

C.8 NOISE

This section addresses the environmental setting and impacts related to the Proposed Project and alternatives. Specifically, Section C.8.1 provides a description of the environmental baseline and regulatory settings, Section C.8.2 presents an introduction to the environmental impacts analysis and applicant proposed measures. Environmental impacts and mitigation measures for the Proposed Project and alternatives are described in Section C.8.3 through C.8.8 and a mitigation monitoring program is provided in Section C.8.9.

C.8.1 ENVIRONMENTAL BASELINE AND REGULATORY SETTING

C.8.1.1 Environmental Setting

C.8.1.1.1 *General Characteristics of Community Noise*

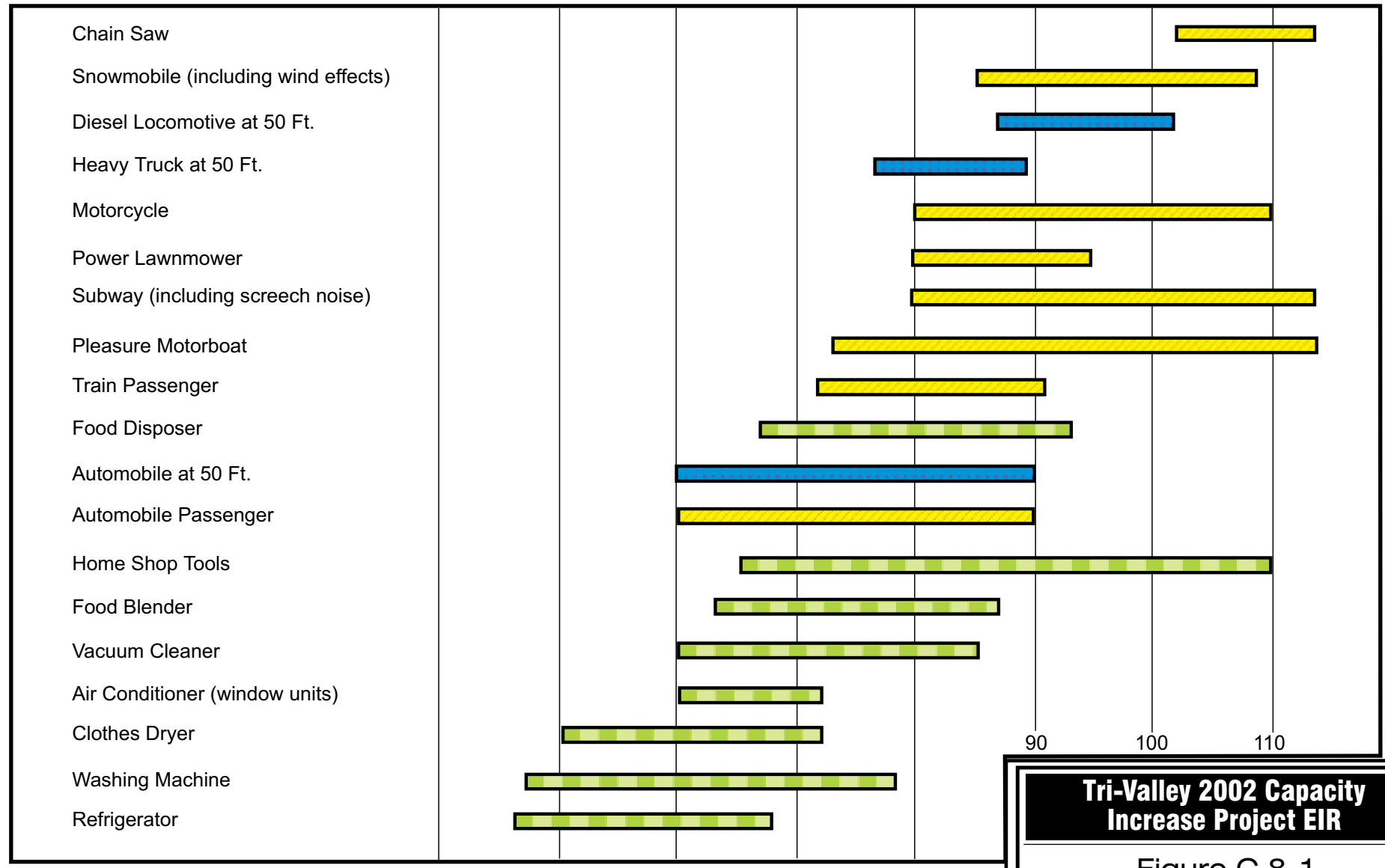
To describe noise environments and to assess impacts on noise sensitive areas, a frequency weighting measure that simulates human perception is customarily used. It has been found that *A-weighting* of sound intensities best reflects the human ear's reduced sensitivity to low frequencies and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dBA) is cited in most noise criteria. Decibels are logarithmic units that conveniently compare the wide range of sound intensities to which the human ear is sensitive. Figure C.8-1 is an illustration of a typical range of common sounds heard in the environment.

Noise environments and consequences of human activities are usually well represented by an equivalent A-weighted sound level over a given time period (L_{eq})¹, or by the average day-night noise levels (L_{dn})². 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. As illustrated in Figure C.8-2, outdoor L_{dn} levels vary over 50 dBA depending on the specific type of land use. In wilderness areas, the L_{dn} noise levels average approximately 35 dBA, 50 dBA in small towns or wooded residential areas, 75 dBA in major metropolis downtown areas (e.g., San Francisco), and 85 dBA near major freeways and airports. Although people often accept the higher levels associated with very noisy urban residential and residential-commercial zones, they nevertheless are considered to be adverse levels of noise to public health.

Various environments can be characterized by levels that are generally 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 average daytime levels. The day-to-night difference in rural

¹The Equivalent Sound Level (L_{eq}) is a single value of sound level for any desired duration, which includes all of the time-varying sound energy in the measurement period.

²Day-night average sound level that is equal to the 24 hour A-weighted equivalent sound level with a 10 decibel penalty applied to nighttime levels.



MEASUREMENT LOCATION

- Outdoors
- Operator/Passenger
- In Home

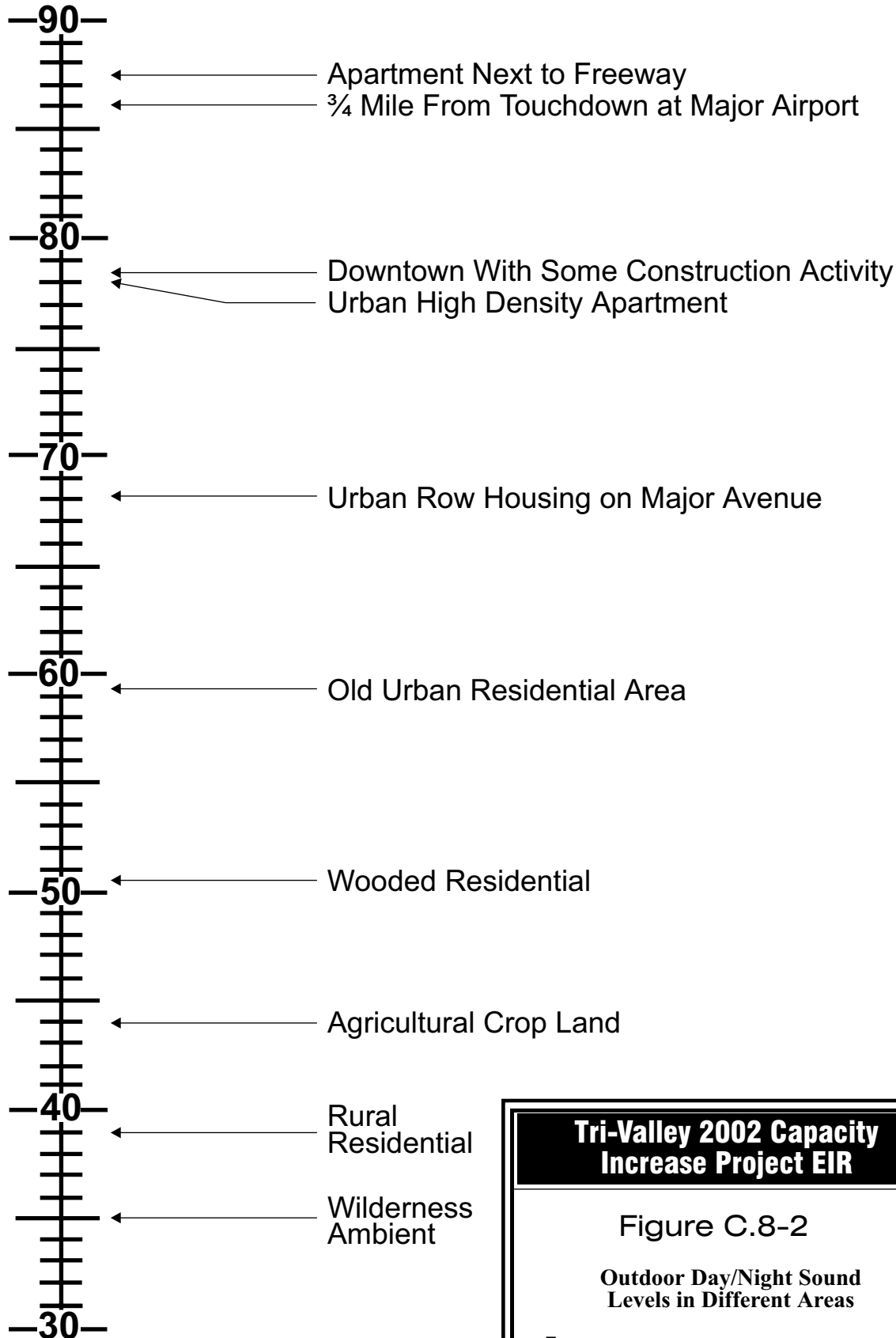
Source: USEPA, 1978. Protective Noise Levels
Condensed Version of EPA Levels Document

Tri-Valley 2002 Capacity Increase Project EIR

Figure C.8-1
Typical Range of Common Sounds Heard in the Environment
Aspen
Environmental Group

L_{dn} in dB

Outdoor Location



Tri-Valley 2002 Capacity Increase Project EIR

Figure C.8-2

Outdoor Day/Night Sound Levels in Different Areas

Aspen
Environmental Group

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

areas away from roads and other human activity can be considerably less. Areas with full-time human occupation that are subject to nighttime noise and are the same as daytime levels are often considered objectionable relative to noise disturbance. Noise levels above 45 dBA at night can result in the onset of sleep interference effects (U.S. EPA, 1971). At 70 dBA, sleep interference effects become considerable.

C.8.1.1.2 *Noise Environment in the Project Area*

This section describes the general noise environment of the project area, including areas adjacent to the Proposed and Alternative route alignments and substations. The noise environment is described in terms of existing ambient noise levels and sensitive noise receptors. Noise-sensitive receptors are facilities or areas (e.g., residential areas, hospitals, schools, parks, offices) where excessive noise may cause annoyance or loss of business.

Pleasanton Area

Ambient Noise Levels. With the exception of traffic noise associated with Highway 84, the first 4 miles or so of the Proposed South Area Route are in an area of limited development with estimated ambient noise levels of approximately 45 to 50 dBA. Traffic associated with Highway 84 can be expected to generate noise levels of approximately 60 to 70 dBA. From Milepost M4.0 to approximately M5.3, the proposed alignment is on streets in residential neighborhoods. 1995 noise measurements along Hearst Avenue and Bernal Avenue, which are along the proposed route, recorded average noise levels of 54 and 69 dB, respectively (City of Pleasanton, 1996). Residential neighborhoods tend to have ambient noise levels in the range of 50 to 55 dBA. An average measured L_{eq} in the vicinity of the existing Vineyard Substation was found to be 68 dBA (PEA, 1999). Noise measurements calculated for a different project approximately 300 feet to the southeast of the existing Vineyard Substation in the Vineyard Villa Mobile Home Park indicated an L_{eq} range of 55 to 62 dBA at around 10:00 a.m. (PEA, 1999). A noise measurement for this project was collected in the same vicinity as the previously mentioned measurements in the Vineyard Villa Mobile Home Park. This measurement was conducted at 9:00 a.m. on a Sunday (12/10/00) and recorded a significantly lower 20 minute L_{eq} of 49 dBA (Aspen, 2000).

Sensitive Receptors. The proposed underground alignment is in streets (Benedict Court, Smallwood Court, Hearst Drive, and Bernal Avenue) adjacent to single-family residential units from Milepost M4.0 to Milepost M4.4. At the intersection of Smallwood Court and Hearst Drive, the proposed alignment passes the Kottinger Ranch private swimming and tennis club. From about Milepost M4.4 to Milepost M5.4 the proposed alignment would be located within Bernal Avenue, which is also predominantly a residential street. The proposed route passes Kottinger Park at Bernal Avenue's intersection with Kottinger Drive. The subject stretch of Bernal Avenue is lined exclusively with single-family homes south of Kottinger Park, while north of the park there are a few condominium developments. Between Palomino Drive and Vineyard Avenue, condominiums line both sides of Bernal Avenue. The proposed alignment proceeds north and passes near a second neighborhood park called Tawny Park. Tawny Park is surrounded by condominiums to the north and west and by single-

family residential units to the east. The nearest sensitive receptor to the existing Vineyard Substation is approximately 300 feet to the southeast (PEA, 1999).

S1: Vineyard-Isabel-Stanley Alternative

Ambient Noise Levels. The majority of the Alternative S1 route is located by roadways that experience relatively high average daily trip (ADT) levels and produce proportionately loud ambient noise levels. Traffic associated with Vineyard Avenue, Isabel Avenue, and Stanley Boulevard can be expected to generate dBA levels of approximately 60 to 70 dBA. A 1995 noise measurement along Vineyard Avenue, west of Ruby Hill Boulevard, recorded an average noise level of 65 dB (City of Pleasanton, 1996). In addition to traffic noise, this alignment is adjacent to extensive gravel mining operations along Vineyard and Stanley that tends to produce elevated ambient noise levels.

Sensitive Receptors. The tap point for Alternative S1 is located in Sycamore Grove Regional Park. Northwest of Sycamore Grove Regional Park, the alternative alignment is adjacent to Foley Road, which is bordered on the west by vineyards that comprise 20-acre vineyard estate lots. Where Foley Road turns west to connect with Highway 84, the S1 alignment is adjacent to two rural residences on the north side of Foley Road. Northwest of Highway 84, the S1 alignment would follow the south/west property line of a single rural residence located on the south side of Vineyard just west of Highway 84. Single-family residential units are on the east side of Isabel Avenue, north of Concannon Boulevard. About 1.3 miles east of Bernal Avenue, the Alternative S1 alignment passes adjacent to the Shadow Cliffs Regional Recreation Area, which includes a popular large waterslide and a lake for swimming and fishing opportunities.

S2: Vineyard Avenue Alternative

Ambient Noise Levels. The main difference between the Alternative S1 alignment and the Alternative S2 alignment is that the S2 alignment continues along Vineyard Avenue, where the S1 alignment would turn north on Isabel Avenue. As Vineyard Avenue approaches Bernal Avenue to the west, it picks up elevated ADT levels compared to the levels that are experienced near Isabel Avenue. Proportionately, ambient noise levels along the western portion of Vineyard Avenue are elevated compared to the levels near Isabel Avenue. A 1995 noise measurement along Vineyard Avenue, between Touriga Drive and Grape Vine, recorded an average noise level of 67 dB (City of Pleasanton, 1996).

Sensitive Receptors. Southeast of Isabel Avenue, Alternative S2 follows the same alignment as Alternative S1 (see above for sensitive receptors southeast of Isabel Avenue). West of Isabel Avenue and to the south of the Alternative S2 alignment is the Ruby Hill subdivision of single-family homes. As the Alternative S2 alignment turns northwest along Vineyard Avenue, it is adjacent to rural single-family residential units for the next mile or so. At the point where the Alternative S2 alignment along Vineyard Avenue turns to the northwest, Station No. 5 of the Livermore-Pleasanton Fire Department is adjacent to the south side of the alignment and road. As Alternative S2 turns from its northwest trajectory and heads due west, a nursery is adjacent to the south side of the alignment (just east of Vista Diablo Way on Vineyard Avenue) and suburban residential developments are on both the north and south sides of the alignment for approximately 1,600 feet. Continuing westward, the Hacienda Estates

Motor Home Park is adjacent to the north side of the alignment, followed by Vineyard Villas, a trailer park that extends to Bernal Avenue. A condominium development is opposite Vineyard Villas on the southeast corner of Vineyard and Bernal Avenues, south of the Alternative S2 alignment.

S4: Eastern Open Space Alternative

Ambient Noise Levels. The majority of the Alternative S4 route is located in remote, undeveloped areas of Alameda County that can be expected to have ambient noise levels of approximately 40 to 45 dBA. However, once the alignment joins with Vineyard Avenue, ambient levels can be expected to be in the high 60 dBA range.

Sensitive Receptors. The S4 alignment passes approximately 900 feet west of a residence that is located approximately 950 feet south of Vineyard Avenue. Refer to the Alternative S2 discussion of sensitive receptors located on Vineyard Avenue for the sensitive receptors adjacent to the common portion of the S2 and S4 alternative alignments.

Dublin Area

Proposed Project

Ambient Noise Levels. The Proposed alignment in the Dublin area is mostly in undeveloped grazing land with relatively low ambient noise levels. Ambient noise levels along this stretch of the Proposed Route are estimated to be approximately 45 to 50 dBA. The Proposed Dublin substation site is on vacant grazing land nestled by surrounding hillsides. A noise measurement collected in 1999 at the Dublin Substation site indicated an average L_{eq} of 47 dBA (PEA, 1999).

Sensitive Receptors. The portion of this alignment east of Milepost B13.2, near Manning Road is described below under the heading of "North Livermore Area." The Dublin Area Proposed alignment passes approximately 1,000 feet north of a farm residence at approximately Milepost B13.8, and would pass approximately 600 feet south of two farm residences and about 400 feet north of a farm residence. A private single-family residence is situated atop of a surrounding hillside, approximately 2,000 feet southwest of the proposed substation site.

Alternative D1: South Dublin

Ambient Noise Levels. From the Vineyard Substation, this route heads due north, crossing Stanley Boulevard into an industrial land use area, passing just to the west of a construction company storage yard and gravel processing facility. Ambient noise levels in this industrial area are estimated to be approximately 55 to 60 dBA. The Alternative D1 alignment would continue north until it hits Busch Road and heads east. A 1995 noise measurement along Busch Road recorded an average noise level of 70 dB (City of Pleasanton, 1996). The alignment would continue easterly along Busch, then head north along a private haul road used to haul gravel mined from pits immediately east of the roadway. Ambient noise levels along this road are estimated to be approximately 70 dBA. The route continues north, to about 1,000 feet north of I-580 to the Alternative D1 substation site in South Dublin. The

portion of the alignment north of the freeway, including the substation site, is currently vacant land. A noise measurement collected at the D1 Alternative Substation Site for this project on December 10, 2000, indicated a 15-minute L_{eq} level of approximately 67 dBA (Aspen, 2000). A 15-minute L_{eq} was adequate for this measurement because there was generally only one continuous noise source (I-580) and the L_{eq} became stable by approximately 15 minutes.

Sensitive Receptors. Just south of the Fallon Road interchange with I-580, the alignment would head west along the south side of the freeway for about 2,600 feet, crossing currently vacant land adjacent to single-family residential development on the west. These residences are the only existing sensitive receptors in the vicinity of Alternative D1. North of the Freeway, the alignment and substation site are located in a vacant area planned for commercial development.

Alternative D2: Dublin-San Ramon

Ambient Noise Levels. West of the San Ramon Substation, Alternative D2 is in residential areas with estimated ambient noise levels of 55 to 60 dBA. East of Dougherty Road, Alternative D2 would be just north of and parallel to the northern border of the Camp Parks training area, which includes shooting ranges. Ambient noise levels adjacent to the training camp are estimated to be approximately 60 dBA. Between Alcosta Boulevard and the Proposed Dublin Substation site, the alignment is bordered on the north by open space grazing land with estimated ambient noise levels of between 45 and 50 dBA. The San Ramon-Pittsburg transmission line (which may require reconductoring) passes through mostly open space and residential land uses; the ambient noise levels along this transmission line are estimated to be approximately 50 to 55 dBA.

Sensitive Receptors. This alternative alignment begins at the existing San Ramon Substation, west of Alcosta Boulevard and north of Pine Valley Road. The station is surrounded on the north and west by single-family residential units. Bordering the substation on the south is a rectangular section of the San Ramon Royal Vista Golf Course, an 18-hole course interspersed throughout with residential units stretching to the south. The Walt Disney Elementary School and neighborhood park are on the south side of Pine Valley Road, approximately 850 feet south of the existing substation. A large wholesale nursery borders the substation on its east boundary. Immediately east of Alcosta Boulevard, the new alternative alignment passes approximately 80 feet north of several residential receptors. At Tassajara Road, a single residence is located on a hilltop, approximately 1,000 feet south of the new D2 Alternative route.

Alternative D2 may also involve reconductoring the San Ramon-Pittsburg transmission line, a 20-mile long, single-circuit 230 kV line. Several miles north of the San Ramon substation, this transmission corridor passes adjacent to or through suburban residential development in eastern Danville, then crosses the community of Blackhawk. North of Mount Diablo, the alignment crosses through residential development in Clayton, then continues into the City of Pittsburg, passing just west of residential neighborhoods, through an industrial area, and into the Pittsburg power plant, located on the north side of Pittsburg.

North Livermore Area

Proposed Project

Ambient Noise Levels. The proposed alignment in the North Livermore area is located mostly in undeveloped grazing land. Ambient noise levels along this stretch of the Proposed Route are estimated to be approximately 45 to 50 dBA. A one mile lateral of the route is located along North Livermore Road, which is estimated to have an ambient noise level of approximately 60 dBA. The North Livermore Substation is located adjacent to North Livermore Road in open space grazing land. A noise measurement collected at the North Livermore Substation site in 1999 indicated an average L_{eq} of 62 dBA (PEA, 1999). A noise measurement collected on December 10, 2000, approximately 10 feet east of North Livermore Road at a residential property line indicated a 20 minute L_{eq} of approximately 67 dBA (Aspen, 2000).

Sensitive Receptors. Heading west from Milepost B10.4, the alignment would pass approximately 500 feet north and south of isolated rural residences at Mileposts B11, B11.3, and B11.4, and about 200 feet south of another residence at Milepost B12.3. At the north end of North Livermore Avenue (Milepost V0), the transmission lines would head in two directions, one continuing westward, and another heading south for 1 mile along the west side of North Livermore Avenue to the proposed North Livermore Substation. The land to the east of this segment is a tilled agricultural field surrounding a residence and farm buildings near Milepost V0.5. A farm residence is also located opposite the substation site on the east side of the roadway, approximately 200 feet from the substation site. A second residence is approximately 1,000 feet due south of the substation site. Thirteen additional rural residences are located along Bel Roma Road, about 2,000 feet east of the substation site. As the northern alignment continues westward from Milepost V0, it passes three rural residences located on the north side of Manning Road between North Livermore Avenue and Morgan Territory Road. A fourth residence is on the south side of Manning at Morgan Territory Road.

P1 and P2 Variant Alternatives

The alignments for the P1 and P2 Variants are identical to the Proposed Project alignment (they would be underground rather than overhead). Refer to the previous discussion for descriptions of existing ambient noise levels and sensitive receptors.

Alternative L1: Raymond Road

Ambient Noise Levels. This alignment is predominantly located in a rural area, along Raymond Road. Estimated dBA levels along Raymond Road are estimated to be approximately 55 to 60 dBA. A noise measurement collected about 15 feet north of Raymond Road, about 40 feet east of Lorraine Street on December 10, 2000 indicated a 20 minute L_{eq} level of 53 dBA (Aspen, 2000). The L1 Alternative Substation site is located immediately north of this sample location and currently consists of vacant grazing land, with an estimated ambient noise level of approximately 50 dBA.

Sensitive Receptors. Single-family residential units are located to the southeast of the tap point, off Ames Street. Heading west from the tap point, the L1 Alternative alignment immediately crosses two adjacent farms. The farm closest to the tap point consists of buildings only, with no residence, while the farm to the west has one residence in addition to other buildings. Three residences are located on the south side of Raymond Road between Dagnino and Lorraine. Two farm houses are in close proximity to the L1 Substation site. One is approximately 150 feet northwest of the site, while the other is approximately 150 feet southeast of the site across Raymond Road. A Federal Communications Commission (FCC) monitoring station is located about 1,000 feet south of the L1 substation site.

Alternative L2: Hartman Road.

Alternative L2 is identical to Alternative S1 (described under the Pleasanton Area heading) from the tap point to the intersection of Isabel Avenue and Stanley Boulevard. Please refer to the Alternative S1 discussion for information about ambient noise levels and sensitive receptors for this portion of the alignment.

Ambient Noise Levels. Traffic associated with Stanley Boulevard can be expected to generate dBA levels of approximately 60 to 70 dBA. Between Stanley Boulevard to the south and Jack London Boulevard to the north, the route extends through vacant grazing land with estimated ambient noise levels of approximately 45 to 50 dBA. North of Jack London Boulevard, Alternative L2 passes east of the main runway of Livermore Municipal Airport. Ambient noise levels in this area are estimated to be approximately 65 to 75 dBA. The route crosses I-580, which can be expected to have ambient noise levels of approximately 75 to 80 dBA at 50 feet. Northeast of I-580, the route passes adjacent to Las Positas College and one to the L2 Alternative substation site study zone. Ambient noise levels adjacent to Las Positas College are estimated to be approximately 50 to 55 dBA. The L2 substation site study zone and immediate surroundings consist entirely of vacant agricultural fields with estimated ambient noise levels of approximately 45 to 50 dBA.

Sensitive Receptors. Adjacent to the east side of the L2 Alternative alignment are single-family residential units. The alignment along Kitty Hawk is bordered on the north by single-story offices and other light industrial development. North of I-580, the alignment is bordered on the west by a large indoor sports facility and on the east by a large office/light industrial building currently under construction. After passing a vacant field, the alignment would veer to the northeast, passing adjacent to Las Positas College.

Tesla Connection

Proposed Project-Phase 2

Ambient Noise Levels. The Proposed Phase 2 alignment would originate at the Tesla substation, which is surrounded by grazing land. The alignment would be located in an existing 75-foot-wide vacant PG&E easement, nearly all of which is on land used to graze cattle and support wind farms. A noise measurement collected along the Proposed Phase 2 route in 1999 indicated an average L_{eq} of 50 dBA (PEA, 1999). The main noise sources along this route are the Union Pacific Rail Corridor and I-580.

At Milepost C1.5, the easement crosses the Union Pacific Railroad corridor and about 800 feet south of the Southern Pacific Railroad corridor. Ambient noise levels in the vicinity of the railroads are estimated to be approximately 55 to 60 dBA. The alignment would cross I-580 at Milepost C3.6. I-580 has estimated ambient noise levels of approximately 75 to 80 dBA at 50 feet.

Sensitive Receptors. About 1,000 feet south of Milepost C8.0 is a former residence now owned by the East Bay Regional Park District (EBRPD). Approximately 800 feet north of this same location is a second residence on the east side of Laughlin Road. The utility easement passes to the south of an existing residence just before crossing Vasco Road.

Brushy Peak Alternative Segment

Ambient Noise Levels. The entire length of this Alternative that deviates from the Proposed Phase 2 route is currently open space used for cattle grazing. Ambient noise levels along this alternative route are estimated to be approximately 50 dBA.

Sensitive Receptors. At the point where the Brushy Peak Alternative route crosses Laughlin Road, it would pass about 350 feet to the south of two existing residences, which are located on opposite sides of Laughlin Road.

Stanislaus Corridor

Ambient Noise Levels. The Phase 2 Alternative which would use the existing Stanislaus transmission corridor originates at the Tesla substation and heads south through open space/grazing land also occupied by wind turbines from approximately Milepost V1.5 to Milepost V4.0. The estimated ambient noise level along the Stanislaus Corridor is approximately 50 dBA.

Sensitive Receptors. At approximately Milepost V7.0, this Alternative alignment crosses through a ranch property where the existing Stanislaus towers are in close proximity to a farm residence, barn, and animal stables. South of Tesla Road, the Stanislaus Corridor crosses the Bar-None Ranch, with one pair of existing towers in close proximity to the residence on the property. The Stanislaus Corridor crosses into Sycamore Grove Regional Park at Milepost V12.8, crossing out of the recently expanded park at approximately Milepost V13.6. South of Sycamore Grove Regional Park, there are no sensitive receptors adjacent to the Stanislaus Corridor.

C.8.1.2 Regulatory Setting

C.8.1.2.1 Federal and State Standards and Regulations

There are no federal noise standards that directly regulate environmental noise from construction or operation of a transmission line project. However, it should be noted that the U.S. EPA has developed guidelines on recommended maximum noise levels to protect public health and welfare (U.S. EPA, 1974). Table C.8-1 provides a summary of noise levels identified as requisite to protect public health and welfare with an adequate margin of safety. With regard to noise exposure and workers, the occupational safety and health administration (osha) regulations safeguard the hearing of workers

exposed to occupational noise. Refer to 29 CFR Section 1910.95 (Code of Federal Regulations) for a list of permissible noise exposures.

Table C.8-1 Examples Of Protective Noise Levels Recommended by U.S. EPA

Effect	Level	Area
Hearing Loss	Leq(24)<70 dB	All areas
Outdoor Activity Interference and Annoyance	Ldn<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.
	Leq (24)<55 dB	Outdoor areas where people spend limited amounts of time, such as school yards, playgrounds, etc.
Indoor Activity Interference and Annoyance	Ldn<45 dB	Indoor residential areas
	Leq(24)<45 dB	Other indoor areas with human activities such as schools, etc.

Source: U.S. EPA, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, March 1974.

Note: Leq (24) = Represents the sound energy averaged over a 24-hour period.

Ldn = Represents the Leq with a 10 dB nighttime weighting.

California encourages each local government entity to perform noise studies and implement a noise element as part of their general plan. Standards and implementation are administered by the California Office of Noise Control. California Administrative Code, Title 4, has guidelines for evaluating the compatibility of various land uses as a function of community noise exposure, are listed in Table C.8-2.

C.8.1.2.2 Local Noise Policies

The proposed and alternative transmission line routes pass through the following local jurisdictions with regulatory authority over project noise levels: City of Pleasanton; Alameda County; City of Dublin; City of San Ramon; Contra Costa County; and the City of Livermore. Similar to the State's Land Use Compatibility Guidelines presented in Table C.8-2, most cities and counties adopt normally acceptable noise level guidelines based on land use categories to require new projects to meet acceptable exterior noise level standards. Refer to Table C.8-3 for city and county normally acceptable noise levels per land use category.

The City of Pleasanton requires the construction of all infrastructure and other site improvements along Vineyard Avenue to be limited to the hours of 8:00 a.m. to 5:00 p.m., Monday through Saturday (City of Pleasanton, 1999).

Table C.8-2 Land Use Compatibility for Community Noise Environment

LAND USE CATEGORY	COMMUNITY NOISE EXPOSURE - Ldn or CNEL (db)							
	50	55	60	65	70	75	80	
Residential - Low Density Single Family, Duplex, Mobile Home								
Residential - Multi-Family								
Transient Lodging - Motel, Hotel								
Schools, Libraries, Churches, Hospitals, Nursing Homes								
Auditorium, Concert Hall, Amphitheaters								
Sports Arena, Outdoor Spectator Sports								
Playgrounds, Neighborhood Parks								
Golf Courses, Riding Stables, Water Recreation, Cemeteries								
Office Buildings, Business Commercial and Professional								
Industrial, Manufacturing, Utilities, Agriculture								
	<p>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.</p> <p>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.</p> <p>Normally Unacceptable New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirement must be made and needed noise insulation features included in the design.</p> <p>Clearly Unacceptable New construction or development generally should not be undertaken.</p>							

Source: State of California General Plan Guidelines, Office of Planning and Research, June 1990.

Table C.8-3 Normally Acceptable Noise Levels Per Land Use Category

Land Use Category	Normally Acceptable ^a Levels - Lnd or CNEL (dB)					
	City of Pleasanton	Alameda County	City of Dublin	City of San Ramon	Contra Costa County	City of Livermore
Residential	60	65	60	60	60	60 ¹
Parks/Playgrounds	65	--	60	70	70	70
Commercial	70	70	70	65	70	70
Industrial/utility/agricultural	70	75	70	70	75	75

Sources: City of Pleasanton, 1999; Alameda County, 1995; City of Dublin, 1985; City of San Ramon, 1995; Contra Costa County, 1996; City of Livermore, 1993.

^a Specified decibel level is satisfactory within the specified land use category.

C.8.2 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES FOR THE PROPOSED PROJECT

C.8.2.1 Introduction

Short-term construction impacts and long-term operational impacts would result from implementation of the Proposed Project. In this section, the potential impacts associated with the construction and operation of the Proposed Project are analyzed. Section C.8.2.2 presents the project significance criteria, and Section C.8.2.3 presents the Applicant Proposed Measures to reduce impacts. Impacts and mitigation measures are presented in Sections C.8.3 through C.8.9.

C.8.2.2 Definition and Use of Significance Criteria

There are two criteria for judging noise impacts. First, noise levels projected for the planned facility must comply with the relevant federal, State, or local standards or regulations. Mitigation of noise impacts on worker safety and health is enforced by OSHA (by CAL OSHA in California), but effectiveness depends on the vigilance of supervisors in seeing that workers use protective gear in high noise environments. Noise impacts on the surrounding community are enforced through local noise ordinances, supported by nuisance complaints and subsequent investigation. There are no regulatory significance criteria applicable to the Proposed Project during construction or operation, but it is assumed that existing regulations would be enforced.

The second measure of impact recognized by noise analysts is the increase in noise levels above the existing ambient level as a result of the introduction of a new source of noise. A change in noise level due to a new noise source can create an impact on people. The degree of impact is hard to assess because of the highly subjective character of individuals' reactions to changes in noise. Empirical studies have shown people begin to notice changes in environmental noise levels of around five dBA (U.S. EPA, 1974). Thus, average changes in noise levels less than five dBA cannot be definitively considered as producing an adverse impact. For changes in noise levels above five dBA, it is difficult to quantify the impact beyond the obvious: the greater the noise level change, the greater the impact. A judgment commonly used in community noise impact analyses associates long-term noise increases of 5 to 10 dBA with "some impact." Noise level increases of more than 10 dBA are generally considered severe. In the case of short-term noise increases, such as those from construction, the 10 dBA threshold between "some" and "severe" impact is often replaced with a criterion of 15 dBA. These noise-averaged thresholds are to be lowered when the noise level fluctuates, or the noise has an irritating character with considerable high frequency energy, or if it is accompanied by subsonic vibration. In these cases, the impact must be individually estimated.

For this analysis, impacts would be considered significant if:

- Adopted local standards, noise elements, or ordinances would be exceeded in noise level, timing, or duration
- The project would increase the ambient noise level above ordinance-specified limits for the land use zoning
- An increase in noise levels of 15 dB or more would occur over a period of at least one day at a sensitive receptor with any ambient noise level; permanent increases of 5 dB would also be significant

- Long term noise would conflict with State or local guidelines, interior noise levels, and 24-hour averages, and specifically, noise levels exceeding a day-night average sound pressure level L_{dn} of 60 dBA at the nearest noise sensitive receptor (California Office of Noise Control)
- Noise increase increments to the ambient that are as low as 5 dB would be significant if they occur during quieter hours at night (between 10 p.m. and 7 a.m.); there is no precise threshold as the character of the noise is also important.

C.8.2.3 Applicant Proposed Measures

Table C.8-4 contains measures that are proposed by PG&E Co. to reduce the potential construction and operational noise impacts associated with the Proposed Project. Potential construction and operational impacts are evaluated assuming that these Applicant Proposed Measures would be implemented.

Table C.8-4 Applicant Proposed Measures for Noise

#	Measure Text
Construction Measures: Noise	
12.1a	Compressors and other small stationary equipment will be shielded with portable barriers.
12.1b	"Quiet" equipment (i.e., equipment that incorporates noise control elements into the design; compressors and jackhammers have "quiet" models) will be used during construction.
12.1c	Equipment exhaust stacks/vents will be directed away from buildings.
12.1d	Truck traffic will be routed away from noise-sensitive areas where feasible.
12.1e	Temporary sound barriers or sound curtains will be employed if the other noise reduction methods are not effective or possible, or if sensitive receptors will be exposed to construction noise for more than 1 day.

Source: PEA, 1999.

C.8.3 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES: PLEASANTON AREA

C.8.3.1 Proposed Project

C.8.3.1.1 Construction

Noise impacts could result from construction of the proposed 230kV transmission line. Construction impacts are generally short-term in nature. Approximate noise levels from construction of the Proposed Project were estimated based on the construction equipment characteristics information provided in Table C.8-5. Maximum estimated noise levels from on-site and off-site construction activities were determined and then compared to the significance criteria as described in Section C.8.2.2. With regard to operations, noise levels were estimated for permanent noise levels associated with audible transmission line noise, substation noise, and from maintenance and inspection operations. An exceedance of one of the criteria listed in Section C.8.2.2 would indicate the potential for the proposed or alternative 230kV transmission lines to result in a significant impact.

Construction Noise Impacts

Construction noise can be created from on-site and off-site sources. On-site noise sources would primarily consist of the operation of heavy duty diesel- and gasoline-powered construction equipment. Off-site noise sources would include vehicles commuting to and from the job site, as well as from trucks transporting material and equipment to the staging areas or construction right-of-way (ROW). These sources are described further in the following paragraphs.

On-site Noise Sources. On-site construction noise would occur primarily from heavy-duty construction equipment (e.g., dozers, backhoes, pile driver). Table C.8-5 presents a list of typical equipment that would be used to construct the transmission line and substations, as well as the noise intensity level at 50 feet from the noise source. Noise levels from these individual pieces of construction equipment range from 70 dBA to 98 dBA at a distance of approximately 50 feet (see Table C.8-5). It should be noted that noise levels are calculated based on the assumption that noise from a localized source is reduced by approximately 6 dBA with each doubling of distance from the source of noise.

Table C.8-5 Noise Characteristics of Construction Equipment

Equipment	Range of Noise Level (dBA) at 50 feet	Equipment	Range of Noise Level (dBA) at 50 feet
Front loaders	72-84	Forklifts	76-82
Backhoes	72-93	Pumps	69-71
Tractors, dozers	76-96	Generators	71-82
Scrapers, graders	80-93	Compressors	74-86
Trucks	82-94	Pneumatic tools	83-88
Concrete mixers	75-88	Jack hammers and rock drills	81-98
Concrete pumps	81-83	Pavers	86-88
Cranes (movable)	75-86	Compactors	84-90
Cranes (derrick)	86-88	Drill rigs	70-85

Source: PEA, 1999

In addition to the construction equipment listed in Table C.8-5, helicopters would be used in some areas to transport construction materials and to string the conductors. Short-term helicopter noise is expected to range from 92 to 95 dBA at 150 feet from the helicopter (PEA, 1999). While noise levels would vary for different construction tasks, the maximum expected noise levels would occur during jack hammer and rock drill operations.

Two types of noise are associated with on-site construction activities: intermittent and continuous. The projected maximum intermittent noise level associated with the construction of transmission line structures would range from approximately 82 to 92 dBA at 50 feet and 76 to 86 dBA at 100 feet. Intermittent construction noise could be annoying to sensitive receptors within 1,000 feet of the construction activity. It is estimated that continuous noise levels from powerline structure construction activities at 50 feet would range from 70 to 77 dBA. At 100 feet, noise levels would be approximately 63 to 71 dBA.

Noise during underground construction activities could disrupt sensitive receptors along the proposed route. Noise levels would vary depending on the specific activity and equipment being used. It is estimated that the continuous noise from underground construction would range from 69 to 85 dBA at 300 feet and would last for approximately 2 weeks in the vicinity of any one receptor location. Underground construction activities are anticipated to last for a total of approximately 5 months (PEA, 1999).

During the installation of additional facilities at the existing Vineyard Substation, neighboring mobile home park residences immediately south of the substation would be exposed to noise levels of up to 71 dBA (PEA, 1999). These short-term construction impacts could temporarily impact the residences of the mobile home park.

Applicant Proposed Measures 12.1a through 12.1c and 12.1e would reduce potentially significant on-site construction noise impacts to non-significant levels (**Class III**). However, the following mitigation measures recommended in Section C.7 would further reduce noise impacts to residential receptors along the proposed transmission line route and adjacent to the substation site.

Impact 8-1: Sensitive Receptors in the vicinity of project construction would be affected by intermittent and continuous noise levels during transmission line and substation upgrade construction (**Class III**).

While significant impacts have not been identified, the following measures would further reduce the impacts associated with on-site construction noise.

Mitigation Measures for On-site Construction Noise

L-1 As fully stated in Section C.7.3.1.1, Mitigation Measure L-1 requires that PG&E Co. provide advance notice to residents, tenants, and occupants near the project.

L-2 As fully stated in Section C.7.3.1.1, Mitigation Measure L-2 requires that PG&E Co. provide a public liaison person and a toll-free information line for construction complaints or questions.

Off-site Noise Sources. Off-site noise during construction would occur primarily from commuting workers and from various truck trips to and from the construction sites. As described in Section B.3 (Proposed Project Construction), the construction workforce for the project would average approximately 60 to 70 workers over a 12-month period. It is anticipated that most workers would be meeting at one of the staging areas and would travel to the construction site in commuter vans or buses. It is also assumed that truck trips would be required to haul structures, conductor line, and other materials to the construction sites. The peak noise levels (approximately 70 to 75 dBA at 50 feet) associated with passing trucks and commuting worker vehicles would be short-term in duration and would generate adverse, but less than significant impacts (**Class III**). Applicant Proposed Measure 12.1d would reduce adverse impacts by routing project truck traffic away from noise-sensitive areas where feasible. Because off-site noise impacts are essentially the same for the Proposed South Area and North Area routes, and for the Alternatives, off-site noise impacts are not discussed any further.

C.8.3.1.2 *Operation and Maintenance*

Transmission line noise is generated from corona discharge, which is experienced as a random crackling or hissing sound from overhead transmission lines. Corona discharge occurs when particles, such as dust or water droplets, come into contact with a conductor. The potential for noise from corona discharge is greater during wet or windy weather than during dry, calm weather. The sound generated by 230 kV lines during adverse weather conditions, such as fog or rain, are generally expected to be about 30 to 40 dBA at 100 feet from the outer conductor, but could be as high as 45 dBA at 250 feet (PEA, 1999). See Section C.9 (Public Health and Safety) for more on corona noise. This would amount to a less than significant impact because regulatory standards would not be exceeded and there are no sensitive receptors along the overhead portion of the proposed southern line (**Class III**).

Other noise sources associated with operations of the proposed 230kV transmission line would be inspection and maintenance of the transmission line, instrumentation and control, and support systems. PG&E Co. would inspect all of the structures from the surface annually for corrosion, misalignment, and excavations. Ground inspection would occur on selected lines to check the condition of hardware, insulators, and conductors. Noise generated by periodic maintenance and inspection activities occurring at various times are considered to be adverse, but less than significant short-term impacts (**Class III**). Operation and maintenance impacts would be essentially the same from alternative to alternative, so they will not be discussed further under the alternative routes.

Three transformers are currently operated at the Vineyard Substation. One of these existing 60/21 kV transformer banks would be replaced with a 230/21 transformer bank. The transformers are specified by the manufacturer to meet an 81 dBA noise level at 10 feet, operating at full capacity (fans on). It should be noted that the transformers would rarely operate at full capacity, on only the hottest summer days or coldest winter nights. The rules of dB addition used in community noise prediction are: If two sound levels are within 1 dB of each other, their sum is the highest value plus 3 dB; if two sound levels are within 2 to 4 dB of each other, their sum is the highest value plus 2 dB, and if two sound levels are within 5 to 9 dB of each other, their sum is the highest value plus 1 dB (Contra Costa County, 1996). Using these rules it is estimated that in the worst case scenario, three transformers operating at one time would produce a sound level of approximately 86 dBA at 10 feet. The closest sensitive receptor to the Vineyard Substation site is a mobile home park, approximately 300 feet southeast of the substation site. Noise levels associated with the transformers operating at full capacity would be approximately 56 dBA at the mobile home park, south of the substation. This noise level would result in a less than significant impact on the mobile home park (**Class III**) because these transformers are currently operated at the station.

C.8.3.2 Alternative S1: Vineyard-Isabel-Stanley

Construction of Alternative S1 would generate similar noise impacts as described in Section C.8.3.1.1 for the Proposed South Area transmission line. Sensitive receptors in the vicinity of the Alternative S1 alignment are primarily limited to residential land uses. Residences adjacent to this alternative route might be affected by intermittent and continuous noise during construction activities. Although no significant noise impacts are identified, Mitigation Measures L-1 and L-2 (see Section C.7.3.1.1), in addition to Applicant Proposed Measures 12.1a through 12.1e, would further reduce potentially adverse construction noise impacts (**Class III**). Alternative S1 would be slightly preferred over the Proposed South Area route because existing ambient levels along Alternative S1 (roadways) are elevated compared to existing ambient levels along the Proposed route.

C.8.3.3 Alternative S2: Vineyard Avenue

Construction of Alternative S2 would generate similar noise impacts as described in Section C.8.3.1.1 for the proposed South Area transmission line. Sensitive receptors in the vicinity of the Alternative S2 alignment are residences, including the Livermore-Pleasanton Fire Department Station No. 5 (where fire fighters reside in round-the-clock shifts). Receptors adjacent to the alternative route might be affected by intermittent and continuous noise during construction activities. Although no significant

noise impacts are identified, Mitigation Measures L-1 and L-2 (see Section C.7.3.1.1), in addition to Applicant Proposed Measures 12.1a through 12.1e, would further reduce potentially adverse construction noise impacts (**Class III**). This alternative is slightly preferred over the Proposed Route because existing ambient levels along Alternative S2 (Vineyard Av.) are elevated compared to existing ambient levels along the Proposed Route. Alternative S1 would be slightly preferred over this alternative because Alternative S1 would avoid more sensitive receptors on the western portion of Vineyard Avenue.

An elementary school is planned to be constructed south of Vineyard Avenue, and expected to begin holding classes in 2001. Therefore, it is possible that construction of this alternative transmission line route could occur after the school opens. The noise impacts on children in class could be disruptive, causing potentially significant impacts. Mitigation Measure L-12 (time construction around school schedule) identified in Section C.7.3.3 (Land Use) would reduce this impact to less than significant (**Class II**).

C.8.3.4 Alternative S4: Eastern Open Space

Construction of Alternative S4 would generate similar noise impacts as described in Section C.8.3.1.1 for the Proposed South Area transmission line. Sensitive receptors in the vicinity of the Alternative S4 alignment are located on Vineyard Avenue (already identified under the Alternative S2 discussion). Receptors adjacent to the alternative route might be affected by intermittent and continuous noise during construction activities. Although no significant noise impacts are identified, Mitigation Measures L-1 and L-2 (see Section C.7.3.1.1), in addition to Applicant Proposed Measures 12.1a through 12.1e, would further reduce potentially adverse construction noise impacts (**Class III**). This alternative is preferred over the Proposed route and Alternative S2 because fewer sensitive receptors would be impacted under this alternative.

C.8.4 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES: DUBLIN AREA

C.8.4.1 Proposed Project

C.8.4.1.1 Construction Impacts

Construction of the Proposed North Area Project in the Dublin area would generate similar noise impacts as described in Section C.8.3.1.1 for the Proposed South Area transmission line in the Pleasanton area. Sensitive receptors in the vicinity of the Proposed route in the Dublin area are limited to farm residences, with the exception of one single-family residence approximately 2,000 feet southwest of the proposed substation site. The farm residences adjacent to the route might be affected by intermittent and continuous noise during construction activities associated with the transmission line and substation. Although no significant noise impacts are identified, Mitigation Measures L-1 and L-2 (see Section C.7.3.1.1), in addition to Applicant Proposed Measures 12.1a through 12.1e, would further reduce potentially adverse construction noise impacts (**Class III**).

C.8.4.1.2 Operation and Maintenance Impacts

Transmission line noise generated from corona discharge and maintenance and inspection operations would be similar to those described for the South Area Proposed Route described in Section C.8.3.1.2 (**Class III**). Maintenance and Inspection impacts would be essentially the same from alternative to alternative, so they will not be discussed further under the alternative routes.

Four banks of essentially equal sized transformers (230/21 kV and 45 MVA) are planned for the Dublin Substation, to be located near the perimeter of the site. The transformers are specified by the manufacturer to meet an 81 dBA noise level at 10 feet operating at full capacity (fans on) operating conditions. Using the rules of dB addition, it is estimated that the worst case scenario of four 230/21 kV and 45 MVA transformers operating at one time would produce a sound level of 87 dBA at 10 feet. The closest sensitive receptor to the proposed Dublin Substation site is a residential unit, approximately 2,000 feet southwest of the proposed substation site. Noise levels associated with the proposed substation would be approximately 41 dBA at the residential unit, southwest of the substation. This noise level is well under the ambient noise level (47 dB) in the vicinity of the substation site and would result in a less than significant impact on the residential receptor (**Class III**). Mitigation measures are not required.

Some PG&E Co. substations use loud noises to discourage birds from perching on electrical equipment. However, according to PG&E Co., project operations at the Proposed Dublin and North Livermore substations would not involve loud noises to scare birds.

C.8.4.2 Alternative D1: South Dublin

Construction of Alternative D1 would generate similar noise impacts as described in Section C.8.3.1.1 for the Proposed South Area transmission line. Sensitive receptors in the vicinity of the Alternative S1 alignment are limited to residential land uses south of I-580. Residences adjacent to the alternative route might be affected by intermittent and continuous noise during construction activities. Although no significant noise impacts are identified, Mitigation Measures L-1 and L-2 (see Section C.7.3.1.1), in addition to Applicant Proposed Measures 12.1a through 12.1e, would further reduce potentially adverse construction noise impacts (**Class III**). There are currently no sensitive receptors in the vicinity of the Alternative D1 substation site, however the area is planned for commercial development. Potential noise levels associated with the D1 substation site would not be anticipated to cause significant impacts on the commercial developments because of the currently elevated ambient noise levels of approximately 67 dBA. Therefore, there would be no adverse impacts associated with operations of the Alternative D1 substation. Alternative D1 would be slightly preferred over the Proposed Project and the D2 Alternative because there would be no residential receptors in the vicinity of the Alternative D1 substation, and current ambient noise levels at the D1 substation site are already elevated, at 67 dBA.

C.8.4.3 Alternative D2: Dublin-San Ramon

Construction of Alternative D2 would generate similar noise impacts as described in Section 3.8.3.1.1 for the Proposed South Area transmission line. Sensitive receptors in the vicinity of the Alternative D2 alignment are limited to residences and an elementary school and neighborhood park approximately 850

feet south of the existing San Ramon substation. Sensitive receptors adjacent to the alternative route might be affected by intermittent and continuous noise during construction activities. Although no significant noise impacts are identified, Mitigation Measures L-1 and L-2 (see Section C.7.3.1.1), in addition to Applicant Proposed Measures 12.1a through 12.1e, would further reduce potentially adverse construction noise impacts (**Class III**). A residential receptor exists approximately 2,000 feet southwest of the Proposed Dublin substation. Noise levels associated with the substation at this receptor location would be approximately 41 dBA.

Alternative D2 may also involve conductoring of the 20 mile San Ramon-Pittsburg transmission line. It is assumed that construction equipment required for conductoring would consist of two or three modified pickup trucks and one to two cranes. It is anticipated that conductoring activities would proceed at a relatively fast pace and that the residential receptors adjacent to the existing line would not be exposed to adverse construction noise levels for more than a few hours at one time. Potential noise impacts associated with conductoring the San Ramon-Pittsburg line are therefore anticipated to be less than significant (**Class III**).

C.8.5 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES: NORTH LIVERMORE AREA

C.8.5.1 Proposed Project

C.8.5.1.1 Construction

Construction of the Proposed North Area Project in the North Livermore area would generate similar noise impacts as described in Section C.8.3.1.1 for the proposed South Area Transmission Line. Sensitive receptors in the vicinity of the Proposed route in the North Livermore area are limited to residences, including one residence approximately 200 feet east of the proposed substation site. These residents might be affected by intermittent and continuous noise during construction activities associated with the power line and the proposed substation. Although no significant noise impacts are identified, Mitigation Measures L-1, and L-2 (see Section C.7.3.1.1), in addition to Applicant Proposed Measures 12.1a through 12.1e, would further reduce potentially adverse construction noise impacts (**Class III**).

C.8.5.1.2 Operation and Maintenance

Transmission line noise generated from corona discharge and maintenance and inspection operations would be similar to those described for the southern portion of the proposed route described in Section C.8.3.1.2 (**Class III**). These impacts will not be discussed further under the alternative routes; however, it should be noted that there is no transmission line noise in the form of corona noise associated with the underground line portion of the alternatives.

Four banks of essentially equal sized transformers are planned for the proposed North Livermore Substation. The four transformers (230/21 kV and 45 MVA) are planned to be located near the perimeter of the site. The transformers are specified by the manufacturer to meet an 81 dBA noise level at 10 feet operating at full capacity (fans on) operating conditions. Using the rules for dBA addition, it is estimated that the worst case scenario of four 230/21 kV and 45 MVA transformers operating at full capacity at one time would produce a sound level of 87 dBA at 10 feet. The closest sensitive receptor to the proposed North Livermore Substation site is a residential unit, approximately

200 feet east of the proposed substation site. Noise levels associated with the proposed substation could be approximately 61 dBA at the residential unit, east of the substation. However, the Applicant has committed to constructing a substation inside an earthen landscaped berm, with a precast concrete wall structure (see Project Description, Section B.2.2.3). These terms of the Proposed Project could lower dBA levels at the nearby residence by approximately 10 dBA, to 50 dBA. With an ambient noise level of over 60 dBA, projected substation noise is projected to result in a less than significant impact on the residential receptor (**Class III**). Mitigation measures are not required.

C.8.5.2 P1 Variant Alternative

The P1 Variant Alternative is identical to the Proposed Project, except that the one mile of the proposed north-south 230 kV transmission line along North Livermore Avenue would be installed underground. Construction of Alternative P1 would generate similar noise impacts as described in Section C.8.3.1.1 for the Proposed South Area underground segment. Noise during underground construction activities could disrupt sensitive receptors along the route. Noise levels would vary depending on the specific activity and equipment being used. It is estimated that the continuous noise from underground construction would range from 69 to 85 dBA at 300 feet and would last for approximately two weeks in the vicinity of any one receptor location. It is estimated that underground construction activities along North Livermore Avenue would last for approximately two months. Residents along North Livermore Avenue could be disturbed by intermittent and continuous short-term construction noise. Mitigation Measures L-1, and L-2 (see Section C.7.3.1.1), in addition to Applicant Proposed Measures 12.1a through 12.1e, would further reduce potentially adverse construction noise impacts (**Class III**). The Proposed overhead line along North Livermore is preferred over Variant P1 because of the elevated noise levels associated with underground construction and a longer construction noise exposure time to residences in the vicinity.

C.8.5.3 P2 Variant Alternative

The P2 Variant Alternative is identical to the Proposed Project, except that the one mile of the proposed north-south 230 kV transmission line along North Livermore Avenue (same as P1 Alternative) and the line between the CC-N line and approximately Milepost B13.2 (2.8 miles) would be installed underground. Construction of Alternative P2 would generate similar noise impacts as described in Section C.8.3.1.1 for the Proposed South Area underground segment. Noise during underground construction activities could disrupt sensitive receptors along the route. Noise levels would vary depending on the specific activity and equipment being used. It is estimated that the continuous noise from underground construction would range from 69 to 85 dBA at 300 feet and would last for approximately two weeks in the vicinity of any one receptor location. It is estimated that underground construction activities associated with Variant P2 would last for approximately five months. It is anticipated that underground construction in the north valley (between the CC-N line and MP B13.2) would proceed at a quicker pace than along North Livermore Road because of the relative absence of underground utilities. Residents along Variant P2 could be disturbed by intermittent and continuous short-term construction noise. Mitigation Measures L-1, and L-2 (see Section C.7.3.1.1), in addition to Applicant Proposed Measures 12.1a through 12.1e, would further reduce potentially adverse construction noise impacts (**Class III**). The Proposed overhead line along North Livermore Avenue

and across the north valley is preferred over Variant P1 because of the elevated noise levels associated with underground construction and a longer construction noise exposure time to residences in the vicinity.

C.8.5.4 Alternative L1: Raymond Road

Construction of Alternative L1 would generate similar noise impacts as described in Section C.8.3.1.1 for the South Area underground portion of the proposed route. Noise levels would vary depending on the specific activity and equipment being used. It is estimated that the continuous noise from underground construction would range from 69 to 85 dBA at 300 feet and would last for approximately two weeks in the vicinity of any one receptor location. It is anticipated that construction activities along the Alternative L1 route would last for approximately two months while construction activities at the substation site would last for approximately six months. Residences in the vicinity of the Alternative L1 alignment and associated substation might be affected by intermittent and continuous noise during construction activities. Although no significant noise impacts are identified, Mitigation Measures L-1 and L-2 (see Section C.7.3.1.1), in addition to Applicant Proposed Measures 12.1a through 12.1e, would further reduce potentially adverse construction noise impacts (**Class III**).

It is anticipated that four banks of essentially equal sized transformers (230/21 kV and 45 MVA) would be used for the Alternative L1 substation. The transformers are specified by the manufacturer to meet an 81 dBA noise level at 10 feet operating at full capacity (fans on) operating conditions. Using the rules for dBA addition, it is estimated that the worst case scenario of four 230/21 kV and 45 MVA transformers operating at full capacity at one time would produce a sound level of 87 dBA at 10 feet. The closest receptors to the Alternative L1 substation site are two residences located about 150 feet northwest and southeast of the site. Maximum noise levels associated with the L1 substation would be approximately 63 dBA at the residential receptors locations. This noise level would result in a significant but mitigable impact on the residential receptors (**Class II**).

Impact 8-2: Residential receptors in the vicinity of the Alternative L1 substation site would be affected by continuous long-term transformer operational noise (**Class II**).

The following measure would reduce operational noise levels associated with the L1 substation to a level that is less than significant.

Mitigation Measure for Operations of the L1 Substation Site

N-1 If the Alternative L1 is selected, PG&E Co. shall construct the substation within an earthen landscaped berm, with a precast concrete wall structure that would break the line of sight between the residences and noise sources (fans) as to reduce operational noise by at least 10 dBA at the nearby residential receptor locations.

The Proposed Project is preferred over the L1 Alternative because permanent noise levels at the adjacent noise receptor would be slightly elevated.

C.8.5.5 Alternative L2: Hartman Road

Construction of Alternative L2 would generate similar noise impacts as described in Section C.8.3.1.1 for the Proposed South Area route. Noise levels would vary depending on the specific activity and equipment being used. This alternative consists of about 2.3 miles of underground line. It is estimated that the continuous noise from underground construction would range from 69 to 85 dBA at 300 feet and would last for approximately two weeks in the vicinity of any one receptor location. It is anticipated that construction activities along Alternative L2 would last for approximately five months. Residences and commercial facilities in the vicinity of the Alternative L2 alignment and associated substation might be affected by intermittent and continuous noise during construction activities. Although no significant noise impacts are identified, Mitigation Measures L-1 and L-2 (see Section C.7.3.1.1), in addition to Applicant Proposed Measures 12.1a through 12.1e, would further reduce potentially adverse construction noise impacts (**Class III**).

There are no sensitive receptors in the vicinity of the Alternative L2 substation site. Therefore, there would be no adverse impacts associated with operations of the Alternative L2 substation. Alternative L2 is preferred over the Proposed Project and Alternative L1 because there are no sensitive receptors in the vicinity of the L2 substation site.

C.8.6 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES: TESLA CONNECTION (PHASE 2)

C.8.6.1 Proposed Project – Phase 2

C.8.6.1.1 Construction

Construction of the Proposed Phase 2 Tesla Connection would generate similar noise impacts as described in Section C.8.3.1.1 for the Proposed South Area transmission line. Sensitive receptors in the vicinity of the proposed Tesla Connection are limited to two residences and an EBRPD facility (converted residence). These receptors might be affected by intermittent and continuous noise during construction activities. Although no significant noise impacts are identified, Mitigation Measures L-1 and L-2 (see Section C.7.3.1.1), in addition to Applicant Proposed Measures 12.1a through 12.1e, would further reduce potentially adverse construction noise impacts (**Class III**).

C.8.6.1.2 Operation and Maintenance

Transmission line noise generated from corona discharge and maintenance and inspection operations would be similar to those described for the southern portion of the Proposed Route described in Section C.8.3.1.2-adverse, but less than significant (**Class III**).

C.8.6.2 Brushy Peak Alternative

Construction of the Brushy Peak Alternative would generate similar noise impacts as described in Section C.8.3.1.1 for the Proposed South Area transmission line. However, only two sensitive receptors (two residences located on Laughlin Road) could potentially be affected by intermittent and continuous noise during construction activities. Although no significant noise impacts are identified, Mitigation Measures L-1 and L-2 (see Section C.7.3.1.1), in addition to Applicant Proposed Measures 12.1a through 12.1e, would further reduce potentially adverse construction noise impacts (**Class III**).

The Brushy Peak Alternative and Phase 2 of the Proposed Project would have essentially the same noise related impacts.

C.8.6.3 Stanislaus Corridor

C.8.6.3.1 Construction

Construction within the Stanislaus Corridor would generate similar noise impacts as described in Section C.8.3.1.1 for the Proposed South Area transmission line. Sensitive receptors in the vicinity of the Stanislaus Corridor are limited to two residences and the Sycamore Grove Regional Park. These receptors might be affected by intermittent and continuous noise during construction activities. Although no significant noise impacts are identified, Mitigation Measures L-1 and L-2 (see Section C.7.3.1.1), in addition to Applicant Proposed Measures 12.1a through 12.1e, would further reduce potentially adverse construction noise impacts (**Class III**). The Stanislaus Corridor Alternative and Phase 2 of the Proposed Project would have essentially the same noise related impacts.

C.8.6.3.2 Operation and Maintenance

Transmission line noise generated from corona discharge and maintenance and inspection operations would be similar to those described for the southern portion of the Proposed Route described in Section C.8.3.1.22 adverse, but less than significant (**Class III**).

C.8.7 MITIGATION MONITORING PROGRAM

Table C.8-6- Mitigation Monitoring Program

Impact	Mitigation Measure	Location	Monitoring/ Reporting Action	Effectiveness Criteria	Responsible Agency	Timing
Alternative L1						
Residences in the vicinity of the L1 substation site would be affected by long-term transformer operational noise	N-1: If Alternative L1 is selected, PG&E Co. shall construct the substation within and earthen landscaped berm, with a precast concrete wall structure that would break the line of sight between the residences and the noise sources (fans) as to reduce operational noise by at least 10 dBA at the receptor locations	The L1 Substation Alternative site on Raymond Road	Confirm Construction plan; monitor construction activities to verify their consistency with the measure	Noise levels are reduced at the receptor locations by at least 10 dB	CPUC	Confirm project plans prior to construction; verify plans are implemented during construction

C.8.8 REFERENCES

Alameda County. 1994. Noise Element of the Alameda County General Plan, adopted 1975, amended May 5, 1994.

Aspen Environmental Group. 2000. Noise measurements conducted December, 10.

City of Dublin. 1985. Section 9: Noise Element of the City of Dublin General Plan.

-
- City of Livermore. 1993. Noise Element of the City of Livermore General Plan, October.
- City of Pleasanton. 1996. City of Pleasanton General Plan, Noise Element, August.
- _____. 1999. Vineyard Avenue Corridor Specific Plan, June.
- _____. 2000. Negative Declaration for the Pleasanton Local Reliability Facility, October.
- City of San Ramon, *San Ramon General Plan*, adopted October 24, 1995.
- _____. 2000. North Livermore Specific Plan, Volume II: Urban Area, April.
- Contra Costa County. 1996. *Noise Element of the Contra Costa County General Plan, 1995-2010*, July.
- Office of Planning and Research, 1990. *State of California General Plan Guidelines*, June.
- PEA. 1999. *PG&E Co.'s Proponent's Environmental Assessment, Tri-Valley 2002 Capacity Increase Project*. Prepared for the California Public Utilities Commission, November.
- U.S. EPA, 1971. *Community Noise*. Washington D.C. December 31.
- _____, 1974. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*, March.