

## 5.12 Noise

This section describes the environmental and regulatory setting and discusses impacts associated with the construction and operation of the Sanger Substation Expansion Project (proposed project) proposed by Pacific Gas & Electric Company (PG&E, or the applicant) with respect to noise and vibration.

### 5.12.1 Environmental Setting

#### Fundamentals of Noise and Vibration

Noise is defined as unwanted and objectionable sound. Noise is measured in terms of sound-pressure level using units called decibels (dBs). The most common system used by regulatory bodies for noise measurement is the A-weighted decibel scale. The A-weighted decibel (dBA) scale measures sound as an approximation of how a person perceives or hears sound. Since the range of intensities that the human ear can detect is large, the scale is based in multiples of 10, the logarithmic scale. Each interval of 10 decibels indicates a sound energy 10 times greater, which is perceived by the human ear as being roughly twice as loud. Table 5.12-1 contains definitions of acoustical terms used in this analysis.

Table 5.12-1 Definition of Acoustical Terms

Term	Definition
Noise	Unwanted sound, which occurs as a rapid fluctuation of air pressure above and below the atmospheric pressure. There are two important characteristics of noise: frequency and loudness. The number of pressure variations per second is called the frequency of sound and is measured in Hertz. The higher the frequency, the more high-pitched a sound is perceived to be. Loudness is measured in decibels, which are defined further below.
Decibel	Noise is measured in terms of sound-pressure level using units called decibels (dB). Since the range of intensities that the human ear can detect is large, the scale is based in multiples of 10, the logarithmic scale. Each interval of 10 dB indicates a sound energy 10 times greater. Each interval is perceived by the human ear as being roughly twice as loud.
A-weighted decibel (dBA)	The most common system used by regulatory bodies for noise measurement is the A-weighted decibel (dBA) scale. This scale measures sound as an approximate to how a person perceives or hears sound. A-weighted sound levels are typically measured or presented as the equivalent sound pressure level ( $L_{eq}$ ).
Equivalent sound pressure level ( $L_{eq}$ )	The average noise level, on an equal energy basis for a stated period of time. Sound levels are usually best represented by an equivalent level over a given time period ( $L_{eq}$ ) or by an average level occurring over a 24-hour day-night period ( $L_{dn}$ ).
Statistical noise measurement	Statistical methods are used to capture the dynamics of a changing acoustical environment. Statistical measurements are typically denoted by $L_{xx}$ , where xx represents the percentage of time the sound level is exceeded. For example, $L_{90}$ represents the noise level exceeded during 90 percent of the measurement period. Similarly, $L_{10}$ represents the noise level exceeded for 10 percent of the measurement period.
Day-night average sound level ( $L_{dn}$ ) noise level	The $L_{dn}$ , or day-night average sound level (DNL), is equal to the 24-hour A-weighted equivalent sound level that is weighted to account for differences in noise levels and the perception of noise during nighttime hours (10 p.m. to 7 a.m.). Most household noise also decreases at night, however, and exterior noise becomes more noticeable.

Noise levels in communities usually relate to the intensity of nearby human activity. Noise levels are generally considered to be low at levels below 45 dBA, moderate in the 45 to 60 dBA range, and high above 60 dBA. In wilderness areas, the  $L_{dn}$  noise levels can be below 35 dBA. In small towns or wooded and lightly used residential areas, the  $L_{dn}$  is more likely to be around 50 to 60 dBA.

1 The general human response to changes in noise levels that are similar in frequency content (e.g.,  
2 increases in continuous [ $L_{eq}$ ] traffic noise levels) are summarized as follows:

- 3
- 4 • A 3-dB change in sound level is considered a barely noticeable difference.
- 5 • A 5-dB change in sound level will typically be noticeable.
- 6 • A 10-dB change is considered to be a doubling in loudness.
- 7

### 8 **Ambient Noise Levels in the Project Area**

9 The proposed project would be located in rural and agricultural area of central Fresno County and on U.S.  
10 Forest Service (USFS) land in the Sierra National Forest at the Fence Meadow Repeater Station. Noise  
11 and vibration in central Fresno County is mainly the result of vehicular traffic on the adjacent roadways,  
12 with increased noise levels occurring during peak traffic hours. Crop harvesting and irrigation operations  
13 that involve the use of machinery (tractors, harvesters, irrigation pumps, and lines) generate additional  
14 intermittent noise in the project area, primarily during the daytime hours. Noise in the Sierra National  
15 Forest at the Fence Meadow Repeater Station primarily comes from intermittent on-road and off-highway  
16 vehicle (OHV) traffic along nearby roads and from vehicle traffic and maintenance work associated with  
17 the Fence Meadow Fire Lookout Station adjacent to the communications site. The noise level for a  
18 wooded area is about 20 to 30 dBA (California Board of Forestry and Fire Protection 2016). Maximum  
19 noise from OHVs is estimated to be no greater than 96 dBA measured at 20 inches. The USFS assumes  
20 that, generally, noise up to a half mile from OHVs would be detectable and present a noise impact to non-  
21 motorized recreation (USFS 2010). The estimated noise level from OHVs perceived at a distance of 0.5  
22 miles would be 32 dBA. This level of noise may occur periodically at the Fence Meadow Repeater  
23 Station as part of existing conditions.

24  
25 According to noise measurements obtained for the Fresno County General Plan Background Report, day-  
26 night average noise levels in the central area of Fresno County, including the proposed project area, are  
27 61 dBA ( $L_{dn}$ ) (Fresno County 2000a).

28  
29 In addition, the operation of two 30-megavolt ampere distribution transformers at the existing Sanger  
30 Substation produces a constant, low-level humming noise in the project area. According to the National  
31 Electrical Manufacturer's Association (NEMA 2014), standard audible sound levels for this size of  
32 electrical transformers are in the range of 63 decibels per unit at 3 feet from the source. One of the  
33 transformers is located in the southeastern portion of the existing substation site approximately 180 feet  
34 from the property line facing East Jensen Avenue; at this location, the operational noise level from this  
35 transformer is about 27 dBA,  $L_{dn}$ . The second transformer is located in the northeastern portion of the  
36 existing substation site, approximately 105 feet from the property line facing South McCall Avenue; at  
37 this location, transformer noise is about 33 dBA. Given that the transformers are at least 100 feet from the  
38 existing substation property line, and that levels between 27 to 33 dBA are lower than the reported  
39 ambient noise level, the transformer noise is not distinguishable outside the property line of the existing  
40 substation.

### 41 **Vibration**

42  
43 Another community annoyance related to noise is vibration. As with noise, vibration can be described by  
44 its amplitude and frequency. Amplitude may be characterized by displacement, velocity, and/or  
45 acceleration. Frequency of vibration can also change human perception—usually the longer the event and  
46 the higher the frequency, the more adverse the effect on human response (Caltrans 2013). Vibration can  
47 be felt outdoors, but the perceived intensity of vibration impacts are much greater indoors due to the  
48 shaking of the structure. Human response to vibration is difficult to quantify, and vibration can be  
49 perceived at levels that are below those required to produce any damage on structures. Typically,

perception and annoyance are higher for transient rather than for continuous vibration. The background velocity level in residential areas is usually 50 vibration decibels (VdB), which is presumed to be the background vibration level in the project area (FTA 2006).

**Sensitive Receptors**

Noise- and vibration-sensitive receptors include residences, hospitals, religious congregations, schools and libraries, nature and wildlife preserves, and parks. In addition to these land uses, research laboratories are also sensitive to groundborne vibration. The only sensitive receptors within 1,000 feet of the proposed project area are residences. No schools, hospitals, churches, parks, or other noise-sensitive land uses are located within 0.5 miles of the proposed project area. Table 5.12-2 and Figure 5.12-1 identify and show the residences near the proposed project. The Fence Meadow Repeater Station is located within a National Forest; however, no campsites, hiking trails, or other areas where sensitive receptors would be found are located within 1,000 feet of the repeater station. The nearest campsite is approximately two miles northeast of the repeater station. No airports or private airstrips are located within 2 miles of the proposed project area.

Table 5.12-2 Sensitive Receptors within 1,000 Feet of the Proposed Project Area

Sensitive Receptor ID	Nearest Project Component	Approximate Distance from the Project Component <sup>(1)</sup> (feet)	Direction from Sanger Substation
SR1	Power line reconfiguration (new 115-kV subtransmission line pole)	216	South
SR2	Substation expansion	267	North
SR3	Power line reconfiguration (temporary access road)	131	West
SR4	Power line reconfiguration (pull and tension site)	557	East
SR5	Power line reconfiguration (existing line to be removed)	605	Southeast
SR6	Power line reconfiguration (temporary access road)	133	West
SR7	Power line reconfiguration (pull and tension site)	762	Northwest
SR8	Power line reconfiguration (pull and tension site)	802	West

Source: PG&E 2016.

Note:

<sup>(1)</sup> Distance was measured from the closest point from the proposed project component to the closest point of each residence. Measurements to SR1 and SR2 were verified on the field by utilizing Differential Global Positioning System (GPS) and conventional surveying methods.

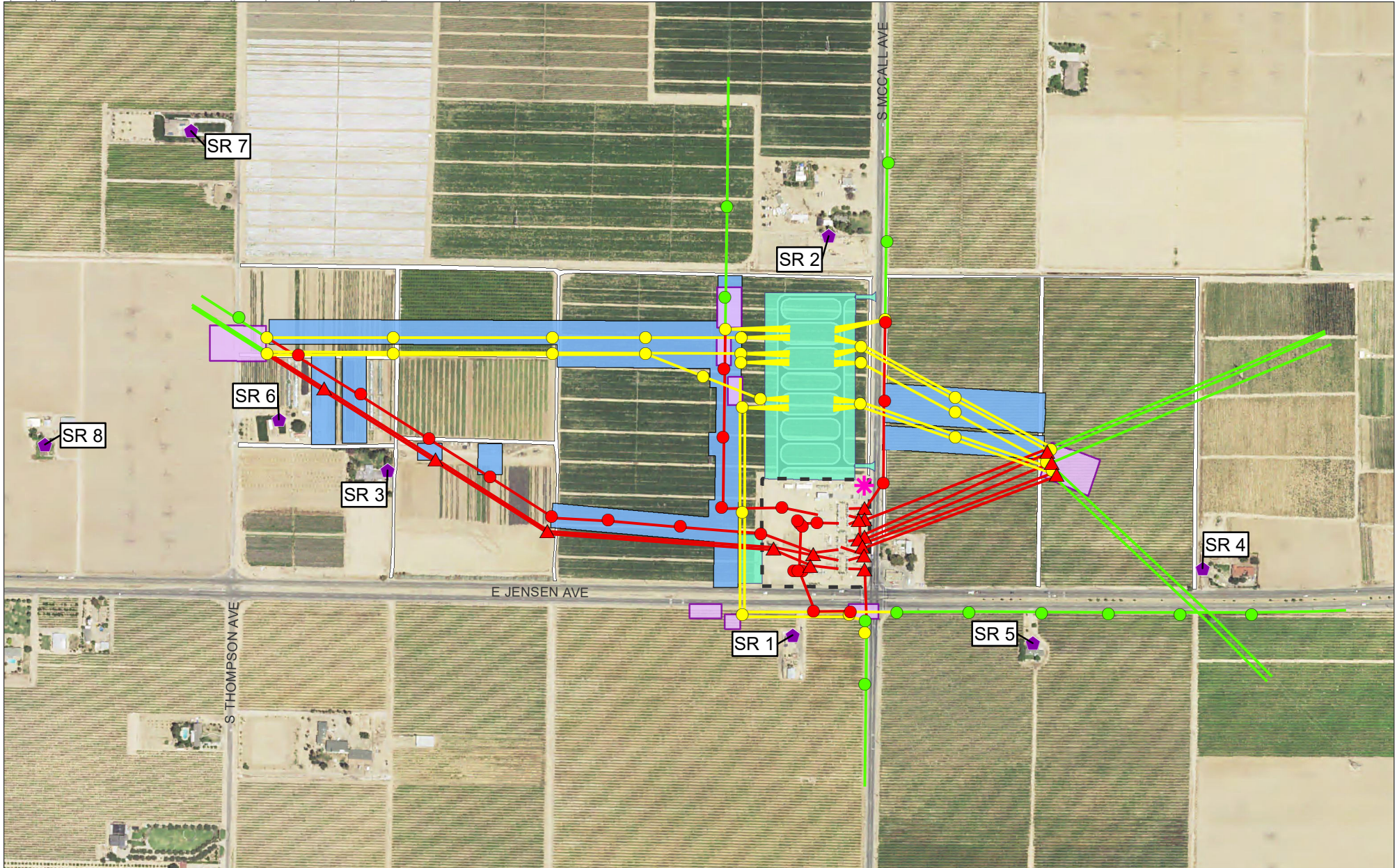
**5.12.2 Regulatory Setting**


**Federal and State**

**Sierra National Forest**

The Sierra National Forest Land Management Plan does not contain specific standards. However, when evaluating noise effects from OHV use, the USFS considered noise generated from within a half mile of an engine 96 decibels or louder a severe impact on non-motorized recreation (USFS 2010).





<ul style="list-style-type: none"> <li><span style="color: purple;">◆</span> Sensitive Receptors</li> <li><span style="color: magenta;">✱</span> Existing Gate on South McCall Ave</li> </ul>	<ul style="list-style-type: none"> <li><span style="color: green;">●</span> Existing Pole to Remain</li> <li><span style="color: yellow;">●</span> New Pole to be Installed</li> <li><span style="color: red;">●</span> Existing Pole to be Removed</li> <li><span style="color: red;">▲</span> Existing Tower to be Removed</li> </ul>	<ul style="list-style-type: none"> <li><span style="color: green;">—</span> Existing Line to Remain</li> <li><span style="color: red;">—</span> Existing Lines to be Removed</li> <li><span style="color: yellow;">—</span> New Line Installed</li> <li><span style="color: purple;">—</span> Pull and Tension Sites</li> <li><span style="color: cyan;">—</span> Proposed Substation Expansion Footprint</li> </ul>	<ul style="list-style-type: none"> <li><span style="border: 1px dashed black; display: inline-block; width: 10px; height: 10px;"></span> Existing Substation Footprint</li> <li><span style="background-color: lightblue; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Temporary Access Road</li> <li><span style="background-color: black; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Construction Access Road</li> <li><span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Existing Farm Road</li> </ul>	 <p>0 125 250 500 Feet</p>	<p><b>Figure 5.12-1</b>  <b>Sensitive Receptors</b>                  Sanger Substation                  Fresno County, CA</p>
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Source: PG&E 2015, 2016  
Basemap: NAIP 2014



1 **Local**

2 **Fresno County General Plan**

3 The Health and Safety Element of the County of Fresno General Plan (Fresno County 2000b) includes the  
4 following policies that are related to noise.

- 5
- 6 • **Policy HS-G.6:** *The County shall regulate construction-related noise to reduce impacts on*  
7 *adjacent uses in accordance with the County's Noise Control Ordinance.*
  - 8 • **Policy HS-G.8:** *The County shall evaluate the compatibility of proposed projects with existing*  
9 *and future noise levels through a comparison to Chart HS-1 (refer to Table 5.12-3 below which*  
10 *has been modified from the original to show only the applicable land use categories in the vicinity*  
11 *of the project, according to Chart HS-1 in the Fresno County General Plan).*
  - 12 • **Policy PF-J.2:** *The County shall work with local gas and electric utility companies to design and*  
13 *locate appropriate expansion of gas and electric systems, while minimizing impacts to agriculture*  
14 *and minimizing noise, electromagnetic, visual, and other impacts on existing and future residents.*  
15

Table 5.12-3 Land Use Compatibility for Community Noise Environments

Land Use Category	Community Noise Exposure (Outdoor) Day-Night Average Sound Level (L <sub>dn</sub> ) or Community Noise Equivalent Level (CNEL), decibels (dB)							
	50	55	60	65	70	75	80	85
Residential: Low-Density Single Family, Duplex, Mobile Homes								
Office Buildings, Business Commercial and Professional								
Industrial, Manufacturing, Utilities, Agriculture								
	Normally Acceptable	Specified land use is satisfactory based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.						
	Conditionally Acceptable	New construction of development should be undertaken only after a detailed analysis of the noise reduction requirement is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning would normally suffice.						
	Generally Unacceptable	New construction of development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.						
	Land Use Discouraged	New construction or development should generally not be undertaken.						

Source: Fresno County 2000b.

**Fresno County Noise Control Ordinance**

Chapter 8.40 of the Fresno County Ordinance Code establishes noise standards to protect the health, safety, and welfare of those living and working in the county and to implement policies of the Fresno County General Plan Health and Safety Element. Notably, the following activities are exempt from the provisions of Chapter 8.40, per section 8.40.060:

- *Noise sources associated with work performed by private or public utilities in the maintenance or modification of its facilities.*
- *Any activity to the extent regulation thereof has been preempted by state or federal law.*

Table 5.12-4 summarizes the outdoor noise standards that are established for noise-sensitive receptors in Fresno County. Section 8.40.090 of the Fresno County Ordinance Code states that “Notwithstanding the provisions of Section 8.40.040, noise sources associated with the operation of electrical substations shall not exceed 50 dBA when measured as provided in Section 8.40.030.”

**Table 5.12-4 Fresno County Exterior Noise Standards**

Category	Cumulative Number of Minutes in any 1-Hour Time Period	Noise Level Standards, dBA	
		Daytime 7 a.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	70	60
5	0	70	65

Source: Municipal Code Corporation 2016.

Note: Per Section 8.40.030 of the Fresno County Code, exterior noise levels are to be measured within 50 feet of the affected residence, school, hospital, church or public library and that interior noise levels are to be measured within the affected dwelling unit.

Key:

dBA      A=weighted decibels

Section 8.40.060C of the Fresno County Ordinance Code specifies that construction-related activities are exempt from noise standards and policies, provided that construction activities do not occur before 6 a.m. or after 9 p.m. on Monday through Friday, or before 7 a.m. or after 5 p.m. on Saturday or Sunday.

**5.12.3 Environmental Impacts and Assessment**

**Applicant Proposed Measures**

The applicant has incorporated applicant proposed measures (APMs) for the proposed project to specifically minimize or avoid impacts from noise. Not all APMs were applied to reduce impacts however; APM NOI-1 was not applied to reduce impacts on noise because impacts could not be minimized through application of this APM. Nonetheless, APM NOI-1 would be implemented by PG&E because it is considered to be part of the project. A list of all project APMs is included in Table 4-5.

**APM NOI-1: Construction schedule limits.** PG&E will limit construction hours so that construction will not occur before 6:00 a.m. or after 9:00 p.m. on any day except Saturday or Sunday, when construction will not occur before 7:00 a.m. or after 5:00 p.m. If nighttime work is needed because of clearance restrictions on the power line, PG&E will take appropriate measures to minimize

disturbance to local residents, including contacting nearby residences to inform them of the work schedule and probable inconveniences.

**APM NOI-2: Construction equipment noise reduction devices and low noise equipment.** PG&E shall include noise control requirements in specifications provided to construction contractors. Such contract specifications would include, but not be limited to, performing all work in a manner that minimizes noise; use of equipment with effective mufflers; use of “quiet” equipment (i.e., equipment that incorporates noise control elements into the design—compressors have “quiet” models) whenever possible; using equipment that is specifically designed for low noise emissions and equipment powered by electric or natural gas as opposed to diesel or gasoline; and undertaking the most noisy activities during the daytime to minimize disturbance to surrounding residents.

**APM NOI-3: Placement of stationary construction equipment.** Stationary equipment used during construction will be located at a minimum distance of 200 feet from sensitive noise receptors.

**APM NOI-4: Minimization of unnecessary engine idling.** Unnecessary engine idling will be limited. (See APM GHG-1.)

**APM NOI-6: Noise disruption minimization through residential notification.** Residents in areas of heavy construction noise will be notified prior to commencing construction activities. Notification will include written notice and the posting of signs in appropriate locations with a contact number that residents can call with questions and concerns.

**Noise Impacts**

Table 5.12-5 includes the significance criteria from Appendix G of the California Environmental Quality Act Guidelines’ noise section to evaluate the environmental impacts of the proposed project. The project area is not located in an airport land use plan or within 2 miles of a public airport or public use airport; therefore, there would be no impact under criterion (e), and a detailed discussion is not provided. The proposed project would not be in the vicinity of a private airstrip; there would be no impact under criterion (f), and a detailed discussion is not provided.

Table 5.12-5 Noise Checklist

Would the project result in:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Table 5.12-5 Noise Checklist

Would the project result in:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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**a. Would the project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?**

*NO IMPACT*

**US Forest Service**

The USFS does not have established noise standards for activities within the Sierra National Forest. Therefore, there would be no impact from construction or operation of the proposed project at the Fence Meadow Repeater Station as a result of noise levels in excess of applicable standards.

**Fresno County**

Pursuant to California Public Utilities Commission (CPUC) General Order No. 131-D, the CPUC has exclusive jurisdiction over the siting and design of the proposed project, and local land use regulations are preempted and would not apply to the proposed project. However, this analysis discusses whether construction or operation of the proposed project would conflict with Fresno County General Plan policies or noise ordinance.

**Ordinance Code**

Fresno County noise regulations are provided in Section 5.12.2, “Regulatory Setting.” The Fresno County Ordinance Code exempts from noise control provisions (including those related to construction activities) the following sources and activities:

- *Noise sources associated with work performed by private or public utilities in the maintenance or modification of its facilities*
- *Any activity to the extent regulation thereof has been preempted by state or federal law*

The proposed project would involve modification of existing facilities during construction and would then involve maintenance during operations. Furthermore, pursuant to CPUC General Order No. 131-D, local noise regulations are preempted by state law. For this reason, construction, operation, and maintenance of the proposed project is exempt from the Fresno County Ordinance Code. There would be no impact related to the Fresno County Ordinance Code.



**Fresno County General Plan****Construction**

The General Plan has no numerical threshold or other guidance for noise during construction activities. Therefore, there would be no impact during construction as a result of exceeding an established local noise standard.

**Operation and Maintenance**

After expansion of the substation, and during operation of the proposed project, the transformers would remain in the same location and no new equipment that would generate additional noise or exceed existing noise levels would be installed at the substation. Maintenance activities would also be the same as currently conducted and would therefore not generate new noise despite the increased size of the substation area. There would be no noise impact and therefore no conflict with the General Plan.

Operation of the proposed reconfigured 115-kilovolt (kV) lines would generate corona noise. The corona effect is the ionization of the air that occurs at the surface of the energized conductor and suspension hardware due to very high electric field strength at the surface of the metal during certain conditions. The corona discharge occurs at the conductor surface, representing a small dissipation of heat and energy in the form of local pressure changes that may result in audible noise or radio and television interference. Audible noise levels from the reconfigured 115-kV subtransmission line segments are expected to be relatively low, generally less than 34 dBA in rainy conditions directly below the conductor. The proposed powerline reconfiguration would not increase voltage or require co-location of conductors and new structures that would increase the corona effect from existing lines. Therefore, corona noise generated by the reconfigured power lines would be the same as the existing power lines and so would not generate new noise. Even though the transmission lines would be shifted slightly from their current position, the corona noise would still be below ambient levels and would not violate standards in the Fresno County General Plan policy related to noise compatibility (Policy HS-G.8).

**b. Would the project result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?****Construction*****LESS THAN SIGNIFICANT IMPACT***

During project construction, groundborne vibration would occur mainly from heavy-duty equipment (e.g., trucks, backhoes, and cranes) driving on uneven surfaces or excavating or compacting the ground surface. The level of groundborne vibration from construction activities at a particular distance from the vibration source depends on the distance between the source and the receptor, the type of equipment used, and the soil conditions at and between the construction site and the receptor. Activities associated with truck traffic, construction of the expanded substation, and excavation for and installation of the tubular steel poles for the reconfigured electrical lines would have the greatest potential to cause groundborne vibration. Construction-related groundborne vibration impacts generally occur within 50 feet of the generating source due to the rapid attenuation of vibration over distance.

1 Table 5.12-6 shows the estimated vibration levels for typical construction sources associated with the  
 2 proposed project at the closest sensitive receptor. Vibration levels from all equipment would be far below  
 3 the residential annoyance threshold (80 VdB). In addition, construction would occur during daytime  
 4 hours, when residences are least sensitive. Construction in these areas would also be temporary, and  
 5 vibration would be intermittent. Vibration related to construction of the proposed antenna system at Fence  
 6 Meadow Repeater Station would not be detectable to sensitive receptors. Therefore, vibration impacts  
 7 would be less than significant.  
 8

Table 5.12-6 Vibration Levels from Typical Construction Equipment

Vibration Source	Estimated Vibration Level at Closest Sensitive Receptors (VdB) <sup>(1)</sup>	
	Powerline Reconfiguration (84 feet)	Substation Expansion (229 feet)
Large bulldozer	71	58
Drilling equipment	71	58
Loaded trucks	70	57
Small bulldozer	42	29
Criteria of residential annoyance for infrequent vibration events (FTA)	80	80
Exceeds threshold?	No	No

Sources: FTA 2006.

Key:

FTA Federal Transit Administration.

VdB decibels of vibration velocity

Note:

There are no sensitive receptors near the Fence Meadow Repeater Station. Therefore, no vibration measurement for construction activities at Fence Meadow Repeater Station is included in this table.

9

10 **Operation and Maintenance**

11 Operation and maintenance of the proposed project would involve activities similar to those associated  
 12 with the existing Sanger Substation and the existing microwave communications site at Fence Meadow  
 13 Repeater Station; therefore, no vibration impact would occur.

14

15 *c. Would the project result in substantial permanent increase in ambient noise levels in the project  
 16 vicinity above levels existing without the project?*

17

18 **Construction**

19 *NO IMPACT*

20

21 Construction of the proposed project would not create permanent sources of noise; construction activities  
 22 would involve equipment temporarily on site during the construction period (approximately 24 to 30  
 23 months). Therefore, there would be no substantial permanent change in ambient noise. The potential  
 24 temporary increase in ambient noise levels associated with construction activities is discussed under  
 25 criterion (d).

26

27 **Operation and Maintenance**

28 *LESS THAN SIGNIFICANT IMPACT*

29

30 During operation of the proposed project, the transformers would remain in their current location after  
 31 construction, and no new equipment that would generate additional noise would be installed at the  
 32 substation. There would be no permanent increase in noise levels due to substation equipment operation.

1  
2 Corona noise (crackling, hissing, or humming noises heard during foggy or rainy weather) associated with  
3 operation of the proposed project's reconfigured power lines is not anticipated to be louder than the  
4 existing noise level from the existing 115-kV subtransmission lines (below approximately 34 dBA)  
5 because it would be quieter than the ambient noise level. Impacts would be less than significant.

6  
7 Operation of the proposed microwave dish antennas at the existing Fence Meadow Communications Site  
8 would not generate an increase in noticeable permanent noise at the Fence Meadow Repeater Station.  
9 Noise from vehicles and equipment used during routine maintenance activities would be infrequent and  
10 would not result in a permanent increase to ambient noise levels. Impacts would be less than significant.

11  
12 *d. Would the project result in a substantial temporary or periodic increase in ambient noise levels in*  
13 *the project vicinity above levels existing without the project?*

### 14 15 **Construction**

#### 16 *LESS THAN SIGNIFICANT IMPACT*

17  
18 A substantial noise increase is typically defined as 10 dBA for purposes of this analysis because an  
19 increase of 10 dBA is perceived as a doubling in loudness. The average ambient noise level for areas in  
20 central Fresno County is 61 dBA,  $L_{dn}$ . An increase would therefore be substantial if the project would  
21 increase ambient noise levels to 71 dBA,  $L_{dn}$  or greater.

22  
23 During the week of construction at the Fence Meadow Repeater Station, noise would be generated  
24 primarily from the use of one crane. Noise from a typical crane used for construction is estimated to be 85  
25 dBA at 50 feet (FHWA 2006). There are no sensitive receptors within 1,000 feet of the Fence Meadow  
26 Repeater Station, and no construction will occur within 2 miles of any other sensitive receptor. Noise  
27 would not be perceptible to any sensitive receptors. Impacts in the Sierra National Forest would be less  
28 than significant.

29  
30 During the 24- to 30-month project construction period for work in central Fresno County, noise would be  
31 generated primarily by the use of heavy-duty equipment, worker vehicles, and trucks needed to bring  
32 materials to the construction sites. Table 5.12-7 shows the estimated combined noise exposure level as  
33 perceived at the nearest sensitive receptors identified in Table 5.12-2. As shown in Table 5.12-7, during  
34 project construction ambient noise levels in the project vicinity would increase above baseline conditions  
35 on a temporary and intermittent basis and would exceed thresholds at the closest sensitive receptors  
36 during all phases of construction. However, this temporary intermittent noise increases would be  
37 attenuated by the presence of physical barriers (e.g., irrigation ditch, roads, and building structures) and  
38 soft ground surrounding the substation. Implementation of APMs NOI-2, NOI-3, and NOI-4 would  
39 further minimize construction noise impacts. Specifically, the use of noise control devices described in  
40 APM NOI-2 would provide noise reductions from heavy construction equipment (for example,  
41 industrial/commercial grade mufflers can provide up to 15 dBA in reduction from the source); therefore,  
42 it is expected that – with implementation of APM NOI-2 - ambient noise level in the vicinity of the  
43 project would be below 71 dBA at all sensitive receptors. Construction impacts would therefore be less  
44 than significant after implementation of APMs.

Table 5.12-7 Estimated Combined Construction Noise Exposure at Sensitive Receptors

Sensitive Receptor ID	Nearest Project Component and Construction Phase	Approximate Distance from the Project Component (feet) <sup>(1)</sup>	Estimated Construction Noise Exposure at Sensitive Receptor without APMs (L <sub>dn</sub> , dBA) <sup>(2)</sup>	Exceeds Threshold?
SR1	Power line reconfiguration (new 115-kV subtransmission line pole, Phases 4a to 4d)	216	69	No
SR2	Substation expansion (Phases 1, 2, and 3)	267	71	No
SR3	Power line reconfiguration Temporary access road use (Phases 2 to 5)	131	70	No
SR4	Power line reconfiguration (pull and tension site, Phases 4b, 4c, and 4d)	557	67	No
SR5	Power line reconfiguration (existing line to be removed, Phases 4b, 4c, and 4d)	605	67	No
SR6	Power line reconfiguration Temporary access road use (Phases 2 to 5)	133	70	No
SR7	Power line reconfiguration (pull and tension site, Phases 4b, 4c, and 4d)	762	65	No
SR8	Power line reconfiguration (pull and tension site, Phases 4b, 4c, and 4d)	802	64	No

Source: PG&E 2015; FHWA 2006; Caltrans 1987.

Notes:

<sup>(1)</sup> Conservative noise estimates assuming multiple pieces of equipment listed by the applicant for each phase would be operating simultaneously during a 1-hour period. The estimated construction noise exposure has been calculated using the geometrical spreading approach (i.e., the sound level is reduced by 6 dB for each doubling of distance from a fixed noise source), considering the effect of soft ground attenuation in non-paved areas, and adjusted to L<sub>dn</sub>.

<sup>(2)</sup> The applicant would use overland access roads. Noise from temporary roads would occur due to vehicle use of roads in support of construction activities. Noise from road use has been estimated using the California Vehicle Noise Reference Energy Mean Emission Levels, assuming one heavy truck pass at a speed of 25 miles per hour.

Key:

dB          decibels

dBA        A-weighted decibel

L<sub>eq</sub> (h)    Hourly equivalent sound level.

1  
2  
3  
4  
5  
6  
7  
8

**Operation and Maintenance**

*NO IMPACT*

Operation and maintenance of the proposed project would involve periodic activities similar to those associated with the existing Sanger Substation and existing Fence Meadow Communications Site, including periodic inspection of the substation and electrical line. Therefore, no periodic noise impacts would occur during operation when compared to baseline. There would be no impact.