

## 4.12 NOISE

This chapter begins with a discussion of the fundamentals of sound and an examination of federal, State, and local noise guidelines, policies, and standards. The remainder of the chapter provides an evaluation of the potential noise-related, environmental consequences that could occur by implementing the proposed Plan. Since the proposed Plan provides an overarching framework for future projects, but does not propose any specific projects, this evaluation focuses on the overall potential for implementation of the proposed Plan to result in noise impacts within adjacent areas of the City of Fresno, Fresno County and Madera County. The supporting analysis considers the existing setting, evaluates potential noise impacts associated with implementation of the proposed Plan, and provides mitigation where necessary to reduce noise impacts at noise-sensitive locations.

### 4.12.1 ENVIRONMENTAL SETTING

#### 4.12.1.1 BACKGROUND

##### Noise Descriptors

Noise is most often defined as unwanted sound. Although sound can be easily measured, the perception of noise and the physical response to sound complicates the analysis of its impact on people. People judge the relative magnitude of sound sensation in subjective terms such as “noisiness” or “loudness.”

The following are brief definitions of terminology used in this section:

- **Sound.** A disturbance created by a vibrating object, which, when transmitted by pressure waves through a medium such as air, is capable of being detected by a receiving mechanism, such as the human ear or a microphone.
- **Noise.** Sound that is loud, unpleasant, unexpected, or otherwise undesirable.
- **Intrusive.** Noise which intrudes over and above the existing ambient noise at a given location. Relative intrusiveness depends on amplitude, duration, frequency, time of occurrence, and tonal or informational content, as well as the prevailing ambient noise level.
- **Decibel (dB).** A unit-less measure of sound on a logarithmic scale.
- **A-Weighted Decibel (dBA).** An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
- **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.
- **Equivalent Continuous Noise Level ( $L_{eq}$ ).** The mean of the noise level (or energy) averaged over the measurement period.

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- **Statistical Sound Level ( $L_n$ ).** The sound level that is exceeded “n” percent of time during a given sample period. For example, the  $L_{50}$  level is the statistical indicator of the time-varying noise signal that is exceeded 50 percent of the time (during each sampling period); that is, half of the sampling time, the changing noise levels are above this value and half of the time they are below it. This is called the “median sound level.” The  $L_{10}$  level, likewise, is the value that is exceeded 10 percent of the time (i.e. near the maximum) and this is often known as the “intrusive sound level.” The  $L_{90}$  is the sound level exceeded 90 percent of the time and is often considered the “effective background level” or “residual noise level.”
- **Day-Night Sound Level ( $L_{dn}$  or DNL).** The energy-average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the sound levels occurring during the period from 10:00 p.m. to 7:00 a.m.
- **Community Noise Equivalent Level (CNEL).** The energy-average of the A-weighted sound levels occurring during a 24-hour period, with 5 dB added to the levels occurring during the period from 7:00 p.m. to 10:00 p.m. and 10 dB added to the sound levels occurring during the period from 10:00 p.m. to 7:00 a.m. Note that for general community/environmental noise, CNEL and  $L_{dn}$  values rarely differ by more than 1 dB. As a matter of practice then,  $L_{dn}$  and CNEL values are considered to be equivalent/interchangeable and are treated as such in this assessment.

### Characteristics of Sounds

When an object vibrates, it radiates part of its energy as acoustical pressure in the form of a sound wave. Sound can be described in terms of amplitude (loudness), frequency (pitch), and duration (time). The human hearing system is not equally sensitive to sound at all frequencies. Therefore, to approximate the human, frequency-dependent response, the A-weighted filter system is used to adjust measured sound levels. The normal range of human hearing extends from approximately 0 dBA (threshold of detection) to 140 dBA (threshold of pain).

Unlike linear units, such as inches or pounds, decibels are measured on a logarithmic scale to better account for the large variations in pressure amplitude (the above range of human hearing, 0 to 140 dBA, represents a ratio in pressures of one hundred trillion to one). All noise levels in this study are relative to the industry-standard pressure reference value of 20 micropascals. Because of the physical characteristics of noise transmission and perception, the relative loudness of sound does not closely match the actual amounts of sound energy. Table 4.12-1 presents the subjective effect of changes in sound pressure levels.

**TABLE 4.12-1 CHANGE IN APPARENT LOUDNESS**

± 3 dB	Threshold of human perceptibility
± 5 dB	Clearly noticeable change in noise level
± 10 dB	Half or twice as loud
± 20 dB	Much quieter or louder

Source: Bies, David A. and Colin H. Hansen. 2009. Engineering Noise Control: Theory and Practice. 4th Ed. New York: Spoon Press.

Sound is generated from a source; the decibel level decreases exponentially as the distance from that source increases. This phenomenon is known as spreading loss or distance attenuation. When sound is measured for distinct time intervals, the statistical distribution of the overall sound level during that period can be obtained. For example,  $L_{50}$  is the noise level that is exceeded 50 percent of the time. Similarly, the  $L_{02}$ ,  $L_{08}$ , and  $L_{25}$  values are exceeded 2, 8, and 25 percent of the time or 1, 5, and 15 minutes per hour. 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 sum of all the time-varying events. Energy-equivalent sound level ( $L_{eq}$ ) is the most common parameter associated with community noise measurements. The  $L_{eq}$  metric is a single-number noise descriptor of the energy-average sound level over a given period of time. An hour is the most common period of time over which average sound is measured, but it can be measured over any duration. Other values typically noted during a noise survey are the  $L_{min}$  and  $L_{max}$ . These values are the minimum and maximum root-mean-square (RMS) noise levels obtained over the measurement period.

Since sensitivity to noise increases during the evening and at night, when excessive noise can interfere with relaxation and/or the ability to sleep, 24-hour descriptors have been developed that incorporate artificial noise penalties added to quiet-time noise events. Because of this increased sensitivity to unwanted noise intrusion during the evening and nighttime hours, State law requires, for planning purposes, that this increased noise sensitivity be accounted for. The Day/Night Average Sound Level,  $L_{dn}$ , is a measure of the cumulative noise exposure in a community, with a 10 dB addition to nocturnal (10:00 p.m. to 7:00 a.m.) noise levels. The Community Noise Equivalent Level (CNEL) is a similar 24-hour cumulative measure of noise; however it differs slightly from  $L_{dn}$  in that 5 dB is added to the levels occurring during the period from 7:00 p.m. to 10:00 p.m. and 10 dB added to the sound levels occurring during the period from 10:00 p.m. to 7:00 a.m.

## Psychological and Physiological Effects of Noise

Physical damage to human hearing begins at prolonged exposure to noise levels higher than 85 dBA. Exposure to high noise levels affects the entire system; prolonged noise exposure in excess of 75 dBA increases body tensions, thereby affecting blood pressure and functions of the heart and nervous system. Extended periods of noise exposure above 90 dBA result in permanent cell damage, which is the main driver for employee hearing protection regulations in the workplace. Causes for annoyance include interference with speech, radio, television, sleep and rest, as well as induced structural vibrations. The  $L_{dn}$  as a measure of noise has been found to provide a valid correlation of noise level and the percentage of people annoyed. The threshold for annoyance from vehicle noise is about 55 dBA  $L_{dn}$ . At an  $L_{dn}$  of about 60 dBA, approximately 8 percent of the population is highly annoyed. When the  $L_{dn}$  increases to 70 dBA, the highly-annoyed proportion of the population increases to about 20 to 25 percent. There is, therefore, an increase of about 2 percent per decibel of increased noise between an  $L_{dn}$  of 60 to 70 dBA. The thresholds for speech interference indoors are approximately 45 dBA for continuous noise and approximately 55 dBA for fluctuating noise. The thresholds outdoors are roughly 15 dBA higher. Steady noise above 35 dBA and fluctuating noise levels above roughly 45 dBA have been shown to affect sleep. For community environments, the ambient or background noise problem is widespread and generally more concentrated in urban areas than in outlying, less-developed areas. Since most people do not routinely work with decibels or A-weighted sound levels, it is often difficult to appreciate what a given sound pressure level (SPL) number means. Table 4.12-2 shows typical noise level values from commonly experienced noise sources.

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**TABLE 4.12-2 TYPICAL NOISE LEVELS**

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110	Rock Band
Jet Flyover at 1,000 feet		
	100	
Gas Lawn Mower at 3 feet		
	90	
Diesel Truck at 50 feet, at 50 miles per hour		Food Blender at 3 feet
	80	Garbage Disposal at 3 feet
Noisy Urban Area (daytime)		
	70	Vacuum Cleaner at 10 feet
Commercial Area		Normal speech at 3 feet
Heavy Traffic at 300 feet	60	
		Large Business Office
Quiet Urban (daytime)	50	Dishwasher Next Room
Quiet Urban (nighttime)	40	Theater, Large Conference Room (background)
Quiet Suburban (nighttime)		
	30	Library
Quiet Rural (nighttime)		Bedroom (at night), Concert Hall (background)
	20	
		Broadcast/Recording Studio
	10	
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

Source: Bies and Hansen 2009.

## Vibration Fundamentals

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. Vibration is normally associated with activities stemming from operations of railroads or vibration-intensive stationary sources, but can also be associated with construction equipment such as jackhammers, pile drivers, and hydraulic hammers. Vibration displacement is the distance that a point on a surface moves away from its original static position. The instantaneous speed that a point on a surface moves is the velocity, and the rate of change of the speed is the acceleration. Each of these descriptors can be used to correlate vibration to human response, building damage, and acceptable equipment vibration levels. During construction, the operation of construction equipment can cause ground-borne vibration. During the operational phase of a project, receptors may be subject to levels of vibration that can cause annoyance due to noise generated from vibration of a structure or items within a structure. These types of vibration are best measured and described in terms of velocity and acceleration.

The three main types of waves associated with ground-borne vibrations are surface or Rayleigh waves, compression or P-waves, and shear or S-waves.

- Surface or Rayleigh waves travel along the ground surface. They carry most of their energy along an expanding cylindrical wave front, similar to the ripples produced by throwing a rock into a lake. The particle motion is more or less perpendicular to the direction of propagation.
- Compression or P-waves are body waves that carry their energy along an expanding spherical wave front. The particle motion in these waves is longitudinal, in a push-pull motion. P-waves are analogous to airborne sound waves.
- Shear or S-waves are also body waves, carrying their energy along an expanding spherical wave front. Unlike P-waves, however, the particle motion is transverse, or perpendicular to the direction of propagation.

Vibration amplitudes are usually described in terms of either the peak particle velocity (PPV) or the RMS velocity. PPV is the maximum instantaneous peak of the vibration signal and RMS is the square root of the average of the squared amplitude of the signal. PPV is more appropriate for evaluating potential building damage, whereas RMS is typically more suitable for evaluating human response.

The units for PPV and RMS velocity are normally inches per second (in/sec). Often, vibration is presented and discussed in dB units in order to compress the range of numbers required to describe the vibration. In this study, all PPV and RMS velocity levels are in in/sec and all vibration levels are in dB relative to one micro-inch per second (abbreviated as VdB). Typically, ground-borne vibration generated by human activities attenuates rapidly with distance from the source of the vibration. Even the more persistent Rayleigh waves decrease relatively quickly as they move away from the source of the vibration. Man-made vibration problems are, therefore, usually confined to relatively short distances (500 to 600 feet or less) from the source.<sup>1</sup>

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<sup>1</sup> Federal Transit Administration (FTA), 2006. *Transit Noise and Vibration Impact Assessment*. United States Department of Transportation (U.S. DOT), FTA-VA-90-1003-06.

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### Vibration Impacts

As discussed previously, annoyance is a subjective measure and vibrations may be found to be annoying at much lower levels than those shown, depending on the level of activity or the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Persons exposed to elevated ambient vibration levels such as people in an urban environment may tolerate a higher vibration level. Table 4.12-3 displays human annoyance and the effects on buildings resulting from continuous vibration.

**TABLE 4.12-3 REACTION OF PEOPLE AND DAMAGE TO BUILDINGS FOR CONTINUOUS/FREQUENT INTERMITTENT VIBRATION LEVELS**

Velocity Level, PPV (in/sec)	Human Reaction	Effect on Buildings
0.02	Barely perceptible	Vibration unlikely to cause damage of any type to any structure
0.08	Distinctly perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
0.1	Strongly perceptible	Virtually no risk of damage to normal buildings
0.3	Strongly perceptible to severe	Threshold at which there is a risk of damage to older residential dwellings such as plastered walls or ceilings
0.5	Severe - Vibrations considered unpleasant	Threshold at which there is a risk of damage to newer residential structures

Source: California Department of Transportation (Caltrans), 2004, *Transportation- and Construction-Induced Vibration Guidance Manual*. Prepared by ICF International.

Human response to ground vibration has been correlated best with the velocity of the ground. The velocity of the ground is expressed on the decibel scale. The reference velocity is  $1 \times 10^{-6}$  inch/second RMS, which equals 0 VdB, and 1 inch/second equals 120 VdB. The abbreviation “VdB” is used in this document for vibration decibels to reduce the potential for confusion with sound decibels. One of the problems with developing suitable criteria for ground-borne vibration is the limited research into human response to vibration and, more importantly, human annoyance inside buildings. The U.S. Department of Transportation, Federal Transit Administration has developed rational vibration limits that can be used to evaluate human annoyance to ground-borne vibration. These criteria are primarily based on experience with rapid transit and commuter rail systems, and are discussed in greater detail in the regulations section of this document.<sup>2</sup>

Railroad and transit operations are potential sources of substantial ground vibration depending on distance, the type and the speed of trains, and the type of track. Trains generate substantial vibration due to their engines, steel wheels, heavy loads, and wheel-rail interactions.

Construction operations generally include a wide range of activities that can generate ground-borne vibration, which varies in intensity depending on several factors. In general, blasting and demolition of structures, as well as pile driving and vibratory compaction equipment generate the highest vibrations. Because of the impulsive nature

<sup>2</sup> Federal Transit Administration (FTA), 2006. *Transit Noise and Vibration Impact Assessment*. United States Department of Transportation (U.S. DOT), FTA-VA-90-1003-06.

of such activities, the use of the peak particle velocity descriptor (PPV) has been routinely used to measure and assess ground-borne vibration and almost exclusively to assess the potential of vibration to induce structural damage and the degree of annoyance for humans. Vibratory compactors or rollers, pile drivers, and pavement breakers can generate perceptible amounts of vibration at up to 200 feet. Heavy trucks can also generate ground-borne vibrations, which can vary, depending on vehicle type, weight, and pavement conditions. Potholes, pavement joints, discontinuities, and differential settlement of pavement increase the vibration levels from vehicles passing over a road surface. Construction vibration is normally of greater concern than vibration from normal traffic flows on streets and freeways with smooth pavement conditions.<sup>3</sup>

“Architectural” damage can be classified as cosmetic only, such as minor cracking of building elements, while “structural” damage may threaten the integrity of a building. Safe vibration limits that can be applied to assess the potential for damaging a structure vary by researcher and there is no general consensus as to what amount of vibration may pose a threat for structural damage to a building. Construction-induced vibration that can be detrimental to the building is very rare and has only been observed in instances where the structure is in a high state of disrepair and the construction activity occurs immediately adjacent to the structure. Table 4.12-4 shows the criteria established by the FTA for the likelihood of structural damage due to vibration.

**TABLE 4.12-4 GROUND-BORNE VIBRATION CRITERIA: ARCHITECTURAL DAMAGE**

Building Category	PPV (in/sec)	L <sub>v</sub> (VdB) <sup>a</sup>
I. Reinforced concrete, steel, or timber (no plaster)	0.5	102
II. Engineered concrete and masonry (no plaster)	0.3	98
III. Non-engineered timber and masonry buildings	0.2	94
IV. Buildings extremely susceptible to vibration damage	0.12	90

a. RMS velocity calculated from vibration level (VdB) using the reference of one micro-inch/second.  
 Source: Federal Transit Administration (FTA). 2006, *Transit Noise and Vibration Impact Assessment*. United States Department of Transportation. FTA-VA-90-1003-06.

## Noise- and Vibration-Sensitive Receptors

Certain land uses are particularly sensitive to noise and vibration, including residential and schools where quiet environments are necessary for enjoyment, public health, and safety. Sensitive land uses in the vicinity of the Parkway Plan Area include residences, schools, places of worship, and recreational areas. These uses are regarded as sensitive because they are where citizens most frequently engage in activities which are likely to be disturbed by noise, such as reading, studying, sleeping, resting, or otherwise engaging in quiet or passive recreation. Commercial and industrial uses are not considered noise- and vibration-sensitive uses for the purposes of this analysis since noise- and vibration-sensitive activities are less likely to be undertaken in these areas, and because these uses themselves often generate noise in excess of what they receive from other uses.

<sup>3</sup> California Department of Transportation (Caltrans), 2004. *Transportation- and Construction-Induced Vibration Guidance Manual*. Prepared by ICF International.

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### 4.12.1.2 REGULATORY FRAMEWORK

To limit population exposure to physically and/or psychologically damaging, as well as intrusive noise levels, the federal government, the State of California, various county governments, and most municipalities in the State have established standards and ordinances to control noise. This section describes the regulatory framework related to noise and vibration in the vicinity of the Parkway Plan Area.

#### State of California Noise Standards

##### *State of California Building Code*

The State of California's noise insulation standards are codified in the California Code of Regulations, Title 24, Building Standards Administrative Code, Part 2, California Building Code. These noise standards are applied to new construction in California for the purpose of ensuring that the level of exterior noise transmitted to and received within the interior living spaces of buildings is compatible with their comfortable use. For new residential buildings, schools, and hospitals, the acceptable interior noise limit for new construction is 45 dBA CNEL. Acoustical studies that accompany building plans must demonstrate that the structure has been designed to limit interior noise in habitable rooms to acceptable noise levels. Where exterior noise levels are projected to exceed 60 dBA  $L_{dn}$  at the façade of a building, a report must be submitted with the building plans describing the noise control measures that have been incorporated into the design of the proposed Project to meet the 45 dBA noise limit.

##### *State of California Land Use Compatibility Criteria*

The State of California adopts suggested land use noise compatibility levels as part of its guidelines. These suggested guidelines provide urban planners with an integral tool to gauge the compatibility of land uses relative to existing and future noise levels. The guidelines identify normally acceptable, conditionally acceptable, and clearly unacceptable noise levels for various land uses. A conditionally acceptable designation implies new construction or development should be undertaken only after a detailed analysis of the noise reduction requirements for each land use is made and needed noise insulation features are incorporated into the design. By comparison, a normally acceptable designation indicates that standard construction can occur with no special noise reduction requirements. However, jurisdictions surrounding the Parkway Plan Area have adopted their own guidelines modeled on the State's suggested levels.

#### Parkway Master Plan Policies

The Conservancy will implement its mission and the Parkway Master Plan in a manner consistent with its adopted Parkway Master Plan goals, objectives, policies, design guidelines, and best management practices (BMPs) to the extent practicable.

## Local Regulations and Policies

The Conservancy is the lead agency responsible for preparing, approving, and implementing the proposed Parkway Master Plan. The Conservancy may assist other government agencies and nonprofit organizations in implementing elements of the proposed Plan. The Conservancy’s authorities and jurisdiction are described in Chapter 3, Project Description. Local land use policies relevant to Parkway development and implementation are discussed in this section.

### *Madera County Noise Standards*

#### 1995 Madera County General Plan Noise Element

The County of Madera adopted a Noise Element in 1995 as part of its General Plan. The Noise Element of the 1995 Madera County General Plan sets forth the following policies to assess and control environmental noise, which would be potentially applicable to the Master Plan (Table 4.12-5).

**TABLE 4.12-5 1995 MADERA COUNTY GENERAL PLAN NOISE POLICIES RELEVANT TO MASTER PLAN**

Goal/Policy Number	Goal/Policy
Policy 7.A.5	Noise which will be created by new non-transportation noise sources, or existing non-transportation noise sources which undergo modifications that may increase noise levels, shall be mitigated so as not to exceed the noise level standards of Table 7.A.4 [presented in this EIR as Table 4.12-6] on lands designated for noise-sensitive uses. This policy does not apply to noise levels associated with agricultural operations.
Policy 7.A.7	Where the development of a project may result in land uses being exposed to- existing or projected future noise levels exceeding the levels specified by the policies of the noise section of the General Plan, the County shall require an acoustical analysis early in the review process so that noise mitigation may be included in the project design. For development not subject to environmental review, the requirements for an acoustical analysis shall be implemented prior to the issuance of a building permit. The requirements for the content of an acoustical analysis are given in Table 7.A.7 [presented in this EIR as Table 4.12-7].

Source: Madera County 1995 General Plan Noise Element.

**TABLE 4.12-6 MAXIMUM ALLOWABLE NOISE EXPOSURE FOR NON-TRANSPORTATION NOISE SOURCES<sup>a</sup>  
 (1995 MADERA COUNTY GENERAL PLAN TABLE 7.A.4)**

	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
Hourly $L_{eq}$ dB [dBA]	50	45
Maximum Level dB [dBA]	70	65

Note: Each of the noise levels specified above shall be lowered by 5 dB for pure tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings).

a. As determined at the property line of the receiving land use. When determining the effectiveness of noise mitigation measures, the standards may be applied on the receptor side of noise barriers at the property line.

Source: Madera County 1995 General Plan Noise Element.

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TABLE 4.12-7 REQUIREMENTS FOR AN ACOUSTICAL ANALYSIS (MADERA COUNTY 1995 GENERAL PLAN  
TABLE 7.A.7)

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An acoustical analysis prepared pursuant to Policy 7 .A.7 shall:

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- A. Be the financial responsibility of the applicant.

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  - B. Be prepared by a qualified person experienced in the fields of environmental noise assessment and architectural acoustics.

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  - C. Include representative noise level measurements with sufficient sampling periods and locations to adequately describe local conditions. Where actual field measurements cannot be conducted, all sources of information used for calculation purposes shall be fully described. When the use being studied is a commercial use, all noise sources related to the service and maintenance of the facility shall be considered, including parking lot and landscape maintenance, refuse collection and truck loading/unloading activities.

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  - D. Estimate existing and projected (20 years) noise levels and compare those levels to the adopted policies of the noise section of the General Plan. Projected future noise levels shall take into account noise from planned streets, highways, and road connections.

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  - E. Recommend appropriate mitigation to achieve compliance with the adopted policies of the noise section of the General Plan, giving preference to proper site planning and design over mitigation measures which require the construction of noise barriers or structural modifications to buildings which contain noise-sensitive land uses.

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  - F. Estimate noise exposure after the prescribed mitigation measures have been implemented.

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  - G. Describe a post-project assessment program which could be used to evaluate the effectiveness of the proposed mitigation measures.
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Source: Madera County 1995 General Plan Noise Element

Some policies from the Madera County 1995 General Plan Noise Element have been excluded from this section because they explicitly relate to transportation projects, or concern other topics which are clearly not associated with the adoption or implementation of the proposed Plan.

### Madera County Code

The Madera County Code contains numerous chapters that relate to noise; however, none of these chapters would apply specifically to adoption or implementation of the proposed Master Plan, with the exception of those related to construction. All noise regulations in Madera County Code either:

- apply only to specific uses permitted under County zoning designations;
- pertain to the operation of vehicles and equipment;
- concern noise disturbances to land uses that would not be included in the Master Plan;
- relate to specific, point-sources of noise, such as pets or radios, which are not directly related to development or land use, and are generally subject to the authority of law enforcement; or
- are sufficiently broad so as not to represent an actionable regulation in the context of proposed open space and recreational uses.

Section 9.58.020 G of the Madera County Code specifies that, “Construction activities are limited to the hours of seven a.m. and seven p.m. Monday through Friday and nine a.m. and five p.m. on Saturdays. Construction activities will be prohibited on Sundays.”

*Fresno County Noise Standards*

Fresno County 2000 General Plan Noise Element

The County of Fresno adopted a Noise Element in 2000 as part of its 2000 General Plan. The Noise Element discusses its purpose of addressing noise impacts, its goal of ensuring noise compatibility between land uses, and its relationship to other general plan elements, such as Land Use.

The Noise Element of the Fresno County 2000 General Plan sets forth the following policies to assess and control environmental noise, which would be potentially applicable to the Master Plan (Table 4.12-8).

**TABLE 4.12-8 FRESNO COUNTY 2000 GENERAL PLAN GOALS AND POLICIES RELEVANT TO NOISE**

Goal/Policy Number	Goal/Policy
Goal HS-E	To minimize the exposure of the public to high noise levels and safety hazards through land use controls and policies for property in the vicinity of airports; and to limit urban encroachment around airports in order to preserve the safety of flight operations and the continued viability of airport facilities.
Goal HS-G	To protect residential and other noise-sensitive uses from exposure to harmful or annoying noise levels; to identify maximum acceptable 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	The County shall require that all proposed development incorporate design elements necessary to minimize adverse noise impacts on surrounding land uses.
Policy HS-G.4	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: a. Noise sensitive land uses are proposed in areas exposed to existing or projected noise levels that are “generally unacceptable” or higher according to the Chart HS-1: “Land Use Compatibility for Community Noise Environments;” b. 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 uses.
Policy HS-G.5	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	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	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.”

Source: Fresno County 2000 General Plan Noise Element

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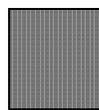
Table 4.12-9, on the following page, shows the standards for land use compatibility for community noise environments contained in the Fresno County 2000 General Plan, Chart HS-1.

**TABLE 4.12-9 LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS (FRESNO COUNTY 2000 GENERAL PLAN)**

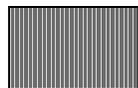
Land Uses	CNEL (dBA)					
	55	60	65	70	75	80
Residential-Low Density Single Family, Duplex, Mobile Homes	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Normally Unacceptable	Clearly Unacceptable
Residential-Multiple Family	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Normally Unacceptable	Clearly Unacceptable
Transient Lodging, Motels, Hotels	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Normally Unacceptable	Clearly Unacceptable
Schools, Libraries, Churches, Hospitals, Nursing Homes	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Normally Unacceptable	Clearly Unacceptable
Auditoriums, Concert Halls, Amphitheaters	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Normally Unacceptable	Clearly Unacceptable
Sports Arena, Outdoor Spectator Sports	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Normally Unacceptable	Clearly Unacceptable
Playgrounds, Neighborhood Parks	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Normally Unacceptable	Clearly Unacceptable
Golf Courses, Riding Stables, Water Recreation, Cemeteries	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Normally Unacceptable	Clearly Unacceptable
Office Buildings, Businesses, Commercial and Professional	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Normally Unacceptable	Clearly Unacceptable
Industrial, Manufacturing, Utilities, Agricultural	Normally Acceptable	Normally Acceptable	Normally Acceptable	Normally Unacceptable	Normally Unacceptable	Clearly Unacceptable



**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.



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



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



**Clearly Unacceptable:**  
 New construction or development generally should not be undertaken.

Source: Fresno county 2000 General Plan Noise Element.

### *Fresno County Code*

The Fresno County Code contains sections that relate to noise; however, none of these chapters would apply specifically to the adoption or implementation of the proposed Plan, except, those related to construction. All noise regulations in the Fresno County Code either:

- apply only to specific uses permitted under County zoning designations;
- pertain to the operation of vehicles and equipment;
- concern noise disturbances to land uses that would not be included in the Master Plan;
- relate to specific, point-sources of noise, such as pets or radios, which are not directly related to development or land use and are generally subject to the authority of law enforcement; or
- are sufficiently broad so as not to represent an actionable regulation in the context of proposed open space and recreational uses.

Section 8.40.060 of the Fresno County Noise Ordinance specifically exempts activities that take place in public parks, as well as construction noise, “provided such activities take place between the hours of 6:00 a.m. and 9:00 p.m. on any day except Saturday or Sunday, or between the hours of 7:00 a.m. and 9:00 p.m. on Saturday or Sunday.” Since the proposed Plan consists of public parks and open space uses, it would be largely exempt from the requirements of the Fresno County noise ordinance.

### *City of Fresno Noise Standards*

#### Fresno General Plan Noise and Safety Element

The City of Fresno’s General Plan was last updated in 2014. The City of Fresno General Plan<sup>4</sup> includes objectives and policies related to noise generated within the city. City of Fresno General Plan objectives and policies relevant to noise in the Parkway Plan Area are shown in Table 4.12-10. Table 4.12-11 shows the maximum allowable noise exposure for non-transportation noise sources.

#### City of Fresno Municipal Code

The Fresno Municipal Code contains sections chapters that relate to noise; however, none of these chapters would apply specifically to adoption or implementation of the proposed Master Plan, with the exception of provisions related to construction. All noise regulations in the Fresno Municipal Code either:

- Apply only to specific uses permitted under City zoning designations;
- Pertain to the operation of vehicles and equipment;
- Concern noise disturbances to land uses that would not be included in the Master Plan;

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<sup>4</sup> City of Fresno, 2014. Fresno General Plan, adopted December 18.

**NOISE**

**TABLE 4.12-10 FRESNO GENERAL PLAN OBJECTIVES AND POLICIES RELEVANT TO NOISE**

Goal/Policy Number	Goal/Policy
Objective NS-1	Protect the citizens of the city from the harmful and annoying effects of exposure to excessive noise.
Policy NS-1-a	Desirable and Generally Acceptable Exterior Noise Environment. Establish 65 dBA Ldn or CNEL as the standard for the desirable maximum average exterior noise levels for defined usable exterior areas of residential and noise-sensitive uses for noise, but designate 60 dBA Ldn or CNEL (measured at the property line) for noise generated by stationary sources impinging upon residential and noise-sensitive uses. Maintain 65 dBA Ldn or CNEL as the maximum average exterior noise levels for non-sensitive commercial land uses, and maintain 70 dBA Ldn or CNEL as maximum average exterior noise level for industrial land uses, both to be measured at the property line of parcels where noise is generated which may impinge on neighboring properties.
Policy NS-1-j	Significance Threshold. Establish, as a threshold of significance for the City's environmental review process, that a significant increase in ambient noise levels is assumed if the project would increase noise levels in the immediate vicinity by 3 dB Ldn or CNEL or more above the ambient noise limits established in this General Plan Update.

Source: Fresno General Plan Noise and Safety Element.

**TABLE 4.12-11 MAXIMUM ALLOWABLE NOISE EXPOSURE FOR NON-TRANSPORTATION NOISE SOURCES<sup>a</sup>  
 (FRESNO GENERAL PLAN TABLE 9-3)**

	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
Hourly Equivalent Sound Level ( $L_{eq}$ ) dB [dBA]	50	45
Maximum Sound Level ( $L_{max}$ ) dB [dBA]	70	65

a. As determined at outdoor activity areas. Where the location of outdoor activity areas is unknown or not applicable, the noise exposure standard shall be applied at the property line of the receiving land use. When ambient noise levels exceed or equal the levels in this table, mitigation shall only be required to limit noise to the ambient plus 5 dB.

Source: Fresno General Plan Noise Element.

- Relate to specific, point-sources of noise, such as pets or radios, which are not directly related to development or land use and are generally subject to the authority of law enforcement; or
- Are sufficiently broad so as not to represent an actionable regulation in the context of proposed open space and recreational uses.

In regard to construction, section 10-109 of the City of Fresno Noise Ordinance specifically exempts noise from permitted construction work, “provided such work takes place between the hours of 7:00 a.m. and 10:00 p.m. on any day except Sunday.”

*Airport Land Use Compatibility Plans*

Sierra Sky Park Land Use Policy Plan

The Sierra Sky Park Airport is the only airport or airfield in close proximity to the Parkway Plan Area, and a small portion of the Parkway Plan Area is located within this airport’s Land Use Compatibility Plan. As shown in Figure 4.12-1, areas of the Parkway Plan Area within the Land Use Policy Plan are designated as Multi-Use Open Space.

The Sierra Sky Park Airport Land Use Policy Plan sets forth the following policies to assess and control environmental noise, and ensure that surrounding land uses would be compatible with the noise generated by use of the airport, which would be potentially applicable to the proposed Plan (Table 4.12-12):

**TABLE 4.12-12 SIERRA SKY PARK AIRPORT POLICIES RELEVANT TO NOISE**

Policy Number	Policy
Policy A.2	The relative acceptability or unacceptability of a particular land use with respect to the noise levels to which it would be exposed is indicated in the "Airport Noise Compatibility Criteria" matrix, Table 1. These criteria shall be the principal determinants of whether a proposed land use is compatible with a given airport/aircraft noise exposure. Special circumstances which could affect a specific proposal's noise sensitivity (e.g. the extent or lack of outdoor activity) shall also be taken into account.
Policy A.4	An acoustical analysis shall be required for proposed projects involving land uses which are "conditionally acceptable" within a noise environment exceeding 65 dB CNEL, when such projects are proposed for areas within the 65 dB CNEL contour of the airport unless otherwise required by California Administrative Code (CAC) Title 24 (California Noise Insulation Standards). The acoustical analysis shall be completed in a manner which is consistent with the requirements of CAC Title 24. In quantifying airport/aircraft noise exposure on site, the acoustical analysis shall include consideration of engine run-up noise where applicable.
Policy A.5	When applying the noise compatibility criteria listed in Table 1 [Table 4.12-13, following] to a given location, the basis for evaluation shall be the CNEL contours shown in the Policy Plan Map (Year 2000 forecast, projected future conditions – 76,320 annual operations). If the noise analysis, which may include noise monitoring, indicates that project noise exposure may be higher or lower than indicated by the Policy Map Plan due to site-specific conditions or changes in airport/aircraft operations, the noise exposure used for project evaluation may be adjusted based upon the – best available information at the discretion of the Airport Land Use Commission.

Source: Sierra Sky Park Airport Land Use Policy Plan (Adopted 1985; Updated 1988, 1998)

*Vibration Standards*

Neither Fresno County, Madera County, nor the City of Fresno have specific and/or quantitative regulatory standards for construction or operational vibration sources. In general, the jurisdictions require that agricultural, commercial, and other permitted land uses do not produce perceptible levels of vibration at sensitive receptors, such as residential or institutional uses. Given the lack of local quantitative standards, for the purpose of this analysis, to evaluate the impacts of the Plan under CEQA, federal standards are used to address vibration results from the operation of equipment and the impacts on adjacent uses.

NOISE



Source: Fresno 2025 General Plan; Sierra Sky Park Airport Land Use Policy Plan, 1998.

Noise Contours

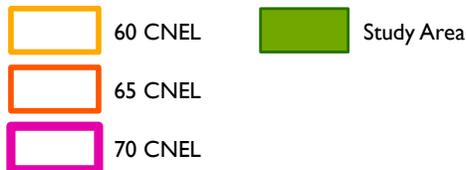


Figure 4.12-1  
Sierra Sky Park Airport Noise Contours

TABLE 4.12-13 SIERRA SKY PARK AIRPORT NOISE COMPATIBILITY CRITERIA (SIERRA SKY PARK AIRPORT LAND USE POLICY PLAN TABLE 1)

Land Use Category	CNEL		
	60-65	65-70	70-75
<b>Residential</b>			
* Single-family and multi-family residential	0	--	--
* Mobile homes	-	--	--
* Transient lodging	0	-	--
<b>Public/Institutional</b>			
* Schools, libraries, hospitals, nursing homes, day nurseries	0	-	--
* Churches, auditoriums, concert halls	0	-	--
Transportation, parking cemeteries	++	+	0
<b>Commercial and Industrial</b>			
Offices, retail trade	+	0	-
Service commercial, wholesale trade, warehousing, light industrial	+	0	0
General manufacturing, utilities, extractive industry	++	+	+
<b>Agricultural and Recreational</b>			
Cropland	++	++	+
Livestock breeding	0	0	-
Parks, playgrounds, zoos	+	0	-
Golf courses, riding stables, water recreation	+	0	0
Outdoor spectator sports	+	0	-
Amphitheaters	-	--	--

**++ Clearly Acceptable**

The activities associated with the specified land use can be carried out with essentially no interference from the noise exposure.

**+ Normally Acceptable**

Noise is a factor to be considered in that slight interference with outdoor activities may occur. Conventional construction methods will eliminate most noise intrusions upon indoor activities.

**0 Conditionally Acceptable**

The indicated noise exposure will cause moderate interference with outdoor activities and with indoor activities when windows are open. The land use is acceptable on the conditions that outdoor activities are minimal and construction features which provide sufficient noise attenuation are used (e.g., installation of air conditioning so that windows can be kept closed). Under other circumstances, the land use should be discouraged.

\* Acoustical Analysis Required acoustical analysis is required for these categories of land uses pursuant to noise policy A.4. Source: Sierra Sky Park Airport Land Use Policy Plan. Adopted 1985; Updated 1988, 1998.

**- Normally Acceptable**

Noise will create substantial interference with both outdoor and indoor activities. Noise intrusion upon indoor activities can be mitigated by requiring special noise insulation construction. Land uses which have conventionally constructed structures and/or involve outdoor activities which would be disrupted by noise should generally be avoided.

**-- Clearly Unacceptable**

Unacceptable noise intrusion upon land use activities will occur. Adequate structural noise insulation is not practical under most circumstances. The indicated land use should be avoided unless strong overriding factors prevail and it should be prohibited if outdoor activities are involved.

## NOISE

The human reaction to various levels of vibration is highly subjective and varies from person to person. The upper end of the range shown for the threshold of perception, or roughly 65 VdB, may be considered annoying by some people. Vibration below 65 VdB may also cause secondary audible effects such as a slight rattling of doors, suspended ceilings/fixtures, windows, and dishes; any of which may result in additional annoyance. The FTA provides criteria to evaluate potential human annoyance due to ground-borne vibration caused by frequent and intermittent events for various types of special buildings that are sensitive to vibration, such as high-tech manufacturing, residences, and institutional land uses near railroads. The vibration impact criteria are in terms of the velocity of the ground expressed on the decibel scale. As employed by the FTA, the reference velocity is 1 x 10<sup>-6</sup> in./sec. Root Mean Square (RMS), which equals 0 VdB, and 1 in./sec. equals 120 VdB. The abbreviation “VdB” is used in this document for vibration decibels to reduce the potential for confusion with sound decibels. The thresholds for residences and buildings where people normally sleep are 72 VdB for frequent events (more than 70 events of the same source per day), 75 VdB for occasional events (30 to 70 vibration events of the same source per day), and 80 VdB for infrequent events (less than 30 vibration events of the same source per day). Table 4.12-14 summarizes the FTA’s vibration impact criteria for sensitive buildings, residences, and institutional land uses near rail transit and railroads.

The vibration criteria in Table 4.12-14 are used in this analysis to evaluate impacts from transportation sources to sensitive land uses throughout the vicinity of the Parkway Plan Area.

**TABLE 4.12-14 GROUND-BORNE VIBRATION IMPACT CRITERIA**

Land Use Category	Ground-borne Vibration Impact Level (VdB re 1 micro-inch/sec.)	
	Frequent Events <sup>a</sup>	Infrequent Events <sup>b</sup>
Category 1: Buildings where low ambient vibration is essential for interior operations.	65 VdB <sup>c</sup>	65 VdB <sup>c</sup>
Category 2: Residences and buildings where people normally sleep.	72 VdB	80 VdB
Category 3: Institutional land uses with primarily daytime use.	75 VdB	83 VdB

a. “Frequent Events” is defined as more than 70 vibration events per day.

b. “Infrequent Events” is defined as fewer than 70 vibration events per day.

c. This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels.

d. Vibration-sensitive equipment is not sensitive to ground-borne noise.

Source: United States Department of Transportation Federal Transit Administration, “Transit Noise and Vibration Impact Assessment” manual, May 2006.

### 4.12.1.3 EXISTING SETTING

This section describes the existing noise environment for the areas in Madera and Fresno Counties, and the City of Fresno surrounding the Parkway Plan Area, including notable sources of noise. Mobile sources of noise, especially cars and trucks, are the most common and significant sources of noise in most communities. The areas surrounding the Parkway Plan Area are affected by a multitude of noise sources, many of them directly connected with major regional thoroughfares. Additional sources of noise in the Parkway Plan Area vicinity include railways as well as industrial and agricultural operations.

## Sensitive Receptors

Noise-sensitive receptors are generally considered to be those people engaged in activities or utilizing land uses that may be subject to the stress of significant interference from noise. Activities usually associated with sensitive receptors include, but are not limited to, talking, reading, and sleeping. Land uses such as residences, hotels, schools, churches, and hospitals are considered noise sensitive. The Parkway Plan Area extends for approximately 20 miles along the San Joaquin River between Friant Dam and Highway 99. The Parkway Plan Area passes along a wide variety of land uses, including, most notably, residential, agricultural, and institutional land uses, such as a hospital and schools. The distance between the Parkway Plan Area and potential sensitive receptors varies along the length of the Parkway Plan Area, but noise from the Parkway Plan Area has the potential to be received at any of the previously listed land uses.

## On-Road Vehicles

On-road vehicles, including cars, trucks, and busses, contribute substantially to the noise environment in the vicinity of the Parkway Plan Area. A number of major roadways border or traverse the Parkway Plan Area in Fresno and Madera Counties and the City of Fresno, including: Road 206 (in the vicinity of Friant), N. Friant Road, Highway 41, and Highway 99. The Parkway Plan Area receives the greatest amount of vehicle noise from traffic on Highway 99, which connects Fresno to Sacramento, Bakersfield, and other Valley cities. Highway 99 carries high volumes of both passenger and freight traffic. Local roadways primarily accommodate traffic within the City of Fresno, and while these smaller local roadways are not a major source of noise for the Parkway Plan Area or the city as a whole, they represent a notable source of ambient noise at the neighborhood level.

## Train Noise

Noise from trains is generated by wheel/rail interaction, locomotive engines, exhaust systems, cooling fans, and other mechanical components, as well as by warning horns and crossing bells near at-grade crossings. The interaction of steel wheels and rails generates rolling noise due to continuous contact; impact noise when a wheel encounters a discontinuity, such as a rail joint, turnout, or crossover; and squeals generated by friction on tight curves. Trains are required by the Federal Railroad Administration (FRA) to sound a warning horn beginning at a distance of ¼-mile from all at-grade crossings. The horn sound level is to have a maximum volume of 110 dBA, as measured at 100 feet. Some areas have established rail “Quiet Zones” (per FRA protocols) where trains do not sound their horns as they approach at-grade crossings; however, although there is a railroad quiet zone in Downtown Fresno, there are no such quiet zones in the vicinity of the Parkway Plan Area.<sup>5</sup>

There are two railways that operate through the River Parkway Plan Area, including the Burlington Northern Santa Fe Railroad and the Union Pacific Railroad. Both railways run through the southern end of the Parkway Plan Area, with the Union Pacific Railroad crossing the Parkway Plan Area immediately adjacent to the Highway 99 Bridge, and the Burlington Northern Santa Fe Railroad crossing the Parkway approximate 1.6 miles to the east of Highway

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<sup>5</sup> City of Fresno, 2010. *Railroad Quiet Zone Completed in Downtown Fresno*, May 7, [http://www.cpuc.ca.gov/uploadedFiles/CPUC\\_Website/Content/Safety/Presentations\\_for\\_Commission\\_Meeting/FresnoCountyRailSafety05102012.pdf](http://www.cpuc.ca.gov/uploadedFiles/CPUC_Website/Content/Safety/Presentations_for_Commission_Meeting/FresnoCountyRailSafety05102012.pdf), accessed April 21, 2017.

## NOISE

99. High freight volumes along these corridors result in frequent train passages that can contribute significantly to the surrounding ambient noise environment in proximity of each rail line that crosses the Parkway. . In addition, the California High Speed Rail Authority is building a new crossing at Highway 99.

### Aircraft Noise

The region surrounding the San Joaquin River Parkway hosts a large number of small and medium-sized airports which modestly affect the noise environment in Parkway Plan Area. Table 4.12-15 shows the nearest airport facilities, and their approximate distances from the Parkway Plan Area:

**TABLE 4.12-15 PUBLIC- AND PRIVATE-USE AIRPORTS IN THE VICINITY OF THE PARKWAY PLAN AREA**

Airport	City/County	Approximate Distance from the Parkway (Miles)
Sierra Sky Park Airport	Fresno	0.1
Fresno Yosemite International Airport	Fresno	7.2
Fresno Chandler Executive Airport	Fresno	7.9
Kindsvater Ranch Airport	Clovis	12.7
Turner Field Airport	Fowler	13.2
Harris River Ranch Airport	Sanger	18.9
Selma Airport	Selma	20.4
Quinn Airport Selma	Selma	20.7
Reedley Municipal Airport	Reedley	23.0
Al Divine Airport	Caruthers	23.2
Peg Field Airport	Reedley	23.3
Central Valley Aviation Inc. Airport	Selma	24.0
Kings River Community College Airport	Reedley	25.4
Swanson Ranch Nr 2 Airport	Riverdale	25.9

Source: Airport Locations from AirNav.com.

The Parkway Plan Area could receive some noise from aircraft using any of these facilities; however, the Parkway Plan Area does not lie within the noise contours of any of the above facilities, except the Sierra Sky Park Airport. As shown on Figure 4.12-1, a small area of the Parkway Plan Area approximately 200 feet wide by 1000 feet long is

located within the 65 dBA CNEL noise level contours from the Sierra Sky Park Airport. No areas are within the 70 dBA CNEL airport noise contours.

## Heliports

Use of helipads generates noise during take-offs and landings in the immediate vicinity of the helipad. Unlike fixed-wing aircraft, helicopters produce noise not only from the engine but also from the rotation of the main rotor and helicopter blades; this latter sound modulation is called ‘blade slap’. According to the Airport Land Use Compatibility Handbook (Caltrans 2002), to a listener on the ground, helicopter noise is most audible as the aircraft approaches. Noise from emergency and non-emergency use of nearby helipads contributes minimally to the ambient noise environment in the Parkway Plan Area. However, single-event noise from helicopter over-flights can notably, albeit momentarily, elevate noise levels.

Table 4.12-16 shows the nearest heliport facilities, and their approximate distances from the Parkway Plan Area.

**TABLE 4.12-16 HELIPORTS SURROUNDING IN THE VICINITY OF THE PARKWAY PLAN AREA**

Airport	City/County	Approximate Distance from the Parkway (Miles)
McCarthy Ranch Heliport	Pinedale	<0.1
Children's Hospital Central California Heliport	Madera	0.4
Rogers Helicopters Inc. Heliport	Clovis	7.1
Community Regional Medical Center Heliport	Fresno	7.4
Valley Medical Center Heliport	Fresno	8.4
PG&E, Fresno Service Center Heliport	Fresno	9.4
Sanger Heliport	Sanger	15.9

\*The indicated heliport at McCarthy Ranch appears to be no longer in regular use.  
 Source: Heliport Locations from AirNav.com.

## Stationary Sources of Noise

Stationary sources of noise include commercial and industrial equipment and activities. Whereas mobile-source noise affects many receptors along an entire length of roadway, stationary noise sources affect only their immediate areas. Stationary sources of noise may occur from all types of land uses. The area surrounding the Parkway Plan Area is developed with broad mix of uses, including residential, institutional, commercial, industrial, recreational, open space, and agricultural.

Both commercial and institutional uses make modest contributions to the noise environment of the areas surrounding the Parkway Plan Area. Commercial uses can generate noise from heating, ventilation, air conditioning

## NOISE

(HVAC) systems, loading docks, trash compactors, and other sources. Noise generated by commercial uses is generally short and intermittent.

Industrial uses may generate noise from HVAC systems, loading docks, and machinery required for manufacturing processes. Industrial uses may generate noise on a more continual basis, or intermittently, depending on the processes and types of machinery involved. In addition to on-site mechanical equipment, warehousing and industrial land uses generate substantial truck traffic that results in additional sources of noise on local roadways in the vicinity of industrial operations. Residential, agricultural, recreational, and institutional uses comprise the vast majority of the areas surrounding the Parkway Plan Area.

The areas in and around the Parkway Plan Area currently feature a number of heavy industrial uses, such as gravel mining. Equipment and activities associated with these uses could, at times, be a source of substantial noise. The permits for these uses are anticipated to expire over the next five to ten years, at maximum, and will not likely be renewed.

Schools are considered noise-sensitive because of the necessity for quiet in the classroom to provide an adequate environment for learning. However, outdoor activities that occur on school campuses can occasionally generate noticeable levels of noise. While it is preferable to have schools in residential areas to support the neighborhood, noise generated on both the weekdays (by physical education classes and sports programs) and weekends (by use of the fields by youth organizations) can elevate noise levels in the immediate surroundings.

### 4.12.2 STANDARDS OF SIGNIFICANCE

Adoption and implementation of the proposed Plan would result in a significant noise impact if it would:

1. Expose people to or generate noise levels in excess of standards established in the General Plan or the Municipal Code, and/or the applicable standards of other agencies.
2. Expose people to or generate excessive ground-borne vibration or ground-borne noise levels.
3. Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
4. Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.
5. Expose people residing or working in the vicinity of the plan area to excessive aircraft noise levels, for a project located within an airport land use plan, or where such a plan has not been adopted, within 2 miles of a public airport or public use airport.
6. Expose people residing or working in the project area to excessive noise levels, for a project within the vicinity of a private airstrip.

### 4.12.3 IMPACT DISCUSSION

This section discusses the impacts of the proposed Plan on the noise environment of Fresno and Madera Counties, and the City of Fresno, as well as the perception of noise by potential sensitive receptors in the Parkway Plan Area. This discussion is organized by and responds to each of the potential impacts identified in the Standards of Significance.

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**NOISE-1**      **The proposed Plan would not expose people to or generate noise levels in excess of standards established in the General Plan or the Municipal Code, and/or the applicable standards of other agencies.**

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The proposed Plan enables only recreational and open space land use designations, therefore implementation of the proposed Plan would not create new noise-sensitive inhabited uses, such as residences, hospitals, or schools. Nevertheless, certain uses and activities within the Parkway Plan Area could be exposed to disruptive levels of noise. Implementation of the proposed Plan has the potential to expose existing sensitive receptors to new sources and/or increased levels of ambient noise; however, proposed uses would be limited to recreational amenities, habitat restoration, and other uses that are not expected to result in adverse impacts related to noise.

#### Code of Regulations Title 24, California Building Code

As described above in the Regulatory Framework section, Title 24 establishes 45 dBA CNEL or  $L_{dn}$  as the acceptable interior noise limit for new construction of habitable structures. Although the proposed Plan would potentially include the creation of permanent structures with interior spaces, these spaces would not be regarded as “habitable” as they would not serve as living quarters.

#### 1995 Madera County General Plan Noise Element

Implementation of the proposed Plan would result in low-impact recreational and open space uses. Because the Madera County General Plan does not have noise standards that pertain to these uses, there would be no noise compatibility conflict under the County’s General Plan. With regard to impacts to surrounding land uses, implementation of the proposed Plan is also not anticipated to result in significant impacts under the policies of the Madera County General Plan. Policy 7.A.5 of the Madera County General Plan requires that new non-transportation projects not result in an hourly  $L_{eq}$  of 50 dBA or more during the daytime, or 45 dBA or more during the nighttime, at the property line of receiving sensitive uses. This policy also limits maximum noise levels to 70 dBA and 65 dBA during the daytime and nighttime, respectively. The planned Parkway would support activities such as camping, boating, fishing, trail use, horseback riding, swim, and golf, none of which produce high levels of noise. The proposed Project would provide launches and other facilities primarily for non-motorized watercraft and fishing boats with small motors. Overall, the recreational activities that would be typically associated with the uses under the proposed Plan are not anticipated to generate high levels of intermittent or sustained noise. Additionally, most sensitive receptors on the Madera County side of the San Joaquin River are located sufficiently far enough away from the proposed recreation sites to allow the attenuation of any noise that may be generated by use of the proposed recreation sites.

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Although activities associated with implementation of the proposed Plan are not generally anticipated to result in high levels of noise, adoption of the proposed Plan would formalize several policies that would help control noise levels. Most notably, ACCESS.23 states, “To the extent feasible, locate and design any new Parkway public access features that may generate noise to reduce disturbance at the nearest noise-sensitive land uses.” Additionally, the proposed Plan also establishes that welcoming signage include the following provision among park rules: “Respect other visitors and their experience. Avoid excessive noise.” These two provisions, together, would serve to substantially limit the noise generated by recreational activities resulting from implementation of the proposed plan. The proposed Plan also contains the following policy and goal that would serve to incidentally limit noise from Parkway use:

### Habitat Conservation and Management

#### Policy:

HABITAT.28 To minimize disturbance of breeding birds, particularly those in heron and egret rookeries, and to minimize disturbance on foraging of wintering bald eagles, work with appropriate authorities to develop boating regulations limiting gas-powered vessels between Friant Dam and the Highway 99 during the months of November through July.

#### Goal:

- Provide primarily for non-motorized watercraft and fishing boats with small motors.

It is therefore anticipated that adoption and implementation of the proposed Plan would be substantially consistent with the noise provisions of the 1995 Madera County General Plan and the impacts in this regard would be *less than significant*.

### Fresno County 2000 General Plan Noise Element

Since implementation of the proposed Plan would not result in the creation of new noise-sensitive inhabited uses and since the operational noise from the Parkway Plan Area is anticipated to be minimal, it is anticipated that the proposed Plan would substantially be consistent with the provisions of the Fresno County 2000 General Plan Noise Element.

As described above, implementation of the proposed Plan would result in recreational and open space uses; therefore, outside of personal enjoyment of quite surroundings when using recreational and open space uses, the land uses proposed under proposed Plan would themselves generally be less subject to noise compatibility conflicts, since they are not generally considered especially noise-sensitive, as compared to residential or institutional uses. As shown above in Table 4.12-9, the Fresno County General Plan establishes land use compatibility criteria various types of land uses. Land uses included in this table, which could be developed as part of the proposed Plan, include playgrounds, neighborhood parks, and water recreation. The uses would generally be at least conditionally acceptable up to a CNEL of 70 dBA. Given the current levels and types of development along the Parkway Plan Area and the location of major roadways such as the State Route 41, Friant Road, and railways, most areas within the Parkway Plan Area could be expected to experience CNELs below the level of 70

dba. Nevertheless, as individual projects are proposed under the proposed Plan, each would be required to undergo project-level CEQA and planning review. As part of this review, site-specific noise measurements and/or analysis would be used to establish land use compatibility and ensure consistency with Fresno County standards.

Additionally Goal GS-E and Policy HS-E.1 of the Fresno County General Plan serve to regulate noise compatibility in regard to airports and their associate Airport Land Use Compatibility Plans. The Parkway Plan Area falls within the land use planning area of one airport, the Sierra Sky Park Airport. Issues related to land use compatibility for this airport are discussed further below, under the Sierra Sky Park Airport Land Use Policy Plan section. Overall, the proposed Plan would be consistent with these airport-related policies of the Fresno County Plan.

In regard to impacts to surrounding land uses, implementation of the proposed Plan is also not anticipated to result in significant impacts under the policies of the Fresno County General Plan. Together, policies HS-G.1 and HS-G.4 of the Fresno County General Plan "...require that all proposed development incorporate design elements necessary to minimize adverse noise impacts on surrounding land uses" and also "...require an acoustical analysis as part of the environmental review process" where projects could either generate or be exposed to excessive noise. Overall, the low-impact recreational and other activities that would be typically associated with the uses under the proposed Plan are not anticipated to generate high levels of intermittent or sustained noise. Nevertheless, as individual projects are proposed under the proposed Plan, each would be required to undergo project-level CEQA and planning review. As part of this review, site-specific noise measurements and/or analysis would be used to establish consistency with these and other polices under the Fresno County General Plan.

As discussed above, the proposed Plan itself would adopt a number of policies that would also help control noise levels. Given the effect of these policies and subsequent project-level review, it is therefore anticipated that adoption and implementation of the proposed Plan would be substantially consistent with the noise provisions of the Fresno County 2000 General Plan. Therefore, the impacts in this regard would be *less than significant*.

## Fresno City General Plan Noise and Safety Element

Since implementation of the proposed Plan would not result in the creation of new noise-sensitive inhabited uses and since the operational noise from implementation of the proposed Plan is anticipated to be minimal, it is anticipated that the proposed Plan would be substantially consistent with the provisions of the Fresno City General Plan Noise and Safety Element.

As described above, implementation of the proposed Plan would result in recreational and open space uses; therefore, the land uses proposed under the proposed Plan would themselves generally be less subject to noise compatibility conflicts, since they are not generally considered especially noise-sensitive as compared to residential or institutional uses. Additionally, the Fresno City General Plan does not identify recreational or open space uses as being noise-sensitive and does not include those uses in its land use compatibility standards. Nevertheless, as individual projects are proposed under the proposed Plan, each would be required to undergo project-level CEQA and planning review. As part of this review, site-specific noise measurements and/or analysis would be used to establish land use compatibility with the City of Fresno Standards.

## NOISE

As discussed above, the proposed Plan itself would adopt a number of policies that would also help control noise levels. Given the effect of these policies and subsequent project-level review, it is therefore anticipated that adoption and implementation of the proposed Plan would be substantially consistent with the noise provisions of the Fresno City General Plan and the impacts in this regard would be *less than significant*.

### Madera and Fresno County Codes and City of Fresno Municipal Code

As discussed above in Section 4.12.2, Regulatory Framework, the county and municipal codes of Madera and Fresno Counties, and the City of Fresno do not contain provisions that would apply specifically to the adoption and implementation of the proposed Plan. Because most of the proposed projects under the proposed Plan would be to support passive recreational uses such as trail use, fishing, picnic and camping, the proposed uses within the Parkway are not expected to cause substantial noise increases to residents in the vicinity of the Parkway. While it is conceivable that particular activities that may eventually take place in the Parkway Plan Area could potentially violate the applicable noise ordinances, such incidents are anticipated to be irregular and isolated, would not directly result from the policies or implementation of the proposed Plan, and would be handled through routine law enforcement. Additionally, the policies of the proposed Plan discussed above would serve to discourage noisy behavior and would reduce the potential for ordinance violations. Given these considerations and the programmatic nature of the proposed Plan, the impacts in this regard would be *less than significant*.

### Sierra Sky Park Land Use Policy Plan

Sierra Sky Park airport is the only air traffic facility whose land use plan overlaps to any degree with the Parkway Plan Area, and is the only airfield within 5 miles of any portion of the Parkway Plan Area. Although the Sierra Sky Park Land Use Policy Plan does not adopt a specific land use map, the Plan includes a land use compatibility table that serves to restrict the types of land uses and structures that may be developed within certain zones surrounding the airport. However, this table does not refer to any of the land uses proposed under the proposed Plan or to any noise-related land use concerns.

According to the noise compatibility criteria adopted by the Sierra Sky Park Land Use Policy Plan, parks, playgrounds, and water recreation are all normally acceptable in areas experiencing a CNEL of 60–65 dBA and would be conditionally acceptable within areas experiencing a CNEL of 65–70 dBA. According to the noise contours presented in the Airport Land Use Plan Exhibit, only a very small sliver of the Parkway Plan Area of approximately 200 feet wide by 1000 feet long would fall in a contour above 65 dBA CNEL and no portion would fall within a contour of 70 dBA CNEL or above. Therefore, the open space and recreational uses to be implemented under the proposed Plan would generally be normally acceptable, except for a very small area in which they would be conditionally acceptable. Additionally, the open space and recreation uses under the proposed Plan are consistent with the Multi-Use Open Space land use designation of the Sierra Sky Park Area Planned Land Use Changes as adopted within the City of Fresno General Plan. Finally, in meeting the county and municipal standards discussed above, developments under the proposed Plan would need to demonstrate their compatibility with existing land uses. Given that the adoption and implementation of the proposed Plan would be substantially consistent with the Sierra Sky Park Land Use Policy Plan, the impacts in this regard would be *less than significant*.

**Applicable Laws, Regulations, and Permits, Relevant Local Land Use Policies:**

- 1995 Madera County General Plan Noise Element (Policy 7.A.5; Policy 7.A.7)
- Fresno County 2000 General Plan Noise Element (Goal HS-E; Policy HS-E.1; Goal HS-G; Policy HS-G.1; Policy HS-G.3; Policy HS-G.4; Policy HS-G.5; Policy HS-G.6; Policy HS-G.8)
- City of Fresno General Plan Noise and Safety Element (Objective NS-1; Policy NS-1-a)
- Sierra Sky Park Land Use Policy Plan (Policy A.2.; Policy A.4.; Policy A.5.)

**Significance Without Mitigation:** Less than significant.

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**NOISE-2**                      **The proposed Plan would not expose people to or result in generation of excessive ground-borne vibration or ground-borne noise levels.**

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CEQA does not specify quantitative thresholds for what is considered “excessive” vibration or ground-borne noise. Neither Madera or Fresno Counties, nor the City of Fresno establish such thresholds. Therefore, based on criteria from the FTA, a significant impact would occur if:

- Implementation of the Project would result in vibration exceeding the criteria presented in Table 4.12-3 that could cause buildings architectural damage.
- Implementation of the Project would exceed the criteria for annoyance presented in Table 4.12-14.

The following discusses short-term construction and long-term operations impacts from implementation of the Project.

**Short-Term Construction Vibration Impacts**

Implementation of the proposed Plan would involve improvements to existing park, conservation, and open space facilities and expansion of park, conservation, and open space facilities along an approximately 23-mile reach of the San Joaquin River. Construction vibration from implementation of the proposed Plan would vary temporally and geographically, depending on the specific location and type of construction activity. Construction activities may include grading, excavation, and fill for habitat restoration projects, preparation work (such as demolition, clearing and grubbing), foundation work, and construction of new small facilities or structures. In general, construction would be localized, occur intermittently and variably, and only occur for relatively short periods of time. Site preparation, excavation, and foundation work for an individual project would normally last for several weeks and would not produce substantial vibration. The number and size of anticipated structures is very limited, these structures would generally not be located in close proximity to sensitive receptors, and, with the exception of a few small bridges, construction would not generally involve the types of pile driving, extensive excavation, or compaction that would result in significant vibration impacts.

Table 4.12-17 lists vibration levels for construction equipment. Grading and demolition activities typically generate the highest vibration levels during construction activities. Ground-borne vibration is almost never annoying to people who are outdoors, so it is usually evaluated in terms of indoor receivers. As construction activities to implement the proposed Plan would be relatively small in scope and limited to construction of trails, small

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**TABLE 4.12-17 GROUND-BORNE VIBRATION LEVELS FOR CONSTRUCTION EQUIPMENT**

Equipment	Approximate Velocity Level at 25 Feet (VdB)	Approximate RMS <sup>a</sup> Velocity at 25 Feet (inch/sec)
Pile Driver (impact) Upper Range	112	1.518
Pile Driver (impact) Lower Range	104	0.644
Pile Driver (sonic) Upper Range	105	0.734
Pile Driver (sonic) Lower Range	93	0.170
Large Bulldozer	87	0.089
Caisson Drilling	87	0.089
Jackhammer	79	0.035
Small Bulldozer	58	0.003
Loaded Trucks	86	0.076
FTA Criteria – Human Annoyance (Daytime)	78 to 90 <sup>b</sup>	—
FTA Criteria – Structural Damage	—	0.2 to 0.5 <sup>c</sup>

a. RMS velocity calculated from vibration level (VdB) using the reference of 1 micro-inch/second.

b. Depending on affected land use. For residential 78VdB, for offices 84 VdB, workshops 90 VdB.

c. Depending on affected building structure, for timber and masonry buildings 0.2 in/sec, for reinforced-concrete, steel, or timber 0.5 in/sec.

Source: Federal Transit Administration, Transit Noise, and Vibration Impact Assessment, 2006.

structures, parking lots and access roads, and because off-site sensitive uses are generally located at a distance from the Parkway Plan Area boundaries, it is expected that vibration from construction would be generally not perceptible. Ground-borne vibration impacts during construction would be *less than significant* and no mitigation would be required.

**Ground-borne Vibration Related to On-Road Vehicles**

The California Department of Transportation (Caltrans) has studied the effects of propagation of vehicle vibration on sensitive land uses and notes that “heavy trucks, and, quite frequently, buses, generate the highest earthborn vibrations of normal traffic.” Caltrans further notes that the highest traffic-generated vibrations are along freeways and State Routes. Their studies have found that “vibrations measured on freeway shoulders (5 meters from the centerline of the nearest lane) have never exceeded 0.08-inch per second, even with the worst combinations of heavy trucks. This level coincides with the maximum recommended safe level for ruins and ancient monuments (and historic buildings).” Typically, trucks do not generate high levels of vibration because they travel on rubber tires and do not have vertical movement, which generates ground vibration; however, vibration from trucks may be more noticeable if there are any roadway imperfections such as potholes.

Given the width of the freeway shoulders and the distances from the freeway right-of-way edges to potential Parkway Plan Area structures, vibration-sensitive structures or uses would be sited well beyond the Caltrans demarcation of 5 meters (approximately 16 feet) from the centerline of the nearest lanes of Highway 99 and State Route 41. Because ground-borne vibration dissipates rapidly with distance and because vibration-sensitive uses would not be sited adjacent to freeways, any potential for significant vibration impacts from on-road vehicles would not occur. Therefore, implementation of the proposed Plan is not expected to result in exposure to excessive transportation-related vibration and this impact would be *less than significant*.

### Ground-borne Vibration Related to Railway Transportation Activity

The subsequent projects envisioned under the proposed Plan would not place vibration-sensitive uses in close proximity to existing rail corridors in the general vicinity of the Parkway Plan Area. Although railway transportation activities generally have the potential to generate vibration levels exceeding FTA standards that could result in significant impacts to sensitive receptors, railways which traverse the Parkway Plan Area are located on elevated structures that would serve to lessen vibration impacts. According to the FTA, the screening distance for the evaluation of vibration impacts to sensitive land uses from commuter and freight rail operations is 200 feet; and the vast majority of uses would be located considerably farther from these railroad crossings. Additionally, as individual elements of the proposed Plan which are in close proximity to railways undergo project-specific CEQA review, the limited potential for ground-borne vibration impacts would be evaluated and addressed. Therefore, with the very limited potential for vibration impacts from railway activity and the provision of separate project-level CEQA review, the impacts of the proposed Plan in this regard would be *less than significant*.

#### Applicable Laws, Regulations, and Permits, Relevant Local Land Use Policies:

- FTA Standards for Vibration Impacts
- Section 9.58.020 G of the Madera County Noise Ordinance
- Section 8.40.060 of the Fresno County Noise Ordinance
- Section 10-109 of the City of Fresno Noise Ordinance

**Significance Without Mitigation:** Less than significant.

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<b>NOISE-3</b>	<b>The proposed Plan would not cause a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project.</b>
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CEQA does not define what noise level increase would be considered substantial; however, the common practice in impact assessments generally considers any 5 dBA or greater increase due to the project to be substantial, and considers a 3 dBA or greater increase due to the project to be substantial, if the resulting noise level would be in excess of an applicable ambient noise level standard.

### Stationary Noise

Noise is regulated by numerous codes and ordinances across federal, State, and local agencies. In addition, Madera and Fresno Counties and the City of Fresno regulate stationary-source noise through their County and Municipal

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Codes. Implementation of the proposed Plan would result in new open space and recreation land uses within the Parkway Plan Area within these jurisdictions. The primary noise sources from these land uses are landscaping, maintenance activities, recreational vehicles and equipment, people, and HVAC or mechanical systems. Noise generated by these recreational uses would generally be brief and intermittent, and these uses are not usually regarded as substantial source of noise.

The siting of new recreational and open space uses may nominally increase noise levels at nearby residential or other sensitive uses. This could result from the increased presence of people, and vehicles and equipment associated with recreational and maintenance activities. Madera and Fresno Counties and the City of Fresno require that noise from stationary sources in their jurisdictions comply with their Noise Ordinances, which regulate the acceptable noise at property boundaries in order to reduce nuisances to nearby land uses. The County Sherriff, City Police, or other Code Enforcement Officers enforce the noise limitations of the Noise Ordinances, and these jurisdictions would also apply these noise standards during the permitting process.

Each new individual project under the proposed Plan would be subject to project-specific review under CEQA. Further, the numerous policies contained in the previously discussed General Plans and codes of ordinances would serve to prevent substantial increases to noise as received at sensitive receptors. Moreover, the policies discussed above in relation to the proposed Plan itself would also serve to prevent noise disturbances and increases to overall ambient noise levels.

Together, consistency with the above General Plan policies and provisions of the Noise Ordinances would serve to ensure that the development of new projects under the proposed Plan would not result in substantial permanent increases in the ambient noise level in the project vicinity, and the impact in this regard would be *less than significant*.

### Transportation-Related Noise

#### *On-Road Vehicle Noise*

Development of new recreational facilities, habitat improvements, and open space areas under implementation of the proposed Plan would result in altered levels of traffic in the project vicinity. In most cases however, these changes would result in only slightly increased levels of traffic (see section 4.15, Transportation and Traffic).

The proposed Plan would generate traffic at several areas dispersed throughout the approximately 23-mile length of the Parkway at over 22 locations. As discussed in the Transportation and Traffic chapter, less-than-significant impacts are expected to occur to study area roadways. Of the areas targeted for new recreational facilities and increased visitation, the River West Fresno/Madera area is projected to experience the greatest increase in daily trips. Nevertheless, even with a projected 480 daily vehicle trips, the resulting average expected increase in traffic on adjacent roadways would only be 48 vehicles per hour, assuming a 10-hour window of use. Even with the anticipated maximum increase in daily trips for any particular portion of the Parkway Plan Area, it is unlikely that significant increases in traffic noise would occur. Low levels of traffic such as these would not typically be anticipated to contribute to substantially increased levels of ambient noise resulting from on-road vehicles. These traffic increases would be small compared to existing traffic noise along study area roadways and would not cause substantial noise increases for sensitive receptors. Additionally, the proposed Plan itself contains several measures

that would promote collaboration with local agencies to ensure any increases in traffic are managed according to applicable traffic and transportation regulations. Such policies in the proposed Plan include the following:

Public Access and Recreation

**Policies:**

- ACCESS.15 Facilitate alternative transportation access to the Parkway including coordinating with transit providers to develop a regional transit map showing linkages to the Parkway facilities.
- ACCESS.16 Encourage the use of alternative transportation to Parkway events.
- ACCESS.17 Plan for transit connections/stops at trailheads, Parkway staging areas, and activity centers during project development.
- ACCESS.18 Participate in regional public transit planning to secure service to the Parkway, particularly during periods of high activity such as summer weekends.
- ACCESS.20 To the extent possible, schedule Parkway events to minimize traffic congestion and crowding.

Additionally, because the proposed Plan itself is programmatic and does not identify specific projects, future projects would be subject to separate project-level CEQA review in which potential permanent noise impacts from increased traffic would be identified. Therefore, with the above policies, consistency with local and regional regulations, and the provision of separate project-level CEQA review, the impacts of the proposed Plan would be *less than significant* in this regard.

**Applicable Laws, Regulations, and Permits, Relevant Local Land Use Policies:**

- 1995 Madera County General Plan Noise Element (Policy 7.A.5; Policy 7.A.7)
- Fresno County 2000 General Plan Noise Element (Goal HS-E; Goal HS-G; Policy HS-G.1; Policy HS-G.3; Policy HS-G.4; Policy HS-G.5)
- City of Fresno General Plan Noise and Safety Element (Objective NS-1; Policy NS-1-a; Policy NS-1-j)
- Madera County Noise Ordinance
- Fresno County Noise Ordinance
- City of Fresno Noise Ordinance

**Significance Without Mitigation:** Less than significant.

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**NOISE-4**                      **The proposed Plan would not cause a substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project.**

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Noise from construction equipment and various construction-related activities is frequently a cause of temporary or periodic increases in ambient noise levels. Temporary or periodic increases in ambient noise levels under the proposed Plan would chiefly result from construction activities associated with development of new recreational

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amenities and facilities and habitat restoration projects under the proposed Plan. Table 4.12-18 below shows typical noise levels generated by commonly-used pieces of construction equipment.

**TABLE 4.12-18 CONSTRUCTION EQUIPMENT NOISE EMISSION LEVELS**

Construction Equipment	Typical Noise Level (dBA) at 50 Feet	Construction Equipment	Typical Noise Level (dBA) at 50 Feet
Air Compressor	81	Pile-Driver (Impact)	101
Backhoe	80	Pile-Driver (Sonic)	96
Ballast Equalizer	82	Pneumatic Tool	85
Ballast Tamper	83	Pump	76
Compactor	82	Rail Saw	90
Concrete Mixer	85	Rock Drill	98
Concrete Pump	71	Roller	74
Concrete Vibrator	76	Saw	76
Crane, Derrick	88	Scarifier	83
Crane, Mobile	83	Scraper	89
Dozer	85	Shovel	82
Generator	81	Spike Driver	77
Grader	85	Tie Cutter	84
Impact Wrench	85	Tie Handler	80
Jack Hammer	88	Tie Inserter	85
Loader	85	Truck	88
Paver	89		

Source: Federal Transit Administration, Transit Noise, and Vibration Impact Assessment, 2006.

The timing of the proposed Plan’s development in terms of which individual projects will be constructed and in what order is unknown at this time. Also unknown is the exact equipment mix (i.e., number of each of the equipment items), spatial distribution, phasing, and overall duration of the construction activities for each individual project implemented under the proposed Plan. Thus, assessing the temporary (and periodic) noise increases from the proposed Plan construction is impractical at this juncture.

Overall, the Madera and Fresno County, and City of Fresno Noise Ordinances contain provisions that would serve to reduce ambient noise impacts from construction by limiting construction activities to particular hours. By restricting the hours of construction per these provisions, temporary or periodic increases to ambient noise from construction activities under the proposed Plan would be greatly reduced.

Through adherence to applicable county and municipal policies and regulations, the proposed Plan would minimize temporary or periodic impacts to ambient noise levels from construction activities to the maximum extent feasible. Subsequent projects would be subject to separate, project-level CEQA review to identify and mitigate associated impacts. Therefore the impact would be *less than significant*.

**Applicable Laws, Regulations, and Permits, Relevant Local Land Use Policies:**

- Section 9.58.020 G of the Madera County Noise Ordinance
- Section 8.40.060 of the Fresno County Noise Ordinance
- Section 10-109 of the City of Fresno Noise Ordinance
- 1995 Madera County General Plan Noise Element (Policy 7.A.7)
- Fresno County 2000 General Plan Noise Element (Goal HS-G; Policy HS-G.1; Policy HS-G.6)
- City of Fresno General Plan Noise and Safety Element (Objective NS-1; Policy NS-1-a; Policy NS-1-j)

**Significance Without Mitigation:** Less than significant.

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**NOISE-5**            **The proposed Plan would not cause exposure of people residing or working in the vicinity of the plan area to excessive aircraft noise levels, for a project located within an airport land use plan, or where such a plan has not been adopted, within 2 miles of a public airport or public use airport.**

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The Parkway Plan Area is located within the airport land use plan for the Sierra Sky Park Airport, and there are no other public or public-use airports within 5 miles of the Parkway Plan Area. The proposed Plan does not include any commercial, office, or residential uses that would be expected to expose workers or residents to excessive aircraft noise levels. Although Parkway staff and maintenance workers may at times be required to work in close proximity to the Sierra Sky Park Airport, there are no permanent Parkway facilities currently planned for the areas that would be most subject to noise from the airport. The area nearest to the airport is a designated unit of the San Joaquin River Ecological Reserve (Milburn Unit), making it very unlikely that visitors or staff would spend extended periods of time in this area. Finally, as indicated in the airport noise contours presented in Figure 4.12-1, the Parkway Plan Area would only include a very small area of approximately 1,000 feet long by 200 feet wide that would be subject to CNEL 65 dBA or greater; therefore even workers or visitors who spent an extended period in this area of the planned Parkway would be unlikely to experience excessive levels of noise. Given these considerations, the impact would be *less than significant*.

**Applicable Laws, Regulations, and Permits, Relevant Local Land Use Policies:**

- N/A

**Significance Without Mitigation:** Less than significant.

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<b>NOISE-6</b>	<b>The proposed Plan would not cause the exposure of people residing or working in the Project area to excessive noise levels, for a project within the vicinity of a private airstrip.</b>
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The Parkway Plan Area is not located within 2 miles of a private airstrip. McCarthy Ranch and Children's Hospital of Central California operate private heliports in very close proximity to the Parkway; however, helicopter takeoffs and landings from these sites would be sporadic and, in the case of the Children's Hospital, located approximately 2000 feet west of the Van Buren unit of the Parkway across the State Route 41, would not occur in sufficiently close proximity to the project site to result in excessive exposure to noise. Additionally, the indicated heliport at McCarthy Ranch appears to be no longer in regular use, as no helipad is evident in recent aerial imagery of the provided location for the heliport. It appears that this heliport may have been abandoned or removed due to development of single-family residential uses in the surrounding area. Irrespective of these potential heliport operations, and as discussed above, the proposed Plan does not include residences, commercial retail, or office land uses. Therefore, there would be little to no exposure of residents or workers to noise from private airstrips or helipads. Any exposure of park visitors or staff would be intermittent and brief. Given these considerations, the impact would be *less than significant*.

### **Applicable Laws, Regulations, and Permits, Relevant Local Land Use Policies:**

- N/A

**Significance Without Mitigation:** Less than significant.

## 4.12.4 CUMULATIVE IMPACTS

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<b>NOISE-7</b>	<b>Implementation of the proposed Plan, in combination with past, present, and reasonably foreseeable projects, would not result in additional cumulatively considerable noise, or ground-borne noise and vibration impacts.</b>
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The above analysis of the proposed Plan addresses cumulative impacts in regard to noise, as well as ground-borne noise and vibration in the project vicinity. Although multiple nearby noise sources may simultaneously create higher overall noise levels, the effect is captured and accounted for by the ambient noise level analysis that forms the basis of the standards of significance for noise evaluation. Any measurement of sound or ambient noise, whether for the purpose of evaluating land use compatibility, establishing consistency with exterior and interior noise standards, or determining point-source violations of a noise ordinance, necessarily would incorporate noise from all other nearby perceptible sources. Additionally, because the proposed Plan itself does not identify specific projects, future projects proposed under the proposed Plan would be subject to separate project-level CEQA review in which potential cumulative noise impacts would be identified. Particularly, any future project-level noise analysis for on-road vehicles would incorporate overall traffic volumes, which also inherently include all vehicle trips on project roadways, irrespective of whether that trip was generated on or by the project itself. Therefore, the cumulative impacts of the proposed Plan would be *less than significant*.

**Applicable Regulations and Conditions of Approval:**

- N/A

**Significance Without Mitigation:** Less than significant.

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