# 5.7 Noise

This section presents an assessment of potential noise effects related to the Rice Solar Energy Project (RSEP). Section 5.7.1 discusses the fundamentals of acoustics. Section 5.7.2 describes the affected environment. Section 5.7.3 presents an environmental analysis of the consequences of construction and operation of the power plant and associated facilities. Section 5.7.4 discusses cumulative effects. Section 5.7.5 discusses mitigation measures. Section 5.7.6 presents applicable laws, ordinances, regulations, and standards (LORS). Section 5.7.7 lists relevant permitting agencies and agency contacts, Section 5.7.8 discusses permits required and the schedule for obtaining them, and Section 5.7.9 contains the references used to prepare this section.

## 5.7.1 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 5.7-1.

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 ($L_{eq}$), 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. For example, 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. The Community Noise Exposure Level (CNEL) is similar to the DNL, except that it also accounts for a greater level of annoyance during the evening hours.

$L_{dn}$ values are calculated by averaging hourly $L_{eq}$ sound levels for a 24-hour period, and apply a weighting factor to nighttime $L_{eq}$ values. The weighting factor, which reflects the increased sensitivity to noise during nighttime hours, is added to each hourly $L_{eq}$ sound level before the 24-hour $L_{dn}$ is calculated. For the purposes of assessing noise, the 24-hour day is divided into two 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 5.7-1**
Definitions of Acoustical Terms

| 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 $L_{eq}$ 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 $L_{90}$ 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 on 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 $L_{10}$ 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 decibels 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 ($L_{eq}$) | The average A-weighted noise level, on an equal energy basis, during the measurement period. |
| Percentile Noise Level ($L_n$) | The noise level exceeded during n percent of the measurement period, where n is a number between 0 and 100 (e.g., $L_{90}$) |
| Day-Night Noise Level ($L_{dn}$ or DNL) | The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels from 10:00 p.m. to 7:00 a.m. |
| Community Noise Exposure Level (CNEL) | The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels from 7:00 p.m. to 10:00 p.m. and the addition of 10 decibels from 10:00 p.m. to 7:00 a.m. |

The two periods are then averaged to compute the overall $L_{dn}$ value. For a continuous noise source, the $L_{dn}$ value is computed by adding 6.4 dB to the overall 24-hour noise level ($L_{eq}$). For example, if the expected continuous noise level from the source were 60.0 dBA, the resulting $L_{dn}$ would be 66.4 dBA.

The CNEL is calculated in a similar manner, except that a weighting factor of 5 dBA is added to the evening hours of 7 p.m. to 10 p.m. For a continuous noise source, the CNEL value is computed by adding 6.7 dB to the overall 24-hour noise level ($L_{eq}$). For example, if the expected continuous noise level from the source were 60.0 dBA, the resulting CNEL would be 66.7 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 5.7-2 shows the relative A-weighted noise levels of common sounds measured in the environment and in industry for various sound levels.

**TABLE 5.7-2**
Typical Sound Levels Measured in the Environment and Industry

| 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 ft) | 130 | — | — |
| Jet takeoff (200 ft) | 120 | — | Threshold of pain |
| Loud rock music | 110 | Rock music concert | — |
| Pile driver (50 ft) | 100 | — | Very loud |
| Ambulance siren (100 ft) | 90 | Boiler room | — |
| Pneumatic drill (50 ft) | 80 | Noisy restaurant | — |
| Busy traffic; hair dryer | 70 | — | Moderately loud |
| Normal conversation (5 ft) | 60 | Data processing center | — |
| Light traffic (100 ft); rainfall | 50 | Private business office | — |
| Bird calls (distant) | 40 | Average living room, library | Quiet |
| Soft whisper (5 ft); rustling leaves | 30 | Quiet bedroom | — |
| | 20 | Recording studio | — |
| Normal breathing | 10 | — | Threshold of hearing |

Source: Beranek, 1998.

## 5.7.2 Affected Environment

### 5.7.2.1 Local Land Use and Noise Sources

The RSEP site and associated offsite linear are located in eastern Riverside County in southern California. During World War II, the project site was used as a military training airfield called Rice Army Airfield. The airfield was used privately for a short time after the war and then abandoned; the site remains in private ownership today. The proposed new generator tie-line and substation are located primarily on land managed by the U.S. Bureau of Land Management (BLM). The project site is located in a very sparsely settled portion of the Mojave Desert/Sonoran Desert. The nearest residences are located approximately 15 miles to the northeast, at Vidal Junction. To the west, the nearest settlement is a cluster of homes located at the Colorado Aqueduct Iron Mountain Pump Plant, 17 miles to the west. The nearest town offering significant services is Parker, Arizona, approximately 35 miles to the east. Blythe, California is 44 miles to the south. Twentynine Palms, California is 75 miles to the west.

Existing use adjacent to the proposed project site consists of undeveloped open space uses to the east, south, and west. Along the northern boundary of the site, State Route 62, the California Aqueduct, and the Arizona-California Railroad run parallel to the site.

### 5.7.2.2 Ambient Noise Survey

There are no residences, hospitals, libraries, schools, places of worship, or other facilities where quiet is an important attribute of the environment within the area potentially impacted by the proposed project. The closest community, Vidal Junction, California, is approximately 15 miles northeast of the project area, adjacent to U.S. Highway 95. Additionally, the RSEP will operate and generate noise mostly when electrical demand is higher, typically during the daylight and evening hours, when ambient noise levels are typically highest. An increase of 5 dBA or more at a sensitive receptor resulting from construction or operational activities would be unlikely to occur, given the distance from any sensitive receptor. Presuming an average noise level of 90 dBA at 50 feet from the source (the upper range for construction equipment), the resulting noise level at 15 miles would be less than 25 dBA. Operational noise levels are also anticipated to be well less than 20 dBA at this location. The low project levels would not increase the ambient noise levels at a distance of 15 miles. Because an observable increase in ambient noise at a receptor is very unlikely to occur, an ambient noise survey is not warranted nor required by the California Energy Commission's (CEC) siting regulations (20 California Code of Regulations [CCR], Chapter 5, Article 6, Appendix B, sections (g)(4)(A) and (g)(4)(B)).[1]

## 5.7.3 Environmental Analysis

Although construction and operation of the RSEP will produce noticeable noise near the facility, the large distance to the closest occupied sensitive receptor in Vidal Junction mean that the anticipated RSEP noise levels will be in compliance with the Noise Element of Riverside County's General Plan, as well as the noise limits in Riverside County Ordinance No. 847. Noise also will be produced at the site during the construction of the project.

[1] CEC Staff was consulted regarding the need to conduct ambient monitoring and concurred that if there is not a potential for a 5 dBA increase that monitoring is not required

Potential noise impacts from construction and operation activities are assessed in this subsection.

### 5.7.3.1 Significance Criteria

Following the California Environmental Quality Act (CEQA) Guidelines (CCR, Title 14, Appendix G, Section XI), the RSEP would cause a significant impact if it would result in the following:

- Exposure of people to noise levels in excess of standards established in the local General Plan or noise ordinance
- Exposure of people to excessive ground-borne noise levels or vibration
- Substantial permanent increase in ambient noise levels in the project vicinity
- Substantial temporary or periodic increase in ambient noise levels in the project vicinity

Generally, the design basis for noise control is the minimum, or most stringent, noise level required by any of the applicable LORS. Therefore, noise from the project is evaluated against Riverside County's requirements. The County has established quantitative standards for determining appropriate noise levels for various land uses in its County Code and has established guidelines in the Noise Element of its General Plan.

The CEC has previously determined that an increase in background noise levels up to 5 dBA in a residential setting is insignificant; an increase of more than 10 dBA is considered significant, and an increase between 5 and 10 dBA may be either significant or insignificant, depending on the particular circumstances of a case.

The CEC also has concluded that construction noise is typically insignificant if the construction activity is temporary, use of heavy equipment and noisy activities is limited to daytime hours, and all feasible noise abatement measures are implemented for noise-producing equipment.

### 5.7.3.2 Construction Impacts

#### 5.7.3.2.1 Plant Construction Noise

Construction of the RSEP 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). Because of the remote location and lack of sensitive receptors within 15 miles of the project site, RSEP construction may at times take place on a 24-hour, 7 day-per-week schedule.

The U.S. Environmental Protection Agency (EPA) 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 (EPA, 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 5.7-3. The composite average or equivalent site noise level, representing noise from all equipment, also is presented for each phase.

**TABLE 5.7-3**
Construction Equipment and Composite Site Noise Levels

| Construction Phase | Loudest Construction Equipment | Equipment Noise Level (dBA) at 50 feet | Composite Site Noise Level (dBA) at 50 feet |
|---|---|---|---|
| Demolition, Site Clearing, and Excavation | Dump Truck<br>Backhoe | 91<br>85 | 89 |
| Concrete Pouring | Truck<br>Concrete Mixer | 91<br>85 | 78 |
| Steel Erection | Derrick Crane<br>Jack Hammer | 88<br>88 | 87 |
| Mechanical | Derrick Crane<br>Pneumatic Tools | 88<br>86 | 87 |
| Cleanup | Rock Drill<br>Truck | 98<br>91 | 89 |

Source: EPA, 1971; Barnes et al., 1976.

Average or equivalent construction noise levels projected at various distances from the site are presented in Table 5.7-4. These results are conservative because the only attenuating mechanism considered was divergence of the sound waves in open air. Additional attenuation will result from air absorption and ground effects. Table 5.7-5 presents noise levels from common construction equipment at various distances from divergence only.

**TABLE 5.7-4**
Average Construction Noise Levels at Various Distances

| | Sound Pressure Level (dBA) | | | |
|---|---|---|---|---|
| **Construction Phase** | **50 feet** | **1,500 feet** | **1 mile** | **15 mile** |
| Demolition, Site Clearing, and Excavation | 89 | 59 | 49 | 25 |
| Concrete Pouring | 78 | 48 | 38 | 14 |
| Steel Erection | 87 | 57 | 47 | 23 |
| Mechanical | 87 | 57 | 47 | 23 |
| Clean-Up | 89 | 59 | 49 | 25 |

**TABLE 5.7-5**
Noise Levels from Common Construction Equipment at Various Distances

| | Sound Pressure Level (dBA) | | | |
|---|---|---|---|---|
| **Construction Equipment** | **50 5eet** | **1,500 feet** | **1 mile** | **15 mile** |
| Pile Drivers (20,000-32,000 ft-lbs./blow) | 104 | 74 | 64 | 40 |
| Dozer (250-700 hp) | 88 | 58 | 48 | 24 |
| Front End Loader (6-15 cu. yds.) | 88 | 58 | 48 | 24 |
| Trucks (200-400 hp) | 86 | 56 | 46 | 22 |
| Grader (13 to 16 ft. blade) | 85 | 55 | 45 | 21 |
| Shovels (2-5 cu. yds.) | 84 | 54 | 44 | 20 |
| Portable Generators (50-200 kW) | 84 | 54 | 44 | 20 |
| Derrick Crane (11-20 tons) | 83 | 53 | 43 | 19 |
| Mobile Crane (11-20 tons) | 83 | 53 | 43 | 19 |
| Concrete Pumps (30-150 cu. yds.) | 81 | 51 | 41 | 17 |
| Tractor (3/4 to 2 cu. yds.) | 80 | 50 | 40 | 16 |
| Unquieted Paving Breaker | 80 | 50 | 40 | 16 |
| Quieted Paving Breaker | 73 | 43 | 33 | 9 |

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 they are usually short lived.

A steam blow, with a noise level of 110 dBA at 1,000 feet, is an activity, rather than a piece of equipment. This activity is designed to clean scale and other debris from the boiler tubes and steam lines before admitting steam to the steam turbine where the foreign material would damage the blades. A temporary bypass line to the atmosphere is welded into the main steam line upstream of the steam turbine to divert the steam. Several short blows of about two minutes in duration each will be performed per day and the entire process generally takes several weeks. Steam blow silencers can reduce noise levels by about 30 dBA, if necessary given the distance to sensitive receptors. However, since the closest sensitive receptors are 15 miles away, the noise at that point will be reduced to 46 dBA taking only geometric spreading into account. The actual noise level will be lower due to atmospheric absorption and ground effects. Therefore, RSEP does not propose any attenuation for the steam blow process or any hourly restrictions on the process.

Project construction activities may include early morning starts, evening work, and 24 hour operations. This may be required to maintain schedule, provide cooler periods to perform the work, perform 24 hour continuous operations, or may be due to other requirements. Due to the remote location, continuous operation would not adversely affect residential or other uses.

#### 5.7.3.2.2 Construction Vibration

Construction vibrations can be divided into three classes, based on the wave form and its source (see Table 5.7-6). It will be limited to normal construction hours (during the daytime) and will be of short duration; therefore, no mitigation is required.

**TABLE 5.7-6**
Construction Vibrations

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

#### 5.7.3.2.3 Worker Exposure to Noise

Worker exposure levels during construction of the RSEP will vary depending on the phase of the project and the proximity of the workers to the noise-generating activities. Construction noise is potentially harmful to the health and hearing of construction workers. The project will develop a Hearing Protection Plan, which complies with California Occupational Safety and Health Administration (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.

### 5.7.3.3 Operational Impacts

#### 5.7.3.3.1 Worker Exposure

Nearly all components will be specified not to exceed near-field maximum noise levels of 90 dBA at 3 feet (or 85 dBA at 3 feet where available as a vendor standard). Because there are no permanent or semi-permanent workstations located near any piece of noisy plant equipment, no worker's time-weighted average exposure to noise should routinely approach the level allowable under Occupational Safety and Health Act of 1970 (OSHA) guidelines. Nevertheless, signs requiring the use of hearing protection devices will be posted in all areas where noise levels commonly exceed 85 dBA, such as inside acoustical enclosures, and the project will comply with applicable Cal-OSHA requirements. Outdoor levels throughout the plant will typically range from 90 dBA near certain equipment to roughly 65 dBA in areas more distant from any major noise source. Therefore, noise impacts to workers during operation will be less than significant.

#### 5.7.3.3.2 Generator Tie-line and Switchyard Noise Levels

One of the electrical effects of high-voltage generator tie-lines is corona. Corona is the ionization of the air that occurs at the surface of the energized conductor and suspension hardware due to very high electric field strength at the surface of the metal during certain conditions. Corona may result in radio and television reception interference, audible noise, light, and production of ozone. Corona is generally a principle concern with generator tie-lines of 345 kilovolts (kV) and higher. Noise is also generally associated with precipitation during foul weather conditions which occurs infrequently in the project area. The audible noise associated with the 161/230-kV lines in the area will be of the same magnitude upstream and downstream of the RSEP. Because the RSEP will be connected at

161 kV (and possibly 230 kV in the future) voltage level, it is expected that no corona-related design issues will be encountered, and any related impacts will be less than significant.

#### 5.7.3.3.3 Plant Operational Noise Levels

A noise model of the proposed RSEP has been developed using source input noise levels derived from manufacturers' data, previous projects with similar equipment, and information available in the technical literature. The noise emissions from the project have been calculated at the facility fenceline. There are no noise sensitive receptors near enough to the project site to be adversely affected. The noise levels presented represent the anticipated steady-state level from the plant with essentially all equipment operating.

Standard acoustical engineering methods were used in the noise analysis. The computer software noise model, CADNA/A by DataKustik GmbH of Munich, Germany, is very sophisticated and is capable of fully modeling complex industrial plants. The sound propagation factors used in the model have been adopted from ISO 9613-2 *Acoustics – Sound Attenuation During Propagation Outdoors* and VDI 2714 *Outdoor Sound Propagation*. The 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 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, ground effects, and blockages are considered. The sum of all these individual levels is the total plant level at the modeling point.

The A-weighted sound power levels for the major noise sources used in the model are summarized in Table 5.7-7. Some of the specific equipment to be used at the plant has not yet been determined. Therefore, typical noise levels for equipment associated with similar facilities have been assumed.

**TABLE 5.7-7**
Summary of Sound Power Levels Used to Model RSEP Plant Operations

| Plant Component | Sound Power Level, dBA |
|---|---|
| Large Cold Salt Pump, each of 3 | 112 |
| Large Cold Salt Pump Motor, each of 3 | 116 |
| Hot Salt Pump, each of 2 | 110 |
| Hot Cold Salt Pump Motor, each of 2 | 110 |
| Small Cold Salt Pump | 108 |
| Small Cold Salt Pump Motor | 100 |
| Steam Turbine Generator | 111 |
| Boiler Feed Pump, each of 2 | 105 |
| Boiler Feed Pump Motor, each of 2 | 116 |
| Air-Cooled Condenser | 111 |
| Fin Fan Cooler | 102 |
| GSU Transformer | 101 |
| Auxiliary Transformer | 90 |
| Service Transformers, each of 2 | 82 |

The estimated noise levels from facility operation at specific locations at the project fenceline are shown in Table 5.7-8. Contours of estimated noise levels from operation of the RSEP are shown in Figure 5.7-1.

**TABLE 5.7-8**
Estimated Noise from RSEP Plant Operations

| Location | Facility Operations Sound Pressure Level, dBA |
|---|---|
| Nearest Sensitive Receptor, Vidal Junction | 4 |
| North Project Fenceline | 47 |
| South Project Fenceline | 52 |
| East Project Fenceline | 48 |
| West Project Fenceline | 45 |

The maximum noise level attributable to RSEP operation at Vidal Junction, the nearest sensitive receptor, is estimated to be 4 dBA. This estimate is based on a geometric divergence over a distance of 15 miles plus attenuation from atmospheric absorption and ground effects. The uncertainty associated with noise estimates increases with distance. The facility noise level at Vidal Junction could be higher than 4 dBA under certain atmospheric conditions, but is still low enough to be insignificant. The noise from RSEP would therefore contribute only in a very small, and probably immeasurable and unnoticeable way to local ambient noise at Vidal Junction. The maximum facility fenceline noise level is estimated to be 49 dBA and will occur at the south fenceline.

#### 5.7.3.3.4 Tonal Noise

No significant tones are anticipated at the closest noise sensitive receptors in Vidal Junction, 15 miles away. The generation of audible tones is possible. Certain sources within the facility, such as transformers and pump motors have the potential to sometimes produce significant tones. It is RSE's intention to anticipate the potential for audible tones in the design and specification of the facility's equipment and take necessary steps to prevent sources from emitting tones that might be disturbing at the nearest sensitive receptors.

#### 5.7.3.3.5 Ground and Airborne Vibration

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 project. 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 shut down. Given these protective measures, impacts related to ground and airborne vibrations will be less than significant.

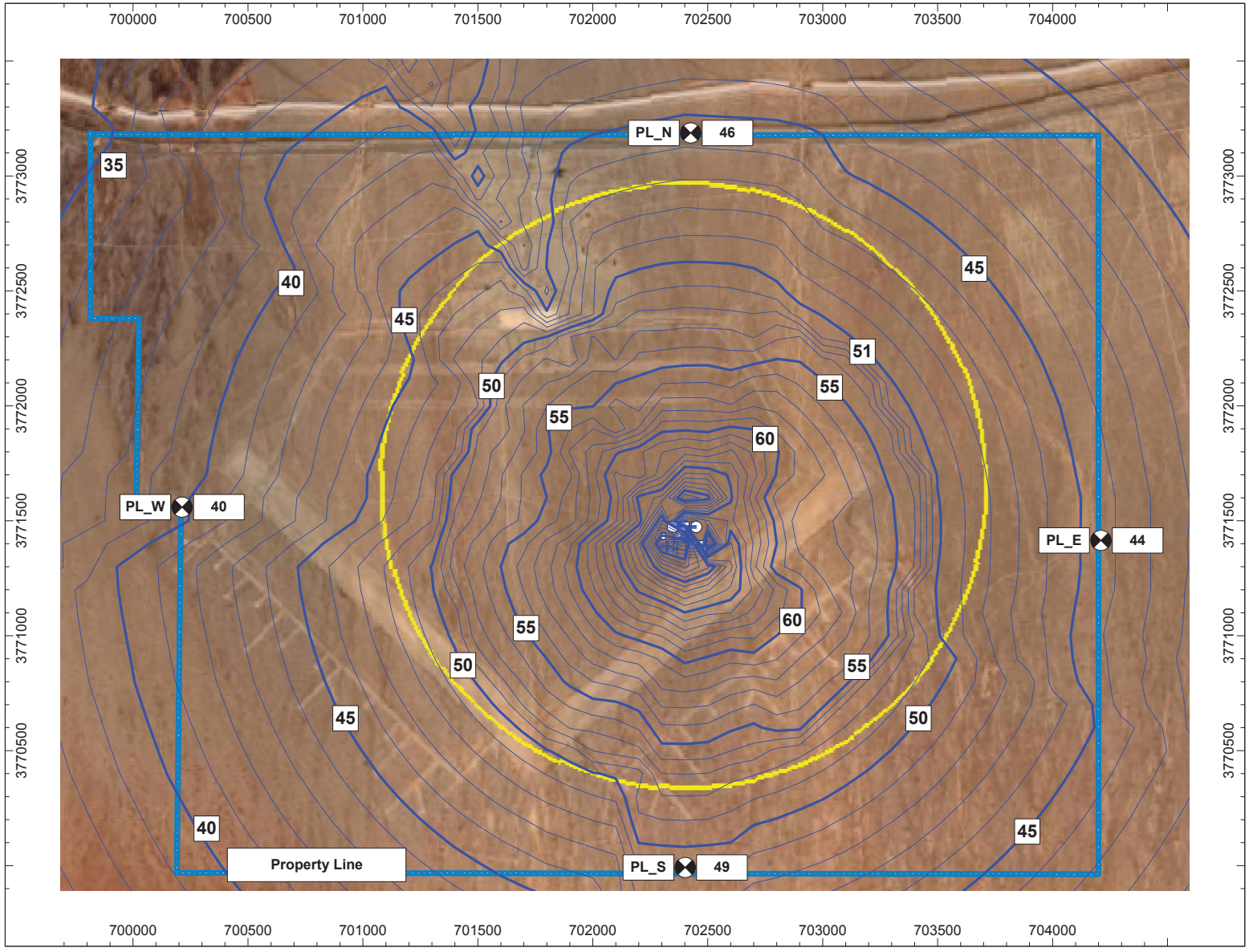


**FIGURE 5.7-1**
**NOISE CONTOURS**
Rice Solar Energy Project
*Riverside County, California*

## 5.7.4 Cumulative Effects

A cumulative impact refers to a proposed 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 (Public Resources Code §21083; CCR, Title 14, §§15064(h), 15065(c), 15130, and 15355). There are currently no projects under active development that would generate significant noise within 15 miles of the RSEP site. Cumulative noise impacts are therefore unlikely to occur.

## 5.7.5 Mitigation Measures

RSE proposes to implement the following measures to ensure that any potential noise impacts of the RSEP are mitigated below the level of significance.

### 5.7.5.1 Noise Hot Line

RSE 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, an automatic answering feature, with date and time stamp recording, will 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 would be maintained until the project has been operational for at least 1 year.

### 5.7.5.2 Noise Complaint Resolution

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.

RSE or authorized agent shall:

- 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.

## 5.7.6 Laws, Ordinances, Regulations, and Standards

Table 5.7-9 presents the LORS that apply to noise.

**TABLE 5.7-9**
Laws, Ordinances, Regulations, and Standards for Noise

| LORS | Requirements/Applicability | Administering Agency | AFC Section Explaining Conformance |
|---|---|---|---|
| **Federal** | | | |
| EPA | Guidelines for state and local governments. | EPA | 5.7.6.1.1 |
| OSHA | Exposure of workers over 8-hour shift limited to 90 dBA. | OSHA | 5.7.6.1.2 |
| **State** | | | |
| Cal-OSHA, 8 CCR Article 105 Sections 095 et seq. | Exposure of workers over 8-hour shift limited to 90 dBA. | Cal-OSHA | 5.7.6.2.1 |
| California Vehicle Code Sections 23130 and 23130.5 | Regulates vehicle noise limits on California highways. | Caltrans, California Highway Patrol and the County Sheriff's Office | 5.7.6.2.2 |
| **Local** | | | |
| California Government Code Section 65302 | Requires local government to prepare plans that contain noise provisions. | California Office of Planning and Research | 5.7.6.3 |
| Riverside County General Plan | The General Plan provides quantitative compatibility goals and policy. | Riverside County | 5.7.6.3 |
| Riverside County Ordinances | The Municipal Code includes quantitative limits on allowable noise for various occupied receptor land uses. | Riverside County | 5.7.6.3 |

## 5.7.6.1 Federal LORS

### 5.7.6.1.1 EPA

Guidelines are available from the EPA (1974) to assist state and local government entities in development of state and local LORS for noise. Because there are local LORS that apply to this project, these guidelines are not applicable.

### 5.7.6.1.2 OSHA

Onsite noise levels are regulated through OSHA. The noise exposure level of workers is regulated at 90 dBA, over an 8-hour work shift to protect hearing (29 Code of Federal Regulations 1910.95). Onsite noise levels will generally be in the 70- to 85-dBA range. Areas above 85 dBA will be posted as high noise level areas and hearing protection will be required. The power plant will implement a hearing conservation program for applicable employees and maintain exposure levels below 90 dBA.

### 5.7.6.2 State LORS

#### 5.7.6.2.1 Cal-OSHA

The California Department of Industrial Relations, Division of Occupational Safety and Health enforces Cal-OSHA regulations, which are the same as the federal OSHA regulations described previously. The regulations are contained in Title 8 of the CCR, General Industrial Safety Orders, Article 105, Control of Noise Exposure, Sections 5095, et seq.

#### 5.7.6.2.2 California Vehicle Code

Noise limits for highway vehicles are regulated under the California Vehicle Code, Sections 23130 and 23130.5. The limits are enforceable on the highways by the California Highway Patrol and the County Sheriff offices.

### 5.7.6.3 Local LORS

The California State Planning Law (California Government Code Section 65302) requires that all cities, counties, and entities (such as multi-city port authorities) prepare and adopt a General Plan to guide community development. The Noise Element in Riverside County's General Plan requires that the noise levels at residential receptors from a stationary noise source not exceed a nighttime 10-minute $L_{eq}$ of 45 dBA and a daytime 10-minute $L_{eq}$ of 65 dBA. Additionally, the Noise Element includes a table of CNELs for various land use categories.

The County's Code, Ordinance No. 847, lists maximum nighttime and daytime sound levels for occupied property by General Plan land use designation. The most restrictive limit that would apply at the nearest occupied receptor in Vidal Junction is a nighttime limit of 45 dBA for residences.

#### 5.7.6.3.1 Riverside County

The Riverside County General Plan Noise Element includes a chart of noise level compatibility for various land use categories. This chart is duplicated in Table 5.7-10.

**TABLE 5.7-10**
Riverside County Land Use Compatibility Guidelines (CNEL or $L_{dn}$)

| Land Use Category | Normally Acceptable[a] | Conditionally Acceptable[b] | Normally Unacceptable[c] | Clearly Unacceptable[d] |
|---|---|---|---|---|
| Residential-Low Density Single Family, Duplex, Mobile Homes | <60 | 55-70 | 70–75 | 75+ |
| Residential, Multiple Family | <65 | 60-70 | 70-75 | 75+ |
| Transient Lodging-Motels, Hotels | <65 | 60-70 | 70-80 | 80+ |
| Schools, Libraries, Churches, Hospitals, Nursing Homes | <70 | 60-70 | 70-80 | 80+ |
| Auditoriums, Concert Halls, Amphitheaters | | <70 | 65-80+ | |
| Sports Arena, Outdoor Spectator Sports | | <75 | 70-80+ | |
| Playgrounds, Neighborhood Parks | <70 | | 68-75 | 73-80+ |

**TABLE 5.7-10**
Riverside County Land Use Compatibility Guidelines (CNEL or $L_{dn}$)

| Land Use Category | Normally Acceptable[a] | Conditionally Acceptable[b] | Normally Unacceptable[c] | Clearly Unacceptable[d] |
|---|---|---|---|---|
| Golf Courses, Riding Stables, Water Recreation, Cemeteries | <75 | | 70-80 | 80+ |
| Office Buildings, Businesses, Commercial, and Professional | <70 | 68-77 | | 75+ |
| Industrial, Manufacturing, Utilities, Agricultural | <75 | 70–80 | | 75+ |

[a]Specified land use is satisfactory, based upon the assumption that any buildings involved are 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. Outdoor areas must be shielded.

[d]New construction or development should generally not be undertaken.

Source: Riverside County 2008 General Plan, Chapter 7: Noise Element, Table N-1

The Riverside County Noise Ordinance includes specific limits for occupied properties as shown in Table 5.7-11.

**TABLE 5.7-11**
Riverside County Ordinance No. 847 Regulating Noise[a]

| Sound Level Standards (dB $L_{max}$) | | | | | |
|---|---|---|---|---|---|
| General Plan Foundation Component | General Plan Land Use Designation | General Plan Land Use Designation Name | Density | Maximum Decibel Level | |
| | | | | Daytime[b] | Nighttime[c] |
| Community Development | EDR | Estate Density Residential | 2 ac | 55 | 45 |
| | VLDR | Very Low Density Residential | 1 ac | 55 | 45 |
| | LDR | Low Density Residential | ½ ac | 55 | 45 |
| | MDR | Medium Density Residential | 2-5 | 55 | 45 |
| | MHDR | Medium High Density Residential | 5-8 | 55 | 45 |
| | HDR | High Density Residential | 8-14 | 55 | 45 |
| | VHDR | Very High Density Residential | 14-20 | 55 | 45 |
| | HTDR | Highest Density Residential | 20+ | 55 | 45 |
| | CR | Retail Commercial | | 65 | 55 |
| | CO | Office Commercial | | 65 | 55 |
| | CT | Tourist Commercial | | 65 | 55 |

**TABLE 5.7-11**
Riverside County Ordinance No. 847 Regulating Noise[a]

| Sound Level Standards (dB $L_{max}$) | | | | | |
|---|---|---|---|---|---|
| **General Plan Foundation Component** | **General Plan Land Use Designation** | **General Plan Land Use Designation Name** | **Density** | **Maximum Decibel Level** | |
| | | | | **Daytime[b]** | **Nighttime[c]** |
| | CC | Community Center | | 65 | 55 |
| | LI | Light Industrial | | 75 | 55 |
| | HI | Heavy Industrial | | 75 | 75 |
| | BP | Business Park | | 65 | 45 |
| | PF | Public Facility | | 65 | 45 |
| | SP | Specific Plan-Residential | | 55 | 45 |
| | SP | Specific Plan-Commercial | | 65 | 55 |
| | SP | Specific Plan-Light Industrial | | 75 | 55 |
| | SP | Specific Plan-Heavy Industrial | | 75 | 75 |
| Rural Community | EDR | Estate Density Residential | 2 ac | 55 | 45 |
| | VLDR | Very Low Density Residential | 1ac | 55 | 45 |
| | LDR | Low Density Residential | ½ ac | 55 | 45 |
| Rural | RR | Rural Residential | 5 ac | 45 | 45 |
| | RM | Rural Mountainous | 10 ac | 45 | 45 |
| | RD | Rural Desert | 10 ac | 45 | 45 |
| Agricultural | AG | Agricultural | 10 ac | 45 | 45 |
| Open Space | C | Conservation | | 45 | 45 |
| | CH | Conservation Habitat | | 45 | 45 |
| | REC | Recreation | | 45 | 45 |
| | RUR | Rural | 20 ac | 45 | 45 |
| | W | Watershed | | 45 | 45 |
| | MR | Mineral Resources | | 75 | 45 |

[a]Limits apply on occupied properties.
[b]Daytime = Hours between 7:00 a.m. and 10:00 p.m.
[c]Nighttime = Hours between 10:00 p.m. and 7:00 a.m.
Source: Riverside County Ordinance No. 847. http://www.clerkoftheboard.co.riverside.ca.us/ords/800/847.pdf

## 5.7.7 Agencies and Agency Contacts

No agencies were contacted directly to specifically discuss project noise.

## 5.7.8 Permits and Permit Schedule

No permits are required; therefore, there is no permit schedule.

## 5.7.9 References

Barnes, J.D., L.N. Miller, and E.W. Wood. 1976. *Prediction of noise from power plant construction*. Bolt Beranek and Newman, Inc. Cambridge, MA. Prepared for the Empire State Electric Energy Research Corporation, Schenectady, NY.

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