

## 3.10. NOISE

The following discussion was prepared with major technical input from Illingworth & Rodkin, Acoustical Consultants. The noise measurement data for this section is attached in a Noise Technical Appendix contained in Appendix E of this EIR.

### 3.10.1. ENVIRONMENTAL SETTING

#### INTRODUCTION

##### Background Information on Acoustics and Noise Measurement

Noise may be defined as unwanted sound. Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. The objectionable effects of noise can be attributed to either pitch or loudness. *Pitch* is the height or depth of a tone or sound, depending on the relative rapidity (frequency) of the 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 may be compared with the height of an ocean wave in that it is a measure of the amplitude of the sound wave.

Sound levels are usually measured and expressed in decibels (dB), a unit of measurement that indicates the relative amplitude of sound pressure. Zero 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 basis. An increase of 10 decibels represents a ten-fold increase in acoustic energy, while an increase of 20 decibels results from 100 times the energy, and a 30 decibel increase results from an energy increase of 1,000 times. There is a relationship between the subjective noisiness or loudness of a sound and its intensity. Each 10-decibel increase in sound level is perceived as approximately a doubling of loudness. Thus noise at zero decibels is barely audible, while noise at 120 to 140 decibels is painful and may cause hearing damage.

There are several methods of characterizing sound. The most common in California is the *A-weighted sound level or dBA*. This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Representative outdoor and indoor noise levels in units of dBA are shown in Table NOI-1. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This energy-equivalent sound/noise descriptor is called  $L_{eq}$ . The most common averaging period is hourly, but  $L_{eq}$  can describe any series of noise events of arbitrary duration. Similarly, noise levels exceeded during 10 percent of the time are expressed as  $L_{10}$ , with noise levels exceeded 50 percent of the time expressed as  $L_{50}$ . Maximum noise levels during a given measurement period are expressed as  $L_{max}$ , while minimum noise levels are expressed as  $L_{min}$ . Additional metrics are described in Table NOI-2.

**TABLE NOI-1**  
**TYPICAL NOISE LEVELS IN THE ENVIRONMENT**

Common Outdoor Noise Source	Noise Level (dBA)	Common Indoor Noise Source
<b>120 dBA</b>		
Jet fly-over at 300 meters		Rock concert
<b>110 dBA</b>		
Impact Pile driver at 20 meters		
<b>100 dBA</b>		
		Night club with live music
<b>90 dBA</b>		
Large truck pass by at 15 meters		
<b>80 dBA</b>		
		Noisy restaurant
		Garbage disposal at 1 meter
Gas lawn mower at 30 meters		Vacuum cleaner at 3 meters
Commercial/Urban area daytime		Normal speech at 1 meter
Suburban expressway at 90 meters		
Suburban daytime		Active office environment
<b>50 dBA</b>		
Urban area nighttime		Quiet office environment
<b>40 dBA</b>		
Suburban nighttime		
Quiet rural areas		Library
<b>30 dBA</b>		
Wilderness area		Quiet bedroom at night
<b>20 dBA</b>		
<b>10 dBA</b>		
<b>0 dBA</b>		
		Threshold of human hearing

Source: Illingworth & Rodkin 2016

**TABLE NOI-2**  
**DEFINITIONS OF ACOUSTICAL TERMS**

Term	Definitions
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. The reference pressure for air is 20 micro Pascals.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micro Pascals (or 20 micro Newtons per square meter), where 1 Pascal is the pressure resulting from a force of 1 Newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micro Pascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and Ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting 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.
Equivalent Noise Level, $L_{eq}$	The average A-weighted noise level during the measurement period.
$L_{max}$ , $L_{min}$	The maximum and minimum A-weighted noise level during the measurement period.
$L_{01}$ , $L_{10}$ , $L_{50}$ , $L_{90}$	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Day/Night Noise Level, $L_{dn}$	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 pm and 7:00 am.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 pm to 10:00 pm and after addition of 10 decibels to sound levels measured in the night between 10:00 pm and 7:00 am.
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.

Source: Illingworth & Rodkin 2016

Noise measurement equipment includes an electrical filter to reflect the fact that human hearing is less sensitive to low and very high frequencies than sound frequencies in the mid-range. The sound levels measured in this manner produce the A-weighted sound levels that are typically expressed as dBA. Unless otherwise noted, all noise levels indicated in this section are A-weighted, although the metric may be abbreviated to dB for simplicity.)

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 added to quiet-time noise events. The *Community Noise Equivalent Level (CNEL)* is a measure of the cumulative noise exposure in a community, with a 5 dB penalty added to evening (7:00 PM to 10:00 PM) noise levels and a 10 dB penalty added to nighttime (10:00 PM to 7:00 AM) noise levels. The *Day/Night Average Sound Level ( $L_{dn}$ )* 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 (I&R 2014b).

### **Vibration**

Vibration is an oscillatory motion through a solid medium, in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (Vdb) is commonly used to measure RMS. The decibel notation acts to compress the range of numbers required to describe vibration. Typically, groundborne vibration generated by heavy equipment or traffic on rough roads attenuates rapidly with distance from the source of the vibration so that potential impact areas are usually confined within short distances (e.g., 200 feet or less) from the source (USDOT 2006).

## **Existing Noise Environment**

### ***Westlands Solar Park***

The primary noise sources in the vicinity of the WSP plan area are: 1) traffic on Avenal Cutoff Road, Lincoln/Gale Avenue, Laurel Avenue, 25<sup>th</sup> Avenue, and Nevada Avenue; 2) agricultural machinery and crop dusters; and 3) the occasional overflights by military aircraft from Naval Air Station Lemoore.

The nearest noise-sensitive receptors in the immediate vicinity of the WSP plan area are located at two ranch complexes situated across county roads from the plan area. These include: 20 single-family dwellings at the Shannon Ranch complex, opposite the west plan area boundary at Avenal Cutoff Road and Lincoln/Gale Avenue; and 2 single-family dwellings at the Stone Land Company Ranch on the south side of Nevada Avenue, approximately 1.5 mile east of Avenal Cutoff Road. Currently, the primary noise sources at both of these ranch complexes include vehicular traffic on Avenal Cutoff Road and Nevada Avenue, respectively, and operational noise from farming and related activities. Both ranches include airstrips which are used infrequently and generate occasional noise from takeoffs and landings by small aircraft.

The Lemoore Naval Air Station is located approximately 5 miles north of the Shannon Ranch and 8 miles north of the Stone Land Company Ranch. While some flight paths for NAS Lemoore pass over the WSP

plan area, no flight paths pass directly over either the Shannon Ranch or the Stone Land Company Ranch. Both ranch complexes are outside the 60 dBA CNEL noise contour for flight paths as mapped in the NAS Lemoore Joint Land Use Study (JLUSPC 2011). It is estimated that both ranch complexes are located on or near the 55 dBA CNEL noise contour from military overflights from NAS Lemoore.

A noise monitoring survey was conducted by Illingworth & Rodkin on December 14 and 15, 2015 to quantify the existing ambient noise environment at the WSP plan area. Three long-term (24-hour) noise measurements and 5 short-term noise measurements were made to complete the noise monitoring survey. Noise measurement locations are shown on Figure NOI-1. The noise monitoring sites were selected to represent the existing noise-sensitive land uses in the immediate vicinity of the project site and to quantify the predominant sources of noise (e.g., traffic along local roadways, agricultural operations, and military overflights).

Long-term noise measurement location LT-1 was located 40 feet from the centerline of West Jayne Avenue (across from 15015 West Jayne Avenue), approximately 3.5 miles west of Avenal Cutoff Road. During the daytime hours of 7 AM to 10 PM, maximum noise levels at this location ranged from 78 to 89 dBA  $L_{max}$  (arithmetic mean – 84 dBA  $L_{max}$ ), and hourly average noise levels ranged from 65 to 74 dBA  $L_{eq}$  (arithmetic mean – 70 dBA  $L_{eq}$ ). Between nighttime hours of 10 PM and 7 AM, maximum noise levels ranged from 40 to 87 dBA  $L_{max}$ , and hourly average noise levels ranged from 58 to 74 dBA  $L_{eq}$ . The day-night average noise level was calculated to be 75 dBA  $L_{dn}$  at this location (CNEL was also 75 dBA), with the higher daily average values reflecting penalties added for evening and nighttime noise.

Long-term noise measurement site LT-2 was located north of the Stone Land Company Ranch complex on Nevada Avenue, approximately 1.4 miles east of Avenal Cutoff Road, and 27 feet from the centerline of Nevada Avenue. During the daytime hours of 7 AM to 10 PM, maximum noise levels at this location ranged from 53 to 92 dBA  $L_{max}$  (arithmetic mean 80 dBA  $L_{max}$ ), and hourly average noise levels ranged from 57 to 69 dBA  $L_{eq}$  (arithmetic mean – 63 dBA  $L_{eq}$ ). Between nighttime hours of 10 PM and 7 AM, maximum noise levels ranged from 33 to 90 dBA  $L_{max}$ , and hourly average noise levels ranged from 53 to 66 dBA  $L_{eq}$ . The day-night average noise level was calculated to be 67 dBA  $L_{dn}$  at this location (CNEL was also 67 dBA).

Long-term noise measurement site LT-3 was located opposite the east frontage of the Shannon Ranch complex on Avenal Cutoff Road, approximately 560 feet south of Lincoln/Gale Avenue, and 81 feet from the centerline of Avenal Cutoff Road. During the daytime hours of 7 AM to 10 PM, maximum noise levels at this location ranged from 75 to 92 dBA  $L_{max}$  (arithmetic mean – 81 dBA  $L_{max}$ ), and hourly average noise levels ranged from 62 to 72 dBA  $L_{eq}$  (arithmetic mean – 69 dBA  $L_{eq}$ ). Between nighttime hours of 10 PM and 7 AM, maximum noise levels ranged from 57 to 100 dBA  $L_{max}$ , and hourly average noise levels ranged from 57 to 73 dBA  $L_{eq}$ . The day-night average noise level was calculated to be 75 dBA  $L_{dn}$  at this location (CNEL was also 75 dBA).

Five short-term noise measurements were made outside the WSP plan area, at the locations of existing clusters of residences that would be subject to increased traffic noise from construction delivery truck traffic associated with solar development within the WSP.

Short-term noise measurement site ST-1 was located on the north side of West Jayne Avenue, approximately 3.5 miles west of Avenal Cutoff Road, where there is a group of 8 single-family dwellings located approximately 100 feet from the roadway centerline. The measured maximum noise level at a distance of 75 feet from the roadway centerline was 59 dBA  $L_{max}$ , and the measured 10-minute average noise level at this location was 51 dBA  $L_{eq}$ .

Short-term noise measurement location ST-2 was on the north side of Nevada Avenue, south of the central portion of the WSP plan area, near the Stone Land Company Ranch complex located approximately 150 feet from the roadway centerline. The measured maximum noise level at a distance of 75 feet from the roadway centerline was 77 dBA  $L_{max}$ , and the measured 10-minute average noise level at this location was 65 dBA  $L_{eq}$ .

Short-term noise measurement location ST-3 was on the north side of West Gale Avenue, approximately 4.5 miles west of Avenal Cutoff Road, where there is a group of 4 single-family dwellings located approximately 150 feet from the roadway centerline. The measured maximum noise level at a distance of 75 feet from the roadway centerline was 80 dBA  $L_{max}$ , and the measured 10-minute average noise level at this location was 61 dBA  $L_{eq}$ .

Short-term noise measurement site ST-4 was located in the center of the Shannon Ranch complex, approximately 430 feet from the centerline of West Gale Avenue and 370 feet from Avenal Cutoff Road. The measured maximum noise level was 63 dBA  $L_{max}$ , and the measured 10-minute average noise level at this location was 53.2 dBA  $L_{eq}$ .

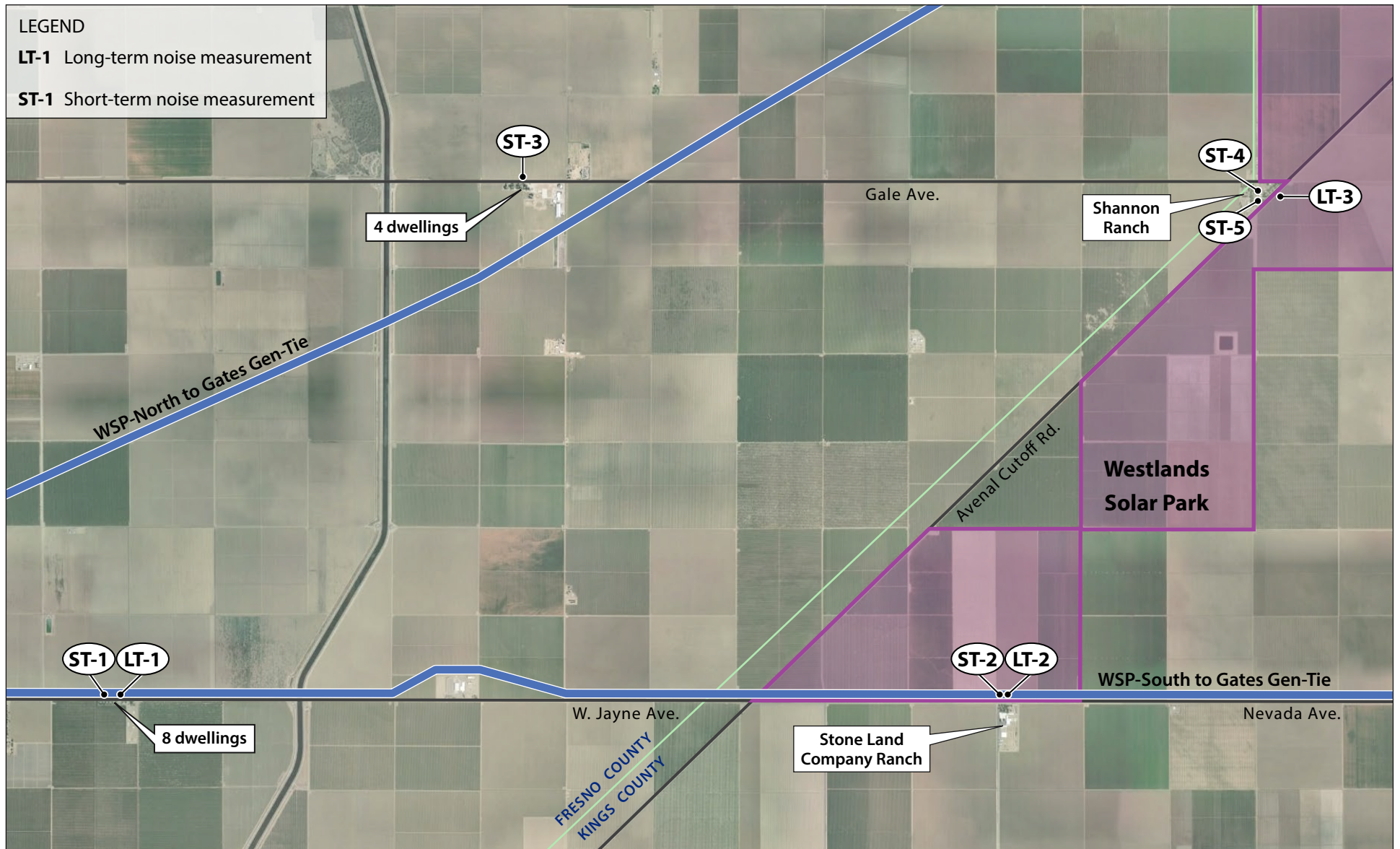
Short-term noise measurement location ST-5 was on the north side of the Avenal Cutoff Road approximately 81 feet from the roadway centerline along the south edge of the Shannon Ranch complex. The measured maximum noise level at ST-5 was 81 dBA  $L_{max}$ , and the measured 10-minute average noise level at this location was 69 dBA  $L_{eq}$ .

## **WSP Gen-Tie Corridors**

### **WSP-North to Gates Gen-Tie**

This planned gen-tie corridor would run parallel to the existing 230 kV Henrietta-Gates transmission line, commencing in the northern portion of the WSP plan area and extending southwestward for approximately 11.5 miles to the Gates Substation on Jayne Avenue. This corridor would pass through sparsely settled agricultural land, crossing over Gale Avenue and SR-269 en route to the Gates Substation.

Ambient noise levels along the transmission corridor would be typical of the rural setting. The predominant noise sources would consist of agricultural machinery, military aircraft from NAS Lemoore, traffic on Gale and Jayne Avenues, and SR-269, and low-level corona discharge noise from the existing transmission lines. The dominant noise source is from traffic along area roadways, so ambient noise levels along the transmission corridor vary depending on proximity to county roads and state highways. In rural settings, noise levels at locations away from paved roadways would typically be less than 50 dBA  $L_{dn}$ . Along the paved roadways that would be crossed by the transmission corridor, ambient noise levels at 100 feet from the road centerlines are follows: 1) Gale Avenue – 61 dBA  $L_{dn}$ ; 2) Jayne Avenue – 65 dBA  $L_{dn}$ ; 3) SR-269 – 69 dBA  $L_{dn}$ .



Source: Illingworth & Rodkin, 2016

Noise Measurement Locations  
Figure NOI-1

*This page intentionally left blank*



There are 3 sensitive residential receptor locations within one mile of the planned transmission corridor. The nearest is a group of 4 dwellings located on Gale Avenue approximately 1,600 feet north of the transmission corridor. The other two receptors consist of single dwellings located 2,000 feet and 3,000 feet from the transmission corridor. The City of Huron is located 2.7 miles northwest of the transmission corridor at its nearest point.

### **WSP-South to Gates Gen-Tie**

This planned gen-tie corridor would run along the north side of Nevada/Jayne Avenue, proceeding from the central area of WSP and extending westward for approximately 11.5 miles to the Gates Substation on Jayne Avenue. This corridor would pass through sparsely settled agricultural land, crossing Avenal Cutoff Road, the San Luis Canal/California Aqueduct, and SR-269 en route to the Gates Substation.

Ambient noise levels along the transmission corridor would be typical of the rural setting. The dominant noise source is from traffic along Nevada/Jayne Avenue, where ambient noise levels would be 59 to 66 dBA  $L_{dn}$  at 100 feet from the roadway centerline.

There are 2 groups of sensitive residential receptors along Nevada/Jayne Avenue in proximity to the planned gen-tie corridor. These include: 2 dwellings at the Stone Land Ranch Company located on the south side of Nevada Avenue, 1.4 miles east of Avenal Cutoff Road, located approximately 165 feet from the gen-tie corridor, and; a group of 8 small dwellings located on the south side of Jayne Avenue, between the California Aqueduct and SR-269, approximately 3.5 miles west of Avenal Cutoff Road, situated approximately 130 feet from the gen-tie corridor.

## **3.10.2. REGULATORY SETTING**

### **Kings County**

#### **Kings County General Plan**

The 2035 Kings County General Plan contains the following goals, objectives and policies related to noise that are relevant to the Westlands Solar Park:

#### ***Noise Element***

#### **B. Non-Transportation Noise Protection**

- |                  |   |
|------------------|---|
| N GOAL B1        | Protect the economic base of Kings County by preventing the encroachment of noise-sensitive land uses into areas affected by existing noise-producing uses. More specifically, to recognize that noise is an inherent byproduct of many land uses, including agriculture, and to prevent new noise-sensitive land uses from being developed in areas affected by existing noise-producing uses. |
| N OBJECTIVE B1.1 | Reduce the potential for exposure of County residents and noise-sensitive land uses to excessive noise generated from Non-Transportation Noise Sources.   |

N Policy B1.1.1: Appropriate noise mitigation measures shall be included in a proposed project design when the proposed new use(s) will be affected by or include non-transportation noise sources and exceed the County's "Non-Transportation Noise Standards" (Table N-8)(next page). Mitigation measures shall reduce projected noise levels to a state of compliance with this standard within sensitive areas. These standards are applied at the sensitive areas of the receiving use.

Table N-8 Non-Transportation Noise Standards Average (Leq) / Maximum (Lmax) <sup>1</sup>				
Receiving Land Use	Outdoor Area <sup>2</sup>		Interiors <sup>3</sup>	Notes
	Daytime	Nighttime	Day & Night	
All Residential	55 / 75	50 / 70	35 / 55	
Transient Lodging	55 / 75	---	35 / 55	4
Hospitals & Nursing Homes	55 / 75	---	35 / 55	5, 6
Theaters & Auditoriums	---	---	30 / 50	6
Churches, Meeting Halls, Schools, Libraries, etc.	55 / 75	---	35 / 60	6
Office Buildings	60 / 75	---	45 / 65	6
Commercial Buildings	55 / 75	---	45 / 65	6
Playgrounds, Parks, etc.	65 / 75	---	---	6
Industry	60 / 80	---	50 / 70	6
<b>Notes:</b> 1. The Table N-8 standards shall be reduced by 5 dB for sounds consisting primarily of speech or music, and for recurring impulsive sounds. If the existing ambient noise level exceeds the standards of Table N-8, then the noise level standards shall be increased at 5 dB increments to encompass the ambient. 2. Sensitive areas are defined acoustic terminology section. 3. Interior noise level standards are applied within noise-sensitive areas of the various land uses, with windows and doors in the closed positions. 4. Outdoor activity areas of transient lodging facilities are not commonly used during nighttime hours. 5. Hospitals are often noise-generating uses. The exterior noise level standards for hospitals are applicable only at clearly identified areas designated for outdoor relaxation by either hospital staff or patients. 6. The outdoor activity areas of these uses (if any), are not typically utilized during nighttime hours.				

N Policy B1.1.3: Noise associated with construction activities shall be considered temporary, but will still be required to adhere to applicable County *Noise Element* standards.

### C. Excessive Noise Prevention

N GOAL C1 Provide sufficient noise exposure information so that existing and potential noise impacts may be effectively addressed in the land use planning and project

review processes, and allow flexibility in the development of infill properties which may be located in elevated noise environments.

N OBJECTIVE C1.1 Ensure the sufficient provision of project and site noise information is available along with alternative mitigation approaches to better inform County staff and land use decision makers.

N Policy C1.1.1: All noise analyses prepared to determine compliance with the noise level standards contained within this *Noise Element* shall be prepared in accordance with the County's "Requirements for Acoustical Analyses Prepared in Kings County" (Table N-9).

Table N-9 Requirements for Acoustical Analyses Prepared in Kings County	
An acoustical analysis prepared pursuant to the <i>Noise Element</i> shall:	
A.	Be the responsibility of the applicant.
B.	Be prepared by qualified persons experienced in the fields of environmental noise assessment and architectural acoustics.
C.	Include representative noise level measurements with sufficient sampling periods and locations to adequately describe local conditions.
D.	Estimate projected future (20 year) noise levels in terms of the Standards of Tables N-7 and N-8, and compare those levels to the adopted policies of the <i>Noise Element</i> .
E.	Recommend appropriate mitigation to achieve compliance with the adopted policies and standards of the <i>Noise Element</i> .
F.	Estimate interior and exterior noise exposure after the prescribed mitigation measures have been implemented.

N Policy C1.1.2: Where noise mitigation measures are required to satisfy the noise level standards of this *Noise Element*, emphasis shall be placed on the use of setbacks and site design, prior to consideration of the use of noise barriers.

## Kings County Code of Ordinances

### Noise Abatement

Article 10 of the Code of Ordinances sets forth requirements and procedures for noise abatement in the County. Section 15-211 (Certain Noise Prohibited) provides as follows:

"No person shall make, suffer, or permit upon any premises owned, occupied or controlled by such person any noises or sounds which are physically annoying to the senses of persons of ordinary sensitivity, or which are so harsh or so prolonged or unnatural or unusual in their use, time or place, as to cause physical discomfort to neighbors or to interfere with the comfortable

use and enjoyment of life or property, or which constitutes a public or private nuisance, within any unincorporated territory of the County of Kings.

The Code of Ordinances provides no further detail on acceptable noise levels or limits on hours for operational or construction noise sources. As such, the General Plan Noise Element requirements and standards (reproduced above) are controlling with respect to quantitative noise thresholds.

## **Fresno County**

### **Fresno County 2000 General Plan**

The Fresno County 2000 General Plan contains the following goals and policies related to noise that are relevant to the WSP Gen-Tie Corridors:

#### ***Health and Safety Element***

- Goal HS-G To protect residential and other noise-sensitive uses from exposure to harmful or annoying noise levels; to identify maximum noise levels compatible with various land use designations; and to develop a policy framework necessary to achieve and maintain a healthful noise environment.
- Policy HS-G.1 Minimize Noise Impacts. The County shall require that all proposed development incorporate design elements necessary to minimize adverse noise impacts on surrounding uses.
- Policy HS-G.4 Acoustical Analysis for New Projects. So that noise mitigation may be considered in the design of new projects, the County shall require an acoustical analysis as part of the environmental review process where:
- Noise sensitive land uses are proposed in areas exposed to existing or projected noise levels that are “generally unacceptable” or higher according to Chart HS-1: “Land Use Compatibility for Community Noise Environments;” (next page)
  - Proposed projects are likely to produce noise levels exceeding the levels shown in the County’s Noise Control Ordinance at existing or planned noise-sensitive land uses.
- Policy HS-G.5 Noise Mitigation for New Projects. Where noise mitigation measures are required to achieve acceptable levels according to land use compatibility or the Noise Control Ordinance, the County shall place emphasis of such measures upon site planning and project design. These measures may include, but are not limited to, building orientation, setbacks, earthen berms, and building construction practices. The County shall consider the use of noise barriers, such as soundwalls, as a means of achieving the noise standards after other design-related noise mitigation measures have been evaluated or integrated into the project.
- Policy HS-G.6 Construction-related Noise. The County shall regulate construction-related noise to reduce impacts on adjacent uses in accordance with the County’s Noise Control Ordinance.
- Policy HS-G.8 Noise Compatibility Standards. The County shall evaluate the compatibility of proposed projects with existing and future noise levels through a comparison to Chart HS-1, “Land use Compatibility for Community Noise Environments.”

Chart HS-1 – Land Use Compatibility for Community Noise Environments

Land Use Category	Community Noise Exposure (Outdoor) Ldn or CNEL, dB							
	50	55	60	65	70	75	80	85
Residential: Low-Density Single-Family, Duplex, Mobile Homes								
Residential: Multiple Family								
Transient Lodging: Motels, Hotels								
Schools, Libraries, Churches, Hospitals, Nursing Homes								
Auditoriums, Concert Halls, Amphitheaters								
Sports Arena, Outdoor Spectator Sports								
Playgrounds, Neighborhood Parks								
Golf Courses, Riding Stables, Water Recreation, Cemeteries								
Office Buildings, Business Commercial and Professional								
Industrial, Manufacturing, Utilities, Agriculture								

## Fresno County Ordinance Code

### Noise Control

Chapter 8.40 of the Ordinance Code sets forth requirements and procedures for noise abatement in the County. The following sections apply to transmission lines:

**Section 8.40.040 – Exterior Noise Standards**

- A. It is unlawful for any person, including an owner, whether through the owner or the owner's agent, lessee, sublessor, sublessee or occupant, at any location within the unincorporated area of the county, to create any noise, or to allow the creation of any noise, on property owned, leased, occupied or otherwise controlled by such person which causes the exterior noise level when measured at any affected single- or multiple-family residence, school, hospital, church or public library situation in either the incorporated or unincorporated area to exceed the noise level standards as set forth in the following table:

Category	Cumulative Number of Minutes in any one-hour time period	Noise Level Standards, dBA	
		Daytime 7a.m. to 10 p.m.	Nighttime 10 p.m. to 7 a.m.
1	30	50	45
2	15	55	50
3	5	60	55
4	1	65	60
5	0	70	65

Section 8.40.060 - Noise Source Exemptions. The following activities shall be exempted from the provisions of this chapter:

- C. Noise sources associated with construction, provided such activities do not take place before six a.m. or after nine p.m. on any day except Saturday or Sunday, or before seven a.m. or after five p.m. on Saturday or Sunday.
- G. Noise sources associated with work performed by private or public utilities in the maintenance or modification of its facilities.

### 3.10.3. ENVIRONMENTAL IMPACT ANALYSIS

#### SIGNIFICANCE CRITERIA

Based on the State CEQA Guidelines, Appendix G, the project would be considered to have a significant noise impact if it would:

- Expose people to or generate noise levels in excess of standards established in the local general plan, noise ordinance, or applicable standards of other agencies. (Impacts NOI-1, NOI-2, NOI-3, NOI-5, NOI-6, NOI-7, NOI-8, and NOI-9)
- Expose people to or generate excessive groundborne vibration or groundborne noise levels. (Impact NOI-5)

- c. Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. (Impacts NOI-5, NOI-6, NOI-7, and NOI-8)
- d. Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. (Impacts NOI-1, , NOI-2, NOI-3, NOI-4, and NOI-10)
- e. For projects within an area covered by an airport land use plan or within two miles of a public airport or public use airport when such an airport land use plan has not been adopted, or within the vicinity of a private airstrip, expose people residing or working in the project area to excessive aircraft noise levels. (Impact NOI-10)
- f. For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels. (Impact NOI-10)

CEQA does not define the noise level increase that is considered substantial. However, the General Plans of Kings and Fresno Counties all apply the same noise increment thresholds for noise generated by new transportation projects, as follows:

<u>Pre-Project Noise Environment (<math>L_{dn}</math>)</u>	<u>Significant Increase</u>
Less than 60 dBA	5+ dBA
60 – 65 dBA	3+ dBA
Greater than 65 dBA	1.5+ dBA

The above noise increment thresholds are intended by the respective counties to apply to noise generated by new transportation projects, which does not encompass increased traffic volumes on existing roadways that are not proposed for capacity enhancing projects. However, for purposes of this analysis, and in the absence of adopted noise thresholds for traffic volume increases, the above noise increment thresholds are applied as significance criteria for increased transportation noise on existing roadways. It is noted that in Fresno County these noise increment thresholds would only apply to permanent transportation noise sources since construction noise sources, including construction traffic, are exempt from these counties' noise standards. In Kings County, these thresholds would apply to both temporary and permanent transportation noise sources, since construction activity is not exempt from the Kings County noise standards.

## IMPACTS AND MITIGATION

### ***Construction Noise***

#### **Impact NOI-1. Noise from Conventional Construction Activities**

**Westlands Solar Park.** Noise levels would be temporarily elevated during construction activities associated with WSP solar development. (*Less-than-Significant Impact*)

**WSP Gen-Tie Corridors.** Noise levels would be temporarily elevated during construction activities associated with the WSP gen-tie projects. *(Less-than-Significant Impact)*

*This impact analysis addresses significance criteria 'a' and 'd' above.*

### ***Westlands Solar Park***

Construction activities associated with WSP solar development would take place over a period of approximately 15 years. The activities would include: site clearing and grading; installation of solar arrays and electrical infrastructure; construction of Operations and Maintenance facilities; installation of on-site transmission lines; and construction of on-site substations. It is expected that solar generating facilities (SGFs) within the WSP plan area would be constructed sequentially, although a worst-case scenario would involve the concurrent construction of two 250-MW SGFs on adjacent sites within WSP.

As discussed in Section 3.10.2. *Regulatory Context* above, the Kings County Code of Ordinances does not contain specific noise level limits for construction noise. The Kings County General Plan Noise Element does contain noise standards, and states in Policy B.1.1.3 that temporary construction activity is required to adhere to those noise standards. The applicable standards, set forth in Table N-8 of the Noise Element (reproduced in Section 3.10.2. *Regulatory Context* above), establish exterior daytime noise limits for residential uses of 75  $L_{max}$  and 55  $L_{eq}$  (i.e.,  $L_{max}$  = maximum instantaneous noise;  $L_{eq}$  = average noise during the noisiest hour). Table N-8, footnote 1 states that “[i]f the existing ambient noise level exceeds the standards of Table N-8, then the noise level standards shall be increased at 5 dB increments to encompass the ambient.” As shown in Table NOI-3 (next page), there are several locations where the ambient noise levels at the residential receptor locations exceed the applicable Noise Element standard, which results in an incremental adjustment in the standard to encompass the ambient. (The locations of the affected dwellings are shown in Figure NOI-1.) The adjusted noise standards shown in Table NOI-3 represent the significance thresholds for determining whether residential receptors located near WSP construction areas would be subject to significant noise impacts.

The determination of whether construction activity would result in a significant noise impact depends on several factors, including: the noise levels generated by various pieces of construction equipment; the number of pieces of equipment in operation in a given area; the timing and duration of noise generating activities; and the distance between construction noise sources and noise sensitive receivers. Typical noise levels from construction equipment are shown in Table NOI-4 on the next page.

#### **Installation of Solar Arrays**

Noise generated by construction would be the greatest during site grading, excavation for underground cables, and installation of support posts for solar arrays. The equipment that would typically be used during grading and site preparation includes dozers, graders, compactors, and trucks, which produce maximum noise levels ranging from 80 to 85 dBA at 50 feet (see Table NOI-4). The typical average hourly noise levels from all construction equipment during grading and construction would range from 65 to 85 dBA  $L_{eq}$  at a distance of 50 feet from active construction areas.

As mentioned, pile drivers would be used to install support posts for the solar arrays. Due to the wide range of equipment types that are available for post driving, and because of the high noise levels associated with conventional impact pile drivers, a focused discussion on pile drivers is warranted here.



TABLE NOI-3

## CONSTRUCTION NOISE THRESHOLDS FOR RESIDENTIAL RECEPTOR LOCATIONS

Residential Receptor Location	Hourly Average Noise (dBA L <sub>eq</sub> )				Maximum Noise (dBA L <sub>max</sub> )			
	Noise Element Standard	Ambient Noise	Adjustment	Adjusted Noise Standard	Noise Element Standard	Ambient Noise	Adjustment	Adjusted Noise Standard
Shannon Ranch w/s Avenal Cutoff Road	55	68	+15	<b>70</b>	75	79	+5	<b>80</b>
Shannon Ranch s/s Lincoln Ave/ Gale Ave	55	67	+15	<b>70</b>	75	77	+5	<b>80</b>
Shannon Ranch south end of 28 <sup>th</sup> Ave, w/s Avenal Cutoff Road	55	66	+15	<b>70</b>	75	76	+5	<b>80</b>
Stone Land Co. s/s Nevada Ave, east of Avenal Cutoff Road	55	57	+5	<b>60</b>	75	76	+5	<b>80</b>

## Notes:

- 1) Adjusted noise standards are shown in **bold**.
- 2) See Figure NOI-1 for locations of residential receptors.

Source: Illingworth & Rodkin

It is anticipated that support posts for the solar arrays would be installed using vibratory (hydraulic) post drivers, which do not produce the loud impulsive sounds associated with impact pile drivers, which produce noise levels of up to 105 dBA at 50 feet. Overall noise levels from vibratory drivers are substantially lower than those generated by impact pile drivers. Depending on the model and make of the hydraulic driver, and the size of the piles to be driven, measured noise levels from a single vibratory driver range from 72 to 95 dBA at a distance of 50 feet.<sup>1</sup>

The range in noise levels reflects the range in equipment size which varies from heavy-duty pile drivers for building piles and marine piers, to light-duty pile drivers for driving smaller posts. The support piles for the solar arrays would be relatively small diameter (4-inch) steel poles or H-beams, which would be installed by lighter-duty truck- or tractor-mounted vibratory drivers. The type of vibratory pile drivers most likely to be utilized would generate noise levels of 72 dBA at 50 feet (SLO County 2010, App. 14). Given that the solar arrays to be installed within WSP would be very similar to those at the Topaz Solar Farm, the noise data from the Topaz EIR is applicable to the analysis of noise impacts from pile drivers that would be utilized within the WSP plan area. To present a worst-case scenario for purposes of analysis, it is assumed that up to 5 pile drivers may be utilized to install support posts in the same vicinity. It is estimated that the combined noise level generated by such pile drivers operating in the same vicinity would be up to 79 dBA L<sub>max</sub> at 50 feet. The hourly average noise generated by the 5 vibratory drivers operating simultaneously in the same area would be about 72 dBA L<sub>eq</sub>.

<sup>1</sup> FirstSolar's Topaz EIR (SLO County 2010) p. B-38 states that "During post driving tests on another First Solar construction site in August 2009, noise meter readings were approximately 103 dB at about 7 feet from the post driver and 66 dB at about 100 feet from the post driver. Topaz Appendix 14, Attachment 1, indicates Truck Mounted Post Driver (66 dB at 100 feet), 72 dBA at 50 feet, and 69.8 dBA Leq at 50 feet.

**TABLE NOI-4**  
**CONSTRUCTION EQUIPMENT – NOISE EMISSION LEVELS (AT 50 FEET)**

<b>Equipment Category</b>	<b>L<sub>max</sub> Level (dBA)<sup>1,2</sup></b>	<b>Impact or Continuous</b>
Arc Welder	73	Continuous
Auger Drill Rig	85	Continuous
Backhoe	80	Continuous
Bar Bender	80	Continuous
Boring Jack Power Unit	80	Continuous
Chain Saw	85	Continuous
Compressor <sup>3</sup>	70	Continuous
Compressor (other)	80	Continuous
Concrete Mixer	85	Continuous
Concrete Pump	82	Continuous
Concrete Saw	90	Continuous
Concrete Vibrator	80	Continuous
Crane	85	Continuous
Dozer	85	Continuous
Excavator	85	Continuous
Front End Loader	80	Continuous
Generator	82	Continuous
Generator (25 KVA or less)	70	Continuous
Gradall	85	Continuous
Grader	85	Continuous
Grinder Saw	85	Continuous
Horizontal Boring Hydro Jack	80	Continuous
Hydra Break Ram	90	Impact
Impact Pile Driver	105	Impact
Insitu Soil Sampling Rig	84	Continuous
Jackhammer	85	Impact
Mounted Impact Hammer (hoe ram)	90	Impact
Paver	85	Continuous
Pneumatic Tools	85	Continuous
Pumps	77	Continuous
Rock Drill	85	Continuous
Scraper	85	Continuous
Slurry Trenching Machine	82	Continuous
Soil Mix Drill Rig	80	Continuous
Street Sweeper	80	Continuous
Tractor	84	Continuous
Truck (dump, delivery)	84	Continuous
Vacuum Excavator Truck (vac-truck)	85	Continuous
Vibratory Compactor	80	Continuous
Vibratory Pile Driver	72 - 95	Continuous
All other equipment with engines larger than 5 HP	85	Continuous

**Footnotes**

<sup>1</sup> Measured at 50 feet from the construction equipment, with a “slow” (1 sec.) time constant.

<sup>2</sup> Noise limits apply to total noise emitted from equipment and associated components operating at full power while engaged in its intended operations.

<sup>3</sup> Portable Air Compressor rated at 75 cfm or greater and operates at greater than 50 psi.

Source: Illingworth & Rodkin

Since the noise levels generated by the multiple vibratory drivers (e.g., 79 dBA  $L_{\max}$ ) would be lower than the noise generated by multiple pieces of equipment operating simultaneously during site preparation and grading (e.g., 85 dBA  $L_{\max}$ ), the worst-case grading noise levels are considered to be representative of worst-case noise conditions for purposes of this construction noise impact analysis.

The nearest sensitive receivers to the construction activity within the WSP plan area would be 8 of the 20 single-family dwellings within the Shannon Ranch complex at the southwest corner of Avenal Cutoff Road and Lincoln/Gale Avenue, and the 2 single-family residences at the Stone Land Company Ranch on the south side of Nevada Avenue, 1.4 miles east of Avenal Cutoff Road. These residences would be subject to varying noise levels depending on their distance from the nearest construction noise, as discussed previously. Also, since ambient noise levels at some residences are higher than at others, the noise standards applicable to the dwellings would vary, as shown in Table NOI-4. At the Shannon Ranch, there are three discrete groups of dwellings facing the plan area where noise conditions vary from one group to the other; e.g., 5 dwellings facing east along Avenal Cutoff Road; 2 dwellings facing north along Lincoln/Gale Avenue; and 1 dwelling at the south end of 28<sup>th</sup> Avenue just north of Avenal Cutoff Road. The noise impact analysis for the Shannon Ranch dwellings is broken down to address each of the 3 dwelling groups separately. (The remaining 12 dwellings in the western portion of the Shannon Ranch complex would be at least 300 feet from the nearest WSP construction and would not be subject to significant noise impacts, as discussed below.) At the Stone Land Company Ranch, the 2 affected dwellings are similarly situated and thus are not considered separately from each other. The potential construction noise impacts that would occur at each residential receptor location are addressed below and summarized in Table NOI-5 (next page).

As shown in Table NOI-5 (next page), the noise data applicable to the affected dwellings is expressed in terms of two different metrics – maximum instantaneous noise ( $L_{\max}$ ) and hourly average noise ( $L_{\text{eq}}$ ). This reflects the metrics used to establish the Kings County noise standards contained in Noise Element Table N-9 (reproduced in Section 3.10.2. *Regulatory Context* above). As shown in Table NOI-5, the applicable  $L_{\text{eq}}$  standards are more stringent in effect than the  $L_{\max}$  standards in that greater distances from construction activity are required under the  $L_{\text{eq}}$  metric to meet the applicable noise standard. (This is due to the fact that the primary ambient noise source is traffic on nearby roadways. Since this traffic noise is relatively constant, the average hourly noise level [ $L_{\text{eq}}$ ] will be relatively close to the maximum noise level [ $L_{\max}$ ], i.e., within about 10 dBA. By comparison, the nominal County standards for  $L_{\text{eq}}$  and  $L_{\max}$  are 20 dBA apart. In addition, the high ambient traffic noise results in a substantial upward adjustment to the applicable  $L_{\text{eq}}$  standard [i.e., by as much as 15 dBA] whereas the upward adjustment for the  $L_{\max}$  standard is only 5 dBA, which makes the adjusted  $L_{\text{eq}}$  relatively more stringent than the  $L_{\max}$  metric. As shown in Table NOI-3, the result here is that  $L_{\text{eq}}$  metric becomes more stringent than the  $L_{\max}$  standard in absolute terms, in that a greater distance from the noise source is required to meet the standard.) Therefore, compliance with the  $L_{\text{eq}}$  standards would automatically result in compliance with the  $L_{\max}$  standards. For simplicity, the following discussion of construction noise impacts is therefore expressed only in terms of the  $L_{\text{eq}}$  standard since it results in a more conservative analysis of potential noise impacts; i.e., there are no scenarios under which application of the  $L_{\max}$  standard would result in a finding of greater noise impact. In other words, the  $L_{\max}$  standard is encompassed by the  $L_{\text{eq}}$  standard for purposes of this CEQA analysis of construction noise impacts. However, in cases where the  $L_{\text{eq}}$  standard is exceeded, the  $L_{\max}$  is also considered in making the determination of significance.

**TABLE NOI-5**  
**CONSTRUCTION NOISE LEVELS AT RESIDENTIAL RECEPTOR LOCATIONS**

Residential Receptor Location	Distance between nearest dwelling and WSP boundary (feet)	Hourly Average Noise Level – $L_{eq}$			Maximum Noise Level – $L_{max}$		
		Highest noise level at dwelling façade (based on project noise of 81 dBA $L_{eq}$ @ 50 feet)	Applicable Standard (dBA $L_{eq}$ )	Distance where standard is met (feet)	Highest noise level at dwelling façade (based on project noise of 85 dBA $L_{max}$ @ 50 feet)	Applicable Standard (dBA $L_{max}$ )	Distance where standard is met (feet)
Shannon Ranch w/s Avenal Cutoff Road	170	70	70	170	74	80	90
Shannon Ranch s/s Lincoln Ave/ Gale Ave	65	<b>79</b>	70	170	<b>83</b>	80	90
Shannon Ranch south end 28 <sup>th</sup> Ave, w/s Avenal Cutoff Rd.	250	67	70	170	71	80	90
Stone Land Co. Ranch s/s Nevada Ave, east of Avenal Cutoff Road	180	<b>70</b>	60	530	74	80	90

**Notes:**

- 1) Noise standards adjusted to encompass ambient noise levels, per Kings County Noise Element (see Table NOI-3).
- 2) Daytime standards applied only since no construction is anticipated during nighttime hours.
- 3) **Bold** numbers indicate exceedances of applicable noise standard.
- 4) See Figure NOI-1 for locations of residential receptors.
- 5) 1 dBA of excess attenuation would be expected at Shannon Ranch receptors (w/s Avenal Cutoff Road due to intervening dense vegetation).

Source: Illingworth & Rodkin

The potential construction noise impacts at each of the residential receptor locations are discussed in detail below and summarized in Table NOI-5 above.

### Shannon Ranch

Dwelling Group 1 – West Side of Avenal Cutoff Road – This includes the 5 residences fronting on Avenal Cutoff Road, except for the dwelling on the corner of Lincoln/Gale Avenue, which is included in the second group discussed below. The front facades of these dwellings are all approximately 170 feet from the nearest WSP plan area boundary across Avenal Cutoff Road and are buffered by dense vegetation, which is conservatively estimated to provide about 1 dBA of excess attenuation (Bies 2003). Given the relatively high ambient noise levels of 68 dBA  $L_{eq}$  at the dwelling facades, the applicable noise standard increases to 70 dBA  $L_{eq}$  pursuant to the Kings County Noise Element. When grading and construction activity is nearest to these dwellings, the highest average hourly noise levels would be 70 dBA  $L_{eq}$ , which would meet the applicable threshold of 70 dBA  $L_{eq}$ . Maximum noise levels would reach 74 dBA  $L_{max}$  at this location and would be well under the applicable maximum noise standard of 80 dBA  $L_{max}$ . All construction activity beyond 170 feet of these dwellings would comply with the County's noise standards, and the noise impact to these receptors would be *less than significant*.

Dwelling Group 2 – South Side of Lincoln/Gale Avenue – This group consists of two residences, located on the south side Lincoln/Gale Avenue just west of Avenal Cutoff Road. (Note: Lincoln Avenue becomes Gale

Avenue at the Fresno County line 900 feet to the west.) The façade of the dwelling nearest to the road right-of-way is 65 feet from the WSP plan area boundary across Lincoln Avenue. Given that the ambient noise level of 67 dBA  $L_{eq}$  at these building facades exceeds the County's nominal 55 dBA  $L_{eq}$  standard, the applicable noise standard increases by 15 dBA to 70 dBA  $L_{eq}$  pursuant to the Kings County Noise Element. When grading and construction activity are nearest to these dwellings, the highest average hourly noise levels would be 79 dBA  $L_{eq}$ , which exceeds the applicable threshold by 9 dBA. However, the noise standard would be violated only by construction activity that occurs within 170 feet of this dwelling, which would apply to construction within the southern-most 105 feet of nearest part of the plan area. This area would represent a very small portion of the solar PV development that would occur within the plan area, and the grading and construction activity along this edge of the project would be temporary and brief. Since the County's 35-foot setback requirement would apply, the nearest structures, e.g., solar arrays, transformer/inverter enclosures, O&M facilities, would be located at least 100 feet from these dwellings. Within the 35-foot setback area, only light grading for unpaved perimeter driveways and installation of boundary fencing would occur. Thus, the heaviest grading and construction activity that would adversely affect these 2 dwellings would occur in a 70-foot wide band located between 100 and 170 feet from the dwelling facades. The total construction area that would generate noise in excess of 70 dBA  $L_{eq}$  at these nearest two residences would be less than 0.5 acres. Given that the typical installation pace for solar arrays is approximately 2 days per MW (0.8 days for site preparation, and 1.2 days for installation of arrays), and since each MW of solar arrays occupies a gross area of about 10 acres, this indicates an overall construction pace of 5 acres per day. Therefore, the duration of construction within the 0.5-acre area where construction noise would result in noise levels of 70 dBA  $L_{eq}$  or more would be less than ½ day. All construction activity beyond 170 feet of these dwellings would comply with the County's noise standards. Given the small number of sensitive receptors (2 dwellings) that would be temporarily affected, and the very brief duration of the loudest construction activity in proximity to the residential receptors, the noise impact to these receptors would be *less than significant*.

Dwelling Group 3 – West Side of 28<sup>th</sup> Avenue – This group consists of a single residence at the southern end of the north-south oriented row of single-family homes along the west side of 28<sup>th</sup> Avenue in the interior of the Shannon Ranch Complex. The façade of this dwelling is 250 feet from the nearest WSP boundary across Avenal Cutoff road to the southeast. Given the relatively high ambient noise level of 66 dBA  $L_{eq}$  at this building facade, the applicable noise standard increases to 70 dBA  $L_{eq}$  pursuant to the Kings County Noise Element. During times when construction activity would be nearest to these dwellings, the highest average hourly noise levels would be 70 dBA  $L_{eq}$  or lower. These noise levels would not exceed the applicable County noise standard of 70 dBA  $L_{eq}$ . Therefore, the noise impact upon these residences due to construction activity within the WSP plan area would be *less than significant*.

Dwellings in Western Portion of Shannon Ranch Complex – There are 12 additional single-family dwellings in the western interior portion of the Shannon Ranch complex. These residences are located between 305 feet and 670 feet from the nearest boundary of the WSP plan area. During times when construction activity would be nearest to these dwellings, the highest average hourly noise levels would be 70 dBA  $L_{eq}$  or lower. These noise levels would not exceed the applicable County noise standard of 70 dBA  $L_{eq}$ . Therefore, the noise impact upon these residences due to construction activity within the WSP plan area would be *less than significant*.

#### **Stone Land Company Ranch**

There are 2 single-family residences at the Stone Land Company Ranch on the south side of Nevada Avenue, 1.4 miles east of Avenal Cutoff Road. The front facades of both of these dwellings are approximately 180 feet from the WSP plan area boundary across Nevada Avenue. Given that the ambient

noise level of 57 dBA  $L_{eq}$  at the dwelling facades exceeds the County's nominal noise standard of 55 dBA  $L_{eq}$ , the applicable noise standard increases to 60 dBA  $L_{eq}$  pursuant to the Kings County Noise Element. When grading and construction activity is nearest to these dwellings, the highest average hourly noise levels would be 70 dBA  $L_{eq}$ , which exceeds the applicable threshold by 10 dBA. However, the maximum noise levels of 74 dBA  $L_{max}$  at this location would be well under the applicable maximum noise standard of 80 dBA  $L_{max}$ . The  $L_{eq}$  noise standard would potentially be violated by construction activity that occurs within 530 feet of these dwellings. In this context, it is important to note that the WSP-South to Gates Gen-Tie transmission line would run along the north side of Nevada Avenue opposite the Stone Land Company Ranch. Assuming a 350-foot wide transmission right-of-way, as planned, the nearest WSP solar development would occur 530 feet from the subject dwellings. [The noise impacts associated with construction of the gen-tie along Nevada Avenue are addressed below.] Thus, the heaviest grading and construction activity in proximity to these 2 dwellings would occur at least 530 feet from the dwelling facades. All construction activity beyond 530 feet of these dwellings would comply with the County's noise standards. As such, the noise levels at the 2 affected dwellings would not exceed the County's  $L_{eq}$  standard but would be well below the County's  $L_{max}$  standard. Therefore, the noise impact to these receptors due to WSP solar development would be *less than significant*.

### **WSP Gen-Tie Corridors**

It is anticipated that the gen-tie projects would be constructed in different years with each gen-tie line requiring less than one year to complete construction. The general sequence of activities for construction of the gen-tie projects would involve the following steps: clearing of ROW and staging areas; construction of access driveways; installation of tower footings and structures; and conductor stringing. These construction activities would proceed in step-wise fashion from one end of the gen-tie corridor to the other, and as such the duration of construction at any given location would be relatively brief.

The noisiest construction activity would occur during site preparation of tower sites and staging areas, when most construction equipment would be used. This equipment typically includes dozers, graders, compactors, auger drill rigs, and trucks, which produce maximum noise levels ranging from 80 to 85 dBA at 50 feet. The maximum noise level generated by several pieces of equipment operating continuously at a distance of 50 feet would be about 90 dBA. Throughout the gen-tie corridors, most residential receptors would be located at least 500 feet from construction activity, except along the WSP-South to Gates Gen-Tie where there are 10 single-family dwellings located approximately 125 feet to 180 feet from the edge of the corridor.

At the Stone Land Company Ranch in Kings County, where the 2 existing residences would be located at least 180 feet from the southern gen-tie corridor, where the maximum noise levels would be up to 78 dBA, given that maximum noise levels would decrease at a rate of 6 dBA per doubling of distance from a point source. (Note: These calculated noise levels apply to conventional construction equipment and techniques. The potential noise levels associated with special construction techniques, such as helicopter construction, are discussed under Impact NOI-2 below.) As discussed above and shown in Table NOI-5, the Kings County Noise Element standard for maximum noise levels is 80 dBA  $L_{max}$  at the Stone Land Company Ranch. Therefore, the maximum noise levels of 78 dBA that would occur at the 2 residential facades at the ranch would not exceed the applicable Kings County noise standard, and the noise impact from gen-tie line construction near the ranch dwellings would be *less than significant*.

At the series of 8 dwellings on the south side of Jayne Avenue in Fresno County, the nearest existing dwellings would be 125 feet from the southern gen-tie corridor, where the maximum noise levels would be up to 83 dBA. The Fresno County Municipal Code establishes maximum permissible exterior noise

levels of 70 dBA during daytime hours of 7 AM to 10 PM. Therefore, construction activity in proximity to the nearest residence could exceed the maximum permissible noise level by 13 dBA if a gen-tie monopole were constructed directly opposite an existing dwelling. However, it is expected that the nearest monopoles would be sited at least 250 feet from the nearest dwelling, where maximum noise levels would be up to 77 dBA. However, almost all gen-tie construction would occur at distances of 600 feet or more from the affected residences, where maximum noise levels would be 70 dBA or lower, and within Fresno County noise standards. In addition, construction noise sources are exempt from the Fresno County noise standards, provided the construction activities do not take place before 6 AM or after 9 PM on weekdays, or before 7 AM or after 5 PM on Saturdays or Sundays (see Section 3.10.2. *Regulatory Context* above). It is anticipated that transmission construction would occur only within the hours prescribed in the ordinance. However, if nighttime construction is determined to be necessary (e.g., during conductor stringing over State highways), a variance would be required from Fresno County prior to such nighttime construction in proximity to any residences. Such a variance would be conditioned to minimize noise and nuisance effects. Since construction of the gen-tie line segments in Fresno County would not violate the noise provisions of the Fresno County Municipal Code, the impact from transmission construction near sensitive noise receptors within the County would be *less than significant*.

As mentioned, gen-tie construction activities would move along the gen-tie corridors and would only take place near any individual receptor for a relatively brief period. Given that maximum construction noise levels would not violate the noise provisions applicable in either county where the gen-tie lines would be constructed, and that construction activity duration at any given location along the transmission corridors would be short, the noise impacts associated with conventional construction equipment and techniques would be *less-than-significant*.

### **Mitigation Measures:**

**Westlands Solar Park.** No mitigation is required.

**WSP Gen-Tie Corridors.** No mitigation is required.

---

### **Impact NOI-2. Noise from Helicopter Construction**

**Westlands Solar Park.** No helicopter construction is anticipated within the WSP plan area; therefore, no noise impacts would occur as a result of helicopter use. (*No Impact*)

**WSP Gen-Tie Corridors.** If helicopter construction is employed for gen-tie line construction at road crossings or canal crossings, temporary increases in noise levels at sensitive receiver locations may result. (*Less-than-Significant Impact*)

*This impact analysis addresses significance criteria 'a' and 'd' above.*

### **Westlands Solar Park**

It is anticipated that all construction within the WSP plan area can be accomplished by conventional ground-based equipment, and that helicopter construction would not be employed. Although helicopters are sometimes used for conductor stringing conductor pilot lines where on-site transmission lines cross arterial roadways, this would not occur within WSP since Kings County does not permit aerial crossings of arterial roads by transmission lines would requires any such crossings to be underground (e.g., Avenal Cutoff Road, Laurel Avenue, Nevada Avenue). Even if overhead crossings of County roads were permitted, the roads are relatively narrow and conductors could be readily strung with cranes to span the roadways. Due to the generally favorable access conditions throughout the WSP site, it is not anticipated that helicopters would be used in construction of internal power collection or gen-tie lines. As such, there would be *no noise impacts* would occur as a result of helicopter construction within the within the WSP plan area.

### **WSP Gen-Tie Corridors**

Within the planned transmission corridors, helicopter construction may be employed to cross the San Luis Canal/California Aqueduct or SR-269, which may involve spans that are too long to be strung using cranes. However, due to the relatively high cost of helicopter construction compared to conventional construction techniques, it is expected that helicopters would be used only if no other options are available.

If used in conductor stringing, the helicopter would lift the pilot string over the sensitive feature for placement on the tower structures on either side. In both instances, the helicopter tasks would be performed in less than one day.

The operation of a helicopter during construction would generate maximum noise levels of approximately 80 dBA at 200 feet (USBLM 2013, p. 3.23-11). At a distance of 400 feet, the helicopter noise would decrease to approximately 74 dBA, based on decreases of 6 dBA per doubling of distance from a point source. At a distance of 700 feet, helicopter noise would decrease to about 70 dBA. Thus at a distance of 400 feet, noise levels would meet the maximum permissible daytime noise levels of 75 dBA in Kings County, and beyond 700 feet noise levels would not exceed the maximum permissible daytime noise levels of 70 dBA in Fresno County for residential receivers (this ignores the exemptions for daytime construction noise in Fresno County).

As mentioned, the most likely instances where helicopter construction has a potential to be required is in crossing the San Luis Canal/California Aqueduct and/or SR-267. The nearest existing dwellings to both of these features are the 8 dwellings along the south side of Jayne Avenue. The California Aqueduct is at approximately 1 mile east of the nearest affected residence, and SR-267 is approximately 1.3 miles from the nearest affected residence. At these distances, the maximum noise levels generated by helicopters at the stringing sites would be 53 dBA or lower, well within the 70 dBA daytime standard in Fresno County.

Although the sites for construction staging areas would not be identified until the engineering design stage for the transmission lines, it is expected that the staging areas would be planned to be located well away from existing residential receivers. Helicopters flying between construction staging areas and work sites could briefly result in noise levels higher than 75 dBA if the flight paths bring them closer than 400 feet to existing residences. However, it is expected that transiting helicopters would make every effort to stay clear of existing dwellings, and thus would not approach within 400 feet of any residences without a



reason for doing so. Therefore, the noise impacts related to helicopter construction for the WSP gen-tie lines are anticipated to be *less than significant*.

### **Mitigation Measures:**

**Westlands Solar Park.** No mitigation is required.

**WSP Gen-Tie Corridors.** No mitigation is required.

### **Impact NOI-3. Construction Traffic Noise**

**Westlands Solar Park.** Construction of the WSP solar projects would result in temporary increases in traffic noise, generated by delivery trucks and construction worker trips, along roadways providing access to the WSP plan area. (*Less-than-Significant Impact*)

**WSP Gen-Tie Corridors.** Construction of the WSP gen-tie lines would result in temporary increases in traffic noise, generated by delivery trucks and construction worker trips, along roadways providing access to the gen-tie work sites. (*Less-than-Significant Impact*)

*This impact analysis addresses significance criteria 'a' and 'd' above.*

### **Westlands Solar Park**

During construction of WSP solar facilities, traffic would be generated by construction deliveries and worker commute trips along area roadways serving the WSP plan area. The increased roadway noise levels resulting from WSP construction traffic were calculated by Illingworth & Rodkin based on worst-traffic volumes for construction. As noted in Section 3.13. *Traffic and Circulation*, the worst-case near-term (2016) scenario for construction traffic generation consists of two 250 MW solar projects being constructed concurrently, with peak construction activity for both occurring simultaneously.

The roadway segments of concern are those where existing sensitive receivers are located along the roadways receiving WSP construction traffic. Two of the sensitive receivers subject to potential noise increases due to WSP construction traffic would be the same as those discussed for on-site noise sources. These include the dwellings at the Shannon Ranch Complex at Avenal Cutoff Road and Lincoln/Gale Avenue, and the residences at the Stone Land Company Ranch on Nevada Avenue, between Avenal Cutoff Road and SR-41.

As discussed under Section 3.10.1. *Environmental Setting* above, there are two additional clusters of existing residences located west of the WSP plan area in Fresno County that would be subject to increased traffic noise from WSP construction delivery truck traffic. The first of these is a group of 8 single-family dwellings located on the south side of Jayne Avenue, approximately 3.5 miles west of the WSP plan area, where the dwellings are located approximately 100 feet from the roadway centerline. The second group consists of 4 single-family dwellings located on the south side of Gale Avenue,

approximately 4.3 miles west of the WSP plan area, where the residences are located approximately 150 feet from the roadway centerline.

The ambient noise levels measured at these receptor locations are shown in Table NOI-6, on the next page. The table also shows: the projected noise level increases due to WSP construction traffic; the amount of noise increase considered significant for the ambient condition; and whether the increased noise at each location represents a significant noise impact. As provided in Kings County Noise Element Policy B1.2.1, the applicable Kings County noise standard is 65 dB CNEL for residential uses in agricultural zones that are subject to transportation noise. (For purposes of establishing the significance threshold for this analysis, the CNEL noise metric is considered equivalent to the  $L_{dn}$  metric.) Fresno County also establishes 65 dBA CNEL (or  $L_{dn}$ ) as the highest normally acceptable noise level for residential uses. In addition to these residential noise thresholds, the Kings County and Fresno County Noise Elements both include provisions that define the magnitude of noise level increase generated by a transportation improvement project that is considered to be significant, with the varying significance thresholds depending on the ambient noise level at the receiver location. In both counties, these policies provide that for locations where the ambient noise level is under 60 dB  $L_{dn}$ , a 5 dBA increase would be significant. Where the ambient noise level is between 60 and 65 dBA  $L_{dn}$ , a 3 dBA increase would be significant; and where the ambient noise level is over 65 dBA, a noise increase of 1.5 dB would be significant. While the WSP solar facilities would include capacity enhancing transportation projects that would be subject to these incremental noise thresholds, these thresholds are applied here to evaluate the level of impact associated with roadway noise increases resulting from traffic generated by the WSP solar projects.

**TABLE NOI-6**  
**CONSTRUCTION TRAFFIC NOISE LEVELS AT RESIDENTIAL RECEPTOR LOCATIONS**

Residential Receptor Location	2015 Ambient Day-Night Average Noise Level at 100 feet from Road C/L (dBA $L_{dn}$ )	Noise Level with WSP Peak Construction Traffic* (dBA $L_{dn}$ )	Noise Level Increase due to WSP Peak Construction Traffic* (dBA $L_{dn}$ )	Impact Significance Criterion (dBA increase) <sup>1,2</sup>	Significant Noise Impact?
<b>Shannon Ranch</b> (w/s Avenal Cutoff Rd. at Gale/Lincoln Av.) (LT-3 & ST-4&5)	73 <sup>3</sup>	73.4	0.4 dBA	+1.5 dBA	No
<b>Stone Land Co. Ranch</b> (1.4 miles east of Avenal Cutoff Rd.) (LT-2 & ST-2)	61 <sup>3</sup>	63.4	2.4 dBA	+3.0 dBA	No
<b>Jayne Avenue</b> (3.5 miles west of Avenal Cutoff Rd.) (LT-1 & ST-1)	68 <sup>3</sup>	68.4	0.4 dBA	+1.5 dBA	No
<b>Gale Avenue</b> (4.3 miles west of Avenal Cutoff Rd.) (ST-3)	59 <sup>3</sup>	59.1	0.1 dBA	+5.0 dBA	No

\* This includes traffic generated by WSP peak construction activity in the near term.

Source: Illingworth & Rodkin

**Footnotes:**

<sup>1</sup> Kings County Noise Element 2010, Policy B1.2.1, page N-35.

<sup>2</sup> Fresno Co. 2000 General Plan Update – Health & Safety Element (policy HS-G.7) p. 2-176.

<sup>3</sup> Illingworth & Rodkin, Short term and long term noise measurements, December 14, 2015.

As shown in Table NOI-6, the near-term noise increases from WSP construction deliveries and construction worker trips would result in noise level increases ranging from 0.1 to 2.4 dBA at the sensitive receiver locations. The resulting increase in noise levels would not exceed the Impact Significance Criterion at the affected receptors in Kings County and Fresno County. While the increased volume of traffic may be noticeable at the receptor locations, the increased noise levels of up to 2.4 dBA would not represent a significant noise level increase. Therefore, the construction traffic generated by WSP solar projects would result in a *less-than-significant* noise impact.

### **WSP Gen-Tie Corridors**

The construction of the WSP gen-tie projects would involve truck trips for hauling equipment and materials to and from the construction sites, and also commute trips by construction workers arriving and departing the construction sites. As discussed in Section 3.13. *Traffic and Circulation*, truck deliveries (including equipment, concrete, and aggregate) would primarily come from the I-5 corridor and then follow local highways and roadways to reach the work sites along the gen-tie corridors. Most construction workers are expected to reside in urban centers in the region, which are largely concentrated along the State Route 99 corridor to the east of the gen-tie corridors. Thus, the truck delivery routes and commute routes would tend not to overlap, except near the access points to the construction sites.

The construction stage with the greatest concentration of workers and truck activity would be during construction of tower foundations. As discussed in Section 3.13. *Traffic and Circulation*, the combination of construction worker commute trips plus haul trips would result in a maximum of 108 daily trips at any given tower work site. This would include 44 worker commute trips and 64 haul trips. (Note: The term “trips” refers to trip ends, so one round-trip equals 2 trips.) The worker trips would be concentrated at the beginning and end of work shifts, resulting in 22 AM trips and 22 PM trips. The haul truck trips would occur throughout the day and would average about 9 trips per hour for a 7-hour workday. The tower construction activities would move fairly quickly from one tower site to the next (i.e., no more than 2 days at any tower site). At other construction work sites along the gen-tie corridors, where lower-intensity activities would take place, the concentration of truck deliveries and construction worker activity would be lower than activity levels at tower work sites, with correspondingly lower traffic generation. Given the relatively short duration of construction activity at any given work site along the transmission corridors, the minor increase in traffic levels at any road segment or intersection would be temporary.

The roadway network in the vicinity of the transmission corridors is subject to relatively low traffic volumes typical of the rural setting. Since these roadways currently serve local agricultural operations, dispersed rural residences, and agricultural processing and support facilities, the areas along the roads are currently subject to occasional noise from farm equipment and heavy trucks, as well as light passenger vehicle traffic. The addition of haul truck traffic and commute traffic associated with transmission line construction would likely be noticeable in the areas immediately adjacent to the travel routes. The noise associated with this traffic would increase noise levels by less than 1 dBA  $L_{dn}$  over ambient noise levels along roadways subject to the construction traffic. Although noise from individual truck passbys would be noticeable to nearby receptors in the rural noise environment, the noise level increase would be less than the smallest incremental noise threshold considered significant (i.e., 1.5 dBA  $L_{dn}$  where ambient noise is over 65 dBA  $L_{dn}$ ) in all both of the potentially affected counties. Since construction activity would move sequentially along the gen-tie corridors, the noise from construction

traffic would be temporary at any given location, the minor and short-term increase in traffic noise resulting from transmission line construction would represent a *less-than-significant* noise impact.

### **Mitigation Measures:**

**Westlands Solar Park.** No mitigation is required.

**WSP Gen-Tie Corridors.** No mitigation is required.

---

## ***Ground Vibration from Construction Activity***

### **Impact NOI-4.      Vibration from Conventional Construction Activities**

**Westlands Solar Park.** Construction of the WSP solar facilities would involve the use of heavy equipment and vehicles that would produce vibration; however, the vibration levels would be too low to result in potential damage to buildings or potential annoyance to sensitive receivers. (*Less-than-Significant Impact*)

**WSP Gen-Tie Corridors.** Construction of the WSP gen-tie projects would involve the use of heavy equipment and vehicles that would produce vibration; however, the vibration levels would be too low to result in potential damage to buildings or potential annoyance to sensitive receivers. (*Less-than-Significant Impact*)

*This impact analysis addresses significance criteria 'b' and 'd' above.*

### ***Westlands Solar Park***

During construction, the use of heavy equipment such as bulldozers, vibratory drivers, and loaded haul trucks would result in ground borne vibration. Depending on proximity of the receiver to the source of vibration, construction vibration could result in damage to nearby structures or annoyance to humans. Vibration is measured as peak particle velocity (PPV) in inches per second. A PPV of 0.2 inches per second is considered to be the threshold at which there is a risk of architectural damage to buildings with plastered ceilings and walls, while there is a potential for minimal damage to weak or sensitive structures at 0.12 inches per second. Vibrations at 0.2 inches per second are considered bothersome to most people, while continuous exposure to long-term PPV is considered unacceptable at 0.12 inches per second. The level at which humans begin to perceive vibration is 0.015 inches per second. Bulldozers and loaded trucks have a PPV of 0.089 inches per second at a distance of 25 feet, while the vibratory pile drivers have PPV levels ranging from 0.170 to 0.734 inches per second at 25 feet, with the specific levels depending on soil type, equipment type, and other factors (USDOT 2006, p. 12-12).

Within the WSP plan area, the nearest structures to the construction activity would be: 1) residences and ranch operations buildings in the Shannon Ranch complex on the west side of Avenal Cutoff Road, south of Lincoln/Gale Avenue, which would be at least 100 feet from the nearest vibration-producing construction activity (i.e., vibratory driving of support posts for solar arrays); and 2) residences at Stone Land Company

Ranch on the south side of Nevada Avenue, which would be at least 315 feet from the nearest vibration-producing construction activity. At both locations, the potential for greatest vibration would be during vibratory pile driving of the support posts for the solar arrays. Assuming peak vibration levels of 0.734 inches per second at 25 feet, the vibration levels at 100 feet (at Shannon Ranch) would decrease to 0.092 inches per second at the nearest receiver (USDOT 2006, p. 12-11). While this vibration level would be perceptible to receivers at a distance of 100 feet, it would not reach the level that is considered bothersome to people or potentially damaging to structures. At a distance of 315 feet from the vibratory pile driving activity (at Stone Land Company Ranch), PPV would decrease to 0.016 inches per second, which is just above the threshold of human perception for vibration. The majority of construction activity would occur well beyond these distances from the nearest receivers, and therefore any associated vibration would not be noticeable.

As mentioned, the next heaviest equipment that would be used in the WSP plan area would be bulldozers and loaded trucks, which both generate a PPV level of 0.089 inches per second at 25 feet. At the site of the nearest off-site receiver, a distance of at least 100 feet from the on-site construction activity, the PPV level would decrease to 0.011 inches per second. This vibration level would be well below the lower thresholds of potential building damage (i.e., 0.12 in/sec), and below the lower limit of human perception (i.e., 0.15 in/sec). Vibration levels from construction equipment at greater distances would be lower at the receiver sites.

In summary, the heaviest construction equipment that would be used within the WSP plan area would not produce vibration levels that would result in building damage or annoyance to the nearest receivers, and all construction-related vibration would decrease below the threshold of human perception beyond 350 feet from the nearest receivers. Majority of construction activity within the WSP plan area would occur at greater distances from receivers where the associated vibration would not be noticeable. Therefore, the potential vibration impacts due to construction activities within the WSP plan area would be *less than significant*.

### **WSP Gen-Tie Corridors**

Within the gen-tie corridors, the heaviest construction equipment would consist of bulldozers, loaded trucks, and drill rigs (for excavating holes for tower footings), all of which would generate a PPV of 0.089 inches per second at 25 feet. (Non-conventional construction techniques, such as blasting, are not expected to be required.) As noted above, construction-related vibration would decrease below the threshold of human perception beyond 350 feet from the nearest receivers. There are a total of 10 residences located within 350 feet of the gen-tie corridors.

The gen-tie corridors could pass as close as 125 feet to 1 dwelling and several non-residential structures such as ranch buildings and agricultural wells. Assuming, tower construction at the nearest points on the corridor to these receivers (i.e., 125 feet away), the heaviest equipment would generate a PPV of 0.008 inches per second at this distance, which is well below the levels where potential building damage could occur (i.e., 0.12 in/sec), and below the threshold of human perception for vibration (i.e., 0.015 in/sec). Therefore, the potential vibration impacts from conventional equipment used in gen-tie line construction would be *less than significant*.

### **Mitigation Measures:**

**Westlands Solar Park. No mitigation is required.**

**WSP Gen-Tie Corridors.** No mitigation is required.

---

## ***Operational Noise***

### **Impact NOI-5. Noise from Project Operations**

**Westlands Solar Park.** Noise generated by operation of WSP solar facilities would result in a small increase noise levels in the vicinity. (*Less-than-Significant Impact*)

**WSP Gen-Tie Corridors.** Noise generated by operation of WSP gen-tie lines would result in a small increase noise levels in the vicinity. (*Less-than-Significant Impact*)

*This impact analysis addresses significance criteria 'a' and 'c' above.*

### ***Westlands Solar Park***

The primary noise sources associated with the operation of solar generating facilities within the WSP plan area would include: 1) maintenance activities and security patrols; 2) panel washing, and; 3) electrical equipment sound from inverters, transformers, and trackers. The potential noise impacts associated with each of these operational sources is discussed in turn below. (Note: Operational noise from transmission lines and substations is addressed subsequently under Impacts NOI-7 and NOI-8, respectively. Noise from traffic generated during solar project operations is addressed under Impact NOI-6.)

#### **Maintenance and Security Activities**

Maintenance crews and security staff would generate noise primarily while traversing the solar facilities in the performance of routine surveillance, inspection, maintenance and repair tasks. The operations and security staff would travel along maintenance access driveways in pickup trucks and all-terrain vehicles. The potential for noise impacts to sensitive receivers would occur when these vehicles are traveling along perimeter driveways nearest to the Shannon Ranch and Stone Land Company Ranch. The maximum noise level generated by a pickup truck would be 75 dBA  $L_{max}$  at 50 feet (see Table NOI-1 for explanation of noise metrics). The nearest sensitive receivers at the Shannon Ranch would be 65 to 165 feet from the nearest WSP perimeter roads. Noise levels generated by pickup trucks would decrease to 73 dBA  $L_{max}$  at 65 feet and 65 dBA  $L_{max}$  at 165 feet (applying the 6 dBA reduction for doubling of distance from a point source). These noise levels would be below Kings County's 75 dBA  $L_{max}$  standard for residential receivers (see Table NOI-3). At the Stone Land Company Ranch, the nearest sensitive receivers would be located 180 feet from the nearest WSP perimeter road. The noise levels at the residential facades would be as high as 64 dBA  $L_{max}$ , which is well below the applicable Kings County noise standard of 75 dBA  $L_{max}$ . Further, the noise generated by pickup trucks would be expected to below the noise generated by traffic along roadways separating the WSP plan area from the nearest receptors. Therefore, the potential noise impacts due to routine maintenance and security activities would be *less than significant*.

### **Panel Washing**

As described in Chapter 2. *Project Description*, it is expected that solar panels would be cleaned 4 times per year. Panel washing crews would traverse the solar facilities in purpose-built lightweight to medium duty trucks which would be equipped with water tanks and high-pressure sprayers. The trucks would generate noise levels of 75 dBA  $L_{max}$  at 50 feet, and the air compressors for the sprayers would generate noise levels of 78 dBA  $L_{max}$  at 50 feet (CPUC 2009) with combined noise levels as high as 80 dBA  $L_{max}$ . While a solar facility may have several panel washing crews working concurrently, it is assumed that only one crew would be operating within a particular solar block or array at any given time, so that the crews would always be at least 500 feet apart. As such, the potential for additive noise from more than one panel washing crew operating in the same area would be negligible. The nearest arrays within the WSP plan area would be located 100 feet from the nearest residential receivers at the Shannon Ranch. At this distance, the maximum noise level would be 74 dBA  $L_{max}$  (with noise decreasing at 6 dBA for doubling of distance from a point source). (The  $L_{max}$  descriptor is the appropriate metric since panel washing noise would not be continuous.) This would be below the County's applicable standard of 75 dBA  $L_{max}$ . At the Stone Land Company Ranch, the nearest residential receivers would be located at least 315 feet from the nearest solar arrays (assuming the 100-foot Gen-Tie right-of-way along the south WSP boundary along Nevada Avenue). At this distance, the maximum noise level from panel washing activity would be 65 dBA  $L_{max}$ , which would be below the County's applicable standard of 75 dBA  $L_{max}$ . Therefore, the potential noise impacts due to panel washing would be *less than significant*.

### **Mechanical Noise from Inverters, Transformers, and Trackers**

Dispersed throughout the solar fields would be inverters and transformers for every 1 to 2 MW of solar generation. Typically, the inverter would be contained in a metal enclosure, while the transformer would not be enclosed. The inverters and transformers would operate throughout the day, but would not operate at night when the solar panels are not generating power. The maximum noise levels generated by the enclosed inverters would be 50 dBA at 50 feet, and the maximum noise levels generated by the transformers would be 38 dBA (CPUC 2009) with a combined noise level of about 51 dBA  $L_{max}$  at 50 feet. As discussed in Chapter 2. *Project Description*, it is expected that most if not all solar generating facilities in WSP will employ horizontal trackers that allow the module arrays to follow the sun from east to west. These motor-driven trackers emit mechanical noise at regular intervals as they make incremental adjustments to the inclination of the arrays. The noise generated by the trackers is roughly equivalent to noise levels generated by inverters and transformers. The combined noise level from simultaneous operation of inverters, transformers, and trackers would be about 52 dBA  $L_{max}$  at 50 feet.

The nearest sensitive receivers to the inverters/transformer pads and trackers could be as close as 100 feet from the nearest residents at Shannon Ranch, conservatively assuming that the inverter and transformer would be (atypically) located at the edge of the solar block nearest to the residences. At this distance, the noise level generated by combined inverter, transformer, and tracker operation would be 46 dBA  $L_{max}$ . These noise levels would be well below the County's applicable standard of 75 dBA  $L_{max}$ . At the Stone Land Company Ranch, the nearest residential receivers would be located at least 315 feet from the nearest inverter/transformer pads and trackers (assuming the 100-foot gen-tie easement along the south WSP boundary along Nevada Avenue). At this distance, the maximum noise level from combined inverter, transformer, and tracker operation would be 37 dBA  $L_{max}$ , which would be well below the County's applicable standard of 75 dBA  $L_{max}$ . Therefore, the potential impacts due to mechanical operational noise would be *less than significant*.

In summary, since the noise generated by operational sources at the solar generating facilities would not exceed Kings County's applicable noise standards, the potential noise impacts from operation of the solar generating facilities at WSP would be *less than significant*.

### ***WSP Gen-Tie Corridors***

The primary noise source associated with the completed gen-tie facilities would be maintenance activities. (Note: The noise emitted by the gen-tie lines, and the associated off-site substation noise, is addressed subsequently under Impacts NOI-7 and NOI-8, respectively.) Maintenance activities would include annual visual inspections of the transmission lines and access roads. These activities would typically involve the use of light duty trucks, although helicopters may be sometimes be used in areas that are not accessible by truck. The maintenance and inspection activities would occur infrequently and noise from truck or helicopter pass-bys would be short in duration. Most sensitive receivers would be located at least 350 feet from the transmission corridors. At this distance, the maximum noise from helicopter pass-bys would be 75dBA  $L_{max}$ , and noise from light truck pass-bys would be 58 dBA  $L_{max}$ .

Within Fresno County, the helicopter noise would exceed the applicable 70 dBA  $L_{max}$  noise limit at a distance of approximately 625 feet. There are 10 residences that are located between 125 and 625 feet from the gen-tie corridors in Fresno County. If helicopter inspections are required, the noise from helicopter passbys would be very brief in duration and therefore would not represent a significant noise impact. In addition, maintenance work performed by public or private utilities in Fresno County is exempt from the County's noise standards (Fresno Ordinance Code Section 8.40.060(G)).

In summary, since the routine inspection activities associated with the transmission lines would not violate the applicable County Code noise control provisions, the potential noise impacts associated with transmission line operation would be *less than significant*.

### **Mitigation Measures:**

**Westlands Solar Park.** No mitigation is required.

**WSP Gen-Tie Corridors.** No mitigation is required.

---

### **Impact NOI-6. Off-Site Traffic Noise from Project Operations**

**Westlands Solar Park.** Traffic generated by the operation of the WSP solar facilities would result in a small increase in traffic along roadways in the vicinity. (*Less-than-Significant Impact*)

**WSP Gen-Tie Corridors.** Traffic generated by the operation of the WSP gen-tie facilities would result in a small increase in traffic along roadways in the vicinity. (*Less-than-Significant Impact*)

*This impact analysis addresses significance criteria 'a' and 'c' above.*



### **Westlands Solar Park**

Upon completion of each WSP solar generating facility, operational activity would result in increased traffic from operational and maintenance staff traveling to and from the solar facilities, and from delivery trucks. As discussed in Section 3.13. *Traffic and Circulation*, a typical 250 MW solar development within WSP would generate an average of 10 daily round trips by workers and 10 round trips by delivery trucks.

The employee trips would occur mainly during the AM and PM commute periods, while delivery truck traffic would occur throughout the day. These trips would originate from the surrounding region and beyond, and would be broadly dispersed over the regional roadway network. The roadway segments nearest to the WSP plan area would receive the greatest increases in traffic due to WSP operational traffic.

The sensitive receptors located near the WSP plan area would be subject to the greatest potential increases in traffic noise. The residential receptors of concern would be the same as those identified in the discussion of construction traffic noise under Impact NOI-3 above, and include clusters of dwellings at the following locations: 1) Shannon Ranch at Avenal Cutoff Road and Lincoln/Gale Avenue; 2) Stone Land Company Ranch on Nevada Avenue 1.4 miles east of Avenal Cutoff Road; 3) Jayne Avenue, 3.5 miles west of Avenal Cutoff Road; and 4) Gale Avenue, 4.3 miles west of Avenal Cutoff Road.

Due to the incremental nature of WSP buildout, the overall intensity of operational activity within the WSP plan area will increase gradually over time. At full buildout, the operational traffic generated by all WSP solar facilities (i.e., 320 daily trips) would represent approximately 30 percent of the daily traffic generated during the peak construction period (i.e., 1,085 daily trips). In addition, the characteristics of the traffic would change, especially truck traffic. During construction, most trucks would consist of large material and equipment transport trucks, while operational truck traffic would large consist of smaller service and delivery trucks.

The increased roadway noise levels resulting from WSP operational traffic were calculated by Illingworth & Rodkin based on traffic volumes presented in Section 3.13. *Traffic and Circulation*. Since WSP buildout is expected to occur in about 2030, the far-term noise and traffic projections for 2035 were used to represent worst-case baseline conditions in the analysis of operational traffic noise. The pre-project noise levels projected for the receptor locations in 2035 are shown in Table NOI-7 below. The table also shows the projected noise level increases due to WSP operational traffic, the amount of noise increase considered to be significant for the baseline condition, and whether the increased noise at each location represents a significant noise impact. As discussed in Section 3.10.2. *Regulatory Context* above, the applicable Kings County noise standard is 65 dB CNEL (or  $L_{dn}$ ) for residential uses in agricultural zones that are subject to transportation noise. Kings County Noise Element Policy B1.2.1 provides that where ambient noise levels exceed this threshold, the incremental noise increase that is considered to be significant depends on the ambient noise level at the receiver location. These noise impact criteria are also applied by Fresno County. In particular, locations where the ambient noise level is under 60 dB  $L_{dn}$ , a 5 dBA increase would be significant. Where the ambient noise level is between 60 and 65 dBA  $L_{dn}$ , a 3 dBA increase would be significant; and where the ambient noise level is over 65 dB dBA  $L_{dn}$ , a noise increase of 1.5 dB would be significant. (Although the Kings County Noise Element applies these noise increment thresholds to noise increases resulting from capacity enhancing transportation projects, as discussed in 'Significance Criteria' above, they are also applied in this EIR as a significance threshold for noise increases due to traffic volume increases resulting from WSP solar development. It is noted that

while the transportation noise thresholds in the Kings County Noise Element are expressed in terms of CNEL, the noise increments that would define a significant noise increase are expressed in  $L_{dn}$  in the Noise Element. Since the CNEL and  $L_{dn}$  metrics are very similar, they are considered equivalent for purposes of comparing noise level increases with the noise standards for purposes of this analysis.)

As shown in Table NOI-7, the 2035 noise levels along Avenal Cutoff Road at the Shannon Ranch complex would exceed the Kings County noise standard of 65 dBA  $L_{dn}$  under baseline and post project conditions. However, as discussed above, transportation noise increases under these conditions would be considered significant only if the noise increase is 1.5 dBA or more over baseline. As shown in Table NOI-7, noise level increases resulting from project operations after WSP buildout were calculated to be 0.3 dBA or less at the sensitive receptor locations within the Shannon Ranch complex, which is less than the applicable noise impact criterion of 1.5 dBA increase for transportation sources. At the other residential receiver locations, the noise increments due to WSP project operations are also below the applicable thresholds. Therefore, the noise impacts to the residential uses in the area due to operational traffic after WSP buildout would be *less than significant*.

**TABLE NOI-7**  
**OPERATIONAL TRAFFIC NOISE LEVELS AT RESIDENTIAL RECEPTOR LOCATIONS**

Residential Receiver Location	2030 Ambient Day-Night Average Noise Level at 100 feet from Road C/L (dBA $L_{dn}$ )	2030 Noise Level with WSP Peak Operational Traffic (dBA $L_{dn}$ )	2030 Noise Level Increase due to WSP Peak Operational Traffic (dBA $L_{dn}$ )	Applicable Impact Criterion (dBA increase) <sup>1,2</sup>	Significant Noise Impact?
Shannon Ranch (w/s Avenal Cutoff Rd. at Lincoln Av.)	76.2 <sup>3</sup>	76.2 <sup>4</sup>	0.0 dBA	+1.5 dB	No
Stone Land Co. Ranch (1.4 miles east of Avenal Cutoff Rd.)	64.5 <sup>3</sup>	64.8 <sup>4</sup>	0.3 dBA	+3.0 dBA	No
Jayne Avenue (3.5 miles west of Avenal Cutoff Rd.)	71 <sup>3</sup>	71 <sup>4</sup>	0.0 dBA	+1.5 dB	No
Gale Avenue (4.3 miles west of Avenal Cutoff Rd.)	62 <sup>3</sup>	62 <sup>4</sup>	0.0 dBA	+3.0 dB	No

**Footnotes:**

<sup>1</sup> Kings County Noise Element 2010, Policy B1.2.1, page N-35.

<sup>2</sup> Fresno Co. 2000 General Plan Update – Health & Safety Element (policy HS-G.7) p. 2-176.

<sup>3</sup> Illingworth & Rodkin, Short-term and long term noise measurements, December 14, 2015 (in App. E of this EIR).

<sup>4</sup> Based on I&R's short-term noise measurements and traffic volume increase.

Source: Illingworth & Rodkin

### **Combined Construction and Operational Traffic**

Throughout most of the WSP buildout period, some solar facilities will be fully operational while others are still under construction. The volume of traffic generated by overall operations within WSP will steadily increase during the buildout period. At the time when the final solar facilities are being constructed, operational traffic will be near peak levels. Thus, the highest WSP traffic volumes would be

generated during the final phases of WSP development when traffic from peak construction activities combines with traffic from near-peak operational activities. This worst-case condition would occur temporarily, and for purposes of this analysis it is assumed that peak construction activity would occur from the simultaneous construction two 250 MW solar facilities in 2030.

As shown in Table NOI-8, the combined traffic noise increase from peak construction activity and peak operational activity would result in noise level increases ranging from 0.1 to 1.6 dB at the receptor locations. These noise level increases would not exceed the applicable noise impact criteria. Therefore, the worst-case traffic generation from combined construction and operational activities would result in a *less-than-significant* noise impact.

**TABLE NOI-8**  
**2030 OVERALL TRAFFIC NOISE LEVELS AT RESIDENTIAL RECEPTOR LOCATIONS**

Residential Receiver Location	2030 Ambient Day-Night Average Noise Level at 100 feet from Road C/L (dBA L <sub>dn</sub> )	2030 Noise Level with WSP Peak Operational plus Construction Traffic (dBA L <sub>dn</sub> )	2030 Noise Level Increase due to WSP Peak Operational plus Construction Traffic (dBA L <sub>dn</sub> )	Applicable Impact Criterion (dBA increase) <sup>1,2</sup>	Significant Noise Impact?
<b>Shannon Ranch</b> (w/s Avenal Cutoff Rd. at Lincoln Av.)	76.2 <sup>3</sup>	76.4 <sup>4</sup>	0.2 dBA	+1.5 dBA	<b>No</b>
<b>Stone Land Co. Ranch</b> (1.4 miles east of Avenal Cutoff Rd.)	64.5 <sup>3</sup>	66.1 <sup>4</sup>	1.6 dBA	+3.0 dBA	<b>No</b>
<b>Jayne Avenue</b> (3.5 miles west of Avenal Cutoff Rd.)	71 <sup>3</sup>	71.2 <sup>4</sup>	0.2 dBA	+1.5 dBA	<b>No</b>
<b>Gale Avenue</b> (4.3 miles west of Avenal Cutoff Rd.)	62 <sup>3</sup>	62.1 <sup>4</sup>	0.1 dBA	+3.0 dBA	<b>No</b>

**Footnotes:**

<sup>1</sup> Kings County Noise Element 2010, Policy B1.2.1 page N-35.

<sup>2</sup> Fresno Co. 2000 General Plan Update – Health & Safety Element (policy HS-G.7) p. 2-176.

<sup>3</sup> Illingworth & Rodkin, Long-term noise measurements, December 14, 2015 (in Appendix E of this EIR).

<sup>4</sup> Calculations based on I&R's short-term noise measurements and traffic volume increase.

Source: Illingworth & Rodkin 2016

## **WSP Gen-Tie Corridors**

Once completed, the operation of the transmission lines would generate very little traffic. During annual inspection and maintenance activities, light utility trucks would traverse local roadways to access transmission towers and maintenance roads. The transmission lines and components would be inspected approximately once per year by a small crew in a utility truck. Occasional maintenance and repairs would be undertaken as needed, and are expected to be infrequent. The additional traffic noise generated by these occasional inspection, maintenance, and repair trips would be negligible (i.e., several trips per year at any given location) and would not result in increased average noise levels along the affected roadways (i.e., a traffic volume increase of 26 percent would produce a 1 dBA increase in noise levels). Therefore,

the potential traffic noise impacts associated with transmission line operation would be *less than significant*.

### **Mitigation Measures:**

**Westlands Solar Park.** No mitigation is required.

**WSP Gen-Tie Corridors.** No mitigation is required.

---

### **Impact NOI-7. Audible Noise from Corona Discharge on Transmission Lines**

**Westlands Solar Park.** During wet conditions, corona discharge from transmission conductors within the WSP plan area would generate noise. (*Less-than-Significant Impact*)

**WSP Gen-Tie Corridors.** During wet conditions, corona discharge from conductors in the WSP gen-tie facilities would generate noise. (*Less-than-Significant Impact*)

*This impact analysis addresses significance criteria 'a' and 'c' above.*

### **Westlands Solar Park**

The solar facilities within the WSP plan area will include high-voltage internal gen-tie lines to transmit solar-generated power to the external gen-tie lines (and/or two switching stations within WSP). Once energized, the conductors would be subject to corona discharge. This involves the breakdown of air into charged particles caused by the electrical field at the surface of a conductor, which can result in a crackling or hissing noise and very small amounts of light. Audible noise from corona discharge varies depending on the voltage of the line and is locally intensified by irregularities on the conductor surface such as scratches or water drops. Wet weather conditions often increase corona discharge due to accumulation of raindrops, fog, frost or condensation on the conductor surface which causes surface irregularities which result in small electrical discharges. In addition to noise generation, corona also results in power loss in the transmission line. Therefore, transmission lines are designed to include sufficiently large conductors and smooth-edged hardware, which reduces the potential for corona.

For a planned double-circuit 230-kV transmission line in a 100-foot wide right-of-way, maximum noise levels that would be generated by corona discharge during wet conditions would be 37 dBA at the edge of the ROW (CPUC 2009, p. 4.10-12). The corona noise generated during dry conditions would be less than 25 dBA and would be barely audible (SLO County 2011).

The nearest residential receivers to any internal gen-tie line would be well beyond the edge of the right-of-way and thus would not be subject to corona noise from within the WSP plan area. Therefore, the potential noise impact due to corona discharge within WSP plan area would be *less than significant*.

### **WSP Gen-Tie Corridors**

The nearest dwellings to the WSP gen-tie corridors include 2 existing residences along the south side of Nevada Avenue and 8 dwellings along the south side of Jayne Avenue. These dwellings would be located 125 to 180 feet from the nearest edge of the gen-tie corridor. At these distances, the noise from corona discharge would not be audible by the nearest receivers even under wet conditions. All other residential receptors would be located farther away from the transmission lines. Therefore, the potential noise impact due to corona discharge along the WSP gen-tie corridors would be *less than significant*.

### **Mitigation Measures:**

**Westlands Solar Park.** No mitigation is required.

**Westlands Transmission Corridors.** No mitigation is required.

---

### **Impact NOI-8. Substation and Switching Station Noise**

**Westlands Solar Park.** Equipment noise from operation of new substations and switching stations within the WSP plan area would result in small increases in noise levels in the vicinity. (*Less-than-Significant Impact*)

**WSP Gen-Tie Corridors.** Equipment noise from operation of substation upgrades associated with the gen-tie lines would result in small increases in noise levels in the vicinity. (*Less-than-Significant Impact*)

*This impact analysis addresses significance criteria 'a' and 'c' above.*

### **Westlands Solar Park**

Upon buildout, the WSP plan area would include several substations for stepping up voltage levels for delivery to the state grid. (It is possible that two switching stations may also be constructed if the point of interconnection to the state grid is ultimately planned for the WSP plan area instead of the Gates Substation as currently planned.) Sources of audible noise within a substation include equipment such as transformers, reactors, voltage regulators, circuit breakers and other intermittent noise generators. (The noise generating elements of switching stations are similar to substations.) Among these sources, transformers, reactors, and circuit breakers have the greatest potential for producing noise. The broadband sound from fans, pumps and coolers has the same character as ambient sound and tends to blend with the ambient noise. Reactors are similar to transformers in terms of audible noise, and would generate noise levels of about 40 dBA  $L_{eq}$  at 200 feet (SLO County 2011, p. AP. 4-114). The highest noise levels would be produced by circuit breakers, which would occur infrequently when breakers are thrown to protect the system during an electrical fault due to line overloads. The resultant noise would be impulsive in character, being loud and short in duration. The maximum impulse noise level from the breakers would be approximately 105 dBA  $L_{max}$  at 50 feet (SLO County 2011, p. AP. 4-114). This maximum noise would decrease at the rate of 6 dBA per doubling of distance from the point source, so

that the noise would be reduced to 75 dBA  $L_{max}$  at a distance of 1,600 feet from the source, and further reduced to 70 dBA  $L_{max}$  at about 3,000 feet (just over ½ mile). While the locations of the substations within the WSP plan area have not been determined, it is anticipated that they would be located at least ½ mile from the nearest residential receivers. The two switching stations would be located at the eastern ends of the WSP gen-tie corridors which are at least 2.0 miles from the nearest residential receivers. Therefore, maximum noise levels generated by the substations and switching stations would be less than the Kings County daytime standard of 75 dBA  $L_{max}$ , and would also meet the nighttime standard of 70 dBA  $L_{max}$  at the nearest residential receivers.

In adjacent Fresno County to the west, the nearest residential receivers would be the dwellings in the western portion of the Shannon Ranch, located approximately 2.7 miles south of the nearest potential switching station location within the WSP plan area. At this distance, the maximum noise level would be reduced to 55 dBA  $L_{max}$ , well within the Fresno County daytime noise standard of 70 dBA  $L_{max}$ , and also the nighttime standard of 65 dBA  $L_{max}$  for residential receivers. Since maximum noise levels generated by the substations and switching stations within the WSP plan area would not exceed any applicable noise limits for residential receivers in Kings County or Fresno County, the noise resulting from substation operations within the WSP plan area would represent a *less-than-significant* impact.

### ***WSP Gen-Tie Corridors***

The WSP gen-tie corridors would terminate at the Gates Substation in Fresno County. It is likely that additional electrical equipment would be installed to accommodate the additional incoming lines. This would include equipment such as transformers, reactors, voltage regulators, circuit breakers and other intermittent noise generators. This additional equipment would increase overall noise levels at the Gates Substation. The nearest residential receivers are located 2 miles to the northeast, where the loudest substation noise (from circuit breakers being thrown) would be 59 dBA  $L_{max}$ , which would be below Fresno County's daytime noise standard of 70 dBA  $L_{max}$ , and also below the nighttime standard of 65 dBA  $L_{max}$  at the nearest residential receivers. Therefore, the potential noise impacts resulting from modifications to the Gates Substation would be *less than significant*.

### **Mitigation Measures:**

**Westlands Solar Park.** No mitigation is required.

**WSP Gen-Tie Corridors.** No mitigation is required.

## ***Decommissioning Noise***

### **Impact NOI-9. Noise from Decommissioning of Solar Facilities**

**Westlands Solar Park.** Noise levels would be temporarily elevated during deconstruction activities associated with solar facility decommissioning within the WSP plan area. (*Less-than-Significant Impact*)

**WSP Gen-Tie Corridors.** Decommissioning of WSP gen-tie facilities is not anticipated; therefore, no noise impacts would occur. (*No Impact*)

*This impact analysis addresses significance criteria 'a' and 'd' above.*

### ***Westlands Solar Park***

As discussed in Chapter 2. *Project Description*, the level of activity during decommissioning (or deconstruction) of solar facilities within WSP is expected to be similar to the activity level during construction. Thus, the number transport vehicle trips required for off-haul of decommissioned materials is expected to be similar to the number of trips required to haul the materials to the site during construction. The number of workers required on-site is also expected to be about the same, while the use of construction equipment would be similar or a little less. For purposes of analysis, it is assumed that traffic generated during decommissioning would be the same as the worst-case traffic generated during construction, and that noise levels would also be the same as shown in Tables NOI-5 and NOI-6 for on-site construction noise and off-site traffic noise respectively. As discussed under Impact NOI-1, construction noise would result in a less-than-significant impact when construction activity occurs in proximity to the existing dwellings at Shannon Ranch and Stone Land Company Ranch. Therefore, it is expected that noise impacts at the nearest receptor locations resulting from decommissioning activities would be *less than significant*.

Traffic noise generated by workers and trucks during decommissioning would be low relative to ambient noise, as it would be for construction-related traffic noise discussed under Impact NOI-4. When the first solar facilities within WSP begin decommissioning in 25 years, the worst-case noise levels would be similar to those indicated in Table NOI-8 under far-term conditions with full SGF operations and construction of final solar projects in WSP. As discussed under Impact NOI-4, the traffic noise levels would not violate the applicable noise requirements and thus the noise impact from off-site traffic generation would be less than significant. The noise impacts from traffic anticipated during decommissioning would also be *less than significant*.

In summary, the on-site noise impacts to the nearby residential receivers during decommissioning would *less than significant*, and off-site noise impacts due to traffic generated by decommissioning activities would also be *less than significant*.

### ***WSP Gen-Tie Corridors***

Unlike solar generating facilities, there are no plans for decommissioning the planned gen-tie lines and towers. Therefore, *no noise impacts* are anticipated in this respect.

**Mitigation Measures:**

**Westlands Solar Park.** No mitigation is required.

**WSP Gen-Tie Corridors.** No mitigation is required.

---

***Aircraft Noise*****Impact NOI-10. Noise from Flight Operations Associated with Nearby Airports**

**Westlands Solar Park.** The workers within the WSP plan area would not be exposed to excessive noise levels from flight operations associated with public or public use airports, NAS Lemoore, or private airstrips in the vicinity. (*Less-than- Significant Impact*)

**WSP Gen-Tie Corridors.** The workers on the gen-tie projects would not be exposed to excessive noise levels from flight operations associated with public or public use airports, NAS Lemoore, or private airstrips in the vicinity. (*No Impact*)

*This impact analysis addresses significance criteria 'e' and 'f' above.*

***Westlands Solar Park*****Public Airports**

The WSP plan area is not located within an airport land use plan or within two miles of a public airport or public use airport. The nearest public or public use airports include the Hanford and Coalinga municipal airports, and the Harris Ranch Airport, all of which are located 15 miles or more from the WSP plan area. Therefore, workers within the WSP plan area would not be exposed to excessive noise levels from flight operations associated with public or public use airports, and the impact would be *less than significant*.

**NAS Lemoore**

The majority of the WSP plan area is included in the study area for the Naval Air Station (NAS) Lemoore Joint Land Use Study (JLUSPC 2011). The northern portions of the WSP plan area are within the NASL flight pattern where ground noise level contours exceed 65 dBA CNEL and can exceed 70 dBA in certain areas. Solar facilities are not considered noise-sensitive land uses, and even the O&M facilities (where staff would be present) are considered compatible with exterior noise levels up to 76 dBA CNEL. Interior noise levels within O&M buildings would be 20 dBA lower, which is considered acceptable for commercial and industrial operations. Therefore, military overflights associated with NAS Lemoore would not expose workers within the WSP plan area to excessive noise levels, and the impact would be *less than significant*.



### **Private Airstrips**

There are no private airstrips within the WSP plan area, and there are five private airstrips within 4 miles of the outside boundaries of WSP. Four of these airstrips are for personal or corporate use of ranch owners, and one of these airstrips is operated by a crop dusting company. The aircraft operations at the private airstrips would be relatively infrequent, and the crop dusting flights may occasionally traverse the WSP plan area en route to their destinations. While private aircraft may occasionally pass over the WSP plan area and result in increased noise levels on the ground, the WSP solar facilities would not be sensitive to noise from these occasional overflights. Therefore, workers within the WSP plan area would not be exposed to excessive noise levels from flight operations associated with private airstrips, and the impact would be *less than significant*.

In summary, the workers within the WSP plan area would not be exposed to excessive noise levels from flight operations associated with public or public use airports, NAS Lemoore, or private airstrips in the vicinity. Therefore, the potential noise impacts from flight operations to workers within the WSP plan area would be *less than significant*.

## ***WSP Gen-Tie Corridors***

### **Public Airports**

The nearest municipal airports to the WSP gen-tie corridors include the Hanford and Coalinga airports, all of which are located between 6 and 20 miles from the transmission corridors at their nearest points. The flight operations associated with these airports are too far from the transmission corridors to result in excessive noise levels to workers on the transmission lines. Therefore, workers on the WSP gen-tie projects would not be exposed to excessive noise levels from flight operations associated with public or public use airports, and the impact would be *less than significant*.

### **NAS Lemoore**

Portions of the WSP to Gates gen-tie corridors are within the NASL flight pattern where ground noise level contours exceed 65 dBA CNEL and can exceed 70 dBA CNEL in small areas. Transmission projects are not noise sensitive and are considered compatible with exterior noise levels up to 76 dBA CNEL. Therefore, military overflights associated with NAS Lemoore would not expose workers on the WSP gen-tie projects to excessive noise levels, and the impact would be *less than significant*.

### **Private Airstrips**

There are five private airstrips within about 5 miles of the WSP gen-tie corridors. The nearest airstrips are at Shannon Ranch at Avenal Cutoff Road and Gale Avenue, where the north end of the runway is located just over one mile south of the WSP-North to Gates gen-tie corridor; and at Stone Land Company Ranch on Nevada Avenue, where the north end of the runway is about 0.3 miles from the WSP-South to Gates gen-tie corridor. Occasional takeoffs and landings at these private airstrips would generate noise at the nearby portions of these gen-tie corridors. However, the noise levels from small private aircraft would not be excessive, and transmission workers would be present in the vicinity relatively briefly during gen-tie line construction, and rarely during inspection and maintenance activities once the gen-tie lines are completed. These workers would not be exposed to excessive noise levels from flight operations associated with private airstrips. The remaining 3 airstrips are located from

3 to 5 miles from the gen-tie corridors. At these distances, flight operations associated with the airstrips would not result in excessive noise levels at the nearest segments of the transmission corridors. Therefore, workers on the WSP gen-tie projects would not be exposed to excessive noise levels from flight operations associated with private airstrips, and the impact would be *less than significant*.

In summary, the workers on the WSP gen-tie projects would not be exposed to excessive noise levels from flight operations associated with public or public use airports, NAS Lemoore, or private airstrips in the vicinity. Therefore, the potential noise impacts from flight operations to workers within the WSP gen-tie corridors would be *less than significant*.

### **Mitigation Measures:**

**Westlands Solar Park.** No mitigation is required.

**WSP Gen-Tie Corridors.** No mitigation is required.

---

## ***Cumulative Noise Impacts***

### **Impact NOI-11. Cumulative Noise Impacts**

**Westlands Solar Park.** The noise generated by WSP solar projects, along with noise from other cumulative projects, would combine to result in a small increase in noise levels in the area. (*Less-than-Significant Cumulative Impact*)

**WSP Gen-Tie Corridors.** The noise generated by WSP gen-tie projects, along with noise from other cumulative projects, would combine to result in a small increase in noise levels in the area. (*Less-than-Significant Cumulative Impact*)

## ***Geographic Scope of Cumulative Analysis***

Noise levels generated by construction and operational activity within the WSP plan area and within the WSP gen-tie corridors would drop off to acceptable levels within several hundred feet of the noise sources. The construction and operation of the WSP solar facilities would also generate traffic which would increase noise levels along roadways serving the WSP solar projects. Due to the differences in character and distribution between these two noise source categories, the noise from on-site sources is treated separately from noise produced by project-generated traffic along off-site roadways for purposes of this cumulative analysis.

The construction and operational noise generated by the WSP solar projects would be confined to the adjacent and nearby properties. To take into account the potential additive effects of noise sources at the WSP Plan area when combined with on-site noise sources at other cumulative projects in the vicinity, this cumulative analysis considers the potential noise sources from cumulative projects within ¼ mile of the WSP plan area.

Noise level increases resulting from WSP-generated traffic would occur along the main roadways serving the plan area. The roadside areas subject to noise increases would extend out from the plan area beyond the immediate project vicinity. Therefore, the geographic scope of impacts due to project traffic noise would be different than the geographic scope of noise impacts due to on-site construction and operations which would be limited to the area immediately surrounding the plan area. The project contributions to cumulative traffic noise would diminish with distance from the plan area, as project traffic would radiate from the site and disperse throughout the surrounding roadway network. Project traffic noise would also be confined to the immediate vicinity of the roadways affected.

## **Westlands Solar Park**

### **Near Term**

Under near-term conditions, there are four pending, approved, and completed projects (or groups of projects) within a ¼ mile radius of the WSP's outside boundaries. (Note: The Westside Solar project and Westlands Aquamarine solar project, shown in Figure PD-9, are located within the WSP plan area. However, since the impacts associated with these projects are addressed in the WSP impact analysis, they are not included again in the list of cumulative projects below.) All four of these projects comprise completed solar PV developments. These solar projects are listed below and described in Section 2.5. *Completed, Approved and Pending Projects/ Introduction to Cumulative Impact Analysis*. Their locations are shown in Figure PD-9.

- Mustang/Orion/Kent South
- American Kings
- Mustang 2
- Kettleman

As noted above, the nearest two of the cumulative projects (Mustang/Orion/Kent South and Kettleman Land) have been constructed, and two others (Mustang 2 and American Kings) are pending approval. For purposes of this analysis, it is assumed that peak construction period of the latter two projects would occur at the same time as the peak construction period assumed for the WSP solar development.

In the far term, it is assumed that development would occur in accordance with the 2035 Kings County General Plan land uses and transportation network.

### Near-Term Cumulative Noise from On-Site Sources

In general, the combined noise from project construction and operational activities at the cumulative project sites would result in a cumulative noise impact if the combined noise levels from the cumulative projects exceeded the applicable County noise standards at the location of a noise-sensitive receiver. As discussed previously, the nearest sensitive receivers to the WSP plan area are the existing residences at the Shannon Ranch Complex at Avenal Cutoff Road and Lincoln/Gale Avenue, and at the Stone Land Company Ranch on Nevada Avenue, 1.4 miles east of Avenal Cutoff Road.

The American Kings and Mustang 2 solar projects occupy a combined area of 3,384 acres directly to the northeast and east of the northeast corner of the WSP plan area (see Figure PD-9 in Chapter 2. *Project Description*). The nearest sensitive receptors to the American Kings project consist of the schools and base housing within NAS Lemoore on the north side SR-198, which are 400 feet north of the American Kings

site. The nearest sensitive receptors to the Mustang 2 site are rural residences located about one mile east along 22<sup>nd</sup> Avenue. The most northerly point in the WSP plan area is 2.5 miles south of the nearest sensitive receptors at NAS Lemoore (i.e., base housing), and about one mile west of the rural residences along 22<sup>nd</sup> Avenue. Under assumed worst-case conditions, peak construction activity would occur at the north end of the American Kings project (i.e., at 25<sup>th</sup> Avenue and SR-198), which is approximately 400 feet from the nearest sensitive receivers (base housing) at NAS Lemoore. The peak construction noise level would be approximately 93 dB  $L_{max}$  at 50 feet, which would decrease to 75 dBA  $L_{max}$  at 400 feet. The noise levels received from the most northerly construction within the Mustang 2 project site located 2 miles away would be 47 dBA  $L_{max}$ , which would comprise a negligible portion of the overall noise level at the nearest sensitive receiver at NAS Lemoore under assumed worst-case conditions. The noise levels received from the most northerly construction within the WSP plan area at 2.5 miles away would be 42 dBA  $L_{max}$ , which would also comprise a negligible portion of the overall noise level at the nearest sensitive receiver at NAS Lemoore under assumed worst-case conditions. The combined peak construction noise level of 75 dB  $L_{max}$  from all 3 cumulative projects at the nearest sensitive receiver at NAS Lemoore would meet the County's 75 dBA  $L_{max}$  daytime noise standard for residential receivers. Therefore, the cumulative noise impacts from combined peak on-site construction noise levels generated at the American Kings, Mustang 2, and WSP solar projects under assumed worst-case conditions would be less than significant.

The cumulative projects are located substantial distances from the sensitive residential receivers located adjacent to the WSP plan area. The most westerly point of the Mustang 2 solar project site is located 3.0 miles east of the Shannon Ranch Complex and 6.0 miles northeast of the Stone Land Company Ranch. The most southerly point of the American Kings solar project site is located 3.9 miles northeast of the Shannon Ranch Complex and 7.3 miles northeast of the Stone Land Company Ranch. At these distances, the peak construction noise generated by the adjacent solar projects would not be audible at either of these sensitive receptor locations and would not combine with peak construction noise from WSP solar development to result in a cumulative increase in noise levels at these receiver locations.

Under post-construction conditions, when American Kings, Mustang 2, and the nearby WSP solar projects are operational, the noise levels generated at these solar facilities would be very low, as discussed for the WSP solar operations under Impact NOI-5, and would not be audible at the potentially affected receiver locations. Once the American Kings and Mustang 2 solar projects are operational, portions of the WSP plan area would still be under construction. However, combination of WSP construction noise and operational noise from the other two cumulative projects would be lower than noise levels during concurrent construction of all three solar projects, a condition under which noise impacts would be less than significant, as discussed above. Therefore, noise impacts under this less noisy cumulative scenario would also be less than significant.

In summary, the near-term cumulative noise impacts associated with the construction and operation of the WSP solar facilities and the other cumulative projects would be *less than significant*.

#### Near-Term Cumulative Traffic Noise

The cumulative analysis of near-term traffic noise impacts considers the noise generated by near-term cumulative projects, consisting of the solar development in the vicinity of the WSP plan area. These projects were identified based on their potential to contribute traffic to roadways which would also be subject to substantial WSP-generated traffic. The only projects in the WSP vicinity that have the potential to generate significant cumulative traffic are the same projects as identified above for the analysis of on-site noise sources. These consist of the American Kings and the Mustang 2 solar projects. There are no

other pending or approved developments within the general WSP vicinity that have the potential to contribute substantial cumulative traffic volumes to the roadway network utilized by the WSP solar projects during their construction or operational phases.

As discussed above under Impact NOI-3, residential receptors that are potentially subject to WSP-generated traffic noise include the following: Shannon Ranch complex at Avenal Cutoff Road and Gale/Lincoln Avenue; Stone Land Company Ranch located on Nevada Avenue 1.4 miles east of Avenal Cutoff Road; residences on Jayne Avenue, 3.5 miles west of Avenal Cutoff Road; and residences on Gale Avenue, 4.3 miles west of Avenal Cutoff Road. The current ambient noise levels at those receptor locations are shown in Table NOI-9 below.

**TABLE NOI-9**  
**NEAR-TERM CUMULATIVE TRAFFIC NOISE LEVELS AT RESIDENTIAL RECEPTOR LOCATIONS**

Residential Receiver Location	2015 Baseline Day-Night Average Noise Level at 100 feet from Road C/L (dBA L <sub>dn</sub> )	Noise Level with WSP Peak Near-Term Traffic (dBA L <sub>dn</sub> )	Noise Level Increase due to Peak Near-Term WSP Traffic (dBA L <sub>dn</sub> )	Near-Term Cumulative Traffic Noise Levels (dBA L <sub>dn</sub> )	Near-Term Cumulative Noise Level Increase due to Cumulative Traffic (dBA L <sub>dn</sub> )	Impact Significance Criterion (dBA increase) <sup>1,2</sup>	Significant Cumulative Noise Impact?
<b>Shannon Ranch</b> (w/s Avenal Cutoff Rd. at Lincoln Av.)	73 <sup>3</sup>	73.1 <sup>4</sup>	0.1 dBA	73.4	0.4 dBA	+1.5 dB	<b>No</b>
<b>Stone Land Co. Ranch</b> (1.4 miles east of Avenal Cutoff Rd.)	61 <sup>3</sup>	61.7 <sup>4</sup>	0.7 dBA	63.9	2.9dBA	+3.0 dBA	<b>No</b>
<b>Jayne Avenue</b> (3.5 miles west of Avenal Cutoff Rd.)	68 <sup>3</sup>	68.0 <sup>4</sup>	0.0 dBA	68.4	0.4 dBA	+1.5 dB	<b>No</b>
<b>Gale Avenue</b> (4.3 miles west of Avenal Cutoff Rd.)	59 <sup>3</sup>	59.0 <sup>4</sup>	0.0 dBA	59.2	0.2 dBA	+5.0 dB	<b>No</b>

**Footnotes:**

<sup>1</sup> Kings County Noise Element 2010, Policy B1.2.1 page N-35.

<sup>2</sup> Fresno Co. 2000 General Plan Update – Health & Safety Element (policy HS-G.7) p. 2-176.

<sup>3</sup> Illingworth & Rodkin, Long-term noise measurements, December 14, 2015 (in Appendix E of this EIR).

<sup>4</sup> Based on I&R's short-term noise measurements and traffic volume increase from WSP projects.

Source: Illingworth & Rodkin 2016

As discussed in Section 3.10.2. *Regulatory Context* above, the applicable Kings County noise standard is 65 dBA CNEL (or L<sub>dn</sub>) for residential uses in agricultural zones that are subject to transportation noise. Kings County Noise Element Policy B1.2.1 also provides that substantial increases in traffic noise levels may also be significant depending on ambient conditions. In particular, the policy provides that for locations where the ambient noise level is under 60 dB L<sub>dn</sub>, a 5 dBA increase would be significant. Where the ambient noise level is between 60 and 65 dBA L<sub>dn</sub>, a 3 dBA increase would be significant; and

where the ambient noise level is over 65 dB  $L_{dn}$ , a noise increase of 1.5 dB would be significant. These noise impact criteria are also applied by Fresno County. (It is noted that while the Kings County Noise Element transportation noise thresholds are expressed in terms of CNEL, the noise increments that would define a significant noise increase are expressed in  $L_{dn}$  in the Noise Element. Since the CNEL and  $L_{dn}$  metrics are very similar, they are considered equivalent for purposes of comparing noise level increases with the noise standards in this analysis.) These criteria are also applied below in the analysis of cumulative noise impacts at the receiver locations.

Table NOI-9 shows the noise level increases due to peak WSP construction traffic, and also shows cumulative noise level increases due to WSP construction traffic combined with traffic from other projects in the area. As discussed in Section 3.13, *Traffic and Circulation*, the analysis is based on assumed worst-case conditions where the two pending but not yet constructed solar projects nearby (American Kings and Mustang 2) would both be under construction at the same time as peak construction activity occurs within WSP.

Based on near-term cumulative traffic projections from Section 3.13, it was calculated by Illingworth & Rodkin that near-term cumulative noise levels along the affected roadways would increase by 0.2 dBA  $L_{dn}$  to 2.9 dBA  $L_{dn}$  relative to ambient 2015 conditions at the locations of the potentially affected residential receivers. The resulting noise levels at the affected residential receivers would be less than the applicable noise increase criteria of Kings and Fresno counties, which are also considered to be the thresholds of significance for cumulative traffic noise increases for purposes of this analysis. Therefore, the near-term cumulative noise impacts due to increased traffic on affected roadways would be *less than significant*.

### **Far Term**

#### Far-Term Cumulative Noise from On-Site Sources

The cumulative noise from on-site sources in the far term would reflect buildout of land uses planned under the 2035 Kings County General Plan and the Fresno County 2000 General Plan. As designated in the Kings County Land Use Map (GP Fig. LU-11), all the lands in the WSP vicinity are planned for agricultural land uses. The nearest areas planned for non-rural development are the Stratford Community Plan area, located 2.0 miles east of the WSP plan area, and the Kettleman City Community Plan area, located 2.0 miles south of the WSP plan area. In Fresno County to the west, the nearest planned development would occur in the City of Huron, located 6.2 miles west of the WSP Plan area. Peak construction and operational noise sources resulting from buildout of these rural communities would not be audible at the sensitive receptors for WSP development. The Shannon Ranch Complex is located 6.9 miles from the Stratford Community Plan area, 11 miles from the Kettleman City Community Plan area, and 7.3 miles from the City of Huron. The Stone Land Company Ranch is located 8.7 miles from the Stratford Community Plan area, 7.9 miles from the Kettleman City Community Plan area, and 7.6 miles from the City of Huron. At these distances, the peak noise generated by development activity within these rural communities would not combine with noise generated by WSP solar development to result in increased cumulative noise levels at any sensitive receptor locations in the far term.

It is possible that currently unknown or unforeseen development could occur on the agriculturally-designated lands in the WSP vicinity. Such development could consist of solar PV facilities or infrastructure improvement projects such as power transmission lines or transportation capacity enhancing projects. Such solar or infrastructure projects could be proposed in proximity to the Shannon Ranch Complex or the Stone Land Company Ranch under far-term conditions. It is also possible, but unlikely, that the peak construction periods of such projects could occur at the same time as nearby development within the WSP

plan area, resulting in potential temporary increases in cumulative noise levels. The analysis of such a scenario is speculative, but in the unlikely event it were to occur, it is reasonable to expect that the noise standards of the Kings County Noise Element and the Fresno County Health and Safety Element, as applicable, would be implemented. This would ensure that noise levels at each project site would be reduced such that potential noise impacts at the sensitive receptor locations would be reduced to less-than-significant levels. The potential for residual, less-than-significant noise levels at potential adjacent projects to combine to result in cumulatively significant noise levels is considered highly unlikely, even under this hypothetical worst-case scenario. Cumulative operational noise levels after construction would be lower than cumulative construction noise levels and therefore would also be less than significant. Therefore, the potential for cumulative noise impacts to occur in association with WSP solar development in the far-term is *less than significant*.

In summary, the far-term cumulative noise impacts associated with the construction and operation of the WSP solar facilities and the other cumulative development that could occur under the Kings County and Fresno County General Plans would be *less than significant*.

#### Far-Term Cumulative Traffic Noise

The noise standards and significance thresholds applied in the analysis of near-term cumulative traffic noise impacts, above, are also applicable to this analysis of far-term cumulative traffic noise impacts.

The far-term cumulative noise analysis is based on the same assumptions as the far-term traffic analysis discussed in Section 3.13. *Traffic and Circulation*. Under the worst-case assumption, WSP buildout would occur in 2030, when it is assumed that traffic volumes projected for General Plan buildout would also occur. Since the WSP solar facilities were not contemplated in the General Plan traffic forecasts, the WSP traffic volumes were added to the 2035 GP traffic volumes. The hypothetical worst-case condition for WSP traffic generation under far-term conditions, presented in Table TRA-2, assumes that all operational traffic from WSP buildout would be included, in addition to construction traffic generated by peak construction activity from two 250 MW solar facilities constructed concurrently within the WSP plan area. It is further assumed that the other currently proposed and approved solar projects in the area would be completed and operational. Thus, the operational traffic generated by these completed projects is included in the cumulative traffic projections upon which the cumulative traffic noise analysis is based. All future non-solar development projects are assumed to be included in the traffic projections for General Plan buildout.

It is possible that additional solar and other development may be proposed within the life of the General Plan that is not reflected in the current Land Use Element; and any such development may generate traffic and noise that is not included in the Circulation Element traffic projections or the Noise Element projections for future noise levels adjacent to the affected roadways. However, the nature and location of such potential development is currently unforeseeable. Any attempt to predict and analyze the potential impacts from currently unknown development patterns would be speculative, and CEQA explicitly requires that EIRs not engage in such speculative analysis.

As shown in Table NOI-10, the combined traffic noise increase from WSP solar facilities and the operation of the other solar projects in the area in 2030 under the assumed worst-case conditions would result in cumulative noise level increases ranging from 0.1 to 1.6 dB  $L_{dn}$  at the receptor locations over baseline 2030 conditions.

**TABLE NOI-10**  
**2030 CUMULATIVE TRAFFIC NOISE LEVELS AT RESIDENTIAL RECEPTOR LOCATIONS**

Residential Receiver Location	2030 Baseline Day-Night Average Noise Level at 100 feet from Road C/L (dBA L <sub>dn</sub> )	Far-Term Noise Level with WSP Peak Operational plus Peak Construction Traffic (dBA L <sub>dn</sub> )	Far-Term Noise Level Increase due to WSP Peak Traffic (dBA L <sub>dn</sub> )	Far-Term Cumulative Noise Level (dBA L <sub>dn</sub> )	Far-Term Cumulative Noise Level Increase from Cumulative Traffic <sup>1</sup> (dBA L <sub>dn</sub> )	Applicable Impact Criterion (dBA increase) <sup>2,3</sup>	Significant Cumulative Noise Impact?
<b>Shannon Ranch</b> (w/s Avenal Cutoff Rd. at Lincoln Av.)	76.2 <sup>4</sup>	76.2 <sup>5</sup>	0.0 dBA	76.4 <sup>5</sup>	0.2 dBA	+1.5 dB	<b>No</b>
<b>Stone Land Co. Ranch</b> (1.4 miles east of Avenal Cutoff Rd.)	64.5 <sup>4</sup>	64.9 <sup>5</sup>	0.4 dBA	66.1 <sup>5</sup>	1.6 dBA	+3.0 dBA	<b>No</b>
<b>Jayne Avenue</b> (3.5 miles west of Avenal Cutoff Rd.)	71 <sup>4</sup>	71 <sup>5</sup>	0.0 dBA	71.2 <sup>5</sup>	0.2 dBA	+1.5 dB	<b>No</b>
<b>Gale Avenue</b> (4.3 miles west of Avenal Cutoff Rd.)	62 <sup>4</sup>	62 <sup>5</sup>	0.0 dBA	62.1 <sup>5</sup>	0.1 dBA	+3.0 dB	<b>No</b>

**Footnotes:**<sup>1</sup> Includes WSP operational and construction traffic in 2030.<sup>2</sup> Kings County Noise Element 2010, Policy B1.2.1 page N-35.<sup>3</sup> Fresno Co. 2000 General Plan Update – Health & Safety Element (policy HS-G.7) p. 2-176.<sup>4</sup> Illingworth & Rodkin, Short Term and Long term noise measurements, December 14, 2015.<sup>5</sup> Based on I&R's short-term noise measurement and traffic volume increase.

Source: Illingworth &amp; Rodkin

As shown in Table NOI-10, these noise level increases would be lower than the applicable thresholds that define significant noise level increases in the Kings County Noise Element and the Fresno County Health and Safety Element. Therefore, the worst-case traffic generation from combined construction and operational activities would result in a *less-than-significant* cumulative noise impact under far-term conditions.

### **WSP Gen-Tie Corridors**

As discussed previously in this section, the construction and operation of the planned gen-tie lines would result in increased noise levels within several hundred feet of the gen-tie corridors. Noise levels would drop to below applicable county thresholds at 400 feet for conventional construction. (Although helicopter noise would drop off county threshold levels at 700 feet from the source, it is highly unlikely that two proximate projects would engage in helicopter construction at the same time, so this distance is not applicable to the cumulative analysis.)

Noise from another project nearby could potentially contribute to noise level at the location of a sensitive receiver to noise from the planned gen-tie lines. It would be necessary for such additional noise source to be located within 400 feet of the common sensitive receptor to have a significant additive effect on noise



levels at the receiver location (i.e., with the combined noise sources resulting in an exceedance of an applicable noise standard). To be conservative, the geographic scope of analysis for cumulative noise impacts related to the WSP gen-tie projects is set at 1,000 feet from the gen-tie corridors. Thus, cumulative projects located within 1,000 feet of the planned transmission corridors are considered in this analysis

### **Near Term**

Under near-term conditions, there are two transmission projects and one solar project on lands within 1,000 feet the WSP gen-tie corridors. These projects are listed below and shown in Figure PD-10, and described in Section 2.5. *Completed, Approved, and Pending Projects/Introduction to Cumulative Impact Analysis.*

- Gates to Gregg Transmission Project (Central Valley Power Connect)
- Westside Transmission Project (Gates to Dos Amigos/Los Banos Substation)
- EC&R Solar

As discussed previously in this section, the WSP gen-tie projects would generate noise from several sources during construction and operation. During construction, noise would be generated by heavy equipment used in grading and excavation, assembly of the transmission towers, and installation of conductors. In some instances, helicopter construction may be required, which would generate substantial noise. Traffic noise would be generated along local roadways by trucks delivering equipment and materials, and by workers arriving and departing the construction sites. Due to the progressive nature of transmission line construction, the activity levels at a given location would be temporary and short in duration. As discussed under Impact NOI-1, noise from conventional construction activity would not exceed the applicable noise standards at the nearest receiver locations along the WSP gen-tie corridors. While there is some potential that helicopter construction may be employed, with higher noise levels than conventional construction, it is unlikely that any two projects would engage in helicopter construction at the same time. Therefore, cumulative or additive noise from these sources is highly unlikely to occur, and thus they are not considered in this cumulative analysis.

Although the gen-tie projects would generate some traffic during construction from trucks delivering materials and workers traveling to and from the job sites, the overall volumes would be very light and would occur briefly at any given location considering the progressive nature of gen-tie line construction. Operational traffic would consist of utility trucks traveling to tower sites for regular inspection and maintenance activities, which would also result in negligible increases in traffic noise levels along local roadways. Therefore, noise impacts associated with construction and operational traffic generated by the Westlands Solar Park transmission would not be significant.

As discussed above, it is possible that the northern WSP gen-tie project could be built simultaneously with the construction of other planned transmission or solar projects in the vicinity. If so, there is a potential that noise levels at nearby sensitive receptors could increase, as discussed below.

The only potential situation where a WSP gen-tie project would be constructed near one of the other cumulative transmission projects is if the northern WSP gen-tie project were to be constructed at the same time as the adjacent segment of the Gates to Gregg transmission project (Central Valley Power Connect). The northern gen-tie corridor would run parallel to one of the alternative routes for the adjacent CVPC transmission project along its entire 11.5-mile corridor. There are 10 rural residences located between 0.3 and 0.9 miles from the corridor. Given that the nearest residence is located 1,600 feet from the northern

gen-tie corridor, the maximum construction noise levels at this residence would be 60 dBA from the WSP gen-tie project, and 63 dBA with the addition of the CVPC transmission project, if constructed adjacent and concurrently. This worst-case noise level would be well below Fresno County's maximum permissible exterior noise level of 70 dBA during daytime hours of 7 AM to 10 PM.

The northern gen-tie corridor runs adjacent to the EC&R solar project site just east of SR-269. The nearest residential receptors to the EC&R site is located 1,150 feet east on Tractor Avenue. At this distance the maximum construction noise levels at the nearest residences would be 63 dBA from the EC&R project alone. As discussed above, maximum combined construction noise levels from the northern gen-tie project and the Central Valley Power Connect project would be 63 dBA at these same residences. Assuming construction of all three projects occurred simultaneously and at the nearest respective locations to these residential receptors, the combined maximum construction noise levels would be 66 dBA. This worst-case noise level would be well below Fresno County's maximum permissible exterior noise level of 70 dBA during daytime hours of 7 AM to 10 PM.

In addition, construction noise sources are exempt from the Fresno County noise standards, provided the construction activities do not take place before 6 AM or after 9 PM on weekdays, or before 7 AM or after 5 PM on Saturdays or Sundays (see Section 3.10.2. *Regulatory Context* above). Therefore, the near-term cumulative noise impact associated with construction of the WSP gen-tie projects would be *less than significant*.

Upon completion of construction, the operational noise sources from the transmission line would include occasional noise from corona discharge and low noise levels associated with maintenance and inspection activities. The noise from these sources would decrease to ambient levels within a short distance of the transmission line. These low noise levels would not combine with other cumulative noise sources to result in substantial increases in noise levels. Therefore, the near-term cumulative noise impacts from operation of the completed WSP gen-tie lines would be *less than significant*.

#### ***Far Term***

Under far-term conditions in 2030, the planned gen-tie lines would be completed. The noise levels from operation of the gen-tie lines would be very low, as discussed above. The nature and location of future development in the vicinity of the gen-tie corridors in 2030 is unknown. While the General Plans for Kings and Fresno counties indicate a continuation of rural and agricultural development patterns in the vicinity of the transmission corridors, there is a potential for currently unknown solar development or transmission other projects to be developed nearby. Even so, the noise levels from operation of the gen-tie lines would be sufficiently low that even under worst-case conditions where development would occur adjacent to the gen-tie corridors, the noise from the gen-tie lines combined with operational noise from any nearby development would not result in a substantial cumulative increase in noise levels. Therefore, the cumulative noise impacts associated with the operation of the WSP gen-tie projects in the far term would be *less than significant*.

#### **Mitigation Measures:**

**Westlands Solar Park.** No mitigation is required.

**WSP Gen-Tie Corridors.** No mitigation is required.

## REFERENCES/BIBLIOGRAPHY – NOISE

- Bies 2003                      Bies, David A., et al. *Engineering Noise Control, Third Edition*. Spon Press, Taylor & Francis Group, 2003.  
[https://books.google.com/books?id=v98PaeB8nQkC&pg=PA242&lpg=PA242&dq=does+oleander+attenuate+noise&source=bl&ots=4n8i7hYY38&sig=q-yPY7VrEcPk74AIsWUYZbUyRjk&hl=en&sa=X&ved=0ahUKEwiJpd\\_jvdzUAhVX\\_WMKHbi6AMQQ6AEIRTAf#v=onepage&q=does%20oleander%20attenuate%20noise&f=false](https://books.google.com/books?id=v98PaeB8nQkC&pg=PA242&lpg=PA242&dq=does+oleander+attenuate+noise&source=bl&ots=4n8i7hYY38&sig=q-yPY7VrEcPk74AIsWUYZbUyRjk&hl=en&sa=X&ved=0ahUKEwiJpd_jvdzUAhVX_WMKHbi6AMQQ6AEIRTAf#v=onepage&q=does%20oleander%20attenuate%20noise&f=false)
- CPUC 2009                      California Public Utilities Commission (CPUC). 2009. *Draft Environmental Impact Report – Southern California Edison’s San Joaquin Cross Valley Loop 220 KV Transmission Line Project*. CPUC A.08-05-039. June 2009.  
[http://www.cpuc.ca.gov/Environment/info/esa/sjxvl/deir\\_toc.html](http://www.cpuc.ca.gov/Environment/info/esa/sjxvl/deir_toc.html)
- Fresno County 2000                      County of Fresno. 2000. *Fresno County 2000 General Plan – Health and Safety Element*. October.  
[http://www2.co.fresno.ca.us/4510/4360/General\\_Plan/GP\\_Final\\_policy\\_doc/Health%20Element\\_rj.pdf](http://www2.co.fresno.ca.us/4510/4360/General_Plan/GP_Final_policy_doc/Health%20Element_rj.pdf)
- Fresno County 2017a                      County of Fresno. 2017. *Fresno County Ordinance Code*. As amended through April 20, 2017.  
[https://www.municode.com/library/ca/fresno\\_county/codes/code\\_of\\_ordinances](https://www.municode.com/library/ca/fresno_county/codes/code_of_ordinances)
- I&R 2017                      Illingworth & Rodkin. 2017. *Noise Measurement Tables and Graphs– Westlands Solar Park and Planned Transmission Corridors*. May. (Contained in Appendix E of this EIR.)
- JLUSPC 2011                      Naval Air Station Lemoore Joint Land Use Study Policy Committee. 2011. *NAS Lemoore Joint Land Use Study – Final Release*. August 30.  
[http://www.kingscog.org/index.asp?SEC=1E7B4327-327C-4971-85B4-05AF6F18D22A&Type=B\\_LIST](http://www.kingscog.org/index.asp?SEC=1E7B4327-327C-4971-85B4-05AF6F18D22A&Type=B_LIST)
- Kings County 2009d                      County of Kings. 2009. *Final EIR – 2035 Kings County General Plan Update*. October. <http://www.countyofkings.com/home/showdocument?id=5897>
- Kings County 2010                      County of Kings. 2010. *2035 Kings County General Plan*. Adopted January 26.  
<http://www.countyofkings.com/departments/community-development-agency/information/2035-general-plan>
- Kings County 2016                      County of Kings. 2016. *Kings County Code of Ordinances, as amended through October 4*. [http://www.municode.com/library/CA/Kings\\_County](http://www.municode.com/library/CA/Kings_County)

SLO County 2010	San Luis Obispo County. 2011. Topaz Solar Farm – Draft EIR. October. Appendix 14 – Noise Background Information. <a href="http://www.sloplanning.org/EIRs/topaz/FEIR/V1Apps/App14-ALL-CD.pdf">http://www.sloplanning.org/EIRs/topaz/FEIR/V1Apps/App14-ALL-CD.pdf</a>
SLO County 2011	San Luis Obispo County. 2011. <i>California Valley Solar Ranch EIR; Appendix 4 – Transmission Upgrades to PG&amp;E Solar-Midway 230 kV Transmission Line</i> . January 2011. <a href="http://www.sloplanning.org/EIRs/CaliforniaValleySolarRanch/feir/apps/Ap04_Transmission_Upgrades_Solar-Midway.pdf">http://www.sloplanning.org/EIRs/CaliforniaValleySolarRanch/feir/apps/Ap04_Transmission_Upgrades_Solar-Midway.pdf</a>
USBLM 2001	US Bureau of Land Management (BLM). 2001. <i>Falcon to Gonder 345 kV Transmission Project Final EIS</i> . December 2001. <a href="http://www.blm.gov/nv/st/en/fo/battle_mountain_field/blm_information/national_environmental/falcon_to_gonder_345.html">http://www.blm.gov/nv/st/en/fo/battle_mountain_field/blm_information/national_environmental/falcon_to_gonder_345.html</a>
USBLM 2013	U.S. Bureau of Land Management (BLM). 2013. <i>Final Environmental Impact Report for the Gateway West Transmission</i> . April 2013. <a href="http://www.wy.blm.gov/nepa/cfodocs/gateway_west/">http://www.wy.blm.gov/nepa/cfodocs/gateway_west/</a>
USDOT 2006	U.S. Department of Transportation, Federal Transit Administration. 2006. <i>Transit Noise and Vibration Impact Assessment, Office of Planning and Environment, May 2006</i> (FTA-VA-9-1003-06). <a href="http://www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf">http://www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf</a>