

DOCKETED

Docket Number:	16-SPPE-01
Project Title:	AltaGas Pomona Energy
TN #:	210802-13
Document Title:	Section 4.7 Noise
Description:	Application for Certification Volume 1
Filer:	Sabrina Savala
Organization:	AltaGas Pomona Energy, Inc.
Submitter Role:	Applicant
Submission Date:	3/22/2016 10:31:18 AM
Docketed Date:	3/21/2016

4.7 Noise

4.7.1 Introduction

This section presents an evaluation of potential noise effects related to the construction and operation of PRP. The plant would be located within the jurisdiction of the City of Pomona. Existing uses within the immediate area of PRP include commercial and industrial uses. The conformance of the proposed project with federal, state, and local noise regulations is evaluated in this section.

4.7.1.1 Fundamentals of Acoustics

Acoustics is the study of sound, and noise is defined as unwanted sound. Airborne sound is a rapid fluctuation or oscillation of air pressure above and below atmospheric pressure creating a sound wave. Acoustical terms used in this section are summarized in Table 4.7-1.

The most common metric is the overall A-weighted sound level measurement that has been adopted by regulatory bodies worldwide. The A-weighting network measures sound in a similar fashion to the way in which a person perceives or hears sound. In this way, it provides a good measure for evaluating acceptable and unacceptable sound levels.

A-weighted sound levels are typically measured or presented as equivalent sound pressure level (Leq), which is defined as the average noise level, on an equal energy basis for a stated period of time, and is commonly used to measure steady-state sound or noise that is usually dominant. Statistical methods are used to capture the dynamics of a changing acoustical environment. Statistical measurements are typically denoted by L_{xx} , where xx represents the percentile of time the sound level is exceeded. The L_{90} is a measurement that represents the noise level that is exceeded during 90 percent of the measurement period. Similarly, the L_{10} represents the noise level exceeded for 10 percent of the measurement period.

Some metrics used in determining the impact of environmental noise consider the differences in response that people have to daytime and nighttime noise levels. During the nighttime, exterior background noises are generally lower than the daytime levels. However, most household noise also decreases at night and exterior noise becomes more noticeable. Furthermore, most people sleep at night and are sensitive to intrusive noises. To account for human sensitivity to nighttime noise levels, the Day-Night Sound Level (L_{dn} or DNL) was developed. L_{dn} is a noise index that accounts for the greater annoyance of noise during the nighttime hours.

L_{dn} values are calculated by averaging hourly Leq sound levels for a 24-hour period, and apply a weighting factor to nighttime Leq values. The weighting factor, which reflects the increased sensitivity to noise during nighttime hours, is added to each hourly Leq sound level before the 24-hour L_{dn} is calculated. For the purposes of assessing noise, the 24-hour day is divided into two time periods, with the following weightings:

- Daytime: 7 a.m. to 10 p.m. (15 hours) Weighting factor of 0 decibels (dB)
- Nighttime: 10 p.m. to 7 a.m. (9 hours) Weighting factor of 10 dB

Table 4.7-1. Definitions of Acoustical Terms*Small Power Plant Exemption Application for the Pomona Repower Project*

Term	Definition
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise or sound at a given location. The ambient level is typically defined by the Leq level.
Background Noise Level	The underlying ever-present lower level noise that remains in the absence of intrusive or intermittent sounds. Distant sources, such as traffic, typically make up the background. The background level is generally defined by the L90 percentile noise level.
Intrusive	Noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, time of occurrence, tonal content, the prevailing ambient noise level as well as the sensitivity of the receiver. The intrusive level is generally defined by the L10 percentile noise level.
Sound Pressure Level Decibel (dB)	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
A-Weighted Sound Pressure Level (dBA)	The sound level in dBs as measured on a sound level meter using the A-weighted filter network. The A-weighted filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this report are A-weighted.
Equivalent Noise Level (Leq)	The average A-weighted noise level, on an equal energy basis, during the measurement period.
Percentile Noise Level (Ln)	The noise level exceeded during n percent of the measurement period, where n is a number between 0 and 100 (e.g., L90)
Day-Night Noise Level (Ldn or DNL)	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 dBs from 10:00 p.m. to 7:00 a.m.

The two time periods are then averaged to compute the overall Ldn value. For a continuous noise source, the Ldn value is easily computed by adding 6.4 dB to the overall 24-hour noise level (Leq). For example, if the expected continuous noise level from the power plant were 60.0 dBA, the resulting Ldn from the plant would be 66.4 dBA.

The effects of noise on people can be listed in three general categories:

- Subjective effects of annoyance, nuisance, and dissatisfaction
- Interference with activities such as speech, sleep, and learning
- Physiological effects such as startling and hearing loss

In most cases, environmental noise produces effects in the first two categories only. However, workers in industrial plants may experience noise effects in the last category. No completely satisfactory way exists to measure the subjective effects of noise, or to measure the corresponding reactions of annoyance and dissatisfaction. This lack of a common standard is primarily due to the wide variation in individual thresholds of annoyance and habituation to noise. Thus, an important way of determining a person's subjective reaction to a new noise is by comparing it to the existing or "ambient" environment to which that person has adapted. In general, the more the level or the tonal (frequency) variations of a noise exceed the previously existing ambient noise level or tonal quality, the less acceptable the new noise will be, as judged by the exposed individual.

Table 4.7-2 shows the relative A-weighted noise levels of common sounds measured in the environment and in industry for various sound levels.

Table 4.7-2. Typical Sound Levels Measured in the Environment and Industry
Small Power Plant Exemption Application for the Pomona Repower Project

Noise Source at a Given Distance	A-Weighted Sound Level in Decibels	Noise Environments	Subjective Impression
Shotgun (at shooter's ear)	140	Carrier flight deck	Painfully loud
Civil defense siren (100 feet)	130		
Jet takeoff (200 feet)	120		Threshold of pain
Loud rock music	110	Rock music concert	
Pile driver (50 feet)	100		Very loud
Ambulance siren (100 feet)	90	Boiler room	
Pneumatic drill (50 feet)	80	Noisy restaurant	
Busy traffic; hair dryer	70		Moderately loud
Normal conversation (5 feet)	60	Data processing center	
Light traffic (100 feet); rainfall	50	Private business office	
Bird calls (distant)	40	Average living room, library	Quiet
Soft whisper (5 feet); rustling leaves	30	Quiet bedroom	
	20	Recording studio	
Normal breathing	10		Threshold of hearing

Source: Beranek, 1998.

4.7.2 Laws, Ordinances, Regulations, and Standards

The following are the applicable LORS that apply to noise generated by PRP.

4.7.2.1 Federal

The federal government has no standards or regulations applicable to offsite noise levels from the project.

Onsite noise levels are regulated through the Occupational Health and Safety Act of 1970 (OSHA). The noise exposure level of workers is regulated at 90 dBA, over an 8-hour work shift to protect hearing (29 C.F.R. 1910.95). Areas above 85 dBA will be posted as high noise level areas and hearing protection will be required. PRP will implement a hearing conservation program for applicable employees and maintain exposure levels below 90 dBA.

4.7.2.2 State

Two state laws apply to the project that address occupational noise exposure and vehicle noise. The California Department of Industrial Relations, Division of Occupational Safety and Health enforces California Occupational Safety and Health Administration (Cal-OSHA) regulations, which are the same as the federal OSHA regulations described above. The regulations are contained in Cal. Code Regs. Title 8, General Industrial Safety Orders, Article 105, Control of Noise Exposure, Sections 5095, et seq.

Noise limits for highway vehicles are regulated under the Cal. Veh. Code, Sections 23130 and 23130.5. The limits are enforceable on the highways by CHP and the County Sheriff's Office.

4.7.2.3 Local

The California State Planning Law (California Government Code Section 65302) requires that cities prepare and adopt a General Plan to guide community change. The City of Pomona General Plan contains a Noise Element (Noise Element) that provides goals and policies to minimize interference from noise sources and promote a comprehensive long range means of achieving acceptable noise levels in the City of Pomona (City of Pomona, 2014). The Noise Element guides the implementation of the regulatory provisions provided in the City's code of ordinances (Noise Ordinance). This section summarizes the local noise goals, policies and provisions from the City's Noise Element and Noise Ordinance that are applicable to the PRP.

City of Pomona General Plan – Noise Element. The City of Pomona Noise Element aims to prevent new noise conflicts by addressing the needs of noise sensitive land uses and by establishing appropriate noise emission standards. The main focus is protecting noise sensitive uses including residential areas, schools, child care facilities, convalescent centers, and retirement homes from potential noise conflicts associated with proximity to major transportation corridors and other noise sources (City of Pomona, 2014).

Table 4.7-3 shows acceptable community noise exposure standards and guidelines for noise levels by land use.

Table 4.7-3. City of Pomona Noise Exposure Standards, per the Noise Element (Ldn or CNEL, dB)
Small Power Plant Exemption Application for the Pomona Repower Project

Land Use Category	Exposure Level	50-55	55-60	60-65	65-70	70-75	75-80	80-85
Residential – low density single-family, duplex, mobile homes	Normally Acceptable ^a							
	Conditionally Acceptable ^b							
	Normally Unacceptable ^c							
	Clearly Unacceptable ^d							
Residential – multi-family	Normally Acceptable							
	Conditionally Acceptable							
	Normally Unacceptable							
	Clearly Unacceptable							
Transient lodging – motels, hotels	Normally Acceptable							
	Conditionally Acceptable							
	Normally Unacceptable							
	Clearly Unacceptable							
Schools, libraries, churches, hospitals, nursing homes	Normally Acceptable							
	Conditionally Acceptable							
	Normally Unacceptable							
	Clearly Unacceptable							
Auditorium, concert halls, amphitheaters	Normally Acceptable							
	Conditionally Acceptable							
	Normally Unacceptable							
	Clearly Unacceptable							

Table 4.7-3. City of Pomona Noise Exposure Standards, per the Noise Element (Ldn or CNEL, dB)
Small Power Plant Exemption Application for the Pomona Repower Project

Land Use Category	Exposure Level	50-55	55-60	60-65	65-70	70-75	75-80	80-85
Sports arena, outdoor spectator sports	Normally Acceptable							
	Conditionally Acceptable							
	Normally Unacceptable							
	Clearly Unacceptable							
Playgrounds, neighborhood parks	Normally Acceptable							
	Conditionally Acceptable							
	Normally Unacceptable							
	Clearly Unacceptable							
Golf courses, riding stables, water recreation, cemeteries	Normally Acceptable							
	Conditionally Acceptable							
	Normally Unacceptable							
	Clearly Unacceptable							
Office buildings, business commercial, and professional	Normally Acceptable							
	Conditionally Acceptable							
	Normally Unacceptable							
	Clearly Unacceptable							
Industrial, manufacturing utilities, agriculture	Normally Acceptable							
	Conditionally Acceptable							
	Normally Unacceptable							
	Clearly Unacceptable							

^a Specified land use is satisfactory, based upon the assumption that any building involved is of normal conventional construction, without any special noise insulation requirements.

^b New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

^c New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

^d New construction or development should generally not be undertaken.

CNEL = Community Noise Equivalent Level

Source: City of Pomona, 2014

The City of Pomona Noise Element (2014) goals and policies include:

Goal 7G.G1. Protect public health and welfare by eliminating or minimizing the effects of existing noise and vibration problems, and by minimizing the increase of noise and vibration levels in the future.

Goal 7G.G2. Continue efforts to incorporate noise considerations into land use planning decisions, and guide the location and design of transportation facilities to minimize the effects of noise on adjacent noise-sensitive land uses.

Policy 7G.P1. As part of development review, use Figure 7-G.1 (Land Use Compatibility for Community Noise Environments) to determine acceptable uses and insulation requirements in noise-impacted areas.

Policy 7G.P2. Discourage location of new noise-sensitive uses, primarily residential and educational facilities, in areas with projected noise levels greater than 65 dB CNEL, as shown in Figure 7-G.2 (Future Noise Contours). Where such uses are permitted, require incorporation of mitigation measures to ensure that interior noise levels do not exceed 45 dB CNEL, including:

- Require that applicants for new noise-sensitive development, in areas subject to noise levels greater than 65 dB CNEL, first obtain the services of a professional acoustical engineer to provide a technical analysis and design of mitigation measures.
- In the Zoning Ordinance, require placement of fixed equipment, such as air conditioning units and condensers, inside or in the walls of new buildings or on rooftops of central units to reduce noise impacts on any nearby sensitive receptors.

Policy 7G.P3. Continue to restrict noise and require mitigation measures for any noise emitting construction equipment or activity.

Policy 7G.P4. Require noise mitigating measures including, but not limited to, the use of double-paned soundproof windows near Metrolink stations to allow transit oriented development to include office and residential uses.

The City of Pomona Noise Element goals and policies provided herein support the noise regulations in the City of Pomona Code of Ordinances, which establish restrictions for allowable noise levels and acceptable exterior noise standards using the “A” weighted decibel scale (dBA).

City of Pomona Code of Ordinances – Noise Control. Section 18 of the City of Pomona’s Noise Ordinance provides policies to control unnecessary, excessive, and annoying sounds and vibrations. Table 4.7-4 summarizes the interior and exterior noise standards within a designated noise zone as indicated in Sections 18-311(a) and 18-312(a) of the Noise Ordinance. Section 18-312a specifies that the interior noise standards listed in Table 4.7-4 apply to all residential property within all noise zones.

Table 4.7-4. Interior and Exterior Noise Standards, per the Pomona Code of Ordinances (dBA)

Small Power Plant Exemption Application for the Pomona Repower Project

Noise Zone	Noise Level	Time Period
Interior		
All	40 dB(A)	10:00 p.m. – 7:00 a.m.
	50 dB(A)	7:00 a.m. – 10:00 p.m.
Exterior		
1 (Single-family residential properties)	50 dB(A)	10:00 p.m. – 7:00 a.m.
	60 dB(A)	7:00 a.m. – 10:00 p.m.
2 (Multiple-family residential properties)	50 dB(A)	10:00 p.m. – 7:00 a.m.
	65 dB(A)	7:00 a.m. – 10:00 p.m.
3 (Commercial properties)	60 dB(A)	10:00 p.m. – 7:00 a.m.
	65 dB(A)	7:00 a.m. – 10:00 p.m.
4 (Industrial properties)	70 dB(A)	Any
5 (High traffic corridors)	70 dB(A)	Any

Notes:

If the measurement location is on a boundary between two different noise zones, the lower noise level standard applicable to the noise zone shall apply.

Source:

City of Pomona, 2013

Section 18-311(b) of the Noise Ordinance prohibits the exceedance of the above exterior levels as follows:

1. *The noise standard for a cumulative period of more than thirty (30) minutes in any hour; or*
2. *The noise standard plus five (5) dB(A) for a cumulative period of more than fifteen (15) minutes in any hour; or*
3. *The noise standard plus ten (10) dB(A) for a cumulative period of more than five (5) minutes in any hour; or*
4. *The noise standard plus fifteen (15) dB(A) for a cumulative period of more than one minute in any hour; or*
5. *The noise standard plus twenty (20) dB(A) for any period of time.*

The Noise Ordinance Section 18-311(c) states that:

If the ambient noise level exceeds any of the noise limit categories in subsections (b)(1) through (4) of this section, the cumulative period applicable to such category shall be increased to reflect such ambient noise level. If the ambient noise level exceeds the noise limit category in subsection (b)(5) of this section, the maximum allowable noise level under such category shall be increased to reflect the maximum ambient noise level.

The Noise Ordinance (Section 18-312(b)) prohibits the exceedance of the above interior levels within a residential dwelling as follows:

The noise standard for a cumulative period of more than five (5) minutes in any hour; or

1. *The noise standard plus five (5) dB(A) for a cumulative period of more than one minute in any hour; or*
2. *The noise standard plus ten (10) dB(A) for any period of time.*

The Noise Ordinance at (Section 18-312(c)) states that:

If the ambient noise level exceeds any of the limit categories in subsection (b)(1) or (2) of this section, the cumulative period applicable to such category shall be increased to reflect the maximum ambient noise level. If the ambient level exceeds the noise category in subsection (b)(3) of this section, the maximum allowable noise level under such category shall be increased to reflect the maximum ambient noise level.

The Noise Ordinance establishes that it is unlawful to cause a sound level at schools, hospitals or similar health care institutions, churches, or libraries, while in use that exceeds the exterior noise standards prescribed for the assigned noise zone in Table 4.7-4 where the school, hospital, church or library is located, or which noise level unreasonably interferes with the use of such institutions, or which unreasonably disturbs or annoys patients in a hospital, convalescent home or other similar health care institution so long as the facilities are in use and signs are conspicuously displayed at 3 separate locations within one-tenth of a mile of the facility (Section 18-313).

An application for a variance from the Noise Ordinance may be filed if noise sources cannot meet applicable noise provisions (Section 18-306). A separate application must be filed for each noise source and must propose a method for achieving compliance and a time schedule for its accomplishment.

Relevant exemptions to the Noise Ordinance (Section 18-305) include the following provisions:

- *Except as provided in section 14-399, any mechanical device, apparatus or equipment used, related to or connected with emergency machinery, vehicle, work or warning alarm or bell, provided the sounding of any bell or alarm on any building or motor vehicle shall terminate its operation within 30 minutes in any hour of its being activated.*

- *Noise sources associated with or vibration created by construction, repair, remodeling or grading of any real property or during authorized seismic surveys, provided such activities do not take place between the hours of 8:00 p.m. and 7:00 a.m. on weekdays, including Saturday, or at any time on Sunday or a federal holiday, and provided the noise level created by such activities do not exceed the noise standard of 65 dB(A) plus the limits specified in section 18-311(b) as measured on residential property and any vibration created does not endanger the public health, welfare and safety.*
- *Noise sources associated with the maintenance of real property, provided such activities take place between the hours of 7:00 a.m. and 8:00 p.m. on any day except Sunday or between the hours of 9:00 a.m. and 8:00 p.m. on Sunday.*
- *Any activity to the extent regulation thereof has been preempted by state or federal law.*

A summary of these various LORS is presented in Table 4.7-5.

Table 4.7-5. Laws, Ordinances, Regulations, and Standards Applicable to Noise
Small Power Plant Exemption Application for the Pomona Repower Project

LORS	Applicability	Conformance (Sec. No.)
Federal Onsite		
OSHA	Exposure of workers over 8-hour shift limited to 90 dBA.	PRP will comply (Section 4.7.2.1)
State-Onsite		
Cal-OSHA Cal. Code Regs. Title 8 Article 105, Sections 5095 et seq.	Exposure of workers over 8-hour shift limited to 90 dBA.	PRP will comply (Section 4.7.2.1)
State-Offsite		
California Vehicle Code Sections 23130 and 23130.5	Regulates vehicle noise limits on California highways.	Delivery trucks and other vehicles will meet Code requirements (Section 4.7.2.2)
Local		
California Government Code Section 65302	Requires local government to prepare plans that contain noise provisions.	City of Pomona conforms (Section 4.7.2.3)
City of Pomona General Plan Noise Element	Provides goals and policies to minimize interference from noise sources and promote a means of achieving acceptable noise levels in the City of Pomona.	PRP will comply (Section 4.7.4)
City of Pomona Code of Ordinances	Establishes interior and exterior noise standards that apply to all property within a designated noise zone.	PRP will comply (Section 4.7.4)

4.7.3 Environmental Setting

As mentioned previously, PRP is located within the jurisdiction of the City of Pomona. The approximately 2-acre site is located north of Mt. Vernon Avenue and the railroad tracks and south of West Holt Avenue, Erie Street to the west, and an unnamed alley to the east in the City of Pomona (see Figure 1.2-3). The existing generation plant is known as the San Gabriel Facility, which has been in operation since 1986.

The land use designation for PRP is Urban Neighborhoods and it is zoned Light Industrial (M1) with a Supplemental (S) Overlay. According to the City's General Plan, Urban Neighborhoods are "moderately

intense clusters of development that contain a mix of uses.” As described in Section 4.6.3.4, Project Site Zoning Designations, areas designated as M-1 are “*intended to provide for the development of industrial uses which include fabrication, manufacturing, assembly or processing of materials that are in a processed form and which do not in their maintenance, assembly, manufacturing or plan operation create smoke, gas, odor, dust, sound, vibration, soot or lighting to any degree which might be termed obnoxious or offensive to persons residing in or conducting business in either this or any other zoning district of the city*” (City of Pomona, 2010). Public utilities and distributing plants are allowable land uses within this designation (City of Pomona, 2010). PRP is proposed within the M1 zoning district at the site of an existing power generation facility. The development of electrical utilities is a permitted use within the M1 zoning district (Williamson, 2015).

Existing uses within the immediate area of PRP include commercial and industrial uses (refer to Table 4.6-2 in the Land Use section for a summary of existing uses). The PRP is located in an urbanized environment characterized by infill industrial development. Sources of environmental noise in the vicinity of the project site include railroad activity, auto and heavy truck traffic on local roadways, and neighboring light and heavy industrial sources mentioned above.

Potential noise-sensitive land uses within the project vicinity include various residential uses located approximately 1,000 feet to the north, 1,500 feet to the east and 1,100 feet to the south; a church and school approximately 1,500 feet to the northeast; and additional churches 1,000 feet north and 1,800 feet to the northwest. Adult education facilities are located approximately 900 feet to the south of the project site on the other side of the railroad tracks.

Existing noise levels were measured at three representative locations designated as M1 through M3 on Figure 4.7-1. Table 4.7-6 describes the noise monitoring locations and their distances to the proposed project site. Distances to the monitoring locations are from the approximate center of the PRP facility.

Table 4.7-6. Noise Monitoring Locations

Small Power Plant Exemption Application for the Pomona Repower Project

Map ID	Land Use	Approximate Distance to PRP (feet)
M1	PRP Site – Existing cogeneration facility	N/A
M2	Church and School	1,500
M3	School (Adult Education)	900

N/A = Not applicable.

4.7.3.1 Noise Survey Methodology

Continuous noise level measurements were conducted at each location for a period of over 25 hours using Type 1, precision, statistical sound level meters. The monitoring period started at approximately 4 pm on November 11, 2015 and extended to approximately 10 am on November 17, 2015. The weather conditions were generally conducive to noise measurements with no rain and light to moderate winds with the exception of some high winds on November 15 and 16. The existing San Gabriel Facility was generating power on Friday, November 13, 2015 from approximately 8 am to 8 pm.

4.7.3.2 Noise Survey Results

The detailed noise monitoring data are presented in Appendix 4.7A. Table 4.7-7 summarizes the L₅₀ (in accordance with the metrics used by the City of Pomona) at each monitoring location.

Table 4.7-7. Summary of the Noise Monitoring Results (dBA)*Small Power Plant Exemption Application for the Pomona Repower Project*

Map ID	Daytime L ₅₀ (7 a.m. – 10 p.m.)	Nighttime L ₅₀ (10 p.m. - 7 a.m.)	L _{dn}
M1	44 - 72	44 - 66	62 - 72
M2	50 - 59	47 - 60	61 - 65
M3	44 - 56	44 - 57	60 - 64

While the existing cogeneration facility was operating, the hourly L50s varied between 70 and 72 dBA at M1, 52 to 57 dBA at M2, and 47 to 54 at M3.

4.7.4 Impacts

Potential noise impacts are described below.

4.7.4.1 CEQA Environmental Checklist

The checklist in Table 4.7-8 assesses the significance of potential noise impacts.

Table 4.7-8. CEQA Checklist to Assess Potential Impacts*Small Power Plant Exemption Application for the Pomona Repower Project*

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
NOISE – Would the project: result in:				
a) Exposure of person 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?			X	
b) Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels?				X
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?			X	
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			X	
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 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?				X
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?				X

4.7.4.2 Discussion of Impacts

Operational Impacts. A noise model of the PRP facility was developed using source input levels derived from manufacturers' data and field surveys of similar equipment. These noise levels represent the anticipated steady-state level from the plant with essentially all equipment operating.

The noise model divides the proposed facility into a list of individual point and area noise sources representing each piece of equipment that produces a significant amount of noise. The sound power levels representing the standard performance of each of these components are assigned based either on first-hand field measurements of similar equipment made at other existing plants, data supplied by manufacturers, or information found in the technical literature. Using these standard power levels as a basis, the model calculates the sound pressure level that would occur at each receptor from each source after losses from distance, air absorption, and blockages are considered. The sum of all these individual levels is the total plant level at the modeling point. The sound propagation factors used in the model were adopted from ISO 9613-2 *Acoustics - Sound Attenuation During Propagation Outdoors*.

The sound power levels used in the model are summarized in Table 4.7-9.

Table 4.7-9. Major Equipment Sound Power Levels

Small Power Plant Exemption Application for the Pomona Repower Project

Source	Sound Power Level (dBA)
Generator Step-up Transformers	100
Fuel Gas Compressor (inside building)	112
Simple-cycle Combustion Turbine Generator	113
Simple-cycle SCR and Stack	104
Simple-cycle Cooling Tower	109

There are multiple acoustical design measures available to satisfy the applicable acoustical requirements including the following:

- Enclosures or barriers around major equipment or equipment skids
- Additional or increased silencing
- Lagging of high-noise piping
- Steam vent silencers
- Low noise valves
- Low noise fans

The project is located on, and surrounded by, industrial and commercially zoned land. The project vicinity is an urbanized environment characterized by infill industrial development. As discussed in Section 4.7.2.3, the applicable sound limit at the boundary of the industrial zone is 70 dBA.

Incorporating the shielding from the numerous existing buildings around the project as well as acoustical design features built into the project, the anticipated steady-state sound level is expected to comply with the 70 dBA limit at the boundary of the adjacent zone. At the noise-sensitive receptors beyond the boundary, the project is not anticipated to exceed the most restrictive daytime limit (60 dBA for single family residences). Existing ambient measurements indicate the nighttime sound levels do, at times, exceed the most restrictive nighttime limit (50 dBA). Section 18-311(c) of the City's Noise Ordinance adjusts the sound limit to the maximum measured ambient levels, which are shown in Table 4.7-7 to be 57 and 60 dBA at M2 and M3, respectively. Nighttime operations are not expected to exceed these levels.

Tonal Noise. Power plants have several components that can produce tones. As a general rule, modern packaged power plants, even those without significant noise controls, do not produce discrete tones

that are prominent at typical residential distances. That is not to say that audible tones are impossible—certain sources within the plant such as the combustion turbine inlets, transformers, pump motors, and cooling tower fan gearboxes have been known to produce significant tones. It is the Applicant's intention to anticipate the potential for audible tones in the design and specification of the plant's equipment and take necessary steps to prevent sources from emitting tones that might be disturbing at the nearest receptors.

Ground and Airborne Vibration. Ground- and airborne-induced vibration from operation of the project is not expected to adversely affect the local area. The project is primarily driven by a gas turbine with the hot combustion gases exiting via the exhaust stack. These very large ducts greatly reduce low frequency noise, which is mainly the source of airborne-induced vibration of structures.

The equipment that would be used in the project is well balanced and is designed to produce very low vibration levels throughout the life of the plant. An imbalance could contribute to ground vibration levels in the vicinity of the equipment. However, vibration-monitoring systems installed in the equipment are designed to ensure that the equipment remains balanced. Should an imbalance occur, the event would be detected and the equipment would automatically shutdown.

Construction Impacts. Construction of the PRP is expected to be typical of other power plants in terms of schedule, equipment used, and other types of activities. The noise level will vary during the construction period, depending on the construction phase. Construction of power plants can generally be divided into five phases that use different types of construction equipment. The five phases are demolition, site preparation, and excavation; concrete pouring; steel erection; mechanical; and clean-up (Miller et al., 1978).

The USEPA Office of Noise Abatement and Control and the Empire State Electric Energy Research Company have extensively studied noise from individual pieces of construction equipment, as well as from construction sites of power plants and other types of facilities (USEPA, 1971; Barnes et al., 1976). Because specific information on types, quantities, and operating schedules of construction equipment is not available at this point in project development, information from these documents for similarly sized industrial projects will be used. Use of these data, which are more than 30 years old, is conservative because the evolution of construction equipment has been toward quieter designs to protect operators from exposure to high noise levels.

The loudest equipment types generally operating at a site during each phase of construction are presented in Table 4.7-10. The composite average or equivalent site noise level, representing noise from all equipment, also is presented for each phase.

Table 4.7-10. Construction Equipment and Composite Site Noise Levels
Small Power Plant Exemption Application for the Pomona Repower Project

Construction Phase	Loudest Construction Equipment	Equipment Noise Level (dBA) at 50 feet	Composite Site Noise Level (dBA) at 50 feet
Site clearing and excavation	Dump Truck	91	89
	Backhoe	85	
Concrete pouring	Truck	91	78
	Concrete Mixer	85	
Steel erection	Derrick Crane	88	87
	Jack Hammer	88	
Mechanical	Derrick Crane	88	87
	Pneumatic Tools	86	
Clean-up	Drill	98	89
	Truck	91	

Sources:

USEPA, 1971; Barnes et al., 1976.

Average or equivalent construction noise levels projected to the nearest residences from the site are presented in Table 4.7-11. These results are conservative because the only attenuating mechanism considered was divergence of the sound waves in open air. The noisiest construction activities will be confined to the daytime hours. Table 4.7-12 presents noise levels from common construction equipment at various distances.

Table 4.7-11. Average Construction Noise Levels at Various Distances

Small Power Plant Exemption Application for the Pomona Repower Project

Construction Phase	Sound Pressure Level (dBA)		
	375 feet	1,500 feet	3,000 feet
Demolition, Site Clearing, and Excavation	71	59	53
Concrete Pouring	60	48	42
Steel Erection	69	57	51
Mechanical	69	57	51
Clean-Up	71	59	53

Table 4.7-12. Noise Levels from Common Construction Equipment at Various Distances

Small Power Plant Exemption Application for the Pomona Repower Project

Construction Equipment	Typical Sound Pressure Level at 50 feet (dBA)	Typical Sound Pressure Level at 375 feet (dBA)	Typical Sound Pressure Level at 1,500 feet (dBA)
Pile Drivers (20,000 to 32,000 ft-lb/blow)	104	86	74
Dozer (250 to 700 hp)	88	70	58
Front End Loader (6 to 15 cu yd)	88	70	58
Trucks (200 to 400 hp)	86	68	56
Grader (13- to 16-foot blade)	85	67	55
Shovels (2 to 5 cu yd)	84	66	54
Portable Generators (50 to 200 kW)	84	66	54
Derrick Crane (11 to 20 tons)	83	65	53
Mobile Crane (11 to 20 tons)	83	65	53
Concrete Pumps (30 to 150 cu yd)	81	63	51
Tractor (0.75 to 2 cu yd)	80	62	50
Unquieted Paving Breaker	80	62	50
Quieted Paving Breaker	73	55	43

Notes:

ft-lb/blow = foot-pound(s) per blow

hp = horsepower

kW = kilowatt(s)

Noise generated during the testing and commissioning phase of the project is not expected to be substantially different from that produced during normal full-load operation. Starts and abrupt stops are more frequent during this period, but on the whole, they are usually short-lived.

Construction Vibration. Construction vibrations can be divided into three classes, based on the wave form and its source (see Table 4.7-13). If pile driving is required, it will be limited to normal construction hours (during the daytime) and will be of short duration.

Table 4.7-13. Construction Vibrations

Small Power Plant Exemption Application for the Pomona Repower Project

Wave Form	Example Source
Impact	Impact pile driver or blasting
Steady state	Vibratory pile driver
Pseudo steady state	Double acting pile hammer

Worker Exposer to Noise. Worker exposure levels during construction of the PRP will vary depending on the phase of the project and the proximity of the workers to the noise generating activities. The project will develop a Hearing Protection Plan, which complies with Cal-OSHA requirements. This Hearing Protection Plan will be incorporated into the project construction Health and Safety Plan. The plan will require appropriate hearing protection for workers and visitors throughout the duration of the construction period.

4.7.5 Cumulative Effects

A cumulative impact refers to the project's incremental effect together with other closely related past, present, and reasonably foreseeable future projects whose impacts may compound or increase the incremental effect of the proposed project (Cal. Pub. Res. Code Section 21083; Cal. Code Regs. Title 14 Sections 15064(h), 15065(c), 15130, and 15355).

The CEQA Guidelines further note that:

The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative effects can result from individually minor, but collectively significant, projects taking place over a period of time.

The PRP consists of replacement of the San Gabriel Facility and does not represent a new source of noise on a previously unused parcel. No additional sources of noise in the project vicinity were identified as being reasonably foreseeable. Other pending residential, commercial, and industrial projects (see Section 5.6, Land Use) in the area have not been identified as substantial sources of noise in the project vicinity; therefore, cumulative impacts are expected to be less than significant.

4.7.6 Applicant Proposed Measures

Since there are no significant noise impacts from the project, mitigation measures are not required. However, the following APM will be incorporated into the project:

The project owner will establish a telephone number for use by the public to report any significant undesirable noise conditions associated with the construction and operation of the project. If the telephone is not staffed 24 hours per day, the project owner will include an automatic answering feature, with date and time stamp recording, to answer calls when the phone is unattended. This telephone number will be posted at the project site during construction in a manner visible to

passersby. This telephone number will be maintained until the project has been operational for at least 1 year.

Throughout the construction and operation of the project, the project owner will document, investigate, evaluate, and attempt to resolve all legitimate project-related noise complaints.

The project owner or authorized agent will:

- Use the Noise Complaint Resolution Form typically suggested by CEC or functionally equivalent procedure 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 attempt to determine the source of noise related to the complaint.
- If the noise complaint is legitimate, take all feasible measures to reduce the noise at its source.

Noisy construction or demolition work (that which causes offsite annoyance as evidenced by the filing of a legitimate noise complaint) will be permitted Monday through Saturday from 7 a.m. to 8:00 p.m. and prohibited on Sunday and federal holidays.

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

4.7.7 Agencies and Agency Contacts

No agencies were contacted directly to specifically discuss project noise. See Section 4.6, Land Use for contacts in the City Planning Department.

4.7.8 Permits and Permit Schedules

No State or county agency requires noise permits.

4.7.9 References

Barnes, J.D., L.N. Miller, and E.W. Wood. 1976. Prediction of Noise from Power Plant Construction. Prepared for Empire State Electric Energy Research Corporation, Schenectady, New York. Cambridge, Massachusetts: Bolt Beranek and Newman, Inc.

Beranek, L.L. 1998. *Noise and Vibration Control*. Institute of Noise Control Engineering. McGraw Hill.

City of Pomona. 2013. *City of Pomona, California – Code of Ordinances*. Codified through Ordinance No. 4173. Adopted July 15, 2013. Accessed on November 2, 2015.

https://www.municode.com/library/#!/ca/pomona/codes/code_of_ordinances?nodeId=13712.

City of Pomona. 2014. *City of Pomona 2014 General Plan Update*. Adopted March 2014. Accessed on November 2, 2015. <http://www.ci.pomona.ca.us/index.php/forms-and-docs/planning-division/280-announcements/1310-general-plan-update-project-2013>.

International Organization for Standardization, Geneva. 1989. Acoustics-Attenuation of Sound During Propagation Outdoors, Part 2, A General Method of Calculation, ISO 9613-2.

Miller, Laymon N., et al. 1984. *Electric Power Plant Environmental Noise Guide*. Second Edition. New York: Edison Electric Institute.

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. Prepared for the Edison Electric Institute, New York, NY. Cambridge, Massachusetts: Bolt Beranek & Newman, Inc.

SECTION 4.7: NOISE

U.S. Environmental Protection Agency (USEPA). 1971. Noise from Construction Equipment and Operations, US Building Equipment, and Home Appliances. Prepared by Bolt Beranek and Newman for USEPA Office of Noise Abatement and Control, Washington, DC.

Williamson, Dustin. 2015. Planning Intern. Personal communication with Angela Wolfe, CH2M HILL. October 19, 29; November 5 and 23.



- Legend**
- Noise Monitoring Location
 - Project Location



FIGURE 4.7-1
Noise Monitoring Locations
 Pomona Repower Project
 Pomona, California

