TABLE OF CONTENTS

5.12 Noise 5.12-1
5.12.1 Fundamentals of Acoustics 5.12-1
5.12.2 Affected Environment 5.12-5
5.12.3 Summary of Noise Level Design Goals 5.12-12
5.12.4 Environmental Consequences 5.12-15
5.12.5 Cumulative Impacts 5.12-28
5.12.6 Mitigation Measures and Conditions of Certification 5.12-29
5.12.7 Laws, Ordinances, Regulations, and Standards 5.12-32
5.12.8 Involved Agencies and Agency Contacts 5.12-41
5.12.9 Permits Required 5.12-41
5.12.10 References 5.12-41

LIST OF TABLES

Table 5.12-1 Sound Levels of Typical Noise Sources and Noise Environments (A-Weighted Sound Levels) 5.12-4
Table 5.12-2 25-hour Sound Level Measurement at LT-1 (dBA) 5.12-8
Table 5.12-3 Short-Term Sound Level Measurements at ST-1 (dBA) 5.12-9
Table 5.12-4 25-Hour Sound Level Measurement at LT-2 (dBA) 5.12-9
Table 5.12-5 Short-Term Sound Level Measurements at ST-2 (dBA) 5.12-11
Table 5.12-6 Noise-Sensitive Receiver Construction Noise Limit Goals 5.12-12
Table 5.12-7 Noise-Sensitive Receiver Operational Noise Design Goals 5.12-14
Table 5.12-8 PPEC Plant Site Construction Noise Levels at Noise-Sensitive Receivers 5.12-16
Table 5.12-9 PPEC Transmission Line (Route A) Construction Noise Levels at Noise-Sensitive Receivers 5.12-17
Table 5.12-10 PPEC Transmission Line (Route B) Construction Noise Levels at Noise-Sensitive Receivers 5.12-17
Table 5.12-11 PPEC Natural Gas Line (Route A) Construction Noise Levels at Noise-Sensitive Receivers 5.12-18
Table 5.12-12 PPEC Natural Gas Line (Route B) Construction Noise Levels at Noise-Sensitive Receivers 5.12-19
Table 5.12-13 Project Roadway Segments 5.12-19
Table 5.12-14 Changes in Sound Level due to Project Construction Traffic 5.12-20
Table 5.12-15 Project Sound Level along Otay Mesa Road and Alta Road due to Construction Traffic 5.12-20
Table 5.12-16 Project Operational Traffic 5.12-21
Table 5.12-17 Equipment Sound Power Levels 5.12-23
Table 5.12-18 Noise Modeling Results at Ambient Noise Measurement Locations 5.12-26

Table 5.12-19 Existing CNEL Plus Project CNEL 5.12-26
Table 5.12-20 Nighttime L_{eq} Values at Existing Noise-Sensitive Receivers 5.12-27
Table 5.12-21 Nighttime L_{90} Values at Existing Noise-Sensitive Receivers 5.12-27
Table 5.12-22 Cal-OSHA Permissible Noise Exposures 5.12-33
Table 5.12-23 County of San Diego Land Use/Noise Compatibility Guidelines (Tables N-1 and N-2 of the Noise Element of the County of San Diego General Plan, 2010) . 5.12-36
Table 5.12-24 County of San Diego Exterior Noise Standards 5.12-38
Table 5.12-25 Summary of Laws, Ordinances, Regulations and Standards 5.12-39
Table 5.12-26 Involved Agencies and Agency Contacts 5.12-41

LIST OF FIGURES

Figure 5.12-1 Ambient Noise Measurement Locations
Figure 5.12-2 Existing Land Use Surrounding Project Site
Figure 5.12-3 Predicted Property Boundary Noise Level Contour

5.12 Noise

In accordance with California Energy Commission (CEC) regulations, this section describes the existing noise environment on site and in the vicinity of the Pio Pico Energy Center (PPEC) and assesses potential noise impacts associated with the proposed project. Noise-sensitive receptors that may be affected by noise are identified, as well as the laws, ordinances, regulations, and standards (LORS) that regulate noise levels for those receptors.

The following discussion describes the results of a detailed site survey, ambient sound level measurements, acoustical calculations, and assessment of potential noise impacts. Where appropriate, additional noise control measures have been incorporated to reduce potential project-related noise impacts to acceptable levels. With the implementation of the noise control measures, the project would have no significant environmental impacts and would comply with all applicable LORS.

5.12.1 Fundamentals of Acoustics

This section describes the physical characteristics of sound. An understanding of these characteristics is useful for evaluating environmental noise from the proposed project. The methods and metrics used to quantify noise exposure, human response, and relative judgment of loudness are also discussed, and noise levels of common noise environments are presented. This section is intended to provide the reader with a basic understanding of the key fundamentals for assessing potential noise impacts.

Noise is generally defined as loud, unpleasant, unexpected, or undesired sound that is typically associated with human activity and interferes with or disrupts normal activities. The effects of noise on people can be grouped into four general categories:

- Subjective effects (dissatisfaction, annoyance)
- Interference effects (communication and sleep interference, learning)
- Physiological effects (startle response)
- Physical effects (hearing loss)

Although exposure to high noise levels has been demonstrated to cause physical and physiological effects, the principal human responses to typical environmental noise exposure are related to subjective effects and interference with activities. The subjective responses of individuals to similar noise events are diverse and influenced by many factors, including the type of noise, the perceived importance of the noise, its appropriateness to the setting, duration of the noise, the time of day and the type of activity during which the noise occurs, and individual noise sensitivity.

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air, and are sensed by the human ear. Sound is generally characterized by several variables, including frequency composition and amplitude. Frequency describes the sound's

pitch (tone) and is measured in cycles per second (Hertz [Hz]), whereas amplitude describes the sound's pressure (loudness). Because the range of sound pressures that occur in the environment is extremely large, it is convenient to express these pressures on a logarithmic scale that compresses the wide range of pressures into a more useful range of numbers. The standard unit of sound measurement is the decibel (dB).

Hertz is a measure of how many times each second the crest of a sound pressure wave passes a fixed point. For example, when a drummer beats a drum, the skin of the drum vibrates a given number of times per second. If the drum vibrates 100 times per second, it generates a sound pressure wave that is oscillating at 100 Hz, and this pressure oscillation is perceived by the ear/brain as a tonal pitch of 100 Hz. Sound frequencies between 20 and 20,000 Hz are within the range of sensitivity of the healthy human ear.

Sound levels are expressed by reference to a specific national/international standard. The sound pressure level (SPL) is used to describe sound pressure (loudness) and is specified at a given distance or specific receptor location. In expressing sound pressure level on a logarithmic scale, sound pressure (dB) is referenced to a standard pressure of 20 micropascals (µPa). SPL depends not only on the power of the source, but also on the distance from the source to the receiver and the acoustical characteristics of the sound propagation path (absorption, reflection, etc.).

Outdoor sound levels decrease logarithmically as the distance from the source increases. This decrease is because of classical sound wave divergence (spherical spreading loss with adjustments for source directivity from point sources) plus attenuation factors due to atmospheric absorption, minimal ground effects, and barrier/shielding. Sound radiating from a source in a homogeneous and undisturbed manner travels in spherical waves. As the sound waves travel away from the source, the sound energy is dispersed over a greater area, decreasing the sound pressure of the wave. Spherical spreading of the sound wave from a point source reduces the noise level at a rate of 6 dB per doubling of distance.

Atmospheric absorption also influences the sound levels received by an observer. The greater the distance traveled, the greater the influence of the atmosphere and the resultant fluctuations. Atmospheric absorption becomes important at distances greater than 1,000 feet. The degree of absorption varies depending on the frequency of the sound as well as the humidity and temperature of the air. For example, atmospheric absorption is lowest (i.e., sound carries further) at high humidity and cool temperatures and lower frequencies are less readily absorbed (i.e., sound carries further) than higher frequencies. Over long distances, lower frequencies become dominant as the higher frequencies are more rapidly attenuated. Turbulence, gradients of wind, and other atmospheric phenomena also play a substantial role in determining the degree of attenuation. For example, certain conditions, such as temperature inversions can channel or focus the sound waves, resulting in higher noise levels than would result from simple spherical spreading.

Sound from a tuning fork contains a single frequency (a pure tone), but most sounds one hears in the environment do not consist of a single frequency, but rather, a broad band of many frequencies differing in sound level. Because of the broad range of audible frequencies, methods have been developed to quantify these values into a single number representative of human hearing. The most common method used to quantify environmental sounds consists of evaluating

all frequencies of a sound according to a weighting system that is reflective of human hearing characteristics. Human hearing is less sensitive at low frequencies and extremely high frequencies than at the mid-range frequencies. This process is termed "A-weighting," and the resulting dB level is termed the "A weighted" decibel (dBA).

Because A-weighting is designed to emulate the frequency response characteristics of the human ear and reflect the way people perceive sounds, it widely used in local noise ordinances and state and federal guidelines, including the State of California and the County of San Diego County. Unless specifically noted, the use of A-weighting is always assumed with respect to environmental sound and community noise even if the notation does not show the "A."

In terms of human perception, a sound level of 0 dBA is approximately the threshold of human hearing and is barely audible by a young, healthy individual under extremely quiet listening conditions. This threshold is the reference level against which the amplitude of other sounds is compared. Normal speech has a sound level of approximately 60 dBA at five feet. Sound levels above approximately 120 dBA begin to be felt inside the human ear as discomfort progressing to pain at still higher levels. Humans are much better at discerning relative sound levels than absolute sound levels. The minimum change in the sound level of individual events that an average human ear can detect is about 1 to 3 dBA. A 3- to 5-dBA change is readily perceived. An increase (or decrease) in sound level of approximately 10 dBA is usually perceived by the average person as a doubling (or halving) of the sound's loudness.

Because of the logarithmic nature of the decibel, sound levels cannot be added or subtracted directly and are somewhat cumbersome to handle mathematically. However, some simple rules are useful in dealing with sound levels. First, if a sound's acoustical energy is doubled, the sound level increases by 3 dB, regardless of the initial sound level. Thus, for example: 60 dB + 60 dB = 63 dB, and 80 dB + 80 dB = 83 dB. However, an increase of approximately 10 dBA is required to double the perceived loudness of a sound and a doubling or halving of the acoustical energy (a 3-dB difference) is at the lower limit of readily perceived change.

Although A-weighting (dBA) may adequately indicate the level of environmental noise at any instant in time, community noise levels vary continuously. Most ambient environmental noise includes a mixture of noise from nearby and distant sources that creates an ebb and flow of sound, including some identifiable sources plus a relatively steady background noise in which no particular source is identifiable.

A single descriptor termed the equivalent sound level (L_{eq}) is used to describe sound that is constant or changing in level. L_{eq} is the energy-mean A-weighted level (dBA) during a measured time interval. It is the equivalent sound level produced by a given constant source equal to the acoustic energy contained in the fluctuating sound level measured during the interval. In addition to the energy-average level, it is often desirable to know the amplitude range of the noise source being measured. This is accomplished through the maximum L_{eq} (L_{max}) and minimum L_{eq} (L_{min}) indicators, which represent the root-mean-square (RMS) maximum and minimum noise levels measured during the monitoring interval. The L_{min} value obtained for a particular monitoring location is often called the acoustic floor for that location.

The day-night average sound level (L_{dn} or DNL) represents the average sound level for a 24-hour day and is calculated by adding a 10-dBA penalty to sound levels during nighttime hours (10:00 p.m. to 7:00 a.m.). The L_{dn} is the descriptor of choice used by nearly all federal, state, and local agencies throughout the United States to define acceptable land use compatibility with respect to noise. The State of California sometimes uses the community noise equivalent level (CNEL), which is similar to L_{dn}, except that an additional 5-dB penalty is applied to the evening hours (7:00 p.m. to 10:00 p.m.). Because of the time-of-day penalties associated with the L_{dn} and CNEL descriptors, the L_{dn} or CNEL A-weighted (dBA) value for a continuously operating sound source during a 24-hour period will be numerically greater than the A-weighted (dBA) value of the 24-hour L_{eq}. Thus, for a continuously operating noise source producing a constant noise level operating for periods of 24 hours or more, the L_{dn} will be 6 dB higher than the 24-hour L_{eq} value. To provide a frame of reference, common sound levels are presented in Table 5.12-1, Sound Levels of Typical Noise Sources and Noise Environments (A-Weighted Sound Levels).

To describe the time-varying character of environmental noise, the statistical or percentile noise descriptors L_{10}, L_{50}, and L_{90} may be used. These descriptors are the noise levels equaled or exceeded during 10 percent, 50 percent, and 90 percent of the measured time interval. Sound levels associated with L_{10} typically describe transient or short-term events, such as car and truck passbys. Sound levels are higher than this value only 10 percent of the measurement time. L_{50} represents the median sound level during the measurement interval. Levels will be above and below this value exactly one-half of the measurement time. L_{90} is the sound level exceeded 90 percent of the time; therefore, it is often used to describe background noise conditions because it typically represents generators of continuous sound and the aggregate of distant background environmental noise. For this reason, L_{90} is a key criterion metric used by the CEC to define noise during the quietest periods of the day and night.

TABLE 5.12-1
SOUND LEVELS OF TYPICAL NOISE SOURCES AND NOISE ENVIRONMENTS (A-WEIGHTED SOUND LEVELS)

Noise Source (at Given Distance)	Scale of A-weighted Sound Level in Decibels	Noise Environment	Human Judgment of Noise Loudness (Relative to a Reference Loudness of 70 Decibels*)
Military Jet Take-off with After-burner (50 feet)	140	Carrier Flight Deck	–
Civil Defense Siren (100 feet)	130	–	–
Commercial Jet Take-off (200 feet)	120	–	Threshold of Pain *32 times as loud
Pile Driver (50 feet)	110	Rock Music Concert	*16 times as loud
Ambulance Siren (100 feet) Newspaper Press (5 feet) Power Lawn Mower (3 feet)	100	–	Very Loud *8 times as loud
Propeller Plane Flyover (1,000 feet) Diesel Truck, 40 mph (50 feet) Motorcycle (25 feet)	90	Boiler Room Printing Press Plant	*4 times as loud
Garbage Disposal (3 feet)	80	High Urban Ambient Sound	*2 times as loud
Passenger Car, 65 mph (25 feet) Living Room Stereo (15 feet)	70	–	Moderately Loud *70 dBs

Noise Source (at Given Distance)	Scale of A-weighted Sound Level in Decibels	Noise Environment	Human Judgment of Noise Loudness (Relative to a Reference Loudness of 70 Decibels*)
Vacuum Cleaner (3 feet)			(Reference Loudness)
Air Conditioning Unit (100 feet) Normal Conversation (5 feet)	60	Data Processing Center Department Store	*1/2 as loud
Light Traffic (100 feet)	50	Private Business Office	*1/4 as loud
Bird Calls (distant)	40	Lower Limit of Urban Ambient Sound	Quiet *1/8 as loud
Soft Whisper (5 feet)	30	Quiet Bedroom	Very Quiet
	20	Recording Studio	
	10	–	Extremely Quiet
	0	–	Threshold of Hearing

Source: Compiled by URS from various published sources and widely used references, such as Harris, 1991; Berger, 2004; and Beranek, 1988.
Notes:
– = no specific noise environment identified
mph = miles per hour
* = Relative to a reference loudness of 70 decibels

5.12.2 Affected Environment

5.12.2.1 Project Site Description and Local Land Use

Pio Pico Energy Center (PPEC) is a proposed 300 megawatt (MW) simple-cycle electrical generating facility located in an industrial area of San Diego County, adjacent to the existing OMGP. PPEC will supply fast response power to help San Diego Gas & Electric (SDG&E) meet cyclic demand and further utilize renewable resources. The project will be constructed on disturbed land and prepared land, and will include a 230 kilovolt (kV) transmission line, a natural gas supply pipeline, and short connections into adjacent streets for potable and recycled water supply, and sewer and stormwater discharge.

The project site is comprised of a 9.99 acre parcel located in the southeast quadrant of the Alta Road and Calzada de la Fuente intersection. The proposed project site comprises the entire parcel with Assessor's Parcel Number (APN) 648-040-45, and the laydown area consists of 6.00 acres of an adjacent parcel to the south (APN 648-040-46) (Figure 3.3-2, Project Location).

According to data provided by the County of San Diego Department of Planning and Land Use (DPLU), existing land uses surrounding the proposed project site include Specific Plan Area land uses. The land use designations are shown on Figure 5.9-3 in Land Use Section 5.9 of this AFC, and more detail regarding proposed uses immediately adjacent to the project site is provided in the section below. Other nearby land uses include Public/Semi-Public Land Uses northwest of the proposed project site. Multiple Rural and Estate Residential Land Uses are located east of the proposed project site. Industrial Employment and Commercial Employment, Retail and Service Land Uses are located southwest of the proposed project site. Figure 5.12-2 displays the existing land use designations. Current uses are also shown on Figure 5.9-1 of Land Use Section 5.9. The Richard J. Donovan Correctional Facility is located approximately 4,000 feet northwest of the proposed project site. A San Diego County Correctional Facility Complex is also located on land approximately 4,800 feet north of the proposed project site. This complex includes the

Federal Immigration Detention Facility, George Bailey Detention Facility, East Mesa Detention Facility, and the San Diego County Juvenile Detention Facility. An unpermitted community of mobile homes is present approximately 1.5 miles northwest of the proposed project site. It is likely that this community consists of 'squatters', that is persons using the land without any associated right to do so.

Vacant, disturbed and unimproved land is located immediately north, south and west of the proposed project site. An auto auction is located at the southwest corner of Otay Mesa Road and Alta Road. Three single family residences are located approximately 4,700 feet southwest of the proposed project site along Otay Mesa Road. Industrial Employment land uses are located 500 feet southwest of these residences. A single family residence converted to a restaurant (Kuebler Ranch) is located 2,200 feet north of proposed project site. Light industrial work is currently being conducted at this location.

The Richard J. Donovan Correctional Facility, San Diego Correctional Facility Complex and the unpermitted community of mobile homes are located in zones designated as Holding Areas (Zone S90) by the County of San Diego.

The three single-family residences located on Otay Mesa Road are located on property with a zoning designation of Specific Plan (S88) under the County of San Diego Zoning Ordinance. The Specific Plan zoning designation allows for an unlimited variety of land uses, as further established through an adopted Specific Plan document. The County subsequently adopted the East Otay Mesa Business Park Specific Plan, which includes a land use plan for the area, identifying land use designations within the boundaries of the Specific Plan area (Land Use Section 5.9, Figure 5.9-4). The PPEC site, and land surrounding the site, falls within the 'Heavy Industrial' land use designation of the Specific Plan.

The comparable County Zoning Ordinance designation is also Heavy Industrial M58. The noise limit for an M58 land use is 75 dBA L_{eq}. Based on Noise Element standards for residential uses, the maximum exterior acceptable CNEL value would be 65 dBA at residential building locations or at group-use outdoor areas and the conditionally acceptable CNEL value would be 75 dBA.

5.12.2.2 Ambient Noise Level Survey

An ambient noise level survey was conducted March 16 through March 18, 2010 and on December 9 and December 10, 2010 near the vicinity of the proposed PPEC project site. The purpose of the surveys was to quantify noise exposure in the project environs, with emphasis on locations of noise-sensitive receivers that may be impacted by project construction, operation, or project-related transportation. One long-term monitoring site was selected during the March 16 through March 18, 2010 ambient noise level measurement survey and another long-term monitoring site was selected during the December 9 and December 10, 2010 ambient noise level survey. These two long-term monitoring sites were chosen because of the nature of the noise environment and terrain in relation to the proposed project site. Each survey consisted of one long-term (greater than 25-hours continuous data - denoted as "LT") and one short-term measurement locations (denoted as "ST"). Short-term measurements included two consecutive 10-minute or 20-minute measurements at each location during the day (7:00 a.m. - 7:00 p.m.), evening (7:00 p.m. - 10:00 p.m.) and night (10:00 p.m. - 7:00 a.m.).

Short-term measurements at ST-1 were conducted approximately 100 feet west of the LT-1 measurement site, and short-term measurements at ST-2 were conducted approximately 1,000 feet southeast of the LT-2 measurement site. These short-term measurements are reflective of the ambient noise level measurements found at the long-term measurement sites despite not being conducted at the exact location of the long-term measurements. The noise survey that was completed in March 2010 included noise measurements at measurement sites LT-2 and ST-2 that were conducted for a previous location of the proposed PPEC. The noise level data that was gathered in March 2010 is still reflective of the current ambient noise levels in the vicinity of the noise-sensitive receivers near LT-2 and ST-2 despite a new location for the proposed PPEC. An additional noise survey was necessary for the current proposed PPEC location in December 2010 in order to quantify ambient noise levels near new noise-sensitive receivers by measurement sites LT-1 and ST-1.

One selected long-term measurement site was near three single-family residences located approximately 4,700 southwest of the project site. This measurement site is designated as LT-1. Another long-term measurement site was selected near the unpermitted mobile home community located approximately 1.5 miles (7,900 feet) northwest of the proposed project site. This measurement site is designated as LT-2. The selected sites are considered to be representative of the ambient noise environment in the project vicinity. Short-term measurements near each long-term measurement site were conducted to verify the accuracy of long-term measurement data and to document ambient noise sources at particular times of the day, evening, and night. Field measurement data sheets can be found in Appendix O-1. Figure 5.12-1 displays the noise monitoring locations.

LT-1/ST-1: Ambient noise level measurement site LT-1 is located at the eastern-most single-family residence located on the north side of, and along, Otay Mesa Road and in between Sanyo Avenue and Enrico Fermi Drive. There are three single family residences located in this vicinity. LT-1 is located approximately 4,700 feet southwest of the project site's nearest boundary and 5,100 feet southwest of the center of the project site. LT-1 is representative of the nearest noise-sensitive receptor. A continuous 25-hour long-term measurement was conducted near the east side of the eastern-most home along Otay Mesa Road. Long-term noise monitoring at LT-1 was conducted from 1:00 p.m. on December 9, 2010, until 2:00 p.m. on December 10, 2010.

The hourly L_{eq} values at LT-1 ranged from 62 dBA to 74 dBA. The average hourly L_{eq} during the entire measurement period was 72 dBA. The average daytime, evening, and nighttime hourly L_{eq} values were 73 dBA, 69 dBA, and 69 dBA, respectively. The hourly L_{90} values ranged from 40 dBA to 56 dBA, and the arithmetic average hourly L_{90} over the period was 48 dBA. The lowest arithmetic average L_{90} over a consecutive 4-hour period for the entire 25-hour measurement was from 12:00 a.m. until 4:00 a.m. The L_{90} during that period was 41 dBA. Table 5.12-2 displays the results of the measurements from LT-1.

TABLE 5.12-2
25-HOUR SOUND LEVEL MEASUREMENT AT LT-1 (dBA)

Date and Time (Hour-Starting)	L_{eq}	L_{max}	L_{min}	L_{10}	L_{50}	L_{90}
12/9/10 13:00	74.1	89.7	44.3	78.2	70.1	54.6
12/9/10 14:00	74.3	86.2	48.6	78.3	71.9	56.2
12/9/10 15:00	74.1	85.3	44.9	78.1	71.7	53.9
12/9/10 16:00	73.7	85.1	45.9	77.7	71.1	53.9
12/9/10 17:00	71.6	85.3	46.0	76.4	63.8	51.0
12/9/10 18:00	72.5	97.1	43.5	76.0	61.4	48.9
12/9/10 19:00	69.4	84.8	42.3	74.4	57.6	45.5
12/9/10 20:00	68.8	83.9	40.7	73.9	57.3	44.6
12/9/10 21:00	69.8	82.9	41.7	75.0	60.1	46.3
12/9/10 22:00	71.1	83.4	44.3	76.3	61.9	49.3
12/9/10 23:00	67.3	85.1	38.1	71.8	49.1	42.2
12/10/10 0:00	66.8	84.1	37.3	70.1	48.9	40.4
12/10/10 1:00	61.5	82.5	37.8	57.0	42.3	39.7
12/10/10 2:00	64.5	87.1	38.6	63.4	44.0	40.4
12/10/10 3:00	64.9	83.0	40.3	65.4	45.2	42.1
12/10/10 4:00	64.9	82.6	40.6	65.5	46.4	43.6
12/10/10 5:00	71.9	82.3	42.4	77.1	63.0	45.6
12/10/10 6:00	73.7	87.0	47.3	78.0	70.5	54.1
12/10/10 7:00	73.6	85.6	48.4	77.6	70.4	53.3
12/10/10 8:00	73.3	85.8	42.7	77.8	66.8	48.3
12/10/10 9:00	72.3	84.8	42.3	77.3	64.0	47.7
12/10/10 10:00	71.9	91.4	38.7	76.8	62.3	45.0
12/10/10 11:00	72.1	85.9	40.7	76.9	63.8	48.4
12/10/10 12:00	71.7	86.4	43.0	76.5	62.4	47.6
12/10/10 13:00	72.5	83.7	42.2	77.3	66.8	48.8

Source: URS Corporation, 2010.
Notes:
dBA = A-weighted decibel
L_{eq} = equivalent sound level
Measurements conducted on December 9 and 10, 2010.
Measurement Location: N 32º 34' 03.3", W 116º 55' 56.8."
Community Noise Equivalent Level = 76 dBA.
24-hour L_{eq} = 72 dBA
Daytime L_{eq} = 73 dBA
Evening L_{eq} = 69 dBA
Nighttime L_{eq} = 69 dBA

A total of six short-term measurements were completed at or near this location with two 10-minute measurements occurring consecutively during daytime hours, evening hours, and nighttime hours. The primary noise source during all short-term measurements at ST-1 was traffic along Otay Mesa Road with distant aircraft overhead.

The average daytime L_{eq} at ST-1 was 74 dBA, and the arithmetic average L_{90} for the daytime short-term measurements was 57 dBA. The average evening L_{eq} at ST-1 was 69 dBA, and the arithmetic average L_{90} for the evening short-term measurements was 46 dBA. The average nighttime L_{eq} at ST-1 was 67 dBA, and the arithmetic average L_{90} for the nighttime short-term measurements was 42 dBA. ST-1 sound-level measurement data are listed in Table 5.12-3.

TABLE 5.12-3
SHORT-TERM SOUND LEVEL MEASUREMENTS AT ST-1 (dBA)

Date and Measurement Start Time (10-minute measurements)	L_{eq}	L_{max}	L_{min}	L_{10}	L_{50}	L_{90}
12/9/10 14:06	74.7	89.8	45.1	78.6	70.2	57.8
12/9/10 14:17	73.9	90.5	48.8	78.2	68.2	56.1
12/9/10 20:31	70.8	90.3	43.1	73.7	59.8	48.9
12/9/10 20:42	66.0	84.1	41.1	66.0	52.1	43.0
12/10/10 0:08	67.8	86.2	39.7	68.4	53.1	43.6
12/10/10 0:18	65.1	85.1	38.2	63.2	44.8	40.0

Source: URS Corporation, 2010.
Notes:
dBA = A-weighted decibel
L_{eq} = equivalent sound level
Measurements conducted on December 9 and 10, 2010.
Measurement Location: N 32º 34' 03.3", W 116º 55' 57.8."

LT-2/ST-2: Ambient noise level measurement site LT-2 is located approximately 1.5 miles northwest of the project site boundary. A community of unpermitted mobile homes is located at this noise level measurement site. The ambient noise levels results at this site are representative of the ambient noise levels at the Richard J. Donovan Correctional Facility and San Diego County Correctional Facility Complex. The mobile homes are arranged in a circular fashion, with stables for horses, cattle, goats, and chickens located in the interior. LT-2 is approximately 1,000 feet west of the San Diego County law enforcement firing range and 2,200 feet east of the Richard J. Donovan Correction Facility. This facility is a part of the California State Prison System and houses medium and high-custody inmates.

Long-term measurements were conducted at one of the mobile homes located on the northeast portion of the property. The address of this area is 405 Alta Road, and it is located in the County of San Diego. Long-term noise monitoring at LT-2 was conducted from 6:00 p.m. on March 16, 2010, until 7:00 p.m. on March 17, 2010.

The hourly L_{eq} values at LT-2 ranged from 39 dBA to 59 dBA. The average hourly L_{eq} was 51 dBA. The average daytime, evening, and nighttime hourly L_{eq} values were 52 dBA, 50 dBA, and 47 dBA, respectively. The hourly L_{90} values ranged from 33 dBA to 45 dBA, and the arithmetic average hourly L_{90} over the period was 39 dBA. The lowest average L_{90} over a consecutive 4-hour period for the entire 25-hour measurement was from 10:00 p.m. until 2:00 a.m. The L_{90} during that period was 35 dBA. Table 5.12-4 lists the measurement results at LT-2.

TABLE 5.12-4
25-HOUR SOUND LEVEL MEASUREMENT AT LT-2 (dBA)

Date and Time (Hour-Starting)	L_{eq}	L_{max}	L_{min}	L_{10}	L_{50}	L_{90}
3/16/10 18:00	49.2	69.7	38.5	51.4	44.3	41.6
3/16/10 19:00	53.9	76.3	39.3	50.2	45.0	43.0
3/16/10 20:00	47.4	72.3	41.6	47.2	46.0	44.5
3/16/10 21:00	45.1	62.5	35.8	46.3	43.8	40.3
3/16/10 22:00	48.9	71.9	30.3	47.9	36.8	32.5

Date and Time (Hour-Starting)	L_{eq}	L_{max}	L_{min}	L_{10}	L_{50}	L_{90}
3/16/10 23:00	38.7	55.7	30.0	42.2	35.1	32.8
3/17/10 0:00	45.1	56.6	32.1	48.4	43.4	37.4
3/17/10 1:00	43.1	58.6	31.6	45.9	41.4	37.8
3/17/10 2:00	44.5	58.8	35.6	47.2	43.2	39.6
3/17/10 3:00	45.8	57.7	37.0	48.9	43.8	40.1
3/17/10 4:00	43.6	63.7	31.1	46.4	40.9	35.8
3/17/10 5:00	46.3	68.0	32.1	48.8	43.8	38.1
3/17/10 6:00	52.4	72.4	36.7	52.6	47.2	42.6
3/17/10 7:00	50.2	65.0	39.3	52.7	48.1	43.6
3/17/10 8:00	52.1	70.2	39.1	54.7	47.3	43.3
3/17/10 9:00	59.0	76.0	39.5	60.3	48.0	42.8
3/17/10 10:00	50.4	68.1	33.0	54.3	45.1	38.7
3/17/10 11:00	49.9	69.3	32.5	53.2	46.2	41.4
3/17/10 12:00	47.6	60.9	32.0	51.2	44.3	38.8
3/17/10 13:00	49.7	70.3	29.7	52.5	45.0	37.8
3/17/10 14:00	51.0	68.9	34.4	52.5	47.0	41.5
3/17/10 15:00	50.5	64.9	33.3	53.3	49.2	38.8
3/17/10 16:00	47.2	67.6	30.4	40.5	49.6	35.5
3/17/10 17:00	48.8	71.2	33.2	42.8	49.3	38.3
3/17/10 18:00	54.0	76.4	34.2	46.3	51.6	39.6

Source: URS Corporation, 2010.
Notes:
dBA = A-weighted decibel
L_{eq} = equivalent sound level
Measurements conducted on and March 16 and 17, 2010.
Measurement Location: N 32º 35' 37.9", W 116º 55' 54.2."
Community Noise Equivalent Level = 55 dBA
24-Hour L_{eq} = 51 dBA

Daytime L_{eq} = 52 dBA
Evening L_{eq} = 50 dBA
Nighttime L_{eq} = 47 dBA

Six short-term measurements were conducted at ST-2 with two 20-minute measurements occurring consecutively during daytime, evening, and nighttime hours. Short-term measurements were completed 1,000 feet southeast of the unpermitted mobile home area to avoid disturbing animals and residents during evening and nighttime hours. The ST-2 measurement site is approximately 6,700 feet northwest of the project site boundary and 7,200 feet northwest of the center of the project site. The average daytime L_{eq} at ST-2 was 48 dBA, and the arithmetic average L_{90} during the daytime short-term measurements was 39 dBA. Noise sources during the daytime short-term surveys consisted of aircraft, gunfire from the nearby shooting range, and domestic animals. The average evening L_{eq} at ST-2 was 48 dBA, and the arithmetic average L_{90} during the evening short-term measurements was 39 dBA. The average nighttime L_{eq} at ST-2 was 42 dBA, and the arithmetic average L_{90} during the nighttime short-term measurements was 37 dBA. Noise sources during the evening and nighttime short-term surveys consisted of aircraft, roosters crowing near LT-2, occasional distant horns, and distant undefined industrial noise. ST-2 sound-level measurement data are listed in Table 5.12-5.

TABLE 5.12-5
SHORT-TERM SOUND LEVEL MEASUREMENTS AT ST-2 (dBA)

Date and Measurement Start Time (20-minute Measurements)	L_{eq}	L_{max}	L_{min}	L_{10}	L_{50}	L_{90}
3/17/10 4:00	41.4	57.6	34.0	43.5	38.5	36.0
3/17/10 4:25	43.2	59.9	36.4	45.0	41.0	38.5
3/17/10 19:00	50.1	68.1	36.0	48.5	41.5	39.0
3/17/10 19:25	44.4	63.6	37.5	46.5	40.5	38.5
3/18/10 11:10	49.3	65.2	36.3	52.5	42.5	39.0
3/18/10 11:35	47.3	64.6	37.4	47.5	41.5	38.5

Source: URS Corporation, 2010.
Notes:
dBA = A-weighted decibel
L_{eq} = equivalent sound level
Measurements conducted on March 17 and 18, 2010.
Measurement Location: N 32º 35' 27.0", W 116º 55' 43.0."

Meteorological Conditions

Weather conditions appropriate for outdoor noise measurement existed on March 16, 2010, through March 18, 2010 and on December 9 and December 10, 2010. From March 16, 2010 through March 18, 2010, daytime temperatures averaged 80 to 85 degrees Fahrenheit (°F). Evening and nighttime temperatures averaged 65 °F to 70 °F. Relative humidity ranged from 15 percent during the daytime to 50 percent during nighttime hours. Winds were calm and light with a north or northwest heading. The average wind speed was 3 to 4 miles per hour. The sky was clear throughout the entire measurement period.

On December 9 and December 10, 2010, daytime temperatures averaged 55 °F to 60 °F. Evening and nighttime temperatures averaged 45 °F to 50 °F. Relative humidity ranged from 50 percent during the daytime to 90 percent during nighttime hours. Winds were calm and light with a north or northwest heading. The average wind speed was 4 to 5 miles per hour. The sky was partly cloudy throughout a majority of the measurement period.

Instrumentation

The 25-hour continuous ambient noise level measurements at LT-1 and LT-2 were completed using Larson Davis Model 820 American National Standards Institute (ANSI) Type 1 Integrating Sound Level Meters (SLM). The calibration of the SLMs was verified in the field before and after the measurements. The SLMs at LT-1 and LT-2 were mounted to fences and located approximately 5 feet above ground to simulate the average height of the human ear. Short-term measurements were completed using Brüel and Kjær Model 2236 and 2250 ANSI Type 1 Integrating SLMs. The SLM was mounted on a tripod roughly 5 feet above ground. The sound level meters were calibrated before and after the measurements. All SLMs were equipped with windscreens during the measurement periods. Certification of calibration for all meters and the Larson Davis CAL200 and Brüel and Kjær 4231 that were used to calibrate all sound level meters is provided in Appendix O-2.

5.12.3 Summary of Noise Level Design Goals

Noise level design goals must be achieved for construction noise as well as for project operation noise. The County of San Diego and California Occupational Safety and Health Administration (Cal-OSHA) permissible noise exposure must be met for both construction noise and for employees at the project site once the proposed project is operational.

Summary of Construction Design Goals

Construction design goals must meet the standards established by the County of San Diego. The construction noise standards for the County of San Diego can be found in Section 5.12.7. Table 5.12-6 lists the applicable jurisdictions for each noise-sensitive receiver and the construction noise standards that apply. Applicable construction noise restrictions for the nearby noise-sensitive species and any possible mitigation implementations that may be needed can be found in the Section 5.6, Biological Resources, of this Application for Certification (AFC).

TABLE 5.12-6
NOISE-SENSITIVE RECEIVER CONSTRUCTION NOISE LIMIT GOALS

Site ID	Label	Jurisdiction	Applicable Construction Noise Standard
LT-1	3 Single-Family Residences along Otay Mesa Road	County of San Diego	< 75 dBA over an 8-hour period between the hours of 7 a.m to 7 p.m.
ST-1	3 Single-Family Residences along Otay Mesa Road	County of San Diego	< 75 dBA over an 8-hour period between the hours of 7 a.m to 7 p.m.
LT-2	Unpermitted Mobile Home Area	County of San Diego	< 75 dBA over an 8-hour period between the hours of 7 a.m to 7 p.m.
ST-2	Southeast of Unauthorized Mobile Home Area	County of San Diego	< 75 dBA over an 8-hour period between the hours of 7 a.m to 7 p.m.

Source: URS Corporation, 2010.
Notes:
dBA = A-weighted decibel

Summary of Operational Design Goals

Generally, the design basis for noise control is the minimum, or most stringent, noise level required by any of the applicable LORS. Therefore, facility operational noise from this project is evaluated against the CEC limit and local LORS. The project noise level is considered insignificant if it does not exceed the ambient background noise level (L_{90}) by 5 dBA or more at the nearest noise-sensitive receiver or local LORS, as detailed below. For projects where the increase is between 5 and 10 dBA, the level of an impact depends on the particular land uses and existing ambient noise levels in the vicinity of the proposed project.

LT-1

The three single-family residences located along Otay Mesa Road at measurement sites LT-1 and ST-1 had a measured late-night L_{90} of 41 dBA. Based on CEC criterion, the allowable L_{90} is 46 dBA at LT-1 after the proposed PPEC project is constructed.

These sensitive receivers are also subject to the County of San Diego Noise Ordinance. The daytime hourly L_{eq} limit is 50 dBA and the nighttime hourly L_{eq} limit is 45 dBA. The lowest measured hourly L_{eq} at LT-1 was 62 dBA. This shows that ambient noise levels near LT-1 are significantly higher than the nighttime noise standard established by the County of San Diego. The higher noise levels are due to high volumes of traffic near the homes along Otay Mesa Road. The operational noise level limit goal for the single-family residences is 45 dBA due to the nighttime hourly L_{eq} limit of 45 dBA established by the County of San Diego Noise Ordinance.

LT-2

The unpermitted mobile home community at measurement site LT-2 had a measured late-night L_{90} of 35 dBA. The noise levels measured at LT-2 and ST-2 are representative of the noise levels at the mobile home community, Richard J. Donovan Correctional Facility and the San Diego County Correctional Facility Complex. The Richard J. Donovan Correctional Facility and San Diego County Correctional Facility Complex will not have outdoor activities occurring during nighttime hours. The correctional facilities have a concrete design and will likely experience an estimated 30 dBA reduction in outdoor to indoor noise. The Richard J. Donovan Correctional Facility and San Diego County Correctional Facility Complex are located on land use zoned as S90 according to the County of San Diego Land Use map.

Based on CEC criteria, the allowable L_{90} is 40 dBA at the unpermitted mobile home community after the proposed PPEC project is constructed. These sensitive receivers are also subject to the County of San Diego's Noise Ordinance. The daytime hourly L_{eq} limit is 50 dBA and the nighttime hourly L_{eq} limit is 45 dBA at this community of mobile homes. The operational noise limit goal at the mobile home community located at LT-2 is 45 dBA

The measured late-night L_{90} at ST-2 was 37 dBA. The allowable L_{90} is 42 dBA at the two correctional facilities after the proposed PPEC project has been constructed. In reference to Table 5.12-25, S90 land uses have a daytime hourly L_{eq} limit of 50 dBA and a nighttime hourly L_{eq} limit of 45 dBA.

The ambient background noise levels and the associated project design noise levels necessary to comply with CEC guidelines and local standards are shown in Table 5.12-7.

TABLE 5.12-7
NOISE-SENSITIVE RECEIVER OPERATIONAL NOISE DESIGN GOALS

Site ID	Label	Measured, Late-night L_{90} ambient conditions, (dBA)	CEC's Late-Night L_{90} +5 to +10 dB Standard, (dBA)	Measured, Lowest Late-Night L_{eq} ambient conditions, (dBA)	County of San Diego's Late-Night L_{eq} Standard, (dBA)	Design Goal (dBA)
LT-1	3 Single-Family Residences along Otay Mesa Road	41	46-51	62	65[1]	45[1]
ST-1	3 Single-Family Residences along Otay Mesa Road	42	47-52	67	70[1]	45[1]
LT-2	Unpermitted Mobile Home Community	35	40-45	39	45	40
ST-2	Southeast of Unpermitted Mobile Home Community	37	42-47	42	45	42

Source: URS Corporation, 2010.

Notes:
dBA = A-weighted decibel
L_{90} = sound level baseline
[1] The late night measured L_{eq}'s at LT-1 and ST-1 already exceed the County of San Diego's nighttime hourly L_{eq} standard of 45 dBA. The County of San Diego allows for the new noise standards to be 3 dBA higher than the existing measured ambient noise levels if the noise standards are exceeded, but the modeled plant noise will not exceed the nighttime hourly L_{eq} standard of 45 dBA established by the County of San Diego Noise Ordinance. Therefore, the design goal remains at 45 dBA L_{eq}.

5.12.4 Environmental Consequences

Noise will be produced during project construction and project operation. Potential noise impacts from both on-site and off-site activities are assessed in this section. All potential impacts to noise-sensitive wildlife receptors and possible mitigation measures that may be necessary can be found in Section 5.6, Biological Resources, of this AFC.

5.12.4.1 Construction Noise

Construction of the generating facility, from site preparation and grading to commercial operation, is expected to take place from February 2013 to April 2014. Construction will typically take place between 7:00 a.m. and 5:30 p.m. on weekdays. Additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities. During some construction periods and during the startup phase of the project, some activities may continue 24 hours per day, 7 days per week.

Construction at the project site will result in a temporary increase in the ambient noise levels near the construction activities. The magnitude of the increase depends on the type of construction activity, the noise levels generated by various pieces of construction equipment, the duration of the construction phase, and the distance between the noise sources and noise-sensitive receivers. A detailed construction plan identifying construction sequences, phases, and specific equipment has not been developed; therefore, specific projection of sound levels because of construction cannot be made.

Four different construction components need to be assessed in terms of their effect on the existing noise environment. The following noise components associated with construction are listed below:

- PPEC plant site construction
- Transmission line construction
- Linears construction
- Construction traffic

Plant Facility Construction

The proposed project site and the permanent generating facility would cover approximately 9.99 acres.

A conservative assumption can be made regarding the expected noise levels generated by the construction of the plant facility. Because pile driving operations are not planned, site clearing would generate the highest noise levels associated with construction of the plant facility. Site clearing and grading would begin after notice to proceed has been given and last for two months and be temporary in nature.

Noise levels associated with site clearing are estimated to be 89 dBA at a distance of 50 feet.

Table 5.12-8 lists the noise-sensitive receivers, the distance from the noise-sensitive receiver to the boundary of the project site, and the expected noise levels that would be generated from the construction of the plant facility at each respective noise-sensitive receiver. The noise levels at the noise-sensitive receivers were calculated using the formula that attenuates noise over a given distance due to wave divergence. These numbers produce a worst-case scenario because the elevated terrain at most locations will provide some natural shielding for noise-sensitive receivers from noise levels generated by construction.

The expected noise levels due to construction of the plant facility will be below the 75 dBA noise level limit for construction at all potential noise-sensitive receivers. Significant noise impacts are not expected for any noise-sensitive receivers due to main facility construction as long as construction activity occurs in between 7:00 a.m. and 7:00 p.m. Monday through Saturday.

TABLE 5.12-8
PPEC PLANT SITE CONSTRUCTION NOISE LEVELS AT NOISE-SENSITIVE RECEIVERS

Site ID	Label	Distance from Project Site Boundary (feet)	Noise Level at Noise-sensitive Receiver (dBA)
LT-1	3 Single-Family Residences along Otay Mesa Road	4,700	49
ST-1	3 Single-Family Residences along Otay Mesa Road	4,700	49
LT-2	Unpermitted Mobile Home Community	7,700	45
ST-2	Southeast of Unpermitted Mobile Home Community	6,600	47

Notes:
dBA = A-weighted decibel
Assuming worst-case scenario of 89 dBA at 50 feet (USEPA, 1971).

Transmission Lines

Two possible routes are provided for a 230kV transmission line that will connect the project into the existing 230kV Otay Mesa switchyard. Route A would begin as an overhead power line along Calzada de la Fuente, extend approximately 1,700 feet east where it would then be routed underground for approximately 400 feet into the Otay Mesa switchyard (total length of Route A would be approximately 2,100 feet). Route B would begin as an overhead power line from the eastern edge of the project site, run south approximately 550 feet, then turn east along the northern border of the parcels with APN 648-040-48 and APN 648-040-43 for 1,400 feet, and finally turn north for approximately 700 feet into the Otay Mesa switchyard (total length of Route B would be approximately 2,650 feet).

A conservative assumption can be made regarding the expected noise levels generated by the construction of the transmission lines and connection to the existing switchyard. Similar to the construction of the plant facility, a sound level of 89 dBA at a distance of 50 feet is assumed in order to generate a worst-case scenario.

Tables 5.12-9 and 5.12-10 list the noise-sensitive receivers, the distances from the noise-sensitive receivers to both respective transmission line routes, and the expected noise levels that will be generated from the construction of both routes at each respective noise-sensitive receiver. Table 5.12-9 lists the distances and noise levels for Route A and Table 5.12-10 lists the distances

and noise levels for Route B. The noise levels at the noise-sensitive receivers were calculated using the formula that attenuates noise over a given distance due to wave divergence. These numbers produce a worst-case scenario, but many of the noise-sensitive receivers will have natural shielding from construction noise due to elevated terrain.

There will be no significant noise impacts at any nearby noise-sensitive receivers due to the construction of either Route A or Route B of the transmission line.

TABLE 5.12-9
PPEC TRANSMISSION LINE (ROUTE A) CONSTRUCTION NOISE LEVELS AT NOISE-SENSITIVE RECEIVERS

Site ID	Label	Distance from Project Transmission Lines (feet)	Noise Level at Noise-sensitive Receiver (dBA)
LT-1	3 Single-Family Residences along Otay Mesa Road	5,500	48
ST-1	3 Single-Family Residences along Otay Mesa Road	5,500	48
LT-2	Unpermitted Mobile Home Community	8,000	45
ST-2	Southeast of Unpermitted Mobile Home Community	7,000	46

Notes:
dBA = A-weighted decibel
Assuming worst-case scenario of 89 dBA at 50 feet (USEPA, 1971).

TABLE 5.12-10
PPEC TRANSMISSION LINE (ROUTE B) CONSTRUCTION NOISE LEVELS AT NOISE-SENSITIVE RECEIVERS

Site ID	Label	Distance from Project Transmission Lines (feet)	Noise Level at Noise-sensitive Receiver (dBA)
LT-1	3 Single-Family Residences along Otay Mesa Road	5,300	48
ST-1	3 Single-Family Residences along Otay Mesa Road	5,300	48
LT-2	Unpermitted Mobile Home Community	8,400	44
ST-2	Southeast of Unpermitted Mobile Home Community	7,400	46

Notes:
dBA = A-weighted decibel
Assuming worst-case scenario of 89 dBA at 50 feet (USEPA, 1971).

Linears Construction

Off-site construction for PPEC would entail construction of natural gas pipeline, and sewer, stormwater and water supply pipeline connections. There are two possible routes for the gas supply pipeline. Both routes would connect to an existing SDG&E natural gas pipeline, but at different locations. Route A would extend approximately 8,000 feet south along Alta Road to near the U.S. - Mexico border, at which point it would connect to the existing SDG&E natural gas pipeline. Route B would extend approximately 2,375 feet south along Alta Road, turn west on Otay Mesa Road, and continue approximately 7,920 feet to Harvest Road at which point it would connect to the existing SDG&E natural gas pipeline for a total of approximately 10,300 feet. Figure 5.12-1 illustrates the two alternatives.

For the sewer line, a short connection will be made to an existing 12-inch sewer main along Calzada de la Fuente along the north project site boundary or to an existing 15-inch sewer main

along Alta Road, along the west project site boundary.

For the stormwater line, a short connection will be made from a detention pond located at the northwest corner of the project site to an existing 30-inch stormwater pipeline located along Calzada de la Fuente, adjacent to the project site.

For the water supply lines, the project will make a short connection to the potable service system, either at an existing 12-inch main along Calzada de la Fuente, or at an existing 24-inch main along Alta Road. Upon the Otay Water District (OWD)'s completion of the planned Otay Mesa area recycled water system, the project will make a connection to an existing 8-inch recycled water main along Calzada de la Fuente or a new recycled water main to be constructed in Alta Road.

A conservative assumption can be made regarding the expected noise levels generated by the construction of the proposed project pipelines. Similar to the construction of the main facility and transmission lines, a sound level of 89 dBA at a distance of 50 feet is assumed in order to generate a worst-case scenario.

Tables 5.12-11 and 5.12-12 list the noise-sensitive receivers, the distance from the noise-sensitive receiver to the project pipelines, and the expected noise levels that will be generated from the construction of the pipelines at each respective noise-sensitive receiver. Table 5.12-11 lists the distances and noise levels for Route A and Table 5.12-12 lists the distances and noise levels for Route B. The noise levels at the noise-sensitive receivers were calculated using the formula that attenuates noise over a given distance due to wave divergence. These numbers produce a worst-case scenario, but many of the noise-sensitive receivers will have natural shielding from construction noise due to elevated terrain.

Noise levels associated with natural gas line route Route B exceeds the 75 dBA construction noise level limit at the three single-family residences located along Otay Mesa Road. Construction will be taking place within 50 to 100 feet from these homes if Route B is chosen. There may be some noise impacts at the three single-family residents located along Otay Mesa Road if Route B is chosen, but construction will be temporary in nature.

If Route A is chosen, there will be no significant noise impacts due to any linears construction.

TABLE 5.12-11
PPEC NATURAL GAS LINE (ROUTE A) CONSTRUCTION NOISE LEVELS AT NOISE-SENSITIVE RECEIVERS

Site ID	Label	Distance from Linear Facility Construction (feet)	Noise Level at Noise-sensitive Receiver (dBA)
LT-1	3 Single-Family Residences along Otay Mesa Road	4,100	51
ST-1	3 Single-Family Residences along Otay Mesa Road	4,100	51
LT-2	Unpermitted Mobile Home Community	7,900	45
ST-2	Southeast of Unpermitted Mobile Home Community	6,900	46

Notes:
dBA = A-weighted decibel
Assuming worst-case scenario of 89 dBA at 50 feet (USEPA, 1971).

TABLE 5.12-12
PPEC NATURAL GAS LINE (ROUTE B) CONSTRUCTION NOISE LEVELS AT NOISE-SENSITIVE RECEIVERS

Site ID	Label	Distance from Linear Facility Construction (feet)	Noise Level at Noise-sensitive Receiver (dBA)
LT-1	3 Single-Family Residences along Otay Mesa Road	<50	89
ST-1	3 Single-Family Residences along Otay Mesa Road	<50	89
LT-2	Unpermitted Mobile Home Community	7,900	45
ST-2	Southeast of Unpermitted Mobile Home Community	6,900	46

Notes:
dBA = A-weighted decibel
Assuming worst-case scenario of 89 dBA at 50 feet (USEPA, 1971).

Construction Traffic

Traffic volume would increase because of project construction. Primary access to the project site would be Otay Mesa Road. The main roadway segments that would be used during project construction can be found in Table 5.12-13. Traffic noise for each of the roadways is analyzed based on the projected change in traffic based on peak-hour traffic volumes. For purposes of noise analysis, Year 2011 traffic volumes for Otay Mesa Road assumed that the construction workforce would consist of 284 workers. This is conservative as the peak-hour construction numbers show the most vehicles and highest numbers of trucks, they provide the worst-case scenario along Otay Mesa Road and Alta Road. Given the anticipated volumes for certain segments of roadway, two noise receivers were modeled at distances of 50 feet and 100 feet. The noise level, because of construction traffic along Otay Mesa Road and Alta Road, are expected to be between 67.9 dBA to 74.4 dBA at a distance of 50 feet. The noise levels, because of construction traffic along Otay Mesa Road and Alta Road, are expected to be between 64.6 dBA and 7.1 dBA at a distance of 100 feet (as shown in Table 5.12-15). There are no significant noise impacts along Otay Mesa Road.

TABLE 5.12-13
PROJECT ROADWAY SEGMENTS

Roadway	Segment	Cross-section Classification
Otay Mesa Road	East of La Merida	2-Lane Arterial
Otay Mesa Road	West of Enrico Fermi Dr.	2-Lane Arterial
Otay Mesa Road	East of Enrico Fermi Dr.	2-Lane Arterial
Otay Mesa Road	West of Alta Road	2-Lane Arterial
Alta Road	North of Otay Mesa Road	2-Lane Collector

Source: URS Corporation, 2010.

TABLE 5.12-14
CHANGES IN SOUND LEVEL DUE TO PROJECT CONSTRUCTION TRAFFIC

Roadway	Segment	Time Period	Existing Traffic Volume -	Traffic Volume - 2011 Projected with Construction	Change in Sound Level (dBA)
Otay Mesa Road	East of La Merida	Peak Hour	1,877	2,345	-1.8
Otay Mesa Road	West of Enrico Fermi Dr.	Peak Hour	598	972	0.8
Otay Mesa Road	East of Enrico Fermi Dr.	Peak Hour	576	954	0.4
Otay Mesa Road	West of Alta Road	Peak Hour	408	765	3.6
Alta Road	North of Otay Mesa Road	Peak Hour	523	889	1.3

Source: URS Corporation, 2010.
dBA = A-weighted decibel

TABLE 5.12-15
PROJECT SOUND LEVEL ALONG OTAY MESA ROAD AND ALTA ROAD DUE TO CONSTRUCTION TRAFFIC

Roadway	Segment	Time Period	Peak Hour Project Construction Traffic Volume	Sound Level at 100 feet (dBA)
Otay Mesa Road	East of La Merida	Peak Hour	2,345	71.1
Otay Mesa Road	West of Enrico Fermi Dr.	Peak Hour	972	66.2
Otay Mesa Road	East of Enrico Fermi Dr.	Peak Hour	954	66.0
Otay Mesa Road	West of Alta Road	Peak Hour	765	65.6
Alta Road	North of Otay Mesa Road	Peak Hour	889	64.6

Source: URS Corporation, 2010.

Vibration

The only potential power plant construction operation likely to produce vibration that could be perceived off site would be pile driving. Pile driving will not be required for construction of PPEC. Therefore, no vibration impacts are anticipated.

5.12.4.2 Operational Noise

Operational Traffic

Table 5.12-16 lists the project operational traffic numbers. Under a worst-case scenario, a total of 12 operational workers would be entering and exiting the proposed project site. This would add a total of 24 automobiles to the existing average daily traffic volumes and would not change the existing CNEL. The noise levels of 24 automobiles added to the traffic volume are expected to be between 63.5 dBA to 64.4 dBA at 100 feet. There would be no significant noise impacts due to project operational traffic.

TABLE 5.12-16
PROJECT OPERATIONAL TRAFFIC

	Daily Trips	A.M. Peak-Hour Trips		P.M. Peak-Hour Trips	
		In	Out	In	Out
Operational Workforce	24	12	0	0	12
Total Trips	24	12	0	0	12

Source: URS Corporation, 2010.

Corona Discharge Noise

The transmission structures associated with the PPEC 230kV interconnecting power lines would include 230kV pole structures that will connect PPEC to the existing SDG&E Otay Mesa switchyard located east of the proposed project site. The number of power poles that will need to be installed for either route has not been established, but the operational noise that will result from corona discharge remains the same. The structures will be designed to accommodate the overhead shield wires.

The proposed project transmission line will be designed and constructed with conventional transmission line methods, configurations, and materials that specifically incorporate design practices to control corona losses. These design methods are standard industry practices and pertain to the appropriate sizing of conductors, use of a three-phase conductor transmission system, and use of external corona shielding rings. These types of facilities have generally performed well throughout the U.S. in fair weather and without unacceptable electromagnetic corona noise generation, even in foul (i.e., rainy) weather, where the small diameters of rain droplets on the conductors increase voltage gradients and lead to ionization of air in the vicinity of the conductors.

Potential off-site operational noise would consist of corona discharge noise from the transmission line. Corona discharge is a phenomenon associated with all energized transmission lines. Under certain conditions, the localized electric field near an energized conductor can be sufficiently concentrated to produce a tiny electric discharge that can ionize air close to the conductors. This partial discharge of electrical energy is called corona discharge, or corona, and the resulting ionization of air at the surface of the conductor is a source of audible noise. When corona is produced, it is heard as snaps, crackles, and pops.

Several factors, including conductor voltage, shape, and diameter, and surface irregularities such as scratches, nicks, dust, or water drops can affect a conductor's electrical surface gradient and its corona performance. Transmission line designers have two options to reduce the surface voltage gradient at the conductor surface and thus minimize corona effects: 1) increase the diameter of the conductor or 2) increase the effective diameter by using multiple conductors held apart by spacers. To minimize the potential for corona noise, the diameter of the conductors has been optimized and corona rings will be installed at all conductor attachment points.

The Electric Power Research Institute (EPRI) has conducted several transmission line tests and studies that measured sound levels for several power line sizes with wet conductors (*Transmission Line Reference Book, 345 kV and Above,* EPRI 1975, 1982). The *Transmission*

Line Reference Book, 345 kV and Above also notes that the noise produced by a conductor attenuates (decreases) by 2 to 3 dBA for each doubling of the distance from the source.

The maximum noise level from corona discharge directly under the transmission line during typical "fair weather" conditions is approximately 18 dBA. This noise level is below ambient noise levels and would likely be inaudible in consideration of the existing noise environment. The maximum noise level directly under the transmission line during typical "rain" conditions is approximately 43 dBA. Ambient noise measurements during rainy conditions were not conducted; however, this outdoor noise level during periods of inclement weather is not substantial in view of the higher than normal ambient noise levels that typically accompany rainy conditions.

Under most conditions, corona discharge noise will not be audible; however, regardless of weather conditions, potential corona discharge noise, even at locations directly under the transmission line, is below the nighttime noise standard of 45 dBA established by the County of San Diego. There would be no significant noise impacts due to off-site corona discharge noise.

Plant Facility Operational Noise Modeling

To evaluate expected noise levels and identify any need for mitigation measures, a three-dimensional, computer-generated acoustical model of the PPEC was developed using SoundPlan 7.0 to predict property line and off-site noise levels. SoundPlan 7.0 is a computer-based acoustical analysis package specifically designed for estimating noise levels from industrial facilities.

Sound power levels (PWL) for all major noise sources (combustion turbine generators, gas compressors, SCR exhausts, etc.) were estimated using octave band data from manufacturers, field-obtained data, and data from industry-standard prediction algorithms (Edison Electric Institute, 1978). Table 5.12-17 lists all of the sound power levels for all major noise sources used during modeling.

Equipment power levels were adjusted for the reduction of sound by distance (*geometrical spreading);* the molecular absorption of sound by air (*air absorption*); and the absorption and reflection of sound by the ground (*ground effect).* Sound levels were further modified by the effects of shielding, (i.e., via tanks, buildings, equipment, etc.); and by changes in source levels with direction (*directivity)* to estimate property boundary and off-site receiver noise levels.

TABLE 5.12-17
EQUIPMENT SOUND POWER LEVELS

	Octave Band Center Frequency (Hz)										
	31	63	125	250	500	1	2	4	8		
Sound Power Level (PWL) Per Unit	Hz	Hz	Hz	Hz	Hz	kHz	kHz	kHz	kHz	Linear	A-Weight
Air Compressor Skid	85.9	92.9	90.9	90.9	87.9	86.9	85.9	84.9	80.9	98.3	93.0
Ammonia Forwarding Pump	89.5	100.5	94.5	94.5	91.5	90.5	89.5	88.5	84.5	103.5	96.6
Ammonia Injection Skid	89.5	100.5	94.5	94.5	91.5	90.5	89.5	88.5	84.5	103.5	96.6
Ammonia Vaporizer	89.5	100.5	94.5	94.5	91.5	90.5	89.5	88.5	84.5	103.5	96.6
Auxiliary Transformer	79.5	85.5	87.5	82.5	82.5	76.5	71.5	66.5	59.5	91.5	82.9
Bearing Sump Seal Vent	101.5	90.5	89.5	85.5	81.5	75.5	79.5	80.5	80.5	102.3	87.2
Building Roof-Mounted Ventilation Fan	95.0	95.0	91.0	87.0	84.0	82.0	80.0	76.0	76.0	99.4	87.8
Cooling/Purge Air Fan	49.5	88.5	102.5	94.5	94.5	93.5	83.5	78.5	80.5	104.3	96.9
CTG Auxiliary Enclosure Vent Discharge	78.5	79.5	85.5	96.5	85.5	82.5	84.5	77.5	68.5	97.7	91.5
CTG Auxiliary Starter – Fan w/ Oil Cooler	78.5	78.5	81.5	91.5	76.5	66.5	65.5	61.5	55.5	92.4	83.6
CTG Combustion Inlet Silencer and Transformer	121.5	113.5	103.5	91.5	90.5	83.5	94.5	82.5	79.5	122.2	97.9
CTG Generator Air Inlet Filter Face	95.5	107.5	109.5	92.5	78.5	73.5	68.5	69.5	41.5	111.8	94.2
CTG Generator Casing	85.5	81.5	112.5	96.5	89.5	88.5	86.5	83.5	76.5	112.7	98.5
CTG Generator Cooling Air Exhaust		105.5	109.5	87.5	79.5	79.5	80.5	79.5	75.5	111.0	94.4
CTG Generator Filter House Surfaces	90.5	94.5	99.5	88.5	83.5	80.5	80.5	75.5	69.5	101.5	88.7
CTG Inlet Filter House and Ducting	117.5	114.5	105.5	89.5	75.5	75.5	90.5	87.5	92.5	119.5	97.3
CTG J3 Bearing Vent Fan Filter Face	83.5	92.5	85.5	89.5	86.5	84.5	84.5	79.5	70.5	96.4	90.5
CTG J3 Bearing Vent Fan Motor	84.5	78.5	86.5	90.5	89.5	88.5	87.5	82.5	74.5	96.3	93.6
CTG Mineral Lube Oil AC Motor and Pump	72.5	88.5	88.5	84.5	98.5	84.5	84.5	78.5	74.5	99.8	96.2
CTG Mineral Lube Oil Sump Evac System	87.5	97.5	96.5	96.5	106.5	94.5	91.5	85.5	81.5	108.1	104.4
CTG Step-Up Transformer	96.0	102.0	104.0	99.0	99.0	93.0	88.0	83.0	76.0	108.0	99.4
CTG Turbine Air Inlet Filter Face	117.5	114.5	105.5	90.5	83.5	86.5	92.5	88.5	92.5	119.5	98.4
CTG Turbine Base Skid Surfaces	111.5	48.5	90.5	85.5	96.5	86.5	89.5	88.5	83.5	111.7	96.9
CTG Turbine Enclosure Surfaces	104.5	88.5	86.5	87.5	87.5	84.5	90.5	93.5	81.5	105.3	97.0
CTG Turbine Enclosure Vent Exhaust	110.5	109.5	111.5	97.5	90.5	90.5	91.5	88.5	83.5	115.5	99.6
CTG Turbine Enclosure Vent Fan Motor	98.5	91.5	95.5	96.5	90.5	90.5	92.5	90.5	84.5	103.4	98.0
CTG Turbine Lube Oil AC Motor and Pump	81.5	64.5	64.5	69.5	77.5	76.5	68.5	66.5	51.5	84.3	79.4
CTG Upgraded Generator Enclosure Vent	106.0	95.0	95.0	92.0	82.0	81.0	86.0	85.0	74.0	106.9	91.6
CTG Ventilation Inlet Silencer and Elbow	92.5	90.5	80.5	68.5	57.5	42.5	44.5	52.5	43.5	94.8	68.6
CTG Water Inject Boost Motor and Pump	97.5	73.5	66.5	74.5	80.5	78.5	73.5	67.5	64.5	97.7	82.3
CTG Water Pump Skid - LO	79.5	38.5	81.5	79.5	78.5	83.5	76.5	77.5	63.5	88.6	86.1
CTG Water Pump Skid IC Loop Water	97.5	38.5	82.5	90.5	91.5	87.5	81.5	75.5	67.5	99.6	92.1

	Octave Band Center Frequency (Hz)										
	31	63	125	250	500	1	2	4	8		
Demin Water Pump	85.9	92.9	90.9	90.9	87.9	86.9	85.9	84.9	80.9	98.3	93.0
Fuel Gas Metering Area	0.0	0.0	0.0	77.4	79.4	84.4	94.4	92.4	84.4	97.1	98.0
Gas Compressor Aftercooler (does not include Directivity)	110.0	110.0	109.0	106.0	101.0	99.0	93.0	87.0	81.0	115.3	104.0
Gas Compressor Enclosure	117.0	108.0	107.0	106.0	90.0	79.0	73.0	63.0	61.0	118.6	99.2
Intercooler System	108.2	100.2	100.2	97.3	98.5	90.7	89.7	93.5	80.5	110.2	99.9
Pad-Mounted Transformer	79.5	85.5	87.5	82.5	82.5	76.5	71.5	66.5	59.5	91.5	82.9
SCR Casing and Stack Walls	116.3	101.6	98.5	99.5	94.4	85.2	76.9	72.3	73.3	116.6	95.1
SCR Stack Exhaust with SCR DIL (does not include Directivity)	103.6	97.9	99.0	95.7	100.2	85.9	75.0	71.8	62.6	107.1	98.0
SCR System Dilution Air Fan		82.5	83.5	83.5	85.5	83.5	79.5	75.5	72.5	91.3	87.8
SCR System Temper Air Fan		102.5	100.5	96.5	92.5	91.5	83.5	79.5	79.5	105.7	95.7
Service Water Pump	85.9	92.9	90.9	90.9	87.9	86.9	85.9	84.9	80.9	98.3	93.0
VBV Silencer Diffuser Pipes	92.5	38.5	83.5	71.5	96.5	92.5	96.5	99.5	82.5	103.4	103.3
Waste Water Pump	85.9	92.9	90.9	90.9	87.9	86.9	85.9	84.9	80.9	98.3	93.0
Water Treatment Building	99.8	102.8	96.8	90.8	76.8	67.8	60.8	54.8	53.8	105.4	85.6
WSAC Air Inlet Side		95.6	96.6	95.6	92.6	92.2	88.6	84.6	79.3	102.2	96.6
WSAC Cased Side		111.0	101.0	102.0	96.0	97.6	91.0	91.0	91.7	112.3	101.7
WSAC Fan (does not include Directivity)		109.0	109.0	108.0	106.0	109.0	109.0	110.0	113.0	118.6	116.9
WSAC Water Pump	85.9	92.9	90.9	90.9	87.9	86.9	85.9	84.9	80.9	98.3	93.0

Source: Kiewit Power Engineers, 2010.
AC = aftercooler
CTG = combustion turbine generator
DIL = dilution
Hz = Hertz
IC = intercooler
Khz = kilohertz
LO = lube oil
PWL = sound power level
SCR = selective catalytic reduction
VBV = variable bypass valve
WSAC = wet surface air cooler

Acoustical Modeling Parameters

The acoustical model used for the analysis is based on ISO 9613-2, "Attenuation of Sound During Propagation Outdoors" adopted by the International Organization for Standardization (ISO) in 1996. This standard provides a widely-accepted engineering method for calculating outdoor environmental noise levels from sources of known sound emission. The following sections briefly discuss the conditions under which the predictions are considered valid.

Meteorology

ISO 9613 is designed to estimate far-field noise levels under favorable sound-propagation conditions, (that is, when wind is blowing from the site towards receivers, or under well-developed temperature inversions, which commonly occur on clear, calm nights[1]). For other weather patterns, such as during upwind conditions, or for ground based temperature lapses, observed noise levels would generally be less than predicted.

Air Absorption

Absorption/attenuation of sound by air depends on the frequency of sound as well as on temperature and relative humidity. In general, high temperatures and low humidity increase high-frequency sound absorption, which tends to reduce far-field predicted noise levels. 'Standard' values were used for temperature, relative humidity, and barometric pressure, resulting in a generally conservative estimate of atmospheric attenuation.

Ground Absorption

Noise level predictions are largely dependent on both the type and extent of ground condition assumed for the site and receiver areas. Areas of ground at the Project site were modeled as 'hard', or completely reflective, which is typical of paving, concrete, tamped ground, water and other ground surfaces commonly found at industrial sites. Off-site ground areas were assumed to be 50% absorptive, which is characterized as semi-porous ground, and is typical of moderately vegetated land.

Reflections

For complex industrial installations with a large number of obstacles (such as buildings, tanks, equipment, etc.), reflected energy components can be considerable. Therefore, the number of reflections for the model was conservatively set at two, allowing for the effects of multiple acoustic ray paths from a single source to be considered.

Directivity

A vertical directivity correction was used to account for changes in source levels with direction. This vertical directivity was used with sources including the SCR stack exhausts and Wet-Cooler fans.

---

[1] Temperature inversions typically develop during calm, cloudless nights, when the ground is no longer being heated by the sun. As a result, air near the ground begins to cool, forming a thicker and thicker 'blanket' as the evening progresses. In practical terms, this means that temperature is increasing with elevation, (i.e., the air is actually warmer at higher elevations, as compared to near the ground) and hence the term "temperature inversion". The effect of temperature inversion on sound propagation is to 'bend' sound waves back towards the ground, producing near worst-case sound levels at a receiver. In contrast, "temperature lapse" commonly develops during calm, cloudless daytime periods, when the ground is being heated by the sun, which in turn produces a warm layer of air next to the ground, as opposed to at higher elevations. This means that temperature decreases with elevation, causing sound waves to bend upwards and reducing sound levels observed at a far-field observer.

Plant Facility Operational Noise

The operation of the plant facility is expected to begin in 2014. Noise modeling for the plant facility operation was completed using SoundPlan. Table 5.12-18 lists the noise level modeling results at each of the ambient noise measurement locations. Figure 5.12-3 displays the 75 dBA L_{eq} noise contour as a result of main facility operation. The 75 dBA L_{eq} noise contour does not extend beyond the project boundary.

TABLE 5.12-18
NOISE MODELING RESULTS AT AMBIENT NOISE MEASUREMENT LOCATIONS

Site ID	Label	Noise Level L_{eq} at Noise-Sensitive Receiver (dBA)
LT-1	3 Single-Family Residences along Otay Mesa Road	36
LT-2	Unpermitted Mobile Home Community	34

dBA = A-weighted decibel
L_{eq} = Equivalent sound level

Table 5.12-19 lists the modeled CNEL values at each of the long-term measurement locations. CNEL values cannot be obtained from short-term measurement data because CNEL values are calculated using 24-hour noise level measurement data. LT-1 and LT-2 are subject to the exterior noise standards found in the Noise Element of the *County of San Diego General Plan*. The maximum allowable noise exposure for residential areas within the County of San Diego is 60 dBA CNEL. The existing noise exposure at LT-1 is already above 60 dBA and the existing plus project CNEL value does not change as a result of the proposed project. The noise-sensitive receivers at LT-2 meet the 60 dBA CNEL noise criterion level.

There are no significant noise impacts at any existing nearby noise-sensitive receivers according to the standards found in the *County of San Diego General Plan*.

TABLE 5.12-19
EXISTING CNEL PLUS PROJECT CNEL

Site ID	Label	Project SPL (dBA)	Project CNEL (dBA)	Existing CNEL (dBA)	Existing CNEL Plus Project CNEL (dBA)
LT-1	3 Single-Family Residences along Otay Mesa Road	36	43	76	76
LT-2	Unpermitted Mobile Home Community	34	41	55	55

dBA = A-weighted decibel
CNEL = Community Noise Equivalent Level

Table 5.12-20 lists the modeled project L_{eq} values at each of the long-term measurement sites and then adds the existing, measured nighttime L_{eq} values at each noise-sensitive receiver. LT-1 is subject to the nighttime hourly L_{eq} of 45 dBA as a result of the noise standard found in the County of San Diego's Noise Ordinance. The average measured and existing nighttime hourly L_{eq} value plus project hourly L_{eq} is 62 dBA. The lowest existing nighttime hourly L_{eq} value at LT-1 was measured at 62 dBA. Although the existing plus project nighttime hourly L_{eq} of 62 dBA exceeds the noise standard of 45 dBA L_{eq} established by the County of San Diego's Noise

Ordinance, the Noise Ordinance also states that if the existing ambient noise level is higher than the standard, then the measured ambient noise level plus 3 dBA becomes the new standard. There is no change in the nighttime hourly L_{eq} levels at LT-1 due the introduction of the proposed PPEC project. The nighttime hourly L_{eq} at LT-1 will not exceed the nighttime noise standard established by the County of San Diego.

LT-2 is also subject to the noise standards found in the San Diego County Code. This land must meet the nighttime hourly L_{eq} value of 45 dBA. The lowest existing nighttime hourly L_{eq} value at LT-2 was measured at 39 dBA. The average measured and existing nighttime hourly L_{eq} value plus project hourly L_{eq} is 40 dBA. This is 5 dBA below the maximum allowable exterior hourly L_{eq} value of 45 dBA. The increase in L_{eq} from 39 dBA to 40 dBA during nighttime hours would be insignificant.

TABLE 5.12-20
NIGHTTIME L_{EQ} VALUES AT EXISTING NOISE-SENSITIVE RECEIVERS

Site ID	Project L_{eq} (dBA)	Existing Nighttime L_{eq} (dBA)	Existing Nighttime L_{eq} Plus Project L_{eq} (dBA)
LT-1	36	62	62
LT-2	34	39	40

dBA = A-weighted decibel
L_{eq} = Equivalent sound level

Operational design goals for the project must meet standards established by the CEC. The CEC uses California Environmental Quality Act (CEQA) guidelines to establish a noise standard. The CEC uses the increase in the background noise level as the standard for new projects. The background noise level is known as the L_{90}. An increase in the L_{90} below 5 dBA is not considered significant. If the project increases the L_{90} at noise-sensitive receivers by more than 5 dBA, but less than 10 dBA, then the Project's impact depends on circumstances involving the project. There is a significant noise impact if the project increases the L_{90} at a noise-sensitive receiver by more than 10 dBA.

Table 5.12-21 lists the project L_{90}, existing nighttime L_{90}, existing nighttime plus project L_{90}, and the change in L_{90} as a result of an operational project. The increases in nighttime L_{90} at LT-1 and LT-2 are less than 5 dBA. The proposed PPEC project will meet the standards established by the CEC.

TABLE 5.12-21
NIGHTTIME L_{90} VALUES AT EXISTING NOISE-SENSITIVE RECEIVERS

Site ID	Project L_{90} (dBA)	Existing Nighttime L_{90} (dBA)	Existing Nighttime L_{90} Plus Project L_{90} (dBA)	Change in L_{90} (dBA)
LT-1	35	41	42	1
LT-2	33	35	37	2

Notes:
dBA = A-weighted decibel
L_{90} = Background sound level equivalent

Vibration

Vibration from an operating power plant could be transmitted by two mechanisms: through the ground (groundborne vibration) and through the air (airborne vibration). The operating components of a simple-cycle power plant consist of high-speed gas turbines, compressors, and various pumps. All of these pieces of equipment must be carefully balanced to operate smoothly. Permanent vibration sensors are attached to the turbines and generators. Similar facilities have not resulted in ground or airborne vibration impacts, and it is not anticipated that PPEC will produce ground or airborne vibration.

Excessive airborne vibration (low-frequency noise) can rattle windows and objects on shelves. PPEC's chief source of airborne vibration would be the exhaust from the gas turbines. In a power plant such as PPEC, however, the exhaust must pass through the SCR modules and the stack silencers before it reaches the atmosphere; the SCRs act as efficient mufflers. The combination of SCR units and stack silencers makes it highly unlikely that PPEC would cause perceptible airborne vibration effects.

Tonal Noise

The CTGs, transformers, and combustion turbine inlet compressors produce tonal sounds. Because of the care taken in specifying the plant's engineering design features, no prominent tonal noise emissions would be propagated to the noise-sensitive receptors. For example, the generator enclosure and combustion turbine enclosure and inlet silencers will be designed to reduce the tonal emissions from these sources to levels below the general plant noise. In addition, the transformer tonal noise emission level will be below the broadband plant noise. Therefore, any equipment tonal emissions would not be distinctly audible at any off-site locations. During normal operations, the nature of noise from the proposed facility would be essentially continuous and broadband (no tones).

Occupational Noise Exposure

A review of major equipment near-field (very close to the source) noise emission data and general knowledge of machinery associated with power generation indicate that noise levels within the PPEC project site could reach 85 to 100 dBA within three feet of the equipment envelope. Because of these predicted site noise levels, the requirement for a hearing conservation program will be evaluated and employees working at the PPEC facility with exposure to noise sources will be identified. All areas within the PPEC facility, where noise levels could be 85 dBA or greater, will be delineated and posted "Noise Hazard Area – Hearing Protection Required."

5.12.5 Cumulative Impacts

The purpose of this section is to identify past, present, and reasonably foreseeable actions in the PPEC project area that could affect the same resources as those of the project and provide the following analysis:

- Determine if the impacts of PPEC and the other actions would overlap in time or geographic extent.

- Determine if the impacts of the proposed project would interact with, or intensify, the impacts of the other actions.

- Identify any potentially significant cumulative impacts.

Section 5.18 presents a list of projects have the potential to result in cumulative noise impacts with the proposed project. The primary cumulative impact is the potential increase in traffic-related noise.

The County of San Diego Planning Commission recently approved a Major Use Permit application (MUP 06-074W1) for a secure detention facility – the East Mesa Detention Facility – at a site north of the existing Otay Mesa Generating Project (OMGP). This new correctional facility, if constructed, would be located about 600 feet northeast, across Calzada de la Fuente, from the PPEC. The proposed facility is designed for the short-term stay of inmates awaiting transfer to permanent facilities. Based on the Land Use analysis contained in the Major Use Permit's environmental review documents, the facility has been determined to be compatible with surrounding industrial land use designations of the adopted East Otay Mesa Specific Plan, which supersedes the County's Zoning Ordinance and provides land use designations and development standards for the site and surrounding properties within the specific plan's boundaries (County of San Diego, November 19, 2010, page 4-55).

Based on the Noise analysis report contained in the Major Use Permit Application's environmental review documents for the proposed detention center, the existing noise levels in the site environs are 52 dBA L_{eq} to 66 dBA $L_{eq.}$ If constructed, the facility will include noise producing equipment such as cooling towers, transformers, air handlers, chillers, and a recycled water plant. Future noise levels from facility operations are predicted to be 45 dBA L_{eq} to 59 dBA L_{eq} at the property lines with localized higher noise levels at selected interior areas. These noise levels are consistent with those allowed for the existing and planned Heavy Industrial land uses surrounding the site.

For the project traffic and noise analysis, it was conservatively assumed that to account for ambient traffic growth and cumulative project traffic an ambient traffic growth of 8 percent was used to develop future baseline cumulative conditions from existing intersection traffic count data. The noise study for the project built these assumptions into the project-specific analysis in order to account for potential future growth and traffic-related noise through the end of the construction period.

Following project construction, the very low trip generation associated with the project's operations workforce would not result in significant cumulative noise impacts in the project study area.

5.12.6 Mitigation Measures and Conditions of Certification

PPEC, if built and operated in conformance as described in this AFC and the proposed Conditions of Certification, would produce no significant adverse noise impacts on human noise-sensitive receivers within the affected area.

5.12.6.1 Proposed Conditions of Certification

The following conditions of certification related to noise are proposed for this project:

Noise Complaint Hotline

NOISE-1 At least 15 days prior to the start of ground disturbance, the project owner shall notify all residents within two miles of the site and one mile of the linear facilities, by mail or other effective means, of the commencement of project construction. At the same time, the project owner shall establish a telephone number for use by the public to report any undesirable noise conditions associated with the construction and operation of the project and include that telephone number in the above notice. If the telephone is not staffed 24 hours per day, the project owner shall include an automatic answering feature, with date and time stamp recording, to answer calls when the phone is unattended. This telephone number shall be posted at the project site during construction in a manner visible to passersby. This telephone number shall be maintained until the project has been operational for at least one year.

Verification: Prior to ground disturbance, the project owner shall transmit to the Compliance Project Manager (CPM) a statement, signed by the project owner's project manager, stating that the above notification has been performed and describing the method of that notification, verifying that the telephone number has been established and posted at the site, and giving that telephone number.

Noise Complaint Process

NOISE-2 Throughout the construction and operation of the project, the project owner shall document, investigate, evaluate, and attempt to resolve all project-related noise complaints. The project owner or authorized agent shall:

- Use the Noise Complaint Resolution Form (below), or a functionally equivalent procedure acceptable to the CPM, to document and respond to each noise complaint;
- Attempt to contact the person(s) making the noise complaint within 24 hours;
- Conduct an investigation to determine the source of noise related to the complaint;
- Take all feasible measures to reduce the noise at its source if the noise is project related; and
- Submit a report documenting the complaint and the actions taken. The report shall include: a complaint summary, including final results of noise reduction efforts, and if obtainable, a signed statement by the complainant stating that
- The noise problem is resolved to the complainant's satisfaction.

Verification: Within five days of receiving a noise complaint, the project owner shall file a copy of the Noise Complaint Resolution Form with the CPM, documenting the resolution of the complaint. If mitigation is required to resolve a complaint, and the complaint is not resolved within a three-day period, the project owner shall submit an updated Noise Complaint Resolution Form when the mitigation is implemented. NOISE-3 The project owner shall submit to the CPM

for review and approval a noise control program and a statement, signed by the project owner's project manager, verifying that the noise control program will be implemented throughout construction of the project. The noise control program shall be used to reduce employee exposure to high noise levels during construction and also to comply with applicable OSHA and Cal/OSHA standards.

Noise Control Program

NOISE-3 The project owner shall submit to the CPM for review and approval a noise control program and a statement, signed by the project owner's project manager, verifying that the noise control program will be implemented throughout construction of the project. The noise control program shall be used to reduce employee exposure to high noise levels during construction and also to comply with applicable OSHA and Cal/OSHA standards.

Verification: At least 30 days prior to the start of ground disturbance, the project owner shall submit to the CPM the noise control program and the project owner's project manager's signed statement. The project owner shall make the program available to Cal/OSHA upon request.

Occupational Noise Survey

NOISE-4 Following the project's first achieving a sustained output of 85 percent or greater of rated capacity, the project owner shall conduct an occupational noise survey to identify the noise hazardous areas in the facility.

The survey shall be conducted by a qualified person in accordance with the provisions of Title 8, California Code of Regulations sections 5095–5099 and Title 29, Code of Federal Regulations section 1910.95. The survey results shall be used to determine the magnitude of employee noise exposure.

The project owner shall prepare a report of the survey results and, if necessary, identify proposed mitigation measures that will be employed to comply with the applicable California and federal regulations.

Verification: Within 30 days after completing the survey, the project owner shall submit the noise survey report to the CPM. The project owner shall make the report available to OSHA and Cal/OSHA upon request.

Construction Time Restrictions

NOISE-5 Heavy equipment operation and noisy construction work relating to any project features shall be restricted to an eight hour period between the times delineated below:

- Any Day: 7:00 a.m. to 7:00 p.m.

Haul trucks and other engine-powered equipment shall be equipped with adequate mufflers. Haul trucks shall be operated in accordance with posted speed limits. Truck engine exhaust brake use shall be limited to emergencies.

Verification: Prior to ground disturbance, the project owner shall transmit to the CPM a statement acknowledging that the above restrictions will be observed throughout the construction of the project.

Community Noise Survey

NOISE-6 The project design and implementation shall include appropriate noise mitigation measures adequate to ensure that operation of the project will not cause noise levels due to plant operation alone to exceed an average of 36 dBA Leq measured at monitoring location LT-1 and an average of 34 dBA Leq at monitoring location LT-2. No new pure–tone components may be caused by the project. No single piece of equipment shall be allowed to stand out as a source of noise that draws legitimate complaints

Verification: When the project first achieves a sustained output of 80 percent or greater rated capacity, the project owner shall conduct a community noise survey at monitoring locations LT-1 or at a closer location acceptable to the CPM. This survey shall be performed during power plant operation and shall also include measurement of one-third octave band sound pressure levels to determine whether new pure-tone noise components have been caused by the project.

5.12.7 Laws, Ordinances, Regulations, and Standards

5.12.7.1 Federal

There are no noise-related federal LORS that affect the proposed project. However, guidelines at the federal level are present to direct the consideration of a broad range of noise and vibration issues as listed below:

- National Environmental Policy Act (42 United States Code [USC] 4321, et seq.) (PL-91-190) (40 Code of Federal Regulations [CFR] Section 1506.5)
- Noise Control Act of 1972 (42 USC 4910)

The United States Environmental Protection Agency (USEPA) has not promulgated standards or regulations for environmental noise generated by power plants; however, the USEPA has published a guideline (EPA Levels Document, Report No. 556/9-74-664) containing recommendations for noise levels affecting residential land use of L_{dn} 55 dBA outdoors and L_{dn} 45 dBA indoors. This USEPA document identifies safe levels of environmental noise exposure without consideration of the requirements for achieving these levels or other potentially relevant considerations. It is intended to "provide state and local governments as well as the federal government and the private sector with an informational point of departure for the purpose of decision making." The USEPA is careful to stress that the recommendations contain a factor of safety and do not consider technical or economic feasibility issues and, therefore, should not be construed as standards or regulations.

The Federal Transit Administration (FTA) has published guidelines for assessing the impacts of groundborne vibration associated with construction of rail projects, which have been applied by other jurisdictions to other types of projects. The FTA-recommended vibration standards are expressed in terms of the "vibration level," which is calculated from the peak particle velocity

measured from groundborne vibration. The FTA measure of the threshold of perception is 65 VdB, which correlates to a peak particle velocity of about 0.002 inches per second (in/sec). The VdB is a logarithmic scaling of vibration magnitude, and it allows relative measurements to be easily made. The FTA measure of the threshold of architectural damage for conventional sensitive structures is 100 VdB, which correlates to a peak particle velocity of about 0.2 in/sec.

5.12.7.2 State of California

California Occupational Safety and Health Administration (Cal-OSHA)

Occupational exposure to noise is regulated by Cal-OSHA in Title 8, Group 15, Article 105, Sections 5095 to 5100. The standard stipulates that protection against the effects of noise exposure shall be provided when sound levels exceed 90 dBA over an 8-hour exposure period. Protection shall consist of feasible administrative or engineering controls. If such controls fail to reduce sound levels to within acceptable levels, personal protective equipment shall be provided and used to reduce exposure to the employee. Additionally, a Hearing Conservation Program must be instituted by the employers whenever employee noise exposure equals or exceeds the Action Level of an 8-hour time-weighted average (TWA) sound level of 85 dBA. The Hearing Conservation Program requirements consist of periodic area and personal noise monitoring, performance and evaluation of audiograms, provision of hearing protection, annual employee training, and recordkeeping. Table 5.12-22 displays the Cal-OSHA permissible noise exposures.

TABLE 5.12-22
CAL-OSHA PERMISSIBLE NOISE EXPOSURES

Duration Per Day (hours)	Sound Level (dBA slow response)
8	90
6	92
4	95
3	97
2	100
1.5	102
1	105
0.5	110
0.25 or less	115

California Environmental Quality Act (CEQA)

CEQA requires that significant environmental impacts be identified and that such impacts be eliminated or mitigated to the extent feasible. Section XI of Appendix G of CEQA Guidelines (California Code of Regulations [CCR], Title 14, Appendix G) sets forth characteristics that may signal a potentially significant impact. Specifically, a significant effect from noise may exist if a project would result 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.
- Exposure of persons to or generation of excessive groundborne vibration or groundborne

noise levels.

- Substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
- Substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

Noise due to construction activities is usually considered to be insignificant in terms of CEQA compliance if:

- Construction activity is temporary.
- Use of heavy equipment and noisy activities is limited to daytime hours.
- All industry-standard noise abatement measures are implemented for noise-producing equipment.

California Energy Commission (CEC)

As required by CEC noise guidelines, new source noise impacts at noise-sensitive receivers are evaluated with respect to the pre-existing background noise level or specific performance noise level limits. The CEC defines the area impacted by the project as the area where construction or operation of the project potentially increases the noise level by 10 dBA or more over existing ambient background noise levels. The CEC defines the ambient background noise level as the lowest four-consecutive-hour arithmetic-average L_{90}.

CEC guidelines state that increases in the background noise lower than 5 dBA at a noise-sensitive receiver are clearly not significant or adverse, increases in background noise over 10 dBA at a noise-sensitive receiver are clearly significant and adverse, and increases in background noise between 5 and 10 dBA at a noise-sensitive receiver may or may not be significant and adverse, depending on the circumstances (CEC, 2002). Factors to be considered in determining the significance of an adverse impact as defined above include:

- The resulting noise level.
- The duration and frequency of the noise.
- The number of people affected.
- The land use designation of the affected receptor sites.
- Public concern or controversy as demonstrated at workshops or hearings, or by correspondence.

The CEC has also stated that construction noise is typically insignificant if all of the following are true:

- The construction activity is temporary.
- Use of heavy equipment and noisy activities are limited to daytime hours.
- All feasible noise abatement measures are implemented for noise-producing equipment.

California Vehicle Code

Noise limits for highway vehicles are regulated under the California Vehicle Code, Section 27151. The limits are enforceable on the highways by the California Highway Patrol and the County Sheriff's Office.

5.12.7.3 Local

County of San Diego

The County of San Diego establishes noise compatibility guidelines in the Noise Element of the *County of San Diego General Plan.* These guidelines are used to evaluate the noise impacts from new projects. Land use categories and their corresponding maximum allowable noise exposure levels (in terms of CNEL) can be found in Table 5.12-23, which come from Table N-1 of the County of San Diego Noise Element). The maximum exterior CNEL that is considered acceptable for all residential use (Category A in is 60 dBA CNEL. For multi-family residences and transient lodging (Categories B and C), the maximum CNEL that is considered acceptable is 65 dBA. Based on the Noise Standard descriptions, this 65 dBA CNEL is considered the maximum acceptable exterior noise level for group useable open space.

TABLE 5.12-23
COUNTY OF SAN DIEGO LAND USE/NOISE COMPATIBILITY GUIDELINES (TABLES N-1 AND N-2 OF THE NOISE ELEMENT OF THE COUNTY OF SAN DIEGO GENERAL PLAN, 2010)

Table N-1 Noise Compatibility Guidelines

	Land Use Category	Exterior Noise Level (CNEL)						
			55	60	65	70	75	80
A	Residential—single family residences, mobile homes, senior housing, convalescent homes							
B	Residential—multi-family residences, mixed-use (commercial/residential)							
C	Transient lodging—motels, hotels, resorts							
D*	Schools, churches, hospitals, nursing homes, child care facilities							
E*	Passive recreational parks, nature preserves, contemplative spaces, cemeteries							
F*	Active parks, golf courses, athletic fields, outdoor spectator sports, water recreation							
G*	Office\professional, government, medical\dental, commercial, retail, laboratories							
H*	Industrial, manufacturing, utilities, agriculture, mining, stables, ranching, warehouse, maintenance/repair							

	ACCEPTABLE—Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal construction, without any special noise insulation requirements.
	CONDITIONALLY ACCEPTABLE—New construction or development should be undertaken only after a detailed noise analysis is conducted to determine if noise reduction measures are necessary to achieve acceptable levels for land use. Criteria for determining exterior and interior noise levels are listed in Table N-2, Noise Standards. If a project cannot mitigate noise to a level deemed Acceptable, the appropriate county decision-maker must determine that mitigation has been provided to the greatest extent practicable or that extraordinary circumstances exist.
	UNACCEPTABLE—New construction or development shall not be undertaken.

* Denotes facilities used for part of the day; therefore, an hourly standard would be used rather than CNEL (refer to Table N-2).

Noise Standards:

1. The exterior noise level (as defined in Item 3) standard for Category A shall be 60 CNEL, and the interior noise level standard for indoor habitable rooms shall be 45 CNEL.

2. The exterior noise level standard for Categories B and C shall be 65 CNEL, and the interior noise level standard for indoor habitable rooms shall be 45 CNEL.

3. The exterior noise level standard for Categories D and G shall be 65 CNEL and the interior noise level standard shall be 50 dBA L_{eq} (one hour average).

4. For single-family detached dwelling units, "exterior noise level" is defined as the noise level measured at an outdoor living area which adjoins and is on the same lot as the dwelling, and

which contains at least the following minimum net lot area: (i) for net lots less than 4,000 square feet in area, the exterior area shall include 400 square feet, (ii) for net lots between 4,000 square feet to 10 acres in area, the exterior area shall include 10 percent of the net lot area; (iii) for net lots over 10 acres in area, the exterior area shall include 1 acre.

5. For all other residential land uses, "exterior noise level" is defined as noise measured at exterior areas which are provided for private or group usable open space purposes. “Private Usable Open Space” is defined as usable open space intended for use of occupants of one dwelling unit, normally including yards, decks, and balconies. When the noise limit for Private Usable Open Space cannot be met, then a Group Usable Open Space that meets the exterior noise level standard shall be provided. “Group Usable Open Space” is defined as usable open space intended for common use by occupants of a development, either privately owned and maintained or dedicated to a public agency, normally including swimming pools, recreation courts, patios, open landscaped areas, and greenbelts with pedestrian walkways and equestrian and bicycle trails, but not including off-street parking and loading areas or driveways.

6. For non-residential noise sensitive land uses, exterior noise level is defined as noise measured at the exterior area provided for public use.

7. For noise sensitive land uses where people normally do not sleep at night, the exterior and interior noise standard may be measured using either CNEL or the one-hour average noise level determined at the loudest hour during the period when the facility is normally occupied.

8. The exterior noise standard does not apply for land uses where no exterior use area is proposed or necessary, such as a library.

9. For Categories E and F the exterior noise level standard shall not exceed the limit defined as “Acceptable” in Table N-1 or an equivalent one-hour noise standard.

The County of San Diego’s Noise Ordinance establishes acceptable noise standards based on zoning. These standards can be found in Table 5.12-24. In cases where standards differ between adjacent properties due to differences in zoning, Section 36.404 (e) of the County of San Diego Noise Ordinance states, “The sound level limit at a location on a boundary between two zones is the arithmetic mean of the respective limits for the two zones. The one-hour average sound level limit applicable to extractive industries, however, including but not limited to borrow pits and mines, shall be 75 dB at the property line regardless of the zone in which the extractive industry is located.” If the measured ambient noise level exceeds the applicable limit found in Table 5.12-24, then the allowable one hour average sound level shall be the measured one hour average ambient noise level plus 3 dBA. The County of San Diego’s Noise Ordinance also addresses construction noise level limits. Construction noise is exempt from local noise standards from 7 a.m. to 7 p.m. Monday through Saturday. Construction activities are not exempt on Sundays or holidays. The Noise Ordinance states it is unlawful to operate construction equipment that causes the average sound level to exceed 75 dBA at the boundary line of an occupied property over a period of eight hours during construction noise exempt times.

TABLE 5.12-24
COUNTY OF SAN DIEGO EXTERIOR NOISE STANDARDS

Zone	Time	One-Hour Average Sound Level Limits (dBA)
(1) RS, RD, RR, RMH, A70, A72, S80, S81, S87, S90, S92, and RV and RU with a density of less than 11 dwelling units per acre	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	50 45
(2) RRO, RC, RM, S86, V5, and RV and RU with a density of 11 or more dwelling units per acre	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	55 50
(3) S94, V4, and all commercial zones	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	60 55
(4) V1, V2 V1, V2 V1 V2 V3	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m. 10 p.m. to 7 a.m. 7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	60 55 55 50 70 65
(5) M50, M52 and M54	Anytime	70
(6) S82, M56 and M58	Anytime	75
(7) S88[1]		

Source: Noise Ordinance of the County of San Diego, 2007
Notes:
dBA = A-weighted decibel
[1] S88 zones are Specific Planning Areas that allow different zone uses. The sound level limits that apply in an S88 zone depend on the use being made of the property. The limits in subsection (1) apply to property with a residential, agricultural, or civic use. The limits in subsection (3) apply to property with a commercial use. The limits in subsection (5) apply to property with an industrial use that would only be allowed in an M50, M52, or M54 zone. The limits in subsection (6) apply to all property with an extractive use or a use that would only be allowed in an M56 or M58. (Noise Ordinance of the County of San Diego, 2007)

East Otay Mesa Specific Plan

S88 zones are Specific Planning Areas according to the East Otay Mesa Specific Plan that allow different zone uses. According to the EOMSP, it should be noted that all uses shall comply with applicable portions of Section 6300 et seq. of the County Zoning Ordinance: Performance Standards. Regarding noise measurements, uses in the Activity Node, District Commercial and Commercial Center shall comply with Section 6310.b; uses in the Technology Business Park shall comply with Section 6310.c; uses in the Light Industrial areas shall comply with Section 6310.d; uses in the Heavy and Mixed Industrial areas shall comply with Section 6310.e; and uses in the Rural Residential and Conservation/Limited Use areas shall comply with Section 6310.b.

The EOMSP states that "uses in the Heavy Industrial areas shall comply with Section 6310.e (of the County of San Diego Zoning Ordinance)". Section 6310.e states both, "the noise level limit for uses located in a zone subject to M54 Use Regulations, or in the M58 Use Regulations within 400 of any boundary of a residential zone, shall be 75 dBA" and "the noise level limit for uses located in a zone subject to the M58 Use Regulations other than within 400 feet of any boundary of a residential zone, shall be 80 dBA".

LORS Summary

The summary of LORS can be found in Table 5.12-25.

TABLE 5.12-25
SUMMARY OF LAWS, ORDINANCES, REGULATIONS AND STANDARDS

LORS	Applicability	Significant Noise Standard	AFC Section
Federal			
USEPA 1974 Noise Guidelines	Guidelines for state and local governments.	N/A	5.12.7.1
Noise Control Act (1972) as amended by the Quiet Communities Act (1978); (42 USC 4901 - 4918)	Separate noise-sensitive areas are encouraged.	N/A	5.12.7.1
State			
Cal-OSHA Occupational Noise Exposure Regulations (8 CCR, General Industrial Safety Orders, Article 105, Control of Noise Exposure, Section 5095, et seq.)	Sets employee noise exposure limits. Equivalent to federal OSHA standards.	Noise protection must be provided for workers when noise exposures exceed levels found in Table 5.12-24.	5.12.7.2
CEQA (CCR, Title 14, Section XI of Appendix G)	Identifies significant environmental impacts and states that mitigation must be implemented if impacts are found.	Establishes guidelines that the CEC uses for determining noise standards for noise impacts.	5.12.7.2
CEC (1997)	Establishes standards for power projects by applying CEQA guidelines and specific noise standards.	Cumulative noise level must be less than 5 to 10 dBA (dependent on several factors on a case-by-case basis) at noise-sensitive receivers, but the increase in background noise levels must be less than 10 dBA in all cases.	5.12.7.2
Local			
County of San Diego (Chapter 4, Section 36.404 of San Diego County Regulatory Ordinances)	Establishes exterior noise limits for noise-sensitive receivers at different land uses/zones within the County of San Diego.	50 dBA hourly L_{eq} (7 a.m. to 10 p.m.) for Zones S88 (if Residential) and S90	5.12.7.3
		45 dBA hourly L_{eq} (7 a.m. to 10 p.m.) for Zones S88 (if Residential) and S90	5.12.7.3
County of San Diego (Chapter 4, Section 36.404 of San Diego County Regulatory Ordinances) (continued)		Construction noise is limited to 75 dBA over an eight-hour period between 7 a.m. and 7 p.m. (Monday-Saturday) as measured at the boundary line or any occupied property where noise is being received. Not exempt on Sunday or holidays.	5.12.7.3

LORS	Applicability	Significant Noise Standard	AFC Section
County of San Diego (Chapter 8, Noise Element of the County of San Diego General Plan)	Establishes exterior noise limits for noise-sensitive receivers at different land uses/zones within the County of San Diego.	60 dBA CNEL for single-family residential and 65 dBA for multi-family residential.	5.12.7.3
East Otay Mesa Specific Plan (Chapter 3, Land Use Regulations)	Establishes exterior noise standards for noise-sensitive receivers within the East Otay Mesa Specific Plan (S88 Land Use Regulations)	The sound level limits that apply in an S88 zone depend on the use being made of the property. The limits in subsection (1) of Table 5.12-24 apply to property with a residential, agricultural, or civic use. The limits in subsection (3) apply to property with a commercial use. The limits in subsection (5) apply to property with an industrial use that would only be allowed in an M50, M52, or M54 zone. The limits in subsection (6) apply to all property with an extractive use or a use that would only be allowed in an M56 or M58 zone.	5.12.7.3

Notes:
CCR = California Code of Regulations
CEC = California Energy Commission
CEQA = California Environmental Quality Act
CNEL = Community Noise Equivalent Level
dBA = A-weighted decibel
Leq = Equivalent Sound Level
OSHA = California Occupational Health and Safety Administration
USC = United States Code
USEPA = United States Environmental Protection Act

5.12.8 Involved Agencies and Agency Contacts

Table 5.12-26 below identifies the involved agencies and their contact information.

TABLE 5.12-26
INVOLVED AGENCIES AND AGENCY CONTACTS

Name	Title	Phone	Address	Jurisdiction
Rosemary Rowan	Planning Manager – Department of Planning and Land Use	858-694-2976	5201 Ruffin Road, Suite B San Diego, CA 92123	County of San Diego

5.12.9 Permits Required

No permits are required.

5.12.10 References

42 United States Code (USC). The Noise Control Act of 1972, as amended, 42 U.S.C. Sections 4901 and 4918 et seq.

Beranek, Leo, 1988. *Noise and Vibration Control*. Revised Edition. Institute of Noise Control Engineering. Washington, D.C.

California Code of Regulations (CCR). 1983. Title 8, Article 105, § 5095. October 3.

California Department of Transportation (Caltrans). 2006. Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects.

California Energy Commission (CEC). 2008. Rules of Practice and Procedure, Power Plant Site Certification Regulations.

CEQA (California Environmental Quality Act of 1970). 2009. Title 14. California Code of Regulations, Chapter 3. Guidelines for the Implementation of the California Environmental Quality Act, Sections 15000 – 15387. Appendix G.

County of San Diego. 2007. Noise Ordinance of San Diego County. Chapter 4. March 13.

County of San Diego. 2010. San Diego County General Plan. Noise Element. March 13.

County of San Diego. November 19, 2010. San Diego County Correctional Facility Major Use Permit Modification 3301 06-074-01 (MUP), Otay Subregional Plan; District 1. Staff Report and attachment prepared by the County of San Diego Department of Planning and Land Use.

East Otay Mesa Specific Plan. 2010. Chapter 3: Land Use Regulations. December 10.

Edison Electric Institute. 1978. Electric Power Plant Environmental Noise Guide.

Electric Power Research Institute. 1987. *Transmission Line Reference Book 345 kV and Above*. Second Edition, EL-2500. Palo Alto, CA.

Harris, Cyril M. 1998. *Handbook of Acoustical Measurements and Noise Control, Third Edition.* McGraw Hill, Inc.

International Organization Standardization (ISO). 1996a. *Description and Measurement of Environmental Noise, Basic Quantities and Procedures Part 1, ISO 1996/1*.

Kimley-Horn and Associates, Inc. 2010, Noise Analysis Report, San Diego Correctional Facility Alternative Site Plan Concept.

Miller, L.N., E.W. Wood, R.M. Hoover, A.R. Thompson, S.L. Thompson, and S.L. Paterson. 1978. *Electric Power Plant Environmental Noise Guide, Vol. 1*. (EPPENG) Bolt Beranek & Newman, Inc. Cambridge, Massachusetts. Prepared for the Edison Electric Institute, New York.

URS Corporation. 2010. Field work, data collection, and vehicular traffic modeling analysis.

U.S. Department of Transportation, Federal Transit Agency (FTA). 2006. *Transit Noise and Vibration Impact Assessment.* Report VTA-VA-90-1003-06. (Prepared under contract by Harris, Miller, Miller, & Hanson, Inc., Burlington, Massachusetts). Washington, D.C.

U.S. Environmental Protection Agency (USEPA). 1971. *Noise from Construction Equipment and Operations, Building Equipment and Home Appliances.* NTID300.1 (Prepared under contract by Bolt, Beranek & Newman, Boston, Massachusetts). Washington, D.C.

U.S. Environmental Protection Agency (USEPA). 1974. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*, EPA Report 55019-74-004. Washington, D.C.

U.S. Environmental Protection Agency (USEPA). 1978. *Protective Noise Levels*. Office of Noise Abatement and Control. Report number EPA 550/9-79-100. Washington, D.C. 20460.

World Health Organization. 1999. *Guidelines for Community Noise*. World Heath Organization, Geneva, Switzerland.

Legend

- Project Site
- Laydown Area
- Route A 230 kV Transmission Line
- Route B 230 kV Transmission Line
- Route A Natural Gas Line
- Route B Natural Gas Line
- Short-Term Monitoring Location
- Long-Term Monitoring Location

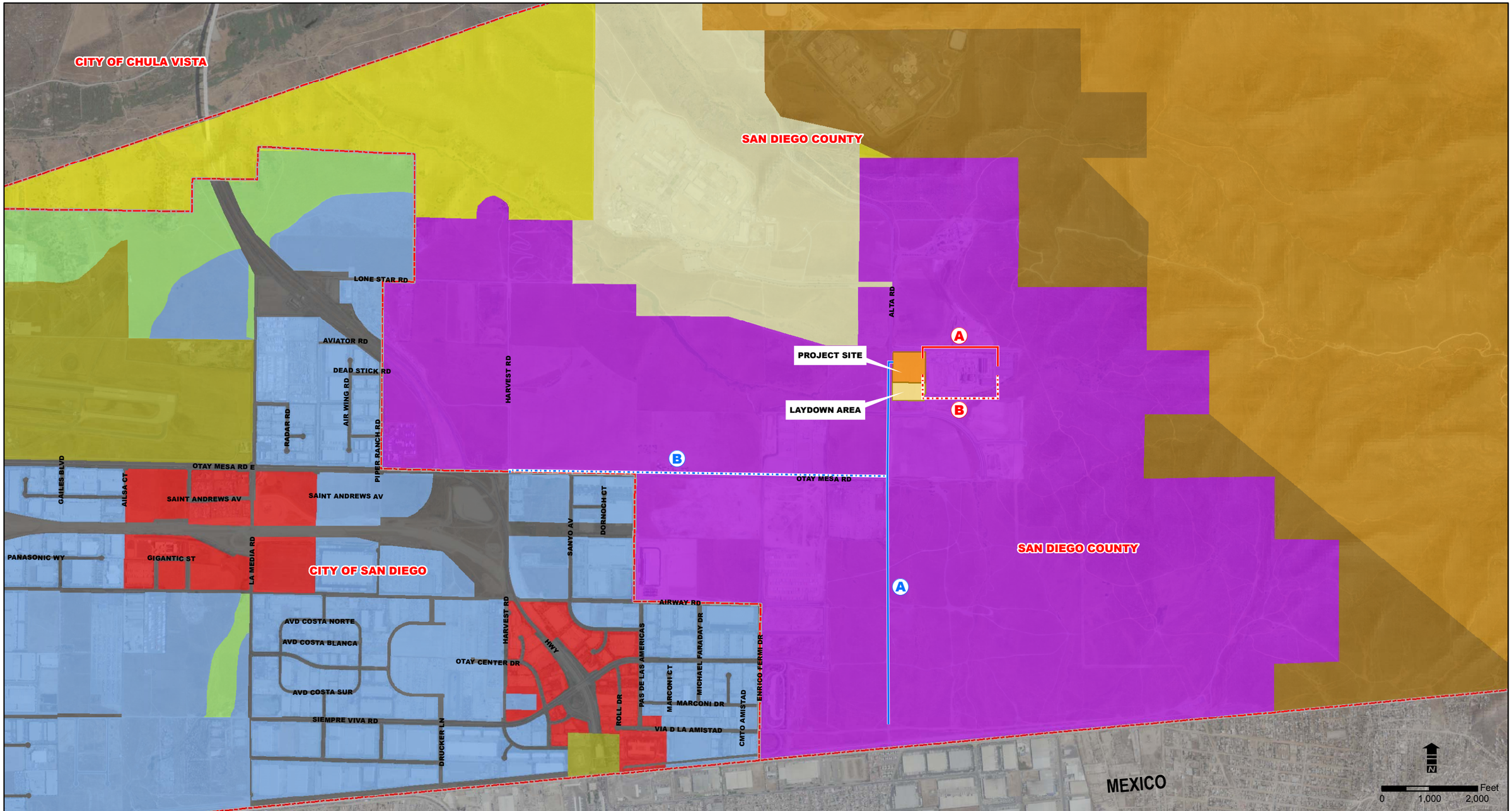
FIGURE 5.12-1
AMBIENT NOISE MEASUREMENT LOCATIONS

PIO PICO ENERGY CENTER

PROJECT NO.: 29874835
DATE: DECEMBER 2010

URS

Source: DigitalGlobe, 2009.



Legend

- Jurisdictional Boundary
- Project Site
- Laydown Area
- Route A 230 kV Transmission Line
- Route B 230 kV Transmission Line
- Route A Natural Gas Line
- Route B Natural Gas Line
- Roads / Freeways / Transportation
- Industrial Employment
- Commercial Employment, Retail, & Services
- Park, Open Space, & Recreation
- Institutional & Public and Semi-Public Facilities
- Impact Sensitive 1 DU/4,8,20 Acres
- Public/Semi-Public Lands
- Multiple Rural Use 1 DU/4,8,20 Acres
- Estate Residential 1 DU/2,4 Acres
- Specific Plan Area

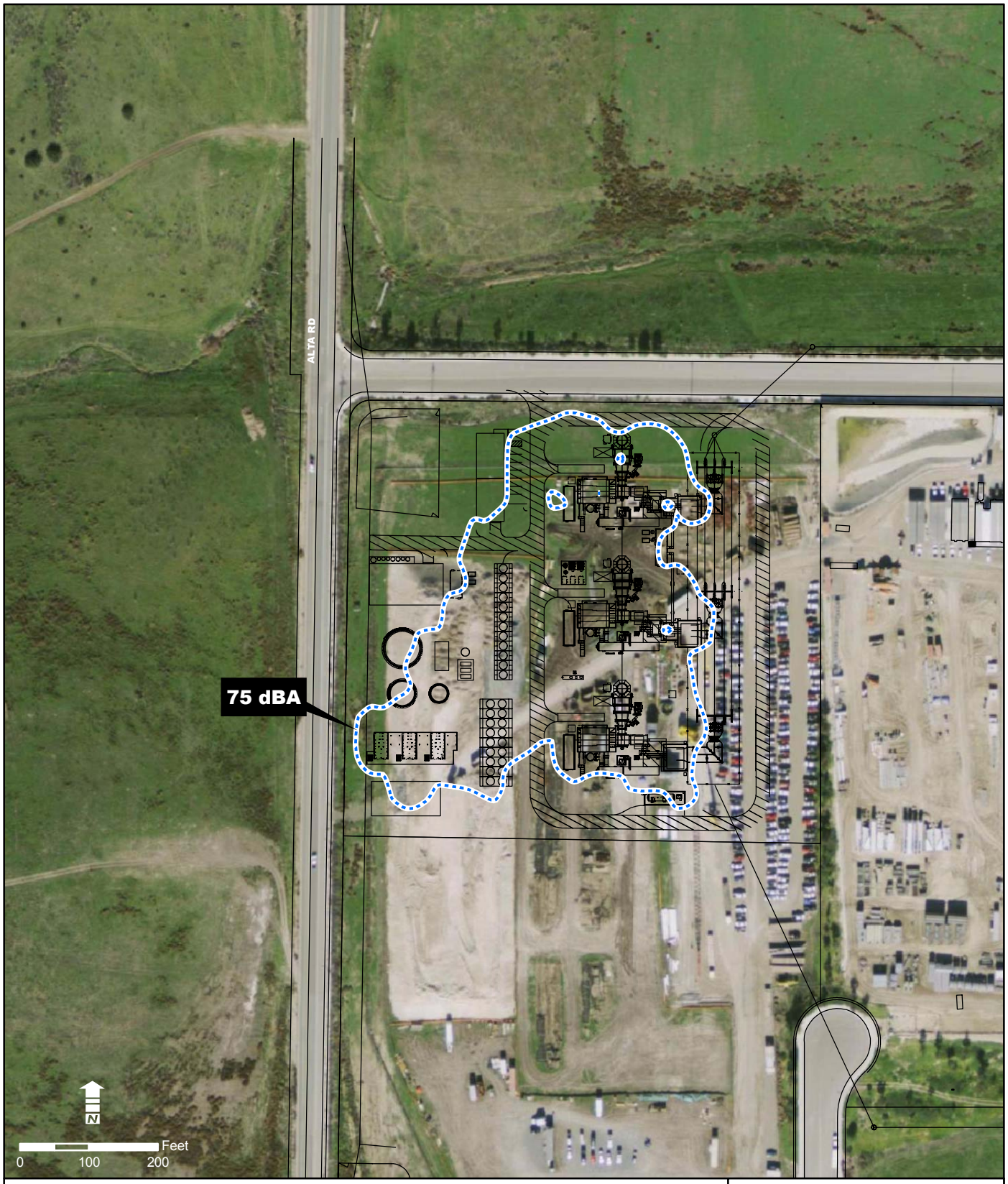
FIGURE 5.12-2
EXISTING LAND USE SURROUNDING PROJECT SITE

PIO PICO ENERGY CENTER

PROJECT NO.: 29874839
DATE: DECEMBER 2010

URS

Source: City of San Diego General Plan Land Use (2008) and General Plan for the County of San Diego (1995).



Legend

- - - 75 dBA Contour Line

FIGURE 5.12-3
PREDICTED PROPERTY BOUNDARY NOISE LEVEL CONTOUR

PIO PICO ENERGY CENTER

PROJECT NO.: 29874835
DATE: DECEMBER 2010

URS

Source: DigitalGlobe, 2009.

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 0 Date ____

Technical Area: **Noise** Project: Pio Pico Energy Center Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (1)	...provide a discussion of the existing site conditions, the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the project, the measures proposed to mitigate adverse environmental impacts of the project, the effectiveness of the proposed measures, and any monitoring plans proposed to verify the effectiveness of the mitigation.	Sections 5.12.2, 5.12.4, 5.12.5 and 5.12.6		
Appendix B (g) (4) (A)	A land use map which identifies residences, hospitals, libraries, schools, places of worship, or other facilities where quiet is an important attribute of the environment within the area impacted by the proposed project. The area potentially impacted by the proposed project is that area where, during either construction or operation, there is a potential increase of 5 dB(A) or more, over existing background levels.	Section 5.12.2.1 Figures 5.12-2 and 5.9-1		
Appendix B (g) (4) (B)	A description of the ambient noise levels at those sites identified under subsection (g)(4)(A) which the applicant believes provide a representative characterization of the ambient noise levels in the project vicinity, and a discussion of the general atmospheric conditions, including temperature, humidity, and the presence of wind and rain at the time of the measurements. The existing noise levels shall be determined by taking noise measurements for a minimum of 25 consecutive hours at a minimum of one site. Other sites may be monitored for a lesser duration at the applicant's discretion, preferably during the same 25-hour period. The results of the noise level measurements shall be reported as hourly averages in Leq (equivalent sound or noise level), Ldn (day-night sound or noise level) or CNEL (Community Noise Equivalent Level) in units of dB(A). The L10, L50, and L90 values (noise levels exceeded 10 percent, 50 percent, and 90 percent of the time, respectively) shall also be reported in units of dB(A).	Section 5.12.2.2		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 0 Date ____

Technical Area: **Noise** Project: Pio Pico Energy Center Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (g) (4) (C)	A description of the major noise sources of the project, including the range of noise levels and the tonal and frequency characteristics of the noise emitted.	Section 5.12.4.2		
Appendix B (g) (4) (D)	An estimate of the project noise levels, during both construction and operation, at residences, hospitals, libraries, schools, places of worship or other facilities where quiet is an important attribute of the environment, within the area impacted by the proposed project.	Section 5.12.4		
Appendix B (g) (4) (E)	An estimate of the project noise levels within the project site boundary during both construction and operation and the impact to the workers at the site due to the estimated noise levels.	Section 5.12.4		
Appendix B (g) (4) (F)	The audible noise from existing switchyards and overhead transmission lines that would be affected by the project and estimates of the future audible noise levels that would result from existing and proposed switchyards and transmission lines. Noise levels shall be calculated at the property boundary for switchyards and at the edge of the rights-of-way for transmission lines.	Section 5.12.4.2		
Appendix B (i) (1) (A)	Tables which identify laws, regulations, ordinances, standards, adopted local, regional, state, and federal land use plans, leases, and permits applicable to the proposed project, and a discussion of the applicability of, and conformance with each. The table or matrix shall explicitly reference pages in the application wherein conformance, with each law or standard during both construction and operation of the facility is discussed; and	Section 5.12.7 Table 5.12-25		

Adequacy Issue: Adequate ____ Inadequate ____

DATA ADEQUACY WORKSHEET

Revision No. 0 Date ____

Technical Area: **Noise** Project: Pio Pico Energy Center Technical Staff: ____

Project Manager: ____ Docket: ____ Technical Senior: ____

SITING REGULATIONS	INFORMATION	AFC PAGE NUMBER AND SECTION NUMBER	ADEQUATE YES OR NO	INFORMATION REQUIRED TO MAKE AFC CONFORM WITH REGULATIONS
Appendix B (i) (1) (B)	Tables which identify each agency with jurisdiction to issue applicable permits, leases, and approvals or to enforce identified laws, regulations, standards, and adopted local, regional, state and federal land use plans, and agencies which would have permit approval or enforcement authority, but for the exclusive authority of the commission to certify sites and related facilities.	Sections 5.12.7 and 5.12.9, Table 5.12-25		
Appendix B (i) (2)	The name, title, phone number, address (required), and email address (if known), of an official who was contacted within each agency, and also provide the name of the official who will serve as a contact person for Commission staff.	Section 5.12.8 Table 5.12-26		
Appendix B (i) (3)	A schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits.	Not applicable. See discussion in Section 5.12.9		