in cumulative construction impacts to sensitive receptors. However, it is assumed that APMs presented in Table D.9-3 (Applicant-Proposed Measures), to reduce noise impacts associated with construction would be implemented by SCE during construction of these required upgrades. The implementation of these APMs would reduce the No Project Alternatives contribution to cumulative construction noise to a less-than-significant (Class III) level.

The No Project Alternative would require the construction of two 12 kV distribution lines (each approximately 9 miles in length) at Maraschino Substation. As the location of these ROWs is unknown, it is possible that corona noise associated with these new 12 kV lines could impact sensitive receptors. While the corona noise associated with a 12 kV line would be minimal, it would be a permanent noise source over existing conditions. Furthermore, as the line between Maraschino and Banning Substations is used as the emergency line to Maraschino Substation, current only flows through the line when it is needed to serve loads. In the event the Proposed Project or an alternative to the Proposed Project would not occur, the existing single-circuit 115 kV line along this segment would have to carry load at all times. The existing 115 kV line currently emits corona discharge noise as described above for the Proposed Project in Impact N-3 of Section D.9.3.3, and presented in Figure D.9-3. The corona noise associated with the required new 12 kV distribution lines would be well below that calculated for the 115 kV line and insignificant. Therefore, receptors along this segment would not be exposed to a permanent increase in ambient noise levels resulting from corona noise over existing conditions. Therefore, the No Project Alternative would not have a cumulatively considerable contribution to ambient noise levels in the area, and the combined effect of operational corona noise combined with other proposed development projects located within close proximity to the proposed subtransmission line would be cumulatively less than significant (Class III).

D.9.9 References - Noise

FTA (Federal Transportation Authority). 1995. Typical Construction Equipment Noise Manual. October.

OPR (California Governor's Office of Planning and Research). 2003. General Plan Guidelines. Appendix C, Noise Element Guidelines. October.

SCE (Southern California Edison). 2007. Proponent's Environmental Assessment El Casco System Project. Filed February 16.

____ 2008a. Attachment of AN Study to A0702022 El Casco Energy Division-SCE-08 Q.NOI-1(2).doc. Technical Memorandum from Scott Lacey (SCE Engineer) to Lynne Mosley (CPUC EL Casco Project Manager). June

____ 2008b. A0702022 El Casco Energy Division-SCE-08 Q.NOI-1.pdf. Technical Memorandum from Scott Lacey (SCE Engineer) to Lynne Mosley (CPUC EL Casco Project Manager). June

____ 2008c. A0702022 El Casco Energy Division-SCE-08 Q.NOI-2.pdf. Technical Memorandum from Scott Lacey (SCE Engineer) to Lynne Mosley (CPUC EL Casco Project Manager). June

USDOT (United States Department of Transportation, Federal Transit Administration). 1995. Transit Noise and Vibration Impact Assessment Final Report. April.

USEPA (United States Environmental Protection Agency). 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. March.