3.12 NOISE

3.12.1 Setting

Terminology and Fundamentals of Environmental Acoustics

The decibel (dB) is the preferred unit used to measure sound levels utilizing a logarithmic scale to account for large ranges in audible sound intensities. A general rule for the decibel scale is that a 10 dB increase in sound is perceived as a doubling of loudness by the human ear. For example, a 55 dB sound level will sound twice as loud as a 45 dB sound level. The average healthy person cannot detect differences of 1 dB whereas a 5 dB change is clearly noticeable.

Several sound measurement descriptors are used to assess the effects of sound on the human environment. These include the equivalent sound level, Leq, which is the level of a constant sound that has the same sound energy as the actual fluctuating sound. It is similar to the average sound level. The day-night sound level, Ldn, is similar to the 24-hour Leq except that a 10 dB penalty is added to sound levels between 10 p.m. and 7 a.m. to account for the greater sensitivity of people to sound at night. The Community Noise Equivalent Level (CNEL) also places a weighted factor on sound events occurring in the evening hours. The L90 value is the sound level (L) that is exceeded 90 percent of the time and is often used to describe the background or residual sound level.

Acoustics is defined as the science of sound, including the generation, transmission, and effects of sound waves, both audible and inaudible. Noise, on the other hand, is generally defined as loud, unpleasant, unexpected or undesired sound that disrupts or interferes with normal human activities. Although exposure to high noise levels has been demonstrated to cause hearing loss, the principal human response to environmental noise is annoyance. The objectionable nature of sound is caused by its pitch or loudness. Pitch is the height or depth of a tone or sound wave, depending on the relative rapidity (frequency) of the sound vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. Loudness is intensity of sound waves combined with the reception characteristics of the ear. Intensity is a measure of the amplitude or height of the sound wave. Frequency describes the sound's pitch and is measured in Hertz (Hz), while intensity describes the sound's loudness and is measured in dB.

The dB is the preferred unit for measuring sound that indicates the relative amplitude (height) of a particular sound wave. The zero (0) on the decibel scale is based on the lowest sound level that a healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic scale. Thus an increase of 10 dB represents a ten–fold increase in acoustic energy, while a 20 dB increase is 100 times more intense, and a 30 dB increase is 1,000 times more intense. There is a direct relationship between the subjective noisiness or loudness of a sound and its intensity. Each 10 dB increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities. The A–weighted decibel (dBA) is a method of

sound measurement which assigns weighted values to selected frequency bands in an attempt to reflect how the human ear responds to sound. Definitions of common acoustical terms are summarized below in Table 3.12-1. The range of human hearing is from 0 dBA (the threshold of hearing) to about 140 dBA which is the threshold of pain. Examples of noise and their A–weighted decibel levels are shown in Table 3.12–2. In general, a 3 to 5 dBA change in community noise levels starts to become noticeable, while 1 to 2 dBA changes are generally not perceived. Quiet suburban areas typically have noise levels in the range of 40–50 dBA, while those along arterial streets are in the 50–60 dBA or greater range. Normal conversational levels are in the 60–65 dBA ranges.

In addition to the actual instantaneous measurements of sound levels, the duration of sound is important since sounds that occur over a long period of time are more likely to be an annoyance or cause direct physical damage or environmental stress. To analyze the overall noise levels in an area, noise events are combined for an instantaneous value or averaged over a specific time period. The time–weighted measure is referred to as equivalent sound level and represented by energy equivalent sound level (Leq). The percentage of time that a given sound level is exceeded also can be designated as L10, L50, and L90. The subscript denotes the percentage of time that the noise level was exceeded during the measurement period. Namely, an L10 indicates the sound level is exceeded 10 percent of the time and is generally taken to be indicative of the highest noise levels experienced at the Proposed Project Site. The L90 is that level exceeded 90 percent of the time and this level is often called the base level of noise at a location. The L50 sound (that level exceeded 50 percent of the time) is frequently used in noise standards and ordinances.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within ±1 dBA. The data is then imported into computer sound models. These computer models are used to predict environmental noise levels from sources such as roadways and airports over a given area using equal sound level contours. The accuracy of the predicted models depends upon the distance the receptor is from the noise source and natural attenuation caused by structures and other sound barriers. The closer to the noise source, the greater is the model's accuracy (±1–2 dBA).

Since the sensitivity to noise increases during the evening and at night (because excessive noise interferes with the ability to sleep) 24–hour descriptors have been developed that incorporate artificial noise penalties that are added to quiet–time noise events. The Community Noise Equivalent Level (CNEL) is a measure of the cumulative noise exposure in a community during a 24–hour period. The Day/Night Average Sound Level (Ldn) is essentially the same as CNEL, with the exception that the evening time period is dropped and all occurrences during this three–hour period are grouped into the daytime period.

Noise sources occur in two forms: 1) point sources, such as stationary equipment, loudspeakers, or individual motor vehicles; and 2) line sources, such as a roadway with a large number of point sources (motor vehicles). Sound generated by a point source typically diminishes (attenuates) at a rate of 6.0 dBA for each doubling of distance from the source to the receptor at acoustically "hard" sites and 7.5 dBA at acoustically "soft" sites (USDOT, FHA, pg. 97). For example, a 60 dBA noise level measured 50 feet from a point source at an acoustically hard site would be 54 dBA 100 feet from the source and 48 dBA 200 feet from the source. Sound generated by a line source typically attenuates at a rate of 3.0 dBA and 4.5 dBA per doubling of distance from the source to the receptor for hard and soft sites, respectively (USDOT, FHA, pg. 97). Sound levels can also be attenuated by man-made or natural barriers. Solid walls, berms, or elevation differences typically reduce point and line source noise levels by 5.0 to 10.0 dBA (USDOT, FHA, pg. 18). Sound levels for a source may also be attenuated 3.0 to 5.0 dBA by a first row of houses and 1.5 dBA for each additional row of houses (T.M. Barry and J.A. Reagan, 1978).

Table 3.12-1 Definitions of Acoustical Terms

Terms	Definitions
dB, Decibel	Unit of measurement of sound level
dBA, decibel A-Weighted	A unit of measurement of sound level corrected to the A–weighted scale, as defined in ANSI S1.4–1971 (R1976), using a reference level of 20 micropascals (0.00002 Newtons per square meter).
A – Weighted Scale	A sound measurement scale, which corrects the pressures of individual frequencies according to human sensitivities. The scale is based upon the fact that the region of highest sensitivity for the average ear is between 2,000 and 4,000 Hz. Sound levels are measured on a logarithmic scale in decibels, dB. The universal measure for environmental sound is the A–weighted sound level, dBA.
Hz, Hertz	Unit of measurement of frequency, numerically equal to cycles per second.
Loudness	A listener's perception of sound pressure incident in his ear.
L01, L10, L50, L90	The A–weighted noise levels that are exceeded 1 %, 10 %, 50 %, and 90 % of the time during the measurement period.
Leq, Equivalent Noise Level	Also called the equivalent continuous noise level. It is the continuous sound level that is equivalent, in terms of noise energy content, to the actual fluctuating noise existing at the location over a given period, usually one hour. Leq is usually measured in hourly intervals over long periods in order to develop 24–hour noise levels.
CNEL, Community Noise Equivalent Level	The CNEL is a measure of the cumulative noise exposure in the community, with greater weights applied to evening and night time periods. This noise descriptor is the equivalent noise level over a 24–hour period mathematically weighted during the evening and night when residents are more sensitive to intrusive noise. The daytime period is from 7:00 a.m. to 7:00 p.m.; evening from 7:00 p.m. to 10:00 p.m.; and nighttime from 10:00 p.m. to 7:00 a.m. A weighting factor of 1 dB is added to the measured day levels defined as 7 a.m. to 7 p.m., evening levels (7 p.m. to 10 p.m.) have a weighting factor of three and 10 dB to the night time levels (10 p.m. to 7 a.m.). The weighted levels over a 24–hour period are then averaged to produce the single number CNEL rating.

Terms	Definitions
Ldn, Day/Night Noise Level	The same as CNEL except that the evening time period is not considered separately, but instead it is included as part of the daytime period. Measurements of both CNEL and Ldn in the same residential environments reveal that CNEL is usually slightly higher (by less than 1 dB) than Ldn due to the evening factor weighting.
Lmin, Lmax	The minimum and maximum A–weighted noise level during the measurement period.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Table 3.12-2 Typical Sound Levels Measure in the Environment

A–Weighted Sound Level in dBA	Outdoor	Indoor	Subjective Impression
Pain Threshold			
130	• Jackhammer • Stock Car Races		
120	• Ambulance Siren		
	• Leaf Blower (110 dBA) • Rock Concert (110 dBA) • Car Horn (110 dBA)	• Baby Crying on Shoulder (110 dBA)	
100	• Snowmobile		Very Loud
90	• Lawnmower (96dBA) • Backhoe (75-95 dBA) • Pile driver at 50' (90-105 dBA) • Motorcycle at 25'	• Shouted Conversation	
80	• Propeller Airplane flyover at 1000' (88 dBA) • Diesel Truck at 50' @ 40mph (84 dBA)	• Vacuum cleaner (60-85 dBA) • Garbage Disposal • Ringing Telephone	
70	• Car at 25' @ 65mph (77 dBA)	• Living Room Music or TV (70-75 dBA) • Dishwasher (55-70 dBA)	Moderately Loud
60	• Air-conditioner at 100'	• Normal Conversation (60-65 dBA) • Sewing Machine	
50		• Refrigerator	
40	• Quiet Residential Area		Quiet
30			
20	• Rustling of Leaves	• Whispering at 5'	
10			
0	Threshold of Hearing		

Affected Noise Environment

The Project site is located in the City of Glendale. The potentially impacted noise sensitive receptors are located in the City of Glendale, Pasadena, and Los Angeles. Residences to the west and north of the Project site are primarily located in the City of Glendale, while most residences to the east and south are located in the City of Pasadena. Additionally, residential areas to the southeast along SR-134 are located in the City of Los Angeles.

Sensitive Receptors

Six representative sensitive receptors (residential land uses) were selected for evaluation that are located within areas that could be potentially impacted by noise generated by the Proposed Project. Stantec measured the day- and night-time ambient noise levels at each of the six identified sensitive receptors on October 21 and 22, 2015 using a Bruel & Kjaer Type 2236 noise meter. The sensitive receptors, proximity to the Project site, and the ambient noise level are presented in Table 3.12-3. Ambient noise measurement data collection sheets are included as Appendix H. The locations of the sensitive receptors are shown in Figure 3.12-1.

Table 3.12-3 Sensitive Receptors in Close Proximity to Project Site

Receptor Identification	Receptor Type	Receptor Location	Distance from Proposed Project (feet)	Daytime Ambient Noise Level (Leq)*	
				Day	Night
R1	Residence	5471 Mount Helena Avenue, Los Angeles	2,389	54.0	56.8
R2	Residence	1233 Cedaredge Avenue, Los Angeles	3,033	65.2	64.3
R3	Residence	325 Woodcliffe Road, Pasadena	2,970	54.5	47.8
R4	Residence	1600 Glen Oaks Boulevard, Pasadena	2,607	37.1	47.1
R5	Residence	1037 Marengo Drive, Glendale	4,271	43.4	39.1
R6	Residence	2840 Glenoaks Canyon Road, Glendale	2,281	46.4	46.5

*Data collected by Stantec Personnel on 10/21-22/2015 during daytime and nighttime hours.

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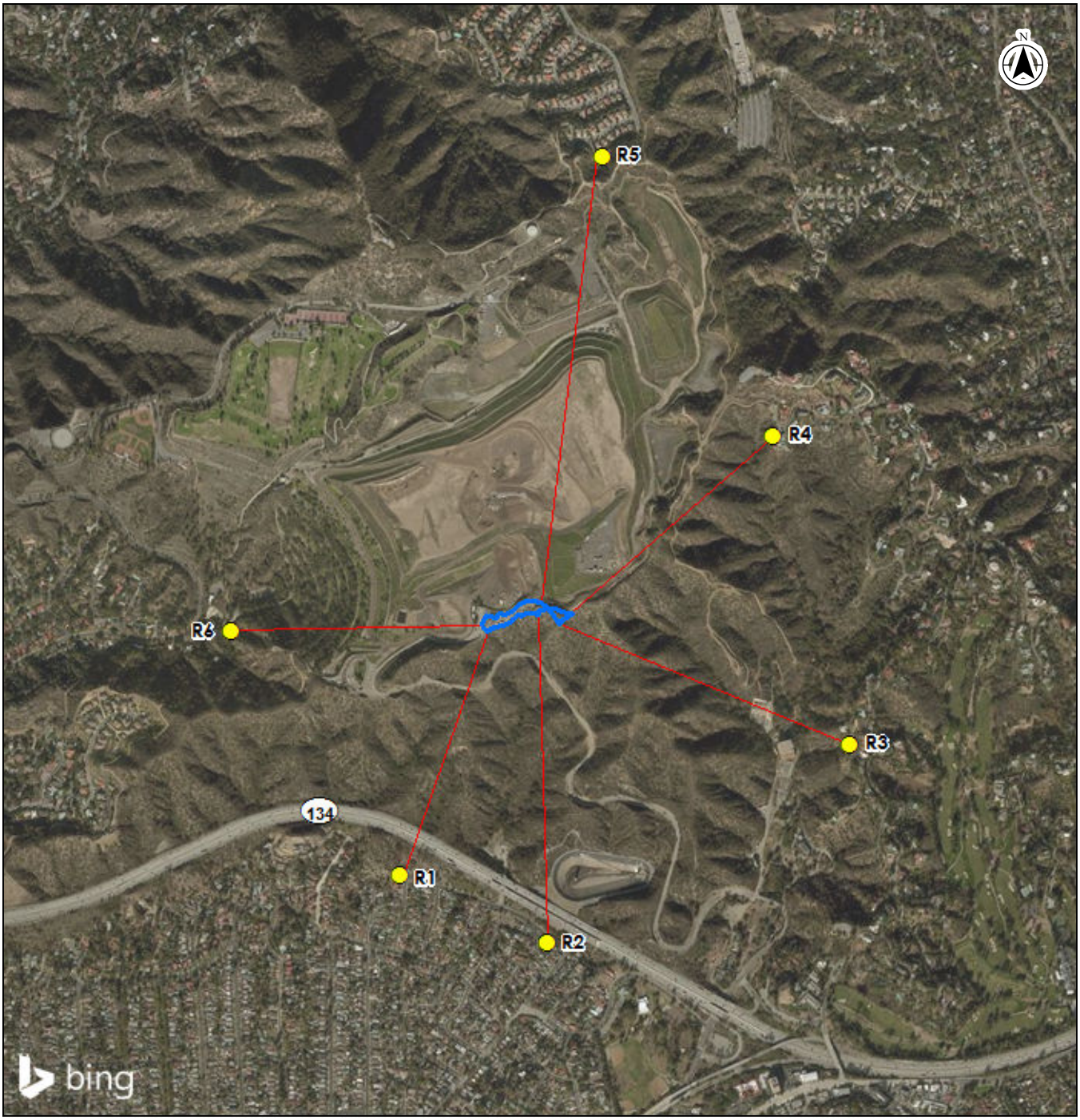


Legend

- Sensitive Noise Receptor
- Proposed Power Plant Facility Boundary

Stantec

Project Location
Glendale, CA

Project No.: 20571 23300
Prepared by JT on 2017-07-18
Technical Review by CH on 2017-07-18

Client/Project
City of Glendale Water and Power
Biogas Renewable Generation Project
Initial Study/Mitigated Negative Declaration

Figure No.
3.12-1

Title
Sensitive Noise Receptor Map

Regulatory Setting

Noise Criteria

Community noise standards relevant to the Proposed Project are contained in the Glendale General Plan and Noise Ordinance, the City of Pasadena General Plan and Noise Ordinance and the City of Los Angeles General Plan and Noise Ordinance which are summarized below.

Local

City of Glendale

The Glendale General Plan Noise Element specifies outdoor and indoor noise standards for various land uses impacted by transportation noise sources. The City's noise standards are consistent with the State of California's noise standards. The interior and exterior noise standards are in terms of the Community Noise Equivalent Level (CNEL) scale. The standards state that for residential land use, the exterior noise exposure level shall not exceed 65 CNEL and the interior noise exposure level shall not exceed 45 CNEL. Open space park land has an exterior standard of 65 CNEL for hillside open space areas open to the public. Hotel, motel, transient lodging, church, school classroom, and hospital uses have interior noise limits of 45 CNEL. These levels are also consistent with the land use compatibility guidelines developed by the California Department of Health.

City of Pasadena

The City of Pasadena General Plan Noise Element has not adopted any specific outdoor or indoor noise standards for land uses impacted by transportation noise sources. Therefore, the State of California's noise standards would be utilized. The State's interior and exterior noise standards are in terms of the CNEL scale. The standards state that for residential land use, the exterior noise exposure level shall not exceed 65 CNEL and the interior noise exposure level shall not exceed 45 CNEL. These levels are also consistent with the land use compatibility guidelines developed by the California Department of Health.

City of Los Angeles

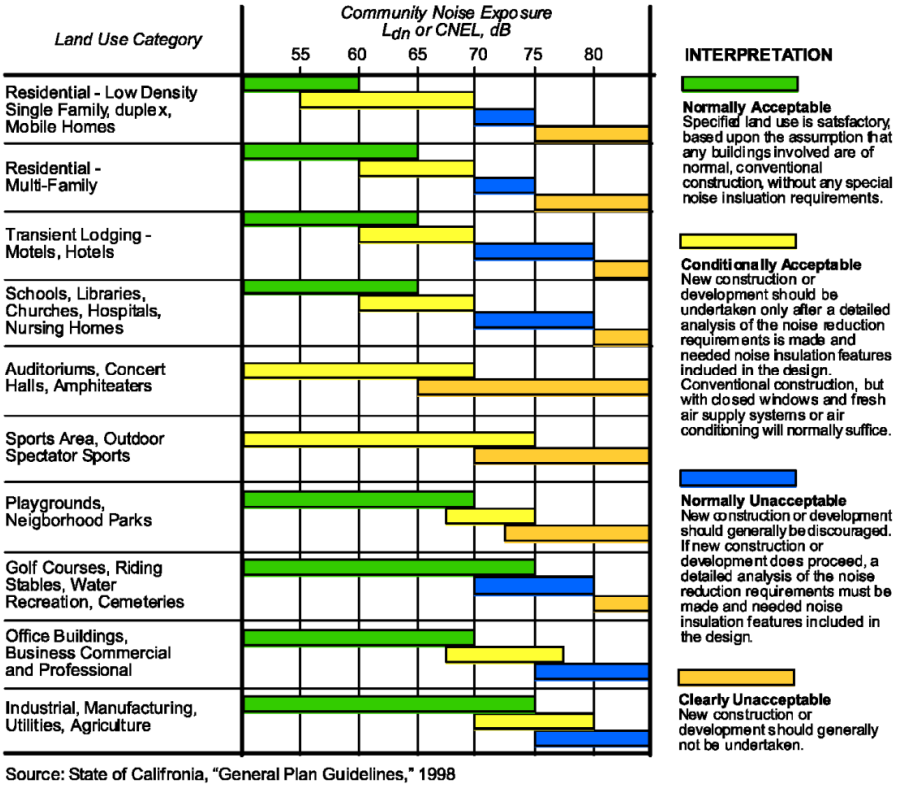
The City of Los Angeles's noise standards are correlated with the type of land use (e.g., residential, commercial, etc.) in order to maintain identified ambient noise levels and to limit, mitigate, or eliminate intrusive noise that exceeds prescribed noise levels for different land use types. Increases of 5 dB above the existing measured or presumed ambient noise levels are in violation of the City Noise Ordinance. Where the existing measured ambient noise level is less than the presumed ambient noise level designated in the City Noise Ordinance, the increase is measured from the presumed ambient noise level.

Land Use and Noise Compatibility Matrix

The Cities of Glendale, Pasadena, and Los Angeles Noise Elements contain similar compatibility matrices for determining the compatibility of various land uses with noise levels. These matrices are consistent with the California Noise/Land Use Compatibility Guidelines. This matrix is shown below. This exhibit classifies various land uses in terms of Normally Acceptable, Conditionally Acceptable, Normally Unacceptable and Unacceptable based on their noise exposure in the Community Noise Equivalent Level (CNEL) scale. For residential uses, CNEL levels from 50 to 60 dBA are Normally Acceptable, CNEL levels from 65 to 70 are Conditionally Acceptable, CNEL levels of greater than 75 dBA are Normally Unacceptable.

A land use exposed to noise levels that are considered Normally Acceptable indicates that the land use is compatible with the noise environment and no special noise insulation is required. If new construction is exposed to a Conditionally Acceptable noise level, a noise analysis is typically required to determine noise mitigation required to reduce noise levels to a compatible level. Conventional construction will normally suffice with a fresh air supply system or air conditioning to allow windows to remain closed. A noise analysis is also required for new construction exposed to a Normally Unacceptable noise level. The analysis is required to determine mitigation measures, which may be significant, to reduce noise levels to a compatible level. Proposed development exposed to Clearly Unacceptable noise levels should generally not be undertaken.

Noise/Land Use Compatibility Table



Source: State of Califronia, "General Plan Guidelines," 1998

Noise Ordinance

A noise ordinance is designed to control unnecessary, excessive, and annoying sounds from stationary (non-transportation) noise sources. Noise ordinance requirements cannot be applied to mobile noise sources such as heavy trucks when traveling on public roadways. Federal and state laws preempt control of mobile noise sources on public roads. Noise ordinance standards typically apply to industrial and commercial noise sources impacting residential areas.

Sensitive land uses surrounding the project site are residential areas located to the east, northeast, southeast, and west. The majority of the residential areas to the west and northeast are located within the City limits, while the majority of the residential areas to the east and southeast are located within the City of Pasadena city limits. A limited residential area to the southeast of the site is located along SR-134 and within the City of Los Angeles city limits. Additionally, there is Lower Scholl Canyon Park the west, recreational (baseball field, golf and tennis court) areas to the north and northwest, as well as the ArtCenter College of Design to the northeast. The the ArtCenter College of Design is considered to be a sensitive commercial land use. For open space uses (i.e., baseball field, golf course and tennis court), the City zoning map show these sites as SR (Special Recreation). As a result, there are no noise ordinance requirements for recreation uses.

City of Glendale

The City Noise Ordinance applies the most stringent noise limits of all the affected cities of 55 to 60 dBA Leq, depending on the type of residential, for the daytime period (7:00 A.M. to 10:00 P.M.) and 45 dBA Leq for the nighttime period (10:00 P.M. to 7:00 A.M.) at the nearest residential property. Also, the noise level cannot exceed 65 dBA (Leq) at any time at an adjacent commercial property, and 70 dBA (Leq) at any time at an adjacent industrial property. The noise limits pertain to noise which exceeds the actual (measured noise) versus presumed ambient noise, and are in terms of hourly average (Leq) noise levels.

In addition, Chapter 8.36.050 Minimum and Maximum Ambient Noise Levels, states, A) Where the actual ambient is less than the presumed ambient, the actual ambient shall control and any noise in excess of the actual ambient, plus 5 dBA, shall be a violation. B) Where the actual ambient is equal to or more than the presumed ambient, the actual ambient shall control and any noise may not exceed the actual ambient by more than 5 dBA; however, in no event may the actual ambient exceed the presumed noise standards by 5 dBA.

The Glendale Noise Ordinance (Chapter 8.36.080) exempts noise from construction activity for certain time periods. Activities that take place between 7:00 A.M. and 7:00 P.M. Monday through Saturday will be exempt from the noise standard. Construction will not be allowed at any time on a Sunday or on holidays.

City of Pasadena

The City of Pasadena General Plan and Noise Ordinance Chapter 9.36 Noise Restrictions prohibits the production of excessive noise. The applicable interior noise standards (for the multi-family residential property land use) are 60 dBA Leq for the daytime period (7:00 A.M. to 10:00 P.M.) and 50 dBA Leq for the nighttime period (10:00 P.M. to 7:00 A.M.). The noise standards are in terms of hourly average (Leq) interior noise levels. The City of Pasadena does not have any specific noise limits for exterior areas.

City of Los Angeles

The City of Los Angeles Noise Control Ordinance Chapter XI Noise Regulation, Sec. 111.03, prohibits unnecessary, excessive and annoying noise. The Los Angeles noise ordinance does not have specific noise criteria, and therefore, presumed ambient noise levels listed in the City of Los Angeles Noise Ordinance are utilized. For residential areas experiencing ambient noise less than the presumed noise (i.e., 50 dBA), the presumed noise level becomes the minimum criterion noise level. For residential areas already experiencing ambient noise greater than the presumed noise level, the measured ambient noise becomes the noise criterion levels.

The City of Los Angeles noise ordinance (Section 41.40) states that construction activity within 500 feet of any residential zone shall be limited to between the hours of 7:00 A.M. and 9:00 P.M., Monday through Friday, and 8:00 A.M. and 6:00 P.M. on Saturday. Construction will not be allowed at any time on a Sunday or on holidays.

State Standards and Regulations

California encourages each local government to perform noise studies and implement a noise element as part of their general plan. Standards and implementation are administered by the California Department of Industrial Relations' Division of Occupational Safety and Health (Cal-OSHA) which are based on the USEPA occupational guidelines to protect the hearing of workers.

According to Cal/OSHA, the standard is set at the noise threshold where hearing loss may occur from long–term exposures. The maximum allowable level is 90 dBA averaged over an 8-hour time period.

SB 4 Section 2, Article 3, Section 3160.(a)(4) requires that operators consider, among several other items, potential noise pollution.

Federal Standards and Regulations

Federal regulations safeguard the hearing of workers exposed to occupational noise, enforced by OSHA (e.g. 29 CFR 1919.120). For example, it is unlawful for employees to be exposed to noise levels in excess of 115 dBA for more than 15 minutes during any working day. The USEPA

has developed guidelines on recommended maximum noise levels to protect public health and welfare (USEPA, 1978). The USEPA identifies a 24-hour exposure level of 70 dBA as the level of environmental noise which will prevent any measurable hearing loss over a lifetime. Likewise, levels of 55 dBA outdoors and 45 dBA indoors are identified as activity interference and annoyance (USEPA, 1978).

3.12.2 Impact Analysis

Issues	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
NOISE: Would the project:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?	☐	☐	☒	☐
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

a) *Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?*

Less than Significant Impact

Construction

Construction of the Proposed Project will result in noise from the operation of conventional construction equipment and associated vehicles. All construction related activities will be conducted during the work week (Monday through Friday) between the hours of 7:00 AM and 7:00 PM and will therefore be exempt from the City of Glendale, City of Los Angeles, and City of Pasadena noise ordinances related to construction noise. Construction related noise would therefore not expose persons to or generate noise levels in excess of established standards and potential impacts would be less than significant.

Operation

Operation of the Proposed Project would result in noise from the operation of stationary power generating and ancillary equipment including but not limited to compressors, coolers, pumps, exhaust fans, exhaust stacks and louvers. LFG would be combusted in four reciprocating GE Jenbacher Model J 620 GS-16 engines to generate electricity. A list of equipment and assumed noise levels generated by the project are provided as Appendix H. There is not expected to be an increase in motor vehicle use associated with project operation that would lead to a substantial increase in noise levels beyond those that already occur at the site. Because the Proposed Project does not include an increase in operation phase traffic, this analysis does not consider the 65 CNEL standard referenced in the regulatory setting applicable to land uses impacted by transportation noise sources.

Per applicable municipal requirements, single family residences shall not be exposed to exterior noise levels exceeding 45 dBA during nighttime or 55 dBA during daytime. Where the actual ambient noise level is less than the presumed ambient (e.g., 45 dBA during nighttime or 55 dBA during daytime), the actual ambient shall control and any noise in excess of the actual ambient, plus 5 dBA, shall be a violation. Where the actual ambient is equal to or more than the presumed ambient, the actual ambient shall control and any noise may not exceed the actual ambient by more than 5 dBA; however, in no event may the actual ambient exceed the presumed noise standards by 5 dBA. The City has the most stringent noise standards applicable to sensitive receptors potentially affected by the Proposed Project and they have therefore been adopted as thresholds for determining potentially significant noise impacts. The noise level thresholds applied to the Proposed Project are summarized below in Table 3.12-4.

Table 3.12-4 Noise Impact Thresholds for Project Operation

Receptor	Exiting Ambient Noise Level (dBA)[1]		Presumed Ambient Noise Level (dBA)		Applicable Noise Limits (dBA)	
	Day	Night	Day	Night	Day	Night
R1	54	56.8	54	50	59	55
R2	65.2	64.3	60	50	65	55
R3	54.5	47.8	54.5	47.8	59.5	52.8
R4	37.1	47.1	37.1	47.1	42.1	52.1
R5	43.4	39.1	43.4	39.1	48.4	44.1
R6	46.4	46.5	46.4	46.5	51.4	51.5

Notes:
Day and night sound levels expressed in Leq.
1. Data collected by Stantec Personnel during daytime and nighttime hours.
2. 5 dB above the Presumed Ambient Sound Level

The expected daytime and nighttime noise generated by the engines as well as ancillary equipment was combined with the presumed ambient sound levels using the Computer Aided Noise Abatement (CadnaA) modeling software. The following considerations were used in the model:

- Terrain;
- Noise source in full octave band;
- Wind speed and direction;
- Ground condition; and
- Barrier effects from buildings.

The results of the noise attenuation modeling for the Project operation are summarized below in Table 3.12-5. Modeled noise level contour maps are included in Appendix H.

Table 3.12-5 Noise Level Summary for Project Operation

Receptor	Presumed Ambient		Facility Noise		Combined Noise Ambient + Facility		Noise Limit		Exceed Limit?
	Day (dBA)	Night (dBA)	Day (dBA)	Night (dBA)	Day (dBA)	Night (dBA)	Day (dBA)	Night (dBA)	
R1	54.0	50.0	38.0	38.0	54.1	50.3	59.0	55.0	No
R2	60.0	50.0	40.0	40.0	60.0	50.4	65.0	55.0	No
R3	54.5	47.8	40.6	40.6	54.7	48.6	59.5	52.8	No
R4	37.1	47.1	35.2	35.2	39.3	47.4	42.1	52.1	No
R5	43.4	39.1	35.1	35.1	44.0	40.6	48.4	44.1	No
R6	46.4	46.5	29.9	29.9	46.5	46.6	51.4	51.5	No

Notes:
Day and night sound levels expressed in Leq.
1. Logarithmic addition of Presumed Ambient Daytime Sound Level and project case
2. Logarithmic addition of Presumed Ambient Nighttime Sound Level and project case

As show in tables 3.12-4 and 3.12-5, operation of the Proposed Project with the use of four GE Jenbacher Model J 620 GS-16 engines would not result in an exceedance of an applicable daytime or nighttime noise standard at any of the sensitive receptor locations. Operation related noise would therefore not expose persons to or generate noise levels in excess of established standards and potential impacts would be less than significant.

Mitigation Measures

None required.

b) Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?

Less than Significant Impact

Construction

The Proposed Project does not include sources known to generate substantial vibration such as pile driving, vibratory equipment or explosives. Construction will include the use of limited track mounted equipment during grading activities that has the potential to generate localized ground borne vibration. However, the nearest sensitive receptor is located approximately 0.43 miles from proposed grading activities. The Proposed Project would not expose persons to or generate excessive ground borne vibration or ground borne noise levels and potential impacts would be less than significant.

Mitigation Measures

None required

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Less than Significant Impact

See response to question a) above.

Mitigation Measures

None required.

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Less than Significant Impact

See response to question a) above.

Mitigation Measures

None required.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

No Impact

The Proposed Project is not located within an airport land use plan or within two miles of a public or public use airport. The closest public airport is the Bob Hope Airport located approximately 10 miles west of the Proposed Project. No impact would occur.

Mitigation Measures

None required.

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

No Impact

The Proposed Project is not located within the vicinity of a private airstrip. The closest private airstrip, the El Monte Airport, managed by American Airports Corporation, is located approximately 10 miles east of the Proposed Project. No impact would occur.

Mitigation Measures

None required.