

TABLE OF CONTENTS

4.12 NOISE **4.12-1**
4.12.0 Introduction..... 4.12-1
4.12.1 Methodology..... 4.12-2
4.12.2 Existing Conditions..... 4.12-2
4.12.3 Impacts..... 4.12-11
4.12.4 Applicant-Proposed Measures 4.12-19
4.12.5 References..... 4.12-19

LIST OF FIGURES

Figure 4.12-1: Construction Vibration Amplitudes 4.12-13

LIST OF TABLES

Table 4.12-1: Human Response to Transient Vibration 4.12-4
Table 4.12-2: Vibration Damage Threshold Guidance..... 4.12-5
Table 4.12-3: San Diego County Sound Level Limits..... 4.12-6
Table 4.12-4: City of San Diego Noise Limits 4.12-9
Table 4.12-5: City of Chula Vista Sound Level Limits 4.12-10
Table 4.12-6: Noise Levels Generated by Typical Construction Equipment 4.12-14
Table 4.12-7: Simulated Construction Noise Levels 4.12-15

LIST OF ATTACHMENTS

Attachment 4.12–A: Construction Noise Calculations

4.12 NOISE

Would the Proposed Project:	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Incorporated	Less-than-Significant Impact	No Impact
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			✓	
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?			✓	
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?				✓
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			✓	
e) If located within an airport land use plan or within two miles of a public airport or public use airport for which such a plan has not been adopted, would the project result in exposure of persons residing or working in the project area to excessive noise levels?				✓
f) If located within the vicinity of a private airstrip, would the project result in exposure of persons residing or working in the project area to excessive noise levels?				✓

4.12.0 Introduction

This section describes the ambient noise conditions in the vicinity of the proposed San Diego Gas & Electric Company Tie Line (TL) 649 Wood-to-Steel Replacement Project (Proposed Project) and assesses noise impacts that have a potential to occur as a result of Proposed Project implementation. Construction of the Proposed Project will not result in a significant increase in temporary, periodic, or permanent ambient noise levels in the Proposed Project area. In addition, the Proposed Project will not expose sensitive receptors to significant vibration levels.

4.12.1 Methodology

Information regarding existing noise sources and standards was obtained from review of federal, state, regional, and local literature reviews to identify the noise standards for the Proposed Project location. Evaluation of potential noise impacts from the Proposed Project included estimating existing noise levels in the vicinity of the Proposed Project site, characterizing the existing noise environment, and examining typical noise levels resulting from construction and operation activities.

4.12.2 Existing Conditions

Regulatory Background

The following subsections describe federal, state, and local regulations regarding noise that are relevant to the Proposed Project.

Federal

No federal noise standards directly regulate noise from operation of electrical power lines and substation facilities. However, in 1974, the United States (U.S.) Environmental Protection Agency (EPA) established guidelines for noise levels, below which no reason exists to suspect that the general population will be at risk from any of the identified effects of noise. The EPA guidelines include the following:

- limit equivalent sound level ($L_{eq}(24)$) that is less than or equal to 70 A-weighted decibels (dBA) to protect against hearing loss;¹
- maintain a day-night equivalent noise level (L_{dn}) that is less than or equal to 55 dBA to protect against activity interference and annoyance in residential areas, farms, and other outdoor areas where quiet is a basis for use;
- limit $L_{eq}(24)$ to less than or equal to 55 dBA to protect against outdoor activity interference where limited time is spent, such as school yards and playgrounds;
- limit L_{dn} to less than or equal to 45 dBA to protect against indoor activity interference and annoyance in residences; and
- limit $L_{eq}(24)$ to less than or equal to 45 dBA to protect against indoor activity interference in school yards.

These levels are not standards, criteria, regulations, or goals, but are defined to protect public health and welfare with an adequate margin of safety, and to provide guidelines for implementing noise standards locally. The federal government has passed various general laws to regulate and limit noise levels, as identified in the following subsections.

¹ The human ear is not uniformly sensitive to all sound frequencies; therefore, the A-weighting scale has been devised to correspond with the human ear's sensitivity. The A-weighting scale uses the specific weighting of sound pressure levels from approximately 31.5 hertz (Hz) to 16 kilohertz for determining the human response to sound.

Noise Control Act of 1972

The Noise Control Act of 1972 was the first comprehensive statement of national noise policy. It declares, “It is the policy of the U.S. to promote an environment for all Americans free from noise that jeopardizes their health or welfare.”

Quiet Communities Act of 1978

The Noise Control Act was amended by the Quiet Communities Act of 1978 to promote the development of effective state and local noise control programs, to provide funds for noise research, and to produce and disseminate educational materials to the public on the harmful effects of noise and ways to effectively control it.

By 2002, agencies—including the Department of Transportation, Department of Labor, Federal Railroad Administration, and Federal Aviation Administration (FAA)—developed their own noise control programs, with each agency setting its own criteria.

Occupational Health and Safety Act of 1970

This act covers all employers and their employees in the 50 states, the District of Columbia, Puerto Rico, and other U.S. territories. Administered by the Occupational Health and Safety Administration (OSHA), the act assigns OSHA two regulatory functions: setting standards and conducting inspections to ensure that employers are providing safe and healthful workplaces. OSHA standards may require that employers adopt certain practices, means, methods, or processes that are reasonably necessary and appropriate to protect workers on the job. Employers must become familiar with the standards applicable to their establishments and eliminate hazards. Included in this act is a regulation for worker noise exposure at 90 dBA over an eight-hour work shift. High-noise-level areas must be designated and labeled as such where exposure exceeds 85 dBA, and hearing protection is required.

Federal Transit Administration Transit Noise and Vibration Guidelines

Originally published in 1995 and updated in 2006, the Federal Transit Administration (FTA) has issued guidelines entitled *Transit Noise and Vibration Impact Assessment*. The document provides guidance for the methods and procedures to be used to assess noise and vibration caused by construction equipment and other sources. The guidelines regarding vibration serve as the basis for maximum vibration standards utilized by several state agencies, including the California Department of Transportation (Caltrans).

Federal Aviation Administration

The FAA establishes 65 decibels (dB) Community Noise Equivalent Level (CNEL)² as the noise standard associated with aircraft noise measured at exterior locations in noise-sensitive land uses

² CNEL measurements are weighted averages of sound levels gathered over a 24-hour period, essentially measuring ambient noise. Measurements taken during day, evening, and nighttime periods are weighted separately, recognizing that humans are most sensitive to noise in late night hours and are more sensitive during evening hours than in daytime hours.

(NSLU).³ This standard is also generally applied to railroad noise.

State

California Noise Control Act

The California Noise Control Act states that excessive noise is a serious hazard to public health and welfare and that exposure to certain levels of noise can result in physiological, psychological, and economic damage. It also recognizes that continuous and increasing noise levels exist in urban, suburban, and rural areas. This act declares that the State of California has the responsibility to protect the health and welfare of its citizens by the control, prevention, and abatement of noise.

California Department of Transportation: Transportation- and Construction-Induced Vibration Guidance Manual

This document provides practical guidance to Caltrans engineers, planners, and consultants who must address vibration issues associated with the construction, operation, and maintenance of Caltrans projects. Continuous or frequent intermittent vibration sources, such as impact pile drivers, are significant when their peak particle velocity (PPV) exceeds 0.1 inch per second. More specific criteria for human annoyance have been developed by Caltrans and were used to evaluate potential Proposed Project vibration sources. Table 4.12-1: Human Response to Transient Vibration lists the Caltrans thresholds of perception.

Table 4.12-1: Human Response to Transient Vibration

Human Response	PPV (inches/second)
Severe	2.0
Strongly Perceptible	0.9
Distinctly Perceptible	0.24
Barely Perceptible	0.035

Source: Caltrans, 2013

Caltrans also provides guidance on vibration damage thresholds to buildings from blasting. These thresholds have been categorized by building type as shown in Table 4.12-2: Vibration Damage Threshold Guidance.

Local

Because the California Public Utilities Commission has exclusive jurisdiction over the siting, design, and construction of the Proposed Project, the Proposed Project is not subject to local discretionary land-use regulations. The following discussion of the local regulations relating to noise is provided for informational purposes. As outlined in the following subsections, the

³ NSLU is defined as any residence, hospital, school, hotel, resort, library, or any other facility where quiet is an important attribute of the environment.

construction and operation of the Proposed Project will not conflict with any environmental plans, policies, or regulations related to noise.

Table 4.12-2: Vibration Damage Threshold Guidance

Structure Type/Condition	Maximum PPV ⁴ (inches per second)	
	Single Blast	Repeated Blast
Structures of substantial construction	4	2
Relatively new residential structures in sound condition	2	1
Relatively old residential structures in poor condition	1	0.5
Relatively old residential structures in very poor condition	0.5	--

Source: Caltrans, 2013

San Diego County Guidelines for Determining Significance for Noise

The San Diego County Guidelines for Determining Significance for noise is used by County staff for review of discretionary projects and environmental documents, pursuant to the California Environmental Quality Act (CEQA). Project implementation is considered significant if it is anticipated to result in the exposure of any on- or off-site, existing or reasonably foreseeable future noise-sensitive land use to exterior or interior noise (including noise generated from a project together with noise from roads, railroads, airports, heliports, and all other noise sources) that is either in excess of 60 dB (CNEL) or an increase of 10 dB (CNEL) over pre-existing noise.

County of San Diego Noise Ordinance

The County of San Diego Noise Ordinance (Municipal Code §36.400) establishes prohibitions for disturbing, excessive, or offensive noise and contains provisions, such as sound level limits, for the purpose of securing and promoting public health, comfort, safety, peace, and quiet. Limits, as specified by zoning, are provided in Table 4.12-3: San Diego County Sound Level Limits. In the case that two adjacent properties each have different zone classifications, the sound level limit at the location on the boundary between the two properties is the arithmetic mean of the respective limits for the two zones, except for extractive industries.

It is unlawful for any person to cause or allow the creation of any noise that exceeds the applicable limits of the Noise Ordinance at any point on or beyond the boundaries of the property on which the sound is produced. Furthermore, the Noise Ordinance allows the County to grant variances from the noise limitations for temporary on-site noise sources, subject to terms and conditions intended to achieve compliance. The County of San Diego Department of Planning and Land Use recommends the use of these limits to establish thresholds of significance for noise. Fixed-location public utility power line facilities located on or adjacent to a property line

⁴ Transient sources create a single, isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Table 4.12-3: San Diego County Sound Level Limits

Zone Categories	Period	One-Hour Average Noise Level (dBA)
Single Family, Duplex, Variable Family, Rural, Urban, and Mobile Home Residential; Limited and General Agriculture; Open Space; Ecological Resource Area; Specific Plan; Holding Area; and General Rural with a General Plan Land Use Designation density of less than 10.9 dwelling units per acre	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	50 45
Multi-Family Residential, Residential-Recreation Oriented, Residential-Commercial, Office-Professional, Parking, Fallbrook Village 5, Variable Family Residential, and Urban Residential with a General Plan Land Use Designation density of 10.9 or more dwelling units per acre	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	55 50
Transportation and Utility Corridor; Fallbrook Village 4; Alpine Village Core; Alpine Village Edge; Alpine Village Civic; Ramona Village 3, 4, and 5; Ramona Village Civic; and all other commercial zones	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	60 55
Fallbrook Village 1 and 2, and Ramona Village 1 and 2	7 a.m. to 7 p.m. 7 p.m. to 10 p.m.	60 55
Fallbrook Village Zone 1 and Ramona Village Zone 2	10 p.m. to 7 a.m.	55
Fallbrook Village Zone 2 and Ramona Village Zone 1	10 p.m. to 7 a.m.	50
Fallbrook Village Zone 3	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	70 65
Basic, Limited, and General Impact Industrial	Anytime	70
Extractive Use, Mixed Industrial, and High-Impact Industrial	Anytime	75

Source: San Diego County, 2009a

are subject to this noise level limit, measured at or beyond six feet from the boundary of the easement upon which the equipment is located.

The Noise Ordinance establishes additional noise limitations for the operation of construction equipment. Except for emergency work, it is unlawful for any person to operate construction equipment at any construction site at the following times without a variance:

- Monday through Saturday, except between the hours of 7 a.m. and 7 p.m.;
- Sunday;
- any day appointed by the President as a special national holiday or the Governor of the State as a special State holiday;
- Thanksgiving; or
- holidays.

Construction noise cannot exceed an average of 75 dB during the allowed construction period when measured at or within the property lines of any property developed for residential purposes, unless a variance is granted.

Section 36.410 of the Noise Ordinance establishes limits on impulsive noise.⁵ This section prohibits the production of impulsive noise that exceeds a maximum of 82 dBA at the boundary of any occupied residential, village zoning, or civic properties for 25 percent of the minutes in the measuring period.⁶ At agricultural, commercial, or industrial properties, the maximum allowable impulsive noise is 85 dBA.

County of San Diego General Plan Noise Element

The San Diego County General Plan establishes limitations on sound levels to be received by NSLUs. New development may cause an existing NSLU to be affected by noise or it may create or locate an NSLU in such a place that it is affected by noise.⁷ The Noise Element identifies airports and traffic on public roadways as the major sources of noise. The Noise Element states that an acoustical study is required if it appears that an NSLU will be subject to noise levels of CNEL equal to 60 dBA or greater. If that study confirms that greater than 60 dBA CNEL will be experienced, modifications that reduce the exterior noise level to less than 60 dBA CNEL and the interior noise levels to below 45 dBA CNEL must be made to the development. If these modifications are not made, the development will not be approved unless a finding is made that specific social or economic considerations warrant project approval. However, if the noise level

⁵ The use of pile drivers, jackhammers, and pavement breakers or the use of explosives during blasting operations often produce impulsive noise. This type of noise is short in duration (generally less than one second), high intensity, with an abrupt onset and rapid decay. For impact equipment, the noise is produced by the impact of a mass on a surface, typically repeating over time.

⁶ The minimum measurement period is one hour. During the measurement period, the maximum sound levels will be measured every minute from a fixed location on the occupied property. If the sound level caused by construction equipment or the producer of the impulsive noise exceeds the maximum sound level for any portion of any minute it will be deemed that the maximum sound level was exceeded during that minute.

⁷ Development is defined as any physical development including, but not limited to, residences, commercial or industrial facilities, roads, civic buildings, hospitals, schools, and airports.

is expected to exceed 75 dBA CNEL even with such modifications, the development will not be approved, irrespective of such social or economic considerations.

The Noise Element includes special provisions for County road construction projects and interior noise levels in rooms that are usually occupied for only a part of the day (e.g., schools, libraries, etc.).

County of San Diego Department of Planning and Land Use Noise and Vibration Guidelines

The Department of Planning and Land Use has issued guidelines for determining significance for noise and vibration based largely on federal transit guidelines. Vibration is considered significant if project implementation will expose the uses listed in Table 4.12-1: Human Response to Transient Vibration to groundborne vibration or noise levels equal to or in excess of the levels shown.

City of San Diego General Plan Noise Element

Noise levels within the City of San Diego are regulated by the city's General Plan. The purpose of the Noise Element in the General Plan is to identify existing conditions and to provide general guidelines that would reduce the negative impact of noise on the community in the future. The General Plan's objective is to protect people living and working in the City of San Diego from excessive noise.

The City of San Diego has an exterior noise level standard of 65 dB CNEL for noise-sensitive uses. These standards are designed to protect noise-sensitive land uses from high noise levels and to be used as guidelines in the planning for future land uses. Noise-sensitive land uses include, but are not necessarily limited to residential areas, hospitals, nursing facilities, intermediate care facilities, educational facilities, libraries, museums, places of worship, child care facilities, and certain types of passive recreational parks and open space.

City of San Diego Noise Ordinance

The City of San Diego Noise Ordinance (Chapter 5, Article 9.5, Division 4 of the City of San Diego Municipal Code) establishes prohibitions for disturbing, excessive, or offensive noise and contains provisions (e.g., sound level limits) for the purpose of securing and promoting public health, comfort, safety, peace, and quiet. Limits, as specified by land use, are provided in Table 4.12-4: City of San Diego Noise Limits. When two adjacent properties each have different zone classifications, the average of the two sound level limits is used. The Noise Ordinance prohibits the creation of any noise that exceeds the applicable limits of the Noise Ordinance at any point on or beyond the boundaries of the property on which the sound is produced unless a permit has been applied for and granted beforehand by the Noise Abatement and Control Administrator. Fixed-location public utility distribution or power line facilities located on or adjacent to a property line are subject to these noise level limits, measured at or beyond six feet from the boundary of the property upon which the equipment is located.

Table 4.12-4: City of San Diego Noise Limits

Zone Categories	Time Period	One-Hour Average Noise Level (dB)
Single-Family Residential	7:00 a.m. to 7:00 p.m.	50
	7:00 p.m. to 10:00 p.m.	45
	10:00 p.m. to 7:00 a.m.	40
Multi-Family Residential (Up to a maximum density of 1/2,000)	7:00 a.m. to 7:00 p.m.	55
	7:00 p.m. to 10:00 p.m.	50
	10:00 p.m. to 7:00 a.m.	45
All Other Residential	7:00 a.m. to 7 p.m.	60
	7:00 p.m. to 10:00 p.m.	55
	10:00 p.m. to 7:00 a.m.	50
Commercial	7:00 a.m. to 7:00 p.m.	65
	10:00 p.m. to 7:00 a.m.	60
	7:00 p.m. to 10:00 p.m.	60
Industrial or Agricultural	Any time	75

Source: City of San Diego, 2015

According to the City of San Diego Noise Ordinance, construction is not allowed during the following timeframes:

- between the hours of 7:00 p.m. of any day and 7:00 a.m. of the following day;
- on legal holidays, as specified in Section 21.04 of the City of San Diego Municipal Code; or
- on Sundays.

A permit can be obtained from the Noise Abatement and Control Administrator if construction activities must be conducted outside of these previously listed timeframes. In addition, it is prohibited to conduct any construction activity that results in an average sound level of 75 dB or greater during the 12-hour period between 7:00 a.m. and 7:00 p.m. at or beyond the property lines of any property zoned residential. Emergency work is exempted from the construction noise limits.

City of Chula Vista General Plan Noise Element

Noise levels within the City of Chula Vista are regulated by the city's General Plan. The purpose of the Noise Element in the General Plan is to identify existing conditions and to provide general guidelines that would reduce the negative impact of noise on the community in the future. In part, the city's objectives are to identify the main sources of sound that impact residents and to suggest some ways in which the city may create a quieter environment.

According to the General Plan Noise Element, all land uses are considered incompatible with noise levels in excess of 75 dBA CNEL. For other types of land uses—such as offices, businesses, churches, athletic fields, and community parks—a limit of 70 dBA CNEL has been established. More sensitive land uses—such as residences, schools, neighborhood parks, and libraries—are considered significantly affected by noise in excess of 65 dBA CNEL.

City of Chula Vista Municipal Code Noise Ordinance

The City of Chula Vista Noise Ordinance (Chapter 19.68 of the Chula Vista Municipal Code) establishes prohibitions for disturbing, excessive, or offensive noise and contains provisions—such as sound level limits—for the purpose of securing and promoting public health, comfort, safety, peace, and quiet. Limits, as specified by zoning, are provided in Table 4.12-5: City of Chula Vista Sound Level Limits. In the case that two adjacent properties each have different zone classifications, the sound level limit at the more restrictive property is used. The Noise Ordinance prohibits the creation of any noise that exceeds the applicable limits of the ordinance at any point on or beyond the boundaries of the property on which the sound is produced unless a variance is granted. The Noise Ordinance allows the City of Chula Vista to grant exemptions from the noise limitations for temporary on-site noise sources, subject to terms and conditions intended to achieve compliance. Fixed-location public utility power line facilities located on or adjacent to a property line are subject to this noise level limit, measured at or beyond six feet from the boundary of the easement upon which the equipment is located.

Table 4.12-5: City of Chula Vista Sound Level Limits

Zone Categories	One-Hour Average Noise Level (dBA)	
	10 p.m. to 7 a.m. (weekdays) 10 p.m. to 8 a.m. (weekends)	7 a.m. to 10 p.m. (weekdays) 8 a.m. to 10 p.m. (weekends)
All Residential (Except Multiple Dwelling)	45	55
Multiple Dwelling Residence	50	60
Commercial	60	65
Light Industry (I-R and I-L Zones)	70	70
Heavy Industry (I Zone)	80	80

Source: City of Chula Vista, 2015

Section 19.68.060 of the Noise Ordinance establishes an exemption from the noise levels presented in Table 4.12-5: City of Chula Vista Sound Level Limits for construction and demolition activities. In addition, Section 19.68.050(C) regulates construction-related vibration, such that it is prohibited to operate or permit the operation of any device that creates a vibration above the perception threshold of any individual at or beyond the property boundary of the source if on private property or at 150 feet from the source if on a public space or public right-of-way.

Chapter 17.24 of the Municipal Code prohibits the use of tools, power machinery, or equipment or the conduct of construction and building work in residential zones between the hours of 10:00 p.m. and 7:00 a.m., Monday through Friday. Construction activities are also prohibited between 10:00 p.m. and 8:00 a.m., Saturday and Sunday. These restrictions do not apply to emergency repair activities.

Section 19.68.050 of the Noise Ordinance regulates vibration from construction and operational sources. It prohibits operating or permitting the operation of any device that creates a vibration that is above the vibration perception threshold of any individual at or beyond the property boundary of the source if on private property or at 150 feet from the source if on a public space or public rights-of-way.

Environmental Setting

Existing Noise Sources

The dominant ambient noise sources in the Proposed Project area are related to transportation. One of these sources is aircraft traffic from Brown Field Municipal Airport. A portion of the Proposed Project is located within the airport's CNEL 60 dB contour. Additional sources include on-road traffic from Interstate 805, State Route (SR-) 905, and SR-125.

Noise Sensitive Land Uses

Noise-sensitive land uses are generally considered to include those uses where noise exposure could result in health-related risks to individuals. In addition, uses where quiet is an essential element of their intended purpose are considered sensitive. Residential dwellings, including senior housing, are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Additional land uses—such as parks, historic sites, cemeteries, and recreation areas—are also considered sensitive to increases in exterior noise levels. Schools, churches, hotels, libraries, and other places where low interior noise levels are essential are also considered noise-sensitive land uses.

The nearest residences to the Proposed Project are located approximately 75 feet from planned construction activities within the City of San Diego. In addition to these residences, there are seven recreational facilities located within one mile of the Proposed Project. The Proposed Project is also located within Otay Valley Regional Park. The school nearest to the Proposed Project alignment is Ocean View Hills School, located approximately 1.01 miles to the southwest. The Proposed Project is also located adjacent to Richard J. Donovan Correctional Facility.

4.12.3 Impacts

The following subsections describe the criteria of significance used to assess potential impacts from noise that may result from implementation of the Proposed Project, and examine those potential impacts.

Significance Criteria

Noise

Standards of significance were derived from Appendix G of the CEQA Guidelines. Impacts to noise would be considered significant if the Proposed Project:

- Results in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies
- Results in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels
- Results in a substantial permanent increase in ambient noise levels in the Proposed Project vicinity above levels existing without the Proposed Project
- Results in a substantial temporary or periodic increase in ambient noise levels in the Proposed Project vicinity above levels existing without the Proposed Project
- Lies within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, and, as a result, exposes people residing or working in the Proposed Project area to excessive noise levels
- Lies in the vicinity of a private airstrip and, as a result, exposes people residing or working in the Proposed Project area to excessive noise levels

The construction and operational noise thresholds of significance for the Proposed Project components have been derived from the applicable regulatory documents, as discussed previously in Section 4.12.2 Existing Conditions. The following thresholds of significance for temporary or periodic increases from construction noise have been developed for the Proposed Project-related L_{eq} values at noise-sensitive receptor locations:

- less than 75 dBA when measured at the receiving property line will be considered noticeable, but not significant; and
- 75 dBA and above when measured at the receiving property line will be considered significantly impacted.

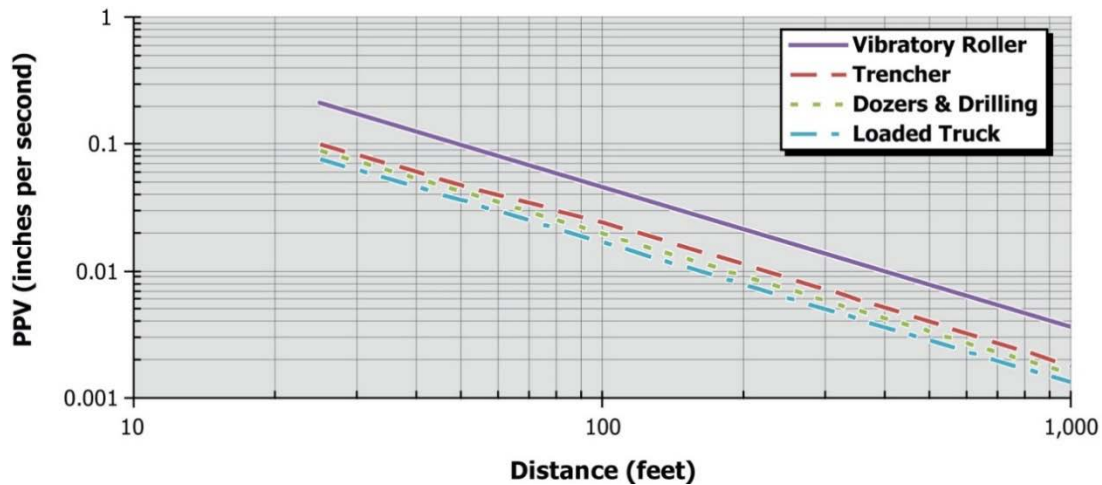
For impulsive noise, construction-related noise in excess of the following significance thresholds will be considered significant:

- 82 dBA maximum sound pressure level (L_{max} or Maximum SPL) for occupied residential, village zoning, or civic land uses.
- 85 dBA maximum sound pressure level (L_{max} or Maximum SPL) for occupied agricultural, commercial, or industrial land uses.

Vibration

Vibration amplitude decreases with distance from the source, as presented in Figure 4.12-1: Construction Vibration Amplitudes. Perceptibility of vibrations from construction equipment can be estimated by comparing the vibration thresholds provided in Table 4.12-1: Human Response to Transient Vibration to Figure 4.12-1: Construction Vibration Amplitudes. Vibration amplitudes with a PPV above 0.24 inch per second will be considered potentially significant. This amplitude corresponds with a distance of approximately 20 feet from construction activities.

Figure 4.12-1: Construction Vibration Amplitudes



Source: Caltrans, 2013

As described previously, Caltrans has recommended thresholds to evaluate potential impacts to structures from blasting. In review of these standards, vibration amplitudes with a PPV above 0.5 inch per second will be considered potentially significant.

Question 4.12a – Noise in Excess of Standards

Construction – Less-than-Significant Impact

Construction of all of the Proposed Project components will require the temporary use of various types of noise-generating equipment, including backhoes, augers, flatbed boom trucks, air compressors and generators, mobile cranes, concrete trucks, and man lifts. Typical noise levels from construction equipment are provided in Table 4.12-6: Noise Levels Generated by Typical Construction Equipment. As demonstrated by Table 4.12-6: Noise Levels Generated by Typical Construction Equipment, noise levels from this equipment during construction will typically range from 75 to 89 dBA when measured at a reference distance of approximately 50 feet.

Table 4.12-6: Noise Levels Generated by Typical Construction Equipment

Equipment	Noise Level Range at Approximately 50 Feet (dBA)
Earth-Moving	
Front loader	79 to 80
Backhoe	78 to 80
Tractor, dozer	82 to 85
Scraper, grader	84 to 85
Paver	77 to 85
Truck	74 to 84
Materials-Handling	
Concrete mixer truck	79 to 85
Concrete pump	81 to 82
Crane (movable)	81 to 85
Stationary	
Pump	77 to 81
Generator	70 to 82
Compressor	78 to 80
Impact	
Jackhammers and rock drills	81 to 89
Compactors	80 to 83

Source: U.S. Department of Transportation (DOT), 2006

The construction schedule and equipment list from Chapter 3 – Project Description was used to simulate the anticipated eight-hour average noise levels from construction. The anticipated noise level from each construction phase has been provided in Table 4.12-7: Simulated Construction Noise Levels. This table also includes the distance at which the 75 dBA threshold for construction noise will be exceeded and the distance to the nearest noise-sensitive receptor for each phase. As indicated in Table 4.12-7: Simulated Construction Noise Levels, with the exception of temporary stringing activities along Sea Lavender Way, it is anticipated that all construction activities will comply with the 75-dBA threshold. Because construction-related noise levels are expected to be below the applicable threshold, impacts will be less than significant in these locations.

Table 4.12-7: Simulated Construction Noise Levels

Construction Phase	Approximate 12-Hour Leq at 50 feet (dBA)	Approximate Distance to 75 dBA (feet)	Approximate Distance to Nearest Sensitive Receptor (feet)	75-dBA Threshold Exceeded?
Staging Yard Setup/Road Refreshing	79.1	80.0	> 1,000	No
Micropile Foundation Construction	77.5	67.0	> 1,000	No
Pier Foundation Construction	77.7	68.3	260	No
Direct Bury Construction and Pole Installation	77.4	65.6	140	No
Trenching for Installation of Underground Cables	71.9	71.5	> 1,000	No
Stringing Activities	76.0	56.1	20	Yes
Demobilization/Cleanup	81.1	101.1	> 1,000	No

As shown in Attachment 3-A: Detailed Route Map, a temporary stringing site will be located along Sea Lavender Way, near the intersection with Black Coral Way, in the City of San Diego. The boundaries of this stringing site will be located approximately five to 10 feet from existing residential parcel lines. As a result, preliminary noise modeling indicates that construction may generate 12-hour noise levels in excess of 75 dBA at these residences for approximately one to two days during stringing activities. SDG&E will implement the following Project Design Feature and Ordinary Construction/Operating Restrictions as described in Chapter 3 – Project Description:

- SDG&E will meet and confer with the City of San Diego to discuss temporarily deviating from the requirements of the Noise Ordinance as necessary.
- Functional mufflers will be maintained on all equipment to minimize noise levels during construction.

With the implementation of these Project Design Feature and Ordinary Construction/Operating Restrictions, noise levels will be less than significant.

Rock splitting/blasting may be required in two locations along the alignment—between pole locations 75 and 82 and between pole locations 97 and 103—if construction crews encounter bedrock during the excavation process. Blasting activities will typically involve drilling multiple holes into the rock. Charges will then be inserted into each hole and detonated sequentially, limiting the blasting-related noises to one individual charge at a time. Smaller charges and/or multiple blasting operations may be utilized to further limit blasting-related noise levels at individual pole locations. Pole locations 75 through 78 are located within the City of Chula Vista and the remaining pole locations where blasting may occur are located within the County. Because the City of Chula Vista does not have an impulsive noise standard, the County standards were applied to all blasting locations. SDG&E will implement the following Project Design Feature and Ordinary Construction/Operating Restriction to ensure the impulsive noise from blasting will not exceed the applicable County standards, as described in Chapter 3 – Project Description:

- A site-specific Blasting Plan will be prepared at each pole location where the use of explosives is anticipated. The Blasting Plan will identify the type and quantity of explosive material required, describe the timing of the blasts if multiple are required, and quantify the impulsive noise and groundborne vibration that will result. The resulting impulsive noise levels and groundborne vibration amplitudes will be compared against the applicable thresholds. If the blasting process is expected to exceed these thresholds, additional control measures (e.g., covering the charge area with soil, rubber mats, and/or steel plates; and/or reducing the charge size) will be implemented if feasible. If these control measures do not reduce the noise and vibration to below applicable thresholds, SDG&E will meet and confer with the County to discuss the planned blasting operation.

With the implementation of SDG&E's Project Design Features and Ordinary Construction/Operation Restrictions, impacts from impulsive noise will be less than significant.

Operation and Maintenance – No Impact

Operation and maintenance activities for the Proposed Project will be conducted in the same manner as the existing facilities. Operation and maintenance activities are expected to decrease slightly as a result of the Proposed Project due to the lower maintenance requirements of the replacement steel poles relative to the existing wood poles. As a result, there will be no change in the noise levels from these activities, and there will be no impact.

Question 4.12b – Groundborne Vibration and Noise

Construction – Less-than-Significant Impact

Construction activities can generate varying degrees of groundborne vibration, depending on the construction procedure and the construction equipment used. Operating construction equipment generates vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings located in the vicinity of the construction site often varies depending on soil type, ground strata, and construction characteristics of the receiving

buildings. Table 4.12-1: Human Response to Transient Vibration shows that vibrations become perceptible by humans at an amplitude of approximately 0.035 inch per second. When compared to Figure 4.12-1: Construction Vibration Amplitudes, a PPV of 0.24 inch per second is generated at a distance of approximately 20 feet by a loaded truck. Because there are no sensitive receptors located within 20 feet of the Proposed Project, construction activities will not generate perceivable levels of groundborne vibrations.

As described previously, blasting may be required in two locations along the alignment—between pole locations 75 and 82 and between pole locations 97 and 103. If blasting occurs, the process will generate groundborne vibrations. Due to the short-term nature of blasting, this activity is not anticipated to affect individuals; however, it does have the potential to damage buildings. As shown in Table 4.12-2: Vibration Damage Threshold Guidance, groundborne vibration with a PPV above 0.5 inch per second from blasting could potentially damage older residential structures. In order to avoid damage to structures, SDG&E will implement the Project Design Feature and Ordinary Construction/Operating Restriction described previously in response to Question 4.12a – Noise in Excess of Standards, which require preparation of a Blasting Plan prior to the use of explosives that will evaluate the anticipated groundborne vibration to ensure that damage to buildings does not occur. As a result, impacts will be less than significant.

Operation and Maintenance – No Impact

As described previously, operation and maintenance activities for the Proposed Project will be conducted in the same manner as the existing facilities. Operation and maintenance activities are expected to decrease slightly as a result of the Proposed Project due to the lower maintenance requirements of the replacement steel poles relative to the existing wood poles. As a result, no new receptors will be subject to groundborne vibration, and there will be no impact.

Question 4.12c – Substantial Permanent Ambient Noise Increases

Construction – No Impact

Construction activities will occur over a finite period; therefore, no permanent increase in noise will occur, and there will be no impact.

Operation and Maintenance – No Impact

When a power line is in operation, an electric field is generated in the air surrounding the conductors, forming a “corona.” The corona results from the partial breakdown of the electrical insulating properties of air surrounding the conductors. When the intensity of an electric field at the surface of the conductor exceeds the insulating strength of the surrounding air, a corona discharge occurs at the conductor surface, representing a small dissipation of heat and energy.

Some of the energy may dissipate in the form of small local pressure changes that create audible noise. Audible noise generated by corona discharge is characterized as a hissing or crackling sound that may be accompanied by a 120 Hz hum. Slight irregularities or water droplets on the conductor and/or insulator surface accentuate the electric field strength near the conductor surface, thereby making corona discharge and the associated audible noise more likely. Therefore, audible noise from power lines is generally a foul weather (i.e., wet conductor)

phenomenon. However, during fair weather, insects and dust on the conductors can also serve as sources of corona discharge.

Because TL 649 will continue to be operated at 69 kilovolts and the existing conductors will remain, the anticipated corona noise from these conductors will not change from existing conditions. As a result, there will be no impact from corona noise.

As described in response to Question 4.12a – Noise in Excess of Standards, operation and maintenance activities for the Proposed Project will be conducted in the same manner as the existing facilities. Operation and maintenance activities are expected to decrease slightly as a result of the Proposed Project due to the lower maintenance requirements of the replacement steel poles relative to the existing wood poles. As such, there will be no new sources of ambient noise, and there will be no impact.

Question 4.12d – Substantial Temporary or Periodic Ambient Noise Level Increases

Construction – Less-than-Significant Impact

Impacts during construction are identified in the response to Question 4.12a – Noise in Excess of Standards. These impacts will be temporary and last approximately seven months. With the exception of some residences along Sea Lavender Way, noise-sensitive receptors will not experience a significant increase in ambient noise during construction activities, as previously described. Impacts will be less than significant due to the short-term nature of the construction phase of the Proposed Project and the distance between the site and sensitive receptors.

As described previously in response to Question 4.12a – Noise in Excess of Standards, preliminary noise calculations indicate that the potential exists for residents along Sea Lavender Way to be temporarily exposed to noise in excess of 75 dBA during stringing activities. Work at this location will be short-term, lasting approximately one day. As described previously in response to Question 4.12a – Noise in Excess of Standards and in Chapter 3 – Project Description, Project Design Feature and Ordinary Construction/Operating Restrictions will be implemented in order to minimize noise impacts from construction. In the event that noise is anticipated to exceed 75 dBA at the boundary of any residential parcels along Sea Lavender Way, SDG&E will meet and confer process with the City of San Diego. As a result, impacts will be less than significant.

Operation and Maintenance – No Impact

As described in response to Question 4.12a – Noise in Excess of Standards, operation and maintenance activities for the Proposed Project will be conducted in the same manner as the existing facilities. Operation and maintenance activities are expected to decrease slightly as a result of the Proposed Project due to the lower maintenance requirements of the replacement steel poles relative to the existing wood poles. As such, there will be no new sources of ambient noise, and there will be no impact.

Question 4.12e – Air Traffic Noise from Public Airports – No Impact

The Proposed Project site is located approximately 0.8 mile north and 1.3 miles east of the Brown Field Municipal Airport and lies within Airport Land Use Compatibility Plan (ALUCP).

The noise compatibility policies and standards in the ALUCP are designed to avoid the establishment of new noise-sensitive land uses—including residences, public and private schools, hospitals and convalescent homes, and places of worship—within the CNEL 65 dB contour. While the Proposed Project is located adjacent to the CNEL 65 dB contour, replacing the existing line will be considered a compatible land use and workers will not be exposed to excessive noise levels. As a result, there will be no impact.

Question 4.12f – Air Traffic Noise from Private Airstrips – No Impact

There are no private airstrips located within two miles of the Proposed Project. Therefore, people working in the Proposed Project area during the construction, operation, or maintenance phases will not be exposed to excessive noise levels attributable to a private airstrip, and no impact will occur.

4.12.4 Applicant-Proposed Measures

Because the Proposed Project will not result in any significant impacts from noise, no applicant-proposed measures have been proposed.

4.12.5 References

- California Health and Safety Code. 2011. California Noise Control Act of 1973. Online. <http://www.noisefree.org/cityord/california-noise-control-act.pdf>. Site visited June 26, 2015.
- Caltrans. 2013. Transportation- and Construction-Induced Vibration Guidance Manual. Online. http://www.dot.ca.gov/hq/env/noise/pub/TCVGM_Sep13_FINAL.pdf. Site visited June 26, 2015.
- City of Chula Vista. 2015. *City of Chula Vista General Plan*.
- City of Chula Vista. 2015. City of Chula Vista Municipal Code. Online. <http://www.codepublishing.com/CA/ChulaVista/#!/ChulaVista01/ChulaVista01.html>. Site visited June 26, 2015.
- City of San Diego. 2015. Municipal Code: Sound Level Limits. Online. <http://docs.sandiego.gov/municode/MuniCodeChapter05/Ch05Art9.5Division04.pdf>. Site visited June 26, 2015.
- City of San Diego. 2008. *General Plan*. Noise Element. Online. <http://www.sandiego.gov/planning/genplan/pdf/generalplan/adoptednoiseelem.pdf> Site visited July 6, 2015.
- Code of Federal Regulations, Title 29, Part 1910.95. 2004. Occupational Health and Safety Act of 1970. Online. https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=OSHACT&p_id=2743. Site visited June 26, 2015.

County of San Diego. 2009a. Ordinance No. 9962 (N.S.): An Ordinance Amending Title 3, Division 6, Chapter 4 of the San Diego County Code of Regulatory Ordinances Relating to Noise Control and Abatement. Online. <http://www.sandiegocounty.gov/dplu/docs/NO-401.pdf>. Site visited June 26, 2015.

County of San Diego. 2009b. Guidelines for Determining Significance: Noise. Online. <http://www.sandiegocounty.gov/content/dam/sdc/dplu/docs/Noise-Guidelines.pdf>. Site visited June 26, 2015.

County of San Diego. 2011. *County of San Diego General Plan*.

Federal Interagency Committee on Noise. 1992. Table B.1 - Federal Agency Review of Selected Airport Noise Analysis Issues. Online. <http://www.fican.org/pdf/nai-8-92.pdf>. Site visited June 26, 2015.

Harris, Cyril. 1979. *Handbook of Noise Control*. University of Michigan: McGraw-Hill, 1979.

U.S. DOT. 2006. FHWA Roadway Construction Noise Model User's Guide. Online. http://www.fhwa.dot.gov/environment/noise/construction_noise/rcnm/rcnm.pdf. Site visited June 26, 2015.

U.S. DOT. 2006. Transit Noise and Vibration Impact Assessment. Online. http://www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf. Site visited June 26, 2015.