

4.11 NOISE

4.11.1 Introduction

This section addresses the potential noise and vibration impacts of the project. It describes the existing ambient noise levels in the project area and identifies federal and state plans, policies, and laws and local plans, policies, and regulations applicable to the project and project area. The analysis identifies the potential impacts of the project, including potential short-term, long-term, and cumulative impacts from noise and vibration and identifies mitigation measures to reduce impacts to less-than-significant levels. Additional data are provided in Appendix L, “Noise Measurement Data and Noise Modeling Calculations.”

Impacts from airport-related noise are not discussed in this section. No actively operating airports or private airstrips are located within 2 miles of the project site and, therefore aircraft-related noise would not be a substantial noise source in the project area. (Fiddymont Field, an inoperable private airstrip, is located approximately 1.3 miles south of the SAP area.) Project operation would not result in any new or additional major sources of ground vibration, such as railways, transit lines, or bus/train stations; therefore, the focus of this analysis is on construction-related vibration and the placement of new sensitive land uses near existing vibration sources.

Important terms for specific parts of the project are discussed in detail in Section 4.0, “Approach to the Environmental Analysis.” The following brief discussion is intended to remind the reader how those terms are defined and used in the EIR analysis, including this section. “SAP area” refers to the entire SAP area, which includes the PRSP area. “Net SAP area” refers to the portion of the SAP area outside the PRSP area. The “project” encompasses the entirety of the SAP, including the PRSP and all associated off-site improvements. “Project area” refers to the entire area covered by the project. Because the project area is composed of three pieces (the net SAP area, the PRSP area, and areas where other off-site infrastructure would support the project), the impact analysis typically is divided into three subsections: “Net SAP Area,” “PRSP Area,” and “Other Supporting Infrastructure.” (“Other Supporting Infrastructure” refers to improvements outside the SAP area and is divided into “Pleasant Grove Retention Facility” and “Off-Site Transportation and Utility Improvements.”) Some required infrastructure improvements are planned outside the PRSP area but still in the SAP area; those improvements are addressed in the “PRSP Area” sections.

As discussed in Chapter 1, “Introduction,” the PRSP land use plan has been slightly revised since circulation of the NOP. Changes primarily relate to increasing the distance between the landfill property and land designated for residential uses, modifying the density of proposed residential areas, reducing the proposed commercial intensity, slightly decreasing the acreage of open space, and increasing the acreage of parks to meet County parkland provision standards. The size of the PRSP area (2,213 acres) has not changed since release of the NOP, and the overall area of development would be nearly identical. Several technical memoranda (see Appendix P) were prepared to update the calculations in response to the revised PRSP, including updated traffic information. The revised vehicle trip generation and vehicle miles traveled (VMT) calculations in the traffic memorandum reflect the revised land use plan and are presented in this section of the Draft EIR. The results presented in the traffic memorandum demonstrate that the trip generation and VMT forecasts for the revised land use plan are less than those identified for the previously proposed land use plan. The traffic memorandum indicates that the trip generation associated with the revised land use plan would be 1,414 trips fewer than identified for the previously proposed land use plan. Regarding VMT, the revised land use plan would result in a reduction of 101,834 VMT compared to the previously proposed land use plan. Because the trip generation and VMT forecasts presented in this section are based on the previous PRSP land use plan, the analysis in this section identifies traffic noise levels that are slightly higher than would occur with the revised land use plan. Other revisions to the land use plan, such as the increased distance between residential uses and the landfill, would not meaningfully change the noise analysis.

Overall, the noise analysis included in this section is considered to be conservative because it relies on higher project vehicle trip generation for PRSP than currently proposed.

4.11.2 Common Noise Descriptors

The intensity of environmental noise fluctuates over time, and several different descriptors of time-averaged noise levels are used. The selection of a proper noise descriptor for a specific source depends on the spatial and temporal distribution, duration, and fluctuation of both the noise source and the environment. The noise descriptors most often used in relation to the environment are defined below (Caltrans 2009).

- ▲ Decibel (dB): a sound level expressed in decibels which is the logarithmic ratio of two like-pressure quantities, with one pressure quantity being a reference sound pressure of 20 micropascals.
- ▲ A-Weighted Decibel (dBA): the frequency-response adjustment of a sound level meter that conditions the output signal to approximate human hearing response. All noise levels in this analysis are A-weighted unless otherwise noted.
- ▲ C-Weighted Decibel (dBC): the frequency-response adjustment of a sound level meter that conditions the output signal to account for the frequency sensitivity of the human ear at very high noise levels.
- ▲ Equivalent Continuous Sound Level (L_{eq}): the equivalent steady-state sound level in a stated period that would contain the same acoustic energy as the time-varying sound level during the same period (i.e., average noise level).
- ▲ Percentile-Exceeded Sound Level (L_{xx}): L_{xx} represents the sound level exceeded for a given percentage of a specified period (e.g., L_{10} is the sound level exceeded 10 percent of the time, and L_{90} is the sound level exceeded 90 percent of the time).
- ▲ Maximum Sound Level (L_{max}): the highest instantaneous noise level during a specified period.
- ▲ Day-Night Sound Level (L_{dn}): the 24-hour L_{eq} with a 10-dBA penalty applied during the hours from 10 p.m. to 7 a.m., which are typically reserved for sleeping.
- ▲ Community Noise Equivalent Level ($L_{dn}/CNEL$): similar to L_{dn} , $L_{dn}/CNEL$ is the energy average of the A-weighted sound levels occurring over a 24-hour period, with a 10-dB penalty applied to sound levels occurring between 10 p.m. and 7 a.m. and a 5-dB penalty applied to sound levels occurring during evening hours between 7 p.m. and 10 p.m.

4.11.3 Sound Properties

A sound wave is initiated in a medium by a vibrating object (e.g., vocal chords, the string of a guitar, the diaphragm of a radio speaker). The wave consists of minute variations in pressure, oscillating above and below the ambient atmospheric pressure. The number of pressure variation cycles occurring per second is referred to as the frequency of the sound wave and is expressed in hertz.

To simplify expression of sound pressure fluctuations, the dB scale was introduced. The use of the dB is a convenient way to address the million-fold range of sound pressures to which the human ear is sensitive. A dB is logarithmic; it does not follow normal algebraic methods and cannot be directly summed. For example, a 65-dBA source of sound, such as a truck, when joined by another 65 dBA source results in a sound amplitude of 68 dBA, not 130 dBA (i.e., doubling the source strength increases the sound pressure by 3 dBA). A sound level increase of 10 dBA corresponds to 10 times the acoustical energy, and an increase of 20 dBA equates to a 100-fold increase in acoustical energy.

Noise can be generated by a number of sources, including mobile sources (i.e., transportation) such as automobiles, trucks, and airplanes and stationary sources (i.e., nontransportation) such as construction sites, machinery, and commercial and industrial operations. As acoustic energy spreads through the atmosphere from the source to the receiver, noise levels attenuate (i.e., decrease) depending on geometric spreading (the initial pressure difference is distributed across an increasing surface area which reduces the energy per unit area), ground absorption characteristics, atmospheric conditions, and the presence of physical barriers. For short distances the ground effect is important; hard sites (characterized by asphalt, concrete, or hard packed earth) attenuate noise less than soft sites (loose soil or vegetated ground cover). Noise generated from mobile sources generally attenuates at a rate of 4.5 dBA per doubling of distance for soft sites, and 3 dBA per doubling of distance where hard ground surfaces exist between the transportation source and receivers. Stationary noise sources spread with more spherical dispersion patterns that attenuate at a rate of 6 dBA (for hard sites) to 7.5 dBA (for soft sites) per doubling of distance.

Atmospheric conditions such as wind speed, turbulence, temperature gradients, and humidity may additionally alter the propagation of noise and affect levels at a receiver. Furthermore, the presence of a large object (e.g., barrier, topographic features, and intervening building façades) between the source and the receptor can provide significant attenuation of noise levels at the receiver. The amount of noise level reduction (i.e., shielding) provided by a barrier primarily depends on the size of the barrier, the location of the barrier in relation to the source and receivers, and the frequency spectra of the noise. Natural (e.g., berms, hills, and dense vegetation) and human-made features (e.g., buildings and walls) may be used as noise barriers.

All buildings provide some exterior-to-interior noise reduction. A building constructed with a wood frame and a stucco or wood sheathing exterior typically provides a minimum exterior-to-interior noise reduction of 25 dBA with its windows closed, whereas a building constructed of a steel or concrete frame, a curtain wall or masonry exterior wall, and fixed plate glass windows of 0.25-inch thickness typically provides an exterior-to-interior noise reduction of 30 to 40 dBA with windows closed (Caltrans 2002).

Table 4.11-1 describes typical A-weighted noise levels for various noise sources.

Table 4.11-1 Typical A-Weighted Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	– 110 –	Rock band
Jet fly-over at 1,000 feet	– 100 –	
Gas lawn mower at 3 feet	– 90 –	
Diesel truck at 50 feet at 50 miles per hour	– 80 –	Food blender at 3 feet, garbage disposal at 3 feet
Noisy urban area, daytime; gas lawn mower at 100 feet	– 70 –	Vacuum cleaner at 10 feet, normal speech at 3 feet
Commercial area, heavy traffic at 300 feet	– 60 –	
Quiet urban daytime	– 50 –	Large business office, dishwasher next room
Quiet urban nighttime	– 40 –	Library, bedroom at night
Quiet suburban nighttime	– 30 –	Bedroom at night, concert hall (background)
Quiet rural nighttime	– 20 –	Broadcast/recording studio
	– 10 –	
Lowest threshold of human hearing	– 0 –	Lowest threshold of human hearing

Source: Caltrans 2013

NOISE EFFECTS ON HUMANS

Excessive and chronic exposure to elevated noise levels can result in auditory and nonauditory effects on humans. Auditory effects of noise on people are those related to temporary or permanent hearing loss caused by loud noises. Nonauditory effects of exposure to elevated noise levels are those related to behavioral and physiological effects. The nonauditory behavioral effects of noise on humans are associated primarily with the subjective effects of annoyance, nuisance, and dissatisfaction, which lead to interference with activities such as communications, sleep, and learning.

The degree to which noise results in annoyance and interference is highly subjective and may be influenced by several nonacoustic factors. The number and effect of these nonacoustic environmental and physical factors vary depending on individual characteristics of the noise environment such as sensitivity, level of activity, location, time of day, and length of exposure. One key aspect in the prediction of human response to new noise environments is the individual level of adaptation to an existing noise environment. The greater the change in the noise levels that are attributed to a new noise source, relative to the environment an individual has become accustomed to, the less tolerable the new noise source will be perceived.

With respect to how humans perceive and react to changes in noise levels, a 1-dBA increase is imperceptible, a 3-dBA increase is barely perceptible, a 6-dBA increase is clearly noticeable, and a 10-dBA increase is subjectively perceived as approximately twice as loud (Egan 2007). These subjective reactions to changes in noise levels were developed on the basis of test subjects' reactions to changes in the levels of steady-state pure tones or broad-band noise and to changes in levels of a given noise source. It is probably most applicable to noise levels in the range of 50–70 dBA, as this is the usual range of voice and interior noise levels.

Negative effects of noise exposure include physical damage to the human auditory system, interference with sleep or relaxation, and contribution to stress-related disease. Exposure to noise may result in physical damage to the auditory system, which may lead to gradual or traumatic hearing loss. Gradual hearing loss is caused by sustained exposure to moderately high noise levels over time. Traumatic hearing loss is caused by sudden exposure to extremely high noise levels over a short period. Gradual and traumatic hearing loss both may result in permanent hearing damage. In addition, noise may interfere with or interrupt sleep, relaxation, recreation, and communication. Although most interference may be classified as annoying, the inability to hear a warning signal may be considered dangerous. Noise may also be a contributor to diseases associated with stress, such as hypertension, anxiety, and heart disease. The degree to which noise contributes to such diseases depends on the frequency, bandwidth, and level of the noise, and the exposure time (Caltrans 2009).

VIBRATION

Vibration is the periodic oscillation of a medium or object with respect to a given reference point. Sources of vibration include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) and those introduced by human activity (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, (e.g., operating factory machinery or transient in nature, explosions). Vibration levels can be depicted in terms of amplitude and frequency, relative to displacement, velocity, or acceleration.

Vibration amplitudes are commonly expressed in peak particle velocity (PPV) or root-mean-square (RMS) vibration velocity. PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal. PPV is typically used in the monitoring of transient and impact vibration and has been found to correlate well to the stresses experienced by buildings (FTA 2006, Caltrans 2013). PPV and RMS vibration velocity are normally described in inches per second (in/sec).

Although PPV is appropriate for evaluating the potential for building damage, it is not always suitable for evaluating human response. It takes some time for the human body to respond to vibration signals. In a sense, the human body responds to average vibration amplitude. The RMS of a signal is the average of the squared amplitude of the signal, typically calculated over a 1-second period. As with airborne sound, the

RMS velocity is often expressed in decibel notation as vibration decibels (VdB), which serves to compress the range of numbers required to describe vibration (FTA 2006). Table 4.11-2 includes the general human response to different ground vibration-velocity levels.

Table 4.11-2 Human Response to Different Levels of Ground Noise and Vibration

Vibration-Velocity Level	Human Reaction
65 VdB	Approximate threshold of perception.
75 VdB	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find that transportation-related vibration at this level is unacceptable.
85 VdB	Vibration acceptable only if there are an infrequent number of events per day.

Notes: VdB = vibration decibels referenced to 1 microinch per second and based on the root-mean-square velocity amplitude.

Source: FTA 2006

The typical background vibration-velocity level in residential areas is approximately 50 VdB. Ground vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels (FTA 2006).

Typical outdoor sources of perceptible ground vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground vibration is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. Construction activities can generate sufficient ground vibrations to pose a risk to nearby structures. Constant or transient vibrations can weaken structures, crack facades, and disturb occupants (FTA 2006).

Construction vibrations can be transient, random, or continuous. Transient construction vibrations are generated by blasting, impact pile driving, and wrecking balls. Continuous vibrations result from vibratory pile drivers, large pumps, and compressors. Random vibration can result from jackhammers, pavement breakers, and heavy construction equipment.

4.11.4 Environmental Setting

AMBIENT LEVELS

Existing noise levels were characterized in Section 6.8, “Noise and Vibration,” of the *Sunset Industrial Plan Update Existing Conditions Report* (Placer County 2015). The existing ambient noise environment presented in this section is primarily based on this report and supplemented by traffic noise modeling based on traffic-volumes provided for this analysis (Fehr & Peers 2018). Noise levels are presented by source type in the following section. In addition, where applicable, noise sources unique to the PRSP area are discussed.

Roadways and Highways

The sound levels in most communities fluctuate, depending on the activity of nearby and distant noise sources, time of the day, or season of the year, with major roads and highways typically the primary sources of ambient noise in a community. To characterize the existing noise environment, existing traffic noise levels were modeled for representative existing major roadway segments within the project area using project-specific average daily trip (ADT) volumes. Table 4.11-3 below summarizes modeled existing noise levels in the project area. For a complete list of all existing roadway noise levels refer to Appendix L.

Table 4.11-3 Modeled Existing Roadway Noise Levels

Roadway Segment	From	To	L _{dn} /CNEL/L _{dn} (dB) at 100 feet from Roadway Centerline	Distance (feet) from Roadway Centerline to L _{dn} /CNEL Contour			
				70 dBA	65 dBA	60 dBA	55 dBA
State Route 65	Blue Oaks Boulevard	Sunset Boulevard	78.7	257	554	1193	2570
Athens Avenue	Fiddymment Road	Industrial Avenue	65.8	31	67	144	310
Industrial Avenue	Twelve Bridges Drive	Athens Avenue	64.6	26	55	119	257
Twelve Brides Drive	Stare Route 65	East Joiner Parkway	66.5	45	96	207	445
Fiddymment Road	Placer Parkway	Athens Avenue	63.5	25	54	117	253
Lone Tree Boulevard	West Oaks Boulevard	Blue Oaks Boulevard	68.7	56	120	259	558
Sunset Boulevard	Foothills Boulevard	Industrial Avenue	65.0	28	59	128	275

Notes: CNEL = Community Noise Equivalent Level; dBA = A-weighted decibels; L_{dn} = day-night average noise level

Source: Data modeled by Ascent Environmental in 2017

Railroads

A Union Pacific Railroad (UPRR) single-track mainline crosses through the eastern side of the net SAP area from the City of Roseville, parallel to SR 65 through the City of Lincoln. The line is approximately 0.39 miles west of SR 65. Railway noise includes noise generated by the locomotive engines, the rattling of rail cars against each other, steel-on-steel contact between the train wheels and rails, and train warning horns. This line carries both freight and Amtrak passenger service.

Based on 24-hour measurements conducted in 2005 for the City of Lincoln's General Plan Noise Element, the operating noise levels from this railroad line are 70 dBA L_{dn}/CNEL at a distance of 900 feet from the tracks and 84 dBA L_{dn}/CNEL at a distance of 35 feet from the tracks, not taking into account any noise shielding from existing barriers such as buildings or terrain (Placer County 2015). Based on these reference noise levels, the 60 dBA L_{dn}/CNEL contour would extend to approximately 3,625 feet from the centerline of the tracks. These levels take into account the combined effect of warning horns and passing trains over a 24-hour period. Noise from passing trains on the UPRR tracks contributes to the ambient noise levels within the SAP and PRSP areas.

Stationary Sources

The project area contains commercial and industrial uses that can generate noise through the operation of rooftop heating and cooling equipment, parking lot activities, loading dock and delivery, and noise associated with transmission lines and power stations. Existing noise levels from these stationary sources are discussed below.

Parking Lots

Existing uses that include parking lot activity includes the Thunder Valley Casino Resort. The Federal Transit Administration (FTA) indicates a reference noise level measurements of parking garage and park and ride lot activities of between 92 and 101 dBA sound exposure level (SEL) at a distance of 50 feet from the center of the parking lot (FTA 2006). This assumes a park-and-ride lot activity level of 1,000 cars and 12 buses during a peak activity hour. This noise characterization is similar to activity at the Thunder Valley Casino Resort. Thus, based on FTA guidance, at a distance of 350 feet from the parking lot center, these noise levels would be between 70 and 79 dBA SEL, not accounting for any additional reduction by any potential intervening structures. 60 dBA SEL levels from peak parking lot activities are reached at 1,758 feet from the center of the parking lot. This source does not contribute to ambient levels within the PRSP area.

Loading Dock Operations/Landfill Operations

The Western Regional Sanitary Landfill (WRSL) is located within the net SAP area at the intersection of Fiddymont Road and Athens Avenue. The current WRSL is permitted to allow up to 468 vehicles per day with a peak limit of 939 vehicles per day. Other on-site operations include dumping and material processing, such as grinding and crushing of waste or recyclables. These vehicles would include waste-hauling vehicles. The most recent EIR, published in 2003, for the WRSL includes a noise analysis of the original WRSL and its expansion. Based on noise measurements conducted for the WRSL, noise levels associated with loading and dumping activities at the facility could result in levels of up to 77 dBA L_{eq} at a distance of 100 feet from activities. Noise levels would attenuate to 59 dBA L_{dn} /CNEL at the nearest residence, located 2,000 feet west of the landfill. These sources do not contribute to ambient levels within the PRSP area.

Roseville Power Plant 2

The City of Roseville owns and operates the Roseville Power Plant 2 (RPP2), which is tied to the Roseville Electric's backbone system and is located on a 1.8-acre site in the southeastern corner of the PRSP area along Nichols Drive. Noise sources at the facility include two gas turbines and generators and associated auxiliary equipment, and an exhaust system. For the purpose of reducing noise levels to adjacent land uses, the generators are enclosed, and an exhaust transition and silencer duct system is in place.

According to a noise study conducted for the RPP2 in 2002 (NCPA 2002), the noise level at 400 feet from the noise source (i.e., gas turbines) was calculated at 49.4 dBA L_{eq} . Assuming reference noise levels from the NCPA study, the RPP2 would result in a 65 dBA L_{dn} /CNEL contour at 180 feet from the source. In addition, in 2015 additional noise measurements were conducted, which captured maximum operating noise levels at the facility (j. c. brennan & associates 2015). Based on this study, maximum noise levels were measured to be 55 dBA L_{max} at 789 feet from the source.

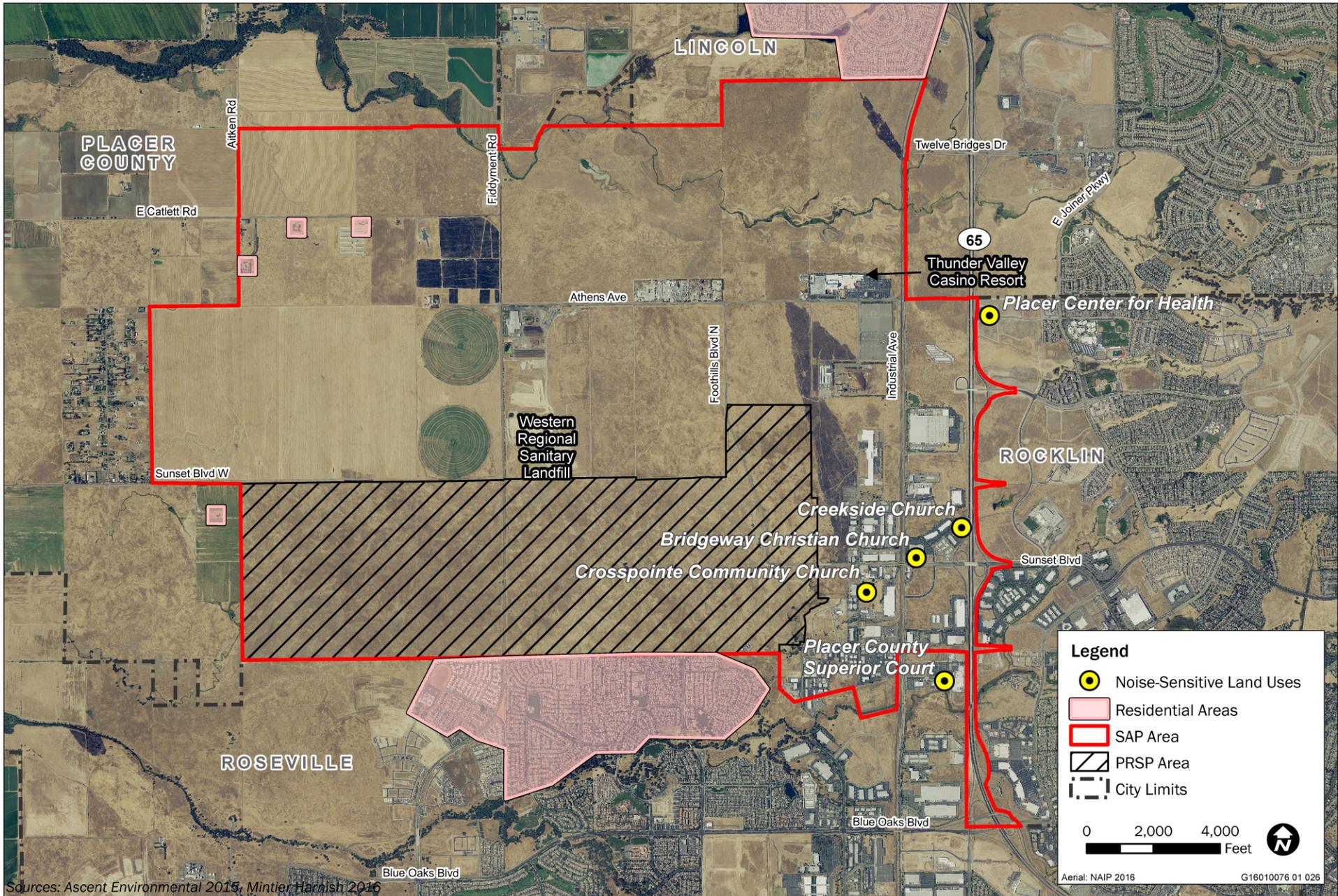
Vibration Sources and Levels

The primary source of ground vibration within the net SAP area is passing trains on the UPRR tracks along the east side of the net SAP area. Although truck traffic may frequent local roadways because of existing industrial activities, rubber-tire vehicles rarely cause unacceptable ground-borne vibration unless discontinuity in the roadway, such as a pothole or bump, causes the vibration (FTA 2006). For this same reason, unacceptable ground vibration from SR 65 would also be rare, assuming roadway conditions are smooth.

Based on FTA guidance, a passing locomotive-powered passenger or freight train travelling at 50 miles per hour would generate over 85 VdB within 47 feet of the track centerline, which is the acceptable vibration limit for infrequent events, such as passing trains on the UPRR tracks.

EXISTING SENSITIVE LAND USES

Noise-sensitive land uses are generally considered those for which noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Additional land uses such as parks, schools, historic sites, cemeteries, and recreation areas are also generally considered sensitive to increases in exterior noise levels. Places of worship and transient lodging, and other places where low interior noise levels are essential, are also considered noise-sensitive. These same land uses are also considered to be vibration-sensitive in addition to commercial and industrial buildings where vibration would interfere with operations in the building, including levels that may be well below those associated with human annoyance. In addition, buildings of older age are more prone to vibration-induced damage. Existing sensitive land uses are shown below in Exhibit 4.11-1.



Sources: Ascent Environmental 2015, Mintier Harnish 2016

Exhibit 4.11-1

Existing Sensitive Land Uses



4.11.5 Regulatory Setting

FEDERAL

The U.S. EPA Office of Noise Abatement and Control was originally established to coordinate federal noise control activities. After its inception, the EPA Office of Noise Abatement and Control issued the federal Noise Control Act of 1972, establishing programs and guidelines to identify and address the effects of noise on public health, welfare, and the environment. In 1981, EPA administrators determined that subjective issues such as noise would be better addressed at more local levels of government. Consequently, in 1982 responsibilities for regulating noise control policies were transferred to state and local governments. However, noise control guidelines and regulations contained in EPA rulings in prior years remain in place by designated federal agencies where relevant.

U.S. Department of Transportation

To address the human response to groundborne vibration, FTA set forth guidelines for maximum-acceptable vibration criteria for different types of land uses. Among these guidelines are the following maximum-acceptable vibration limits:

- ▲ 65 VdB, referenced to 1 microinch per second and based on the RMS velocity amplitude, for land uses where low ambient vibration is essential for interior operations (e.g., hospitals, high-tech manufacturing, laboratory facilities);
- ▲ 80 VdB for residential uses and buildings where people normally sleep; and
- ▲ 83 VdB for institutional land uses with primarily daytime operations (e.g., schools, churches, clinics, offices) (FTA 2006).

STATE

The State of California has adopted noise standards in areas of regulation not preempted by the federal government. State standards regulate noise levels of motor vehicles, sound transmission through buildings, occupational noise control, and noise insulation.

Though not adopted by law, the *State of California General Plan Guidelines 2003*, published by the Governor of California Office of Planning and Research (2003), provide guidance for the compatibility of projects within areas of specific noise exposure. Acceptable and unacceptable community noise exposure limits for various land use categories have been determined to help guide new land use decisions in California communities. In many local jurisdictions, these guidelines are used to derive local noise standards and guidance.

California Department of Transportation

In 2013, Caltrans published the Transportation and Construction Vibration Manual. The Manual provides general guidance on vibration issues associated with construction and operation of projects in relation to human perception and structural damage. Table 4.11-4 below presents recommendations for levels of vibration that could result in damage to structures exposed to continuous vibration.

Table 4.11-4 Caltrans Recommendations Regarding Vibration Levels

PPV (in/sec)	Effect on Buildings
0.4-0.6	Architectural damage and possible minor structural damage
0.2	Risk of architectural damage to normal dwelling houses
0.1	Virtually no risk of architectural damage to normal buildings
0.08	Recommended upper limit of vibration to which ruins and ancient monuments should be subjected
0.006-0.019	Vibration unlikely to cause damage of any type

Note: PPV= peak particle velocity.
Source: Caltrans 2013

LOCAL

Placer County General Plan

The *Placer County General Plan* Noise Element (Placer County 2013) contains noise policies and standards (e.g., exterior and interior noise-level performance standards for new projects affected by or including nontransportation noise sources [Table 4.11-5], and maximum allowable noise exposure levels for transportation noise sources [Table 4.11-6]). The applicable policies and standards contained in the General Plan and Ordinance are summarized below.

- ▲ **Policy 9.A.2:** The County shall require that noise created by new non-transportation noise sources be mitigated so as not to exceed the noise level standards of Table 4.11-5 as measured immediately within the property line of lands designated for noise-sensitive uses.
- ▲ **Policy 9.A.5:** Where proposed non-residential land uses are likely to produce noise levels exceeding the performance standards of Table 4.11-5 at existing or planned noise-sensitive uses, the County shall require submission of an acoustical analysis as part of the environmental review process so that noise mitigation may be included in the project design.
- ▲ **Policy 9.A.9:** Noise created by new transportation noise sources, including roadway improvement projects, shall be mitigated so as not to exceed the levels specified in Table 4.11-6 at outdoor activity areas or interior spaces of existing noise-sensitive land uses.

Table 4.11-5 Placer County Allowable L_{dn} Noise Levels in Specified Zone Districts¹ Applicable to New Projects Affected by or Including Nontransportation Noise Sources

Zone District of Receptor	L _{dn} (dBA) at Property Line of Receiving Use	Interior Spaces (dBA) ²
Residential Adjacent to Industrial ³	60	45
Other Residential ⁴	50	45
Office/Professional	70	45
Transient Lodging	65	45
Neighborhood/General Commercial/Shopping Center	70	45
Heavy Commercial/Limited Industrial/Highway Service	75	45
Industrial	-	45
Industrial Park	75	45
Industrial Reserve	-	-
Airport	-	45
Unclassified	-	-
Farm/Agriculture Exclusive ⁶	-	-
Recreation and Forestry	70	-

Table 4.11-5 Placer County Allowable L_{dn} Noise Levels in Specified Zone Districts¹ Applicable to New Projects Affected by or Including Nontransportation Noise Sources

Notes: Except where noted otherwise, noise exposures will be those which occur at the property line of the receiving use.
 Where existing transportation noise levels exceed the standards of this table, the allowable L_{dn} shall be raised to the same level as that of the ambient level.
 If the noise source generated by, or affecting, the uses shown above consists primarily of speech or music, or if the noise source is impulsive in nature, the noise standards shown above shall be decreased by 5 dBA.
 Where a use permit has established noise level standards for an existing use, those standards shall supersede the levels specified in this table. Similarly, where an existing use which is not subject to a use permit causes noise in excess of the allowable levels in this table, said excess noise shall be considered the allowable level. If a new development is proposed which will be affected by noise from such an existing use, it will ordinarily be assumed that the noise levels already existing or those levels allowed by the existing use permit, whichever are greater, are those levels actually produced by the existing use.
 Existing industry located in industrial zones will be given the benefit of the doubt in being allowed to emit increased noise consistent with the state of the art⁵ at the time of expansion. In no case will expansion of an existing industrial operation because to decrease allowable noise emission limits. Increasing emissions above those normally allowable should be limited to a one-time 5-dBA increase at the discretion of the decision-making body.
 The noise level standards applicable to land uses containing incidental residential uses, such as caretaker dwellings at industrial facilities and homes on agriculturally-zoned land, shall be the standards applicable to the zone district, not those applicable to residential uses.
 Where no noise level standards have been provided for a specific zone district, it is assumed that the interior and/or exterior spaces of these uses are effectively insensitive to noise.

- 1 Overriding policy on interpretation of allowable noise levels: Industrial-zoned properties are confined to unique areas of the county and are irreplaceable. Industries which provide primary wage-earner jobs in the county, if forced to relocate, will likely be forced to leave the county. For this reason, industries operating upon industrial zoned properties must be afforded reasonable opportunity to exercise the rights/privileges conferred upon them by their zoning. Whenever the allowable noise levels herein fall subject to interpretation relative to industrial activities, the benefit of the doubt shall be afforded to the industrial use.
 Where an industrial use is subject to infrequent and unplanned upset or breakdown of operations resulting in increased noise emissions, where such upsets and breakdowns are reasonable considering the type of industry, and where the industrial use exercises due diligence in preventing as well as correcting such upsets and breakdowns, noise generated during such upsets and breakdowns shall not be included in calculations to determine conformance with allowable noise levels.
- 2 Interior spaces are defined as any locations where some degree of noise-sensitivity exists. Examples include all habitable rooms of residences, and areas where communication and speech intelligibility are essential, such as classrooms and offices.
- 3 Noise from industrial operations may be difficult to mitigate in a cost-effective manner. In recognition of this fact, the exterior noise standards for residential zone districts immediately adjacent to industrial, limited industrial, industrial park, and industrial reserve zone districts have been increased by 10 dB as compared to residential districts adjacent to other land uses. For purposes of the Noise Element, residential zone districts are defined to include the following zoning classifications: AR, R-1, R-2, R-3, FR, RP, TR-1, TR-2, TR-3, and TR-4.
- 4 Where a residential zone district is located within an -SP combining district, the exterior noise level standards are applied at the outer boundary of the -SP district. If an existing industrial operation within an -SP district is expanded or modified, the noise level standards at the outer boundary of the -SP district may be increased as described above in these standards. Where a new residential use is proposed in an -SP zone, an Administrative Review Permit is required, which may require mitigation measures at the residence for noise levels existing and/or allowed by use permit as described under "Notes," above, in these standards.
- 5 State of the art should include the use of modern equipment with lower noise emissions, site design, and plant orientation to mitigate off-site noise impacts, and similar methodology.
- 6 Normally, agricultural uses are noise insensitive and will be treated in this way. However, conflicts with agricultural noise emissions can occur where single-family residences exist within agricultural zone districts. Therefore, where effects of agricultural noise upon residences located in these agricultural zones are a concern, an L_{dn} of 70 dBA will be considered acceptable outdoor exposure at a residence.

Source: Placer County 2013

Table 4.11-6 Placer County Maximum Allowable Noise Exposure for Transportation Noise Sources

Land Use	Outdoor Activity Areas ¹	Interior Spaces	
	L _{dn} /CNEL	L _{dn} /CNEL	Leq, dBA ²
Residential	60 ³	45	–
Transient Lodging	60 ³	45	–
Hospitals, Nursing Homes	60 ³	45	–
Theaters, Auditoriums, Music Halls	–	–	35
Churches, Meeting Halls	60 ³	–	40
Office Buildings	–	–	45
Schools, Libraries, Museums	–	–	45
Playgrounds, Neighborhood Parks	70	–	–

Notes: CNEL = community noise equivalent level; L_{dn} = day-night average noise level

- 1 Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.
- 2 As determined for a typical worst-case hour during periods of use.
- 3 Where it is not possible to reduce noise in outdoor activity areas to 60 L_{dn}/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dBA L_{dn}/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

Source: Placer County 2013

Placer County Code

The Placer County Noise Ordinance (Placer County Code Article 9.36.060) defines sound level performance standards for sensitive receptors. These are presented in Table 4.11-7. The ordinance states that it is unlawful for any person at any location to create any sound, or to allow the creation of any sound, on property owned, leased, occupied, or otherwise controlled by such a person that causes the exterior sound level, when measured at the property line of any affected sensitive receptor, to exceed the ambient sound level by 5 dBA or exceed the sound level standards as set forth in Table 4.11-7, whichever is greater.

Each of the sound level standards specified in Table 4.11-7 shall be reduced by 5 dBA for simple tone noises, consisting of speech and music. However, in no case shall the sound level standard be lower than the ambient sound level plus 5 dBA.

Table 4.11-7 Placer County Noise Ordinance Noise Level Standards for Sensitive Receptors

Sound Level Descriptor (dBA)	Daytime (7:00 a.m. to 10:00 p.m.)	Nighttime (10:00 p.m. to 7:00 a.m.)
Hourly L_{eq}	55	45
L_{max}	70	65

Source: Placer County 2004

According to Article 9.36.030, "Exemptions," some noise-generating activities are exempt from the above noise ordinance standards, including construction that is performed between 6:00 a.m. and 8:00 p.m., Monday through Friday, and between 8:00 a.m. and 8:00 p.m. Saturday and Sunday, provided that all construction equipment is fitted with factory-installed muffler devices and maintained in good working order.

Other noise sources applicable to the project that are exempt from the Placer County Noise Ordinance include:

- ▲ sound sources typically associated with residential uses (e.g., children at play, air conditioners in good working order); and
- ▲ emergencies, involving the execution of the duties of duly authorized governmental personnel and others providing emergency response to the general public, including but not limited to sworn peace officers, emergency personnel, utility personnel, and the operation of emergency response vehicles and equipment.

City of Roseville Noise Standards

The City of Roseville is located adjacent to the PRSP area and could be affected by project-generated noise. The City of Roseville has the same noise performance standards for transportation related noise sources as Placer County except that the City has an additional outdoor noise level for office buildings of 65 dBA $L_{dn}/CNEL$. The County does not currently have an outdoor noise level standard for office buildings. Also, the City of Roseville has more stringent noise performance standards for nontransportation sources. Whereas the County has a 55-dBA hourly L_{eq} standard for nontransportation noise sources in the daytime (7 a.m. to 10 p.m.), the City of Roseville has a 50-dBA hourly L_{eq} standard for the same daytime noise sources.

VIBRATION CRITERIA

CEQA states that the potential for any excessive ground noise and vibration levels must be analyzed; however, it does not define the term "excessive." Numerous public and private organizations and governing bodies have provided guidelines to assist in the analysis of ground noise and vibration; however, the federal, state, and local governments have yet to establish specific ground noise and vibration requirements. Caltrans and FTA have published reports addressing the analysis of ground noise and vibration relating to transportation and construction-induced vibration.

With respect to structural damage, Caltrans recommends that a level of 0.2 in/sec PPV not be exceeded for the protection of normal residential buildings, and that 0.1 in/sec PPV not be exceeded for the protection of old or historically significant structures (Caltrans 2013).

To address the human response to groundborne vibration, FTA has guidelines for maximum-acceptable vibration criteria for different types of land uses. These guidelines recommend 65 VdB (referenced to 1 microinch per second and based on the RMS velocity amplitude) for land uses where low ambient vibration is essential for interior operations (e.g., hospitals, high-tech manufacturing, laboratory facilities); 80 VdB for residential uses and buildings where people normally sleep; and 83 VdB for institutional land uses with primarily daytime operations (e.g., schools, churches, clinics, offices) (FTA 2006).

With respect to human response within residential uses (i.e., annoyance), FTA recommends a maximum acceptable vibration level of 80 VdB (FTA 2006).

4.11.6 Analysis, Impacts, and Mitigation

STANDARDS OF SIGNIFICANCE

Based on the Placer County CEQA checklist, Appendix G of the State CEQA Guidelines, noise policies and standards in the *Placer County General Plan*, Placer County Noise Ordinance, proposed SAP Noise policies, and Caltrans and FTA vibration standards, the proposed project would result in a significant impact related to noise or vibration if it would:

- ▲ result in a substantial temporary (or periodic) increase in ambient noise levels associated with construction activities in the project vicinity above levels existing without the project (i.e., an increase in the ambient noise level greater than 5 dBA or activities that expose sensitive receptors to nighttime (10:00 p.m. to 7:00 a.m.) noise levels that exceed 45 dBA L_{eq} or 65 dBA L_{max} , as consistent with the Placer County Noise Ordinance);
- ▲ expose persons to or generation of temporary or permanent excessive ground vibration or ground noise levels (i.e., exceed the Caltrans-recommended level of 0.2 in/sec PPV with respect to the prevention of structural damage for normal buildings or the FTA maximum acceptable level of 65 to 80 VdB (depending on land use and frequency of vibration events) with respect to human response for residential uses [i.e., annoyance] at nearby existing vibration-sensitive land uses);
- ▲ expose persons to, or generate stationary-source (nontransportation) noise levels in excess of applicable standards (i.e., long-term exposure of existing or proposed sensitive receptors to stationary-source noise levels that exceed the County's exterior noise standard of 50 dB $L_{dn}/CNEL$; the County's interior noise standard of 45 dB $L_{dn}/CNEL$; or the County Noise Ordinance daytime and nighttime hourly L_{eq} standards of 55 dBA L_{eq} and 45 dBA L_{eq} , respectively). Note that compliance with exterior noise limits would also meet interior noise limits;
- ▲ expose persons to or generate transportation noise levels in excess of applicable standards (i.e., the County's and proposed SAP standard for noise exposure from transportation noise sources for exterior noise and for interior noise levels, as presented in Tables 4.11-6 and 4.11-9, respectively); or
- ▲ result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project (e.g., long-term exposure of existing sensitive receptors to increased project-generated noise levels of 5 dB or more or that exceed applicable allowable levels).

METHODS AND APPROACH

Construction

To assess potential short-term (construction-related) noise and vibration impacts, sensitive receptors and their relative exposure were identified. Project-generated construction source noise and vibration levels were determined based on methodologies, reference emission levels, and usage factors from the *FTA Guide on Transit Noise and Vibration Impact Assessment* methodology (FTA 2006) and the *Federal Highway Administration Roadway Construction Noise Model User's Guide* (FHWA 2006). Reference levels are noise and vibration emissions for specific equipment or activity types that are well documented in the field of acoustics.

Operations

The assessment of long-term (operational) impacts was based on reference noise emission levels and measured noise levels for activities and equipment associated with project operation (e.g., heating ventilation and air conditioning [HVAC] units, delivery docks), and standard attenuation rates and modeling techniques.

The assessment of potential long-term (operational) noise impacts from project-generated increases in traffic was conducted using modeling based on the Caltrans traffic noise analysis protocol and the technical noise supplement (Caltrans 2013), as well as project-specific traffic data (Appendix L). To assess this impact, traffic noise levels under existing and existing-plus-project conditions for affected roadway segments were modeled. The modeling conducted does not account for any natural or human-made shielding (e.g., the presence of vegetation, berms, walls, or buildings) and, consequently, represents worst-case noise levels.

PROPOSED SUNSET AREA PLAN GOALS, POLICIES, AND IMPLEMENTATION PROGRAMS

The SAP includes the following goals, policies related to noise:

GOAL N-1: To protect County residents, employees, and visitors from the harmful and annoying effects of exposure to excessive noise.

- ▲ **Policy N-1.1: Noise-Sensitive Uses.** The County shall require discretionary development that includes noise-sensitive uses to incorporate effective noise mitigation measures into the development design to achieve the standards specified in Table 6-1 [Table 4.11-8 in this EIR].
- ▲ **Policy N-1.2: Industrial Noise Considerations.** Because many industrial activities and processes necessarily produce noise which could be objectionable to nearby non-industrial land uses, existing and potential future industrial noise shall be considered in all land use decisions in the Sunset Area and in the unincorporated areas outside of the Plan Area.
- ▲ **Policy N-1.3: Non-Residential Noise Levels.** Where proposed new, non-residential discretionary development has the potential to produce noise levels exceeding the performance standards of Table 6-1 [Table 4.11-8 in this EIR] for existing or planned noise-sensitive uses, the County shall require submission of an acoustical analysis as part of the environmental review process so that noise mitigation may be included in the project design. The requirements for the content of an acoustical analysis are listed in Table 6-2 [see Policy N-1.6, Acoustical Analysis].
- ▲ **Policy N-1.4: Acoustical Analysis.** Where noise-sensitive land uses are proposed in areas exposed to existing or projected exterior noise levels exceeding levels specified in Table 6-3 [Table 4.11-9 in this EIR] or the performance standards of Table 6-1 [Table 4.11-8], the County shall require submission of an acoustical analysis consistent with requirements of this policy (included below) as part of the environmental review process so that noise mitigation may be included in the project design. At the discretion of the County, the requirement for an acoustical analysis may be waived provided that all of the following conditions are satisfied:

- a) The development is for less than 10,000 square feet of total gross floor area;
- b) The noise source in question consists of a single roadway or railroad for which up-to-date noise exposure information is available. An acoustical analysis will be required when the noise sources in question is a stationary noise source, or when the noise source consists of multiple transportation noise sources;
- c) The existing or projected future noise exposure at the exterior of buildings which will contain noise-sensitive uses or within proposed outdoor activity areas does not exceed 65 dB L_{dn} /CNEL prior to mitigation;
- d) The topography in the project area is essentially flat (i.e., noise source and receiving land use are the same grade); and
- e) Effective noise mitigation, as determined by the County, is incorporated into the project design to reduce noise exposure levels specified in Table 6-1 [Table 4.11-8] or Table 6-3 [Table 4.11-9]. Such measures may include the use of building setbacks, building orientation, noise barriers, and the standard noise mitigations contained in the Placer County Acoustical Design Manual. If closed windows are required for compliance with interior noise level standards, air conditioning or mechanical ventilations systems will be required.

Table 4.11-8 Allowable Noise Levels within Specified Zone Districts

Receptor Zone District	Noise Level (L_{dn}) at the Property Line of Receiving Use	Interior Spaces ¹
Farm (F)-with a residence	70 ²	45
Farm (F)- without a residence	— ³	— ³
Open Space (O)	— ³	— ³
General Commercial (C)	70	45
Highway Services (HS)	75	45
Office and Professional (OP)	70	45
Industrial Park (IP)	75	45
Industrial (I)	— ³	— ³
Business Park (BP)	70	45

Notes: L_{dn} = day-night 24-hour noise

- ¹ Interior spaces are defined as any interior location where some degree of noise-sensitivity exists. Examples include all habitable rooms of residences, and areas where communication and speech intelligibility are essential, such as office space and retail areas.
- ² Normally, agricultural uses are noise insensitive and will be treated in this way. However, conflicts with agricultural noise emissions can occur where single-family residences exist within agricultural zone districts. Therefore, where effects of agricultural noise upon residences located in these agricultural zones is a concern, an L_{dn} of 70 dBA will be considered acceptable outdoor exposure at a residence.
- ³ Where no noise level standards have been provided for a specific zone district, it is assumed that the interior and/or exterior spaces of these uses are effectively insensitive to noise.

General Notes: a) Where existing transportation noise levels exceed the standards of this table, the allowable L_{dn} shall be raised to the same level as that of the ambient level; b) Where a conditional use permit or minor use permit or other discretionary entitlement has established noise level standards for an existing use, those standards supersede the levels specified in Table 6-1 and 6-3 [Tables 4.11-8 and 4.11-9]; c) Where an existing, conforming use, which is not subject to a conditional use permit, minor use permit or other discretionary entitlement, or was legally established before the requirement for a discretionary entitlement, causes noise levels in excess of Tables 6-1 and 6-3 [Tables 4.11-8 and 4.11-9], said excess noise shall be considered the allowable level; d) Where a new development is proposed, which will be affected by noise from an existing, conforming, legally established use, it will ordinarily be assumed that the noise levels already existing or those levels allowed by the existing use permit, whichever are greater, are those levels actually produced by the existing use.

Source: Placer County 2013

Table 4.11-9 Maximum Allowable Noise Exposure for Transportation Noise Sources

Land Use ¹	Outdoor Activity (L _{dn} /CNEL, dBA)	Interior Spaces (L _{dn} /CNEL, dBA)
Offices	– ²	45
Restaurants (without outdoor dining)	– ²	45
Restaurants (with outdoor dining)	70	45
Child/Adult Day Care	65	45
Business Support Services	– ²	45
Parks, Playgrounds, and Golf Courses	75	45
Recreation and Fitness Centers	– ²	45
Hotels and Motels	65	45
Medical Services- Clinics and Laboratories	– ²	45
Churches	65	45
Outdoor Commercial Recreation	– ²	– ²
Sports Facilities and Outdoor Public Assembly	– ²	– ²
Schools- College and University and Specialized Education and Training	– ²	45

Notes: L_{dn}= day-night 24-hour noise

¹ Where no noise level standards have been provided for a specific zone district, it is assumed that the interior and/or exterior spaces of these uses are effectively insensitive to noise.

² Interior spaces are defined as any interior location where some degree of noise-sensitivity exists. Examples include all habitable rooms of residences, and areas where communication and speech intelligibility are essential, such as office space and retail areas.

³ Normally, agricultural uses are noise insensitive and will be treated in this way. However, conflicts with agricultural noise emissions can occur where single-family residences exist within agricultural zone districts. Therefore, where effects of agricultural noise upon residences located in these agricultural zones is a concern, an L_{dn} of 70 dBA will be considered acceptable outdoor exposure at a residence.

General Notes: a) Where existing transportation noise levels exceed the standards of this table, the allowable L_{dn} shall be raised to the same level as that of the ambient level; b) Where a conditional use permit or minor use permit or other discretionary entitlement has established noise level standards for an existing use, those standards supersede the levels specified in Table 6-1 and 6-3 [Tables 4.11-8 and 4.11-9]; c) Where an existing, conforming use, which is not subject to a conditional use permit, minor use permit or other discretionary entitlement, or was legally established before the requirement for a discretionary entitlement. causes noise levels in excess of Tables 6-1 and 6-3 [Tables 4.11-8 and 4.11-9], said excess noise shall be considered the allowable level; d) Where a new development is proposed, which will be affected by noise from an existing, conforming, legally established use, it will ordinarily be assumed that the noise levels already existing or those levels allowed by the existing use permit, whichever are greater, are those levels actually produced by the existing use.

Source: Placer County 2013

An acoustical analysis prepared under Policy N-1.4 shall include the following:

- Be the financial responsibility of the applicant.
- Be prepared by a qualified person experienced in the fields of environmental noise assessment and architectural acoustics.
- Include representative noise level measurements with sufficient sampling periods and locations to adequately describe local conditions and the predominant noise sources.
- Estimate existing and projected cumulative (20 years) noise levels in terms of L_{dn} or CNEL and/or the standards of Table 6-1 [Table 4.11-8], and compare those levels to the policies in this section. Noise prediction methodology must be consistent with the *Placer County Acoustical Design Manual*.
- Recommend appropriate mitigation to achieve compliance with the policies and standards of this section, 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.

- Estimate noise exposure after the prescribed mitigation measures have been implemented.
- Describe a post-project assessment program which could be used to evaluate the effectiveness of the proposed mitigation measures.
- ▲ **Policy N-1.5: Noise Barriers.** Where noise mitigation measures are required to achieve the standards of Tables 6-1 and 6-3 [Tables 4.11-8 and 4.11-9], such measures shall focus on site planning and project design. The use of noise barriers shall be considered as a means for achieving the noise standards only after all other practical design-related noise mitigation measures have been integrated into the project.
- ▲ **Policy N-1.6: Noise Exposure to Existing Sensitive Receptors.** The County shall require proposed new stationary noise sources to be located a sufficient distance from sensitive receptors, such as residential uses, schools, parks, hospitals, and day care facilities. Minimum siting distance from sensitive receptors shall be as follows:
 - a) new loading dock or commercial delivery sources: 1,836 feet;
 - b) new HVAC units: 440 feet;
 - c) new mechanical generators: 500 feet;
 - d) new parking lots: 50 feet; and
 - e) new overhead transmission lines and substations: 35 feet.

If the above siting requirements cannot be achieved because of specific building locations or other site-specific constraints, the project applicant shall conform to the County's Noise Mitigation Guidelines.

- ▲ **Policy N-1.7: Construction Noise and Vibration:** The County shall impose, as necessary, conditions on new discretionary development which would limit the hours of construction, limit allowable construction noise levels, and/or impose other restrictions to protect sensitive receptors from excessive construction noise.
- ▲ **Policy N-1.8: Rail Operations Vibration Exposure.** Prior to approval of final site plans, project proponents shall conduct a project-level vibration assessment for new residential or other sensitive land uses to be located within 350 feet of an existing rail line. These studies shall be conducted by a qualified acoustical engineer or noise specialist in accordance with Policy N-1.4 to determine vibration levels at specific building locations and recommend feasible structural mitigation measures (e.g., isolation strip foundations, insulated windows and walls, sound walls or barriers, distance setbacks, or other construction or design measures) that would reduce vibration-noise to an acceptable level.

The SAP identifies specific programs to implement the SAP goals and policies. The following programs implement the noise-related goals and policies identified above.

- ▲ **Program N-2: Acoustical Analysis.** The County shall require that project applicants identify and mitigate potential noise impacts through preparation of an acoustical analysis that meets the following conditions:
 - a) Be the financial responsibility of the applicant.
 - b) Be prepared by a qualified person experienced in the fields of environmental noise assessment and architectural acoustics.
 - c) Include representative noise level measurements with sufficient sampling periods and locations to adequately describe local conditions and the predominant noise sources.
 - d) Estimate existing and projected cumulative (20 years) noise levels in terms of L_{dn} or CNEL and/or the standards of Table 6-1, and compare those levels to the policies in this section. Noise prediction methodology must be consistent with the Placer County Acoustical Design Manual.

- e) Recommend appropriate mitigation to achieve compliance with the policies and standards of this section, 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.
- f) Estimate noise exposure after the prescribed mitigation measures have been implemented.
- g) Describe a post-project assessment program which could be used to evaluate the effectiveness of the proposed mitigation measures.

To prevent future sensitive land uses from disturbance during the sensitive times of the day, project proponents of a residential land use or a structure containing residential units shall, prior to the issuance of building permits, provide to the County a site-specific analysis prepared by a qualified acoustical engineer addressing interior noise levels in residential units. The analysis shall consider the types of uses being proposed in the same building or in the vicinity as the residential units in a mixed-use structure and existing noise sources adjacent to the proposed structure. The analysis shall confirm, using approved calculation methodologies, that building design and materials are sufficient to maintain a maximum 45 dB L_{dn} /CNEL interior noise level, with windows closed, in residential units given the reasonably foreseeable noise generation sources within the building, and existing noise sources adjacent to the building. If the analysis shows such standards would not be met with the design as proposed, the project proponent shall implement recommendations of the analysis that are shown to achieve the standards.

- ▲ **Program N-3: Noise Mitigation.** The County shall require that new stationary noise sources that cannot meet the minimum siting distance requirements from sensitive receptors as specified in Policy N-1.6 include the following measures for future development applications including stationary sources.
 - a) Routine testing and preventive maintenance of emergency electrical generators shall be conducted during the less sensitive daytime hours (i.e., 7:00 a.m. to 10:00 p.m.), per the Placer County Noise Ordinance. All electrical generators shall be equipped with noise control (e.g., muffler) devices in accordance with manufacturers' specifications.
 - b) External mechanical equipment, including HVAC units, associated with buildings shall incorporate features designed to reduce noise emissions below the stationary noise source criteria. These features may include, but are not limited to, locating equipment within equipment rooms or enclosures that incorporate noise reduction features, such as acoustical louvers and exhaust and intake silencers. Equipment enclosures shall be oriented so that major openings (i.e., intake louvers, exhaust) are directed away from nearby noise-sensitive receptors. In addition, when locating HVAC units on buildings adjacent to residential land uses, HVAC units shall not be located directly adjacent to windows of residential units. HVAC locations shall be chosen to minimize noise at nearby residential land uses.
 - c) Loading docks shall be located and designed so that noise emissions do not exceed the exterior daytime (7:00 a.m. to 10:00 p.m.) standards of 55 dB L_{eq} /70 dB L_{max} and the exterior nighttime (10:00 p.m. to 7:00 a.m.) standards of 45 dB L_{eq} /65 dB L_{max} at any existing sensitive receptor. At the time of conformity review application submittal for discretionary entitlement, the project applicant shall provide to the County a specialized noise study to evaluate specific design and ensure compliance with Placer County noise standards. Noise studies shall comply with adopted SAP Policy N-1.6, Acoustical Study. Reduction of loading dock noise can be achieved by locating loading docks as far away as possible from noise sensitive land uses, constructing noise barriers between loading docks and noise-sensitive land uses, or using buildings and topographic features to provide acoustic shielding for noise-sensitive land uses. Final design, location, and orientation shall be dictated by findings in the noise study, if applicable.

d) Parking lots and structures shall be located and designed so that noise emissions do not exceed the stationary noise source criteria identified in this analysis (i.e., exterior daytime [7:00 a.m. to 10:00 p.m.] standards of 55 dB L_{eq} /70 dB L_{max} and the exterior nighttime [10:00 p.m. to 7:00 a.m.] standards of 45 dB L_{eq} /65 dB L_{max}) at any existing sensitive receptor. At the time of conformity review application submittal for discretionary entitlement, the project applicant shall provide to the County a specialized noise study to evaluate specific design and ensure compliance with Placer County and SAP noise standards. Noise studies shall comply with adopted SAP Policy N-1.6. Reduction of parking lot noise can be achieved by locating parking lots away from noise sensitive land uses, constructing noise barriers between parking lots/structures and noise-sensitive land uses, incorporating noise barriers into parking structure designs (e.g., providing solid walls around the top levels of parking structures), or using buildings and topographic features to provide acoustic shielding for noise-sensitive land uses. Final design, location, and orientation shall be dictated by findings in the noise study, if applicable.

- ▲ **Program N-4: Construction Noise Reduction Requirements.** Prior to Improvement Plan approval or issuance of Grading Permits for construction activities to take place within 3,000 feet of sensitive land uses (i.e., places where people sleep, reside, or work), the County shall require the following noise reduction measures to be identified as notes on the Improvement/Grading Plans to be implemented by the project construction manager or contractor:
- a) All construction equipment and equipment staging areas shall be located as far as possible from nearby noise-sensitive land uses.
 - b) Idling of construction equipment for extended periods (i.e., 5 minutes) of time shall be prohibited.
 - c) All construction equipment shall be properly maintained and equipped with noise reduction intake and exhaust mufflers and engine shrouds, in accordance with manufacturers' recommendations. Equipment engine shrouds shall be closed during equipment operation.
 - d) All construction equipment with backup alarms shall be equipped with either audible self-adjusting backup alarms or alarms that only sound when an object is detected. The self-adjusting backup alarms shall automatically adjust to 5 dBA over the surrounding background levels. All non-self-adjusting backup alarms shall be set to the lowest setting required to be audible above the surrounding noise levels. In addition to the use of backup alarms, the construction contractor shall consider other techniques such as observers and the scheduling of construction activities such that alarm noise is minimized.
 - e) Individual operations and techniques shall be replaced with quieter procedures (e.g., using welding instead of riveting, mixing concrete off site instead of on site) where feasible and consistent with building codes and other applicable laws and regulations.
 - f) When noise sensitive uses are close (i.e., 3,000 feet, the distance at which the daily L_{eq} noise standard for the worst-case construction activity is achieved) noise attenuating buffers such as structures, truck trailers, temporary noise curtains or sound walls, or soil piles shall be located between noise sources and the receptor to shield sensitive receptors from construction noise.
- ▲ **Program N-5: Construction Vibration Reduction Requirements.** For pile-driving activities proposed within 100 feet of any building, to reduce the potential for structural damage, and within 550 feet of an occupied residence/building, to minimize disturbance from pile-driving activities, a vibration control plan shall be developed by the project applicant and his/her construction contractors to be submitted to and approved by Placer County prior to approval of Improvement Plans or issuance of Grading Permits for the project. The plan shall consider all potential vibration-inducing activities that would occur within the distance parameters described above and include various measures, setback distances, precautions, monitoring programs, and alternative methods to traditional pile-driving activities with the potential to result in structural damage or excessive noise. The following vibration control measures (or other equally effective measures approved by the County) shall be included in the plan:

- a) To prevent structural damage, minimum setback requirements for different types of ground vibration-producing activities (e.g., pile driving) for the purpose of preventing damage to nearby structures shall be established based on the proposed pile-driving activities and locations, once determined. Factors to be considered include the specific nature of the vibration producing activity (e.g., type and duration of pile driving), local soil conditions, and the fragility/resiliency of the nearby structures. Established setback requirements (i.e., 100 feet) can be breached if a project-specific, site specific analysis is conducted by a qualified geotechnical engineer or ground vibration specialist that indicates that no structural damage would occur at nearby buildings or structures.
- b) To prevent disturbance to sensitive land uses, minimum setback requirements for different types of ground vibration producing activities (e.g., pile driving) shall be established based on the proposed pile-driving activities and locations, once determined. Established setback requirements (i.e., 550 feet) can be breached only if a project-specific, site-specific, technically adequate ground vibration study indicates that the buildings would not be exposed to ground vibration levels in excess of 72 VdB, and ground vibration measurements performed during the construction activity confirm that the buildings are not being exposed to levels in excess of 72 VdB.
- c) All vibration-inducing activity within the distance parameters described above shall be monitored and documented for ground vibration noise and vibration noise levels at the nearest sensitive land use and associated recorded data submitted to Placer County so as not to exceed the recommended FTA and Caltrans levels.
- d) Alternatives to traditional pile driving (e.g., sonic pile driving, jetting, cast-in-place or auger cast piles, nondisplacement piles, pile cushioning, torque or hydraulic piles) shall be considered and implemented where feasible to reduce vibration levels. E. Limit pile-driving activities to the daytime hours between 6:00 a.m. and 8:00 p.m. Monday through Friday and between 8:00 a.m. and 8:00 p.m. Saturday and Sunday.
- e) Predrill pile holes to the maximum feasible depth to reduce the number of blows required to seat a pile.
- f) Operate all vibration inducing impact equipment as far away from vibration-sensitive sites as reasonably possible from nearby structures.

IMPACTS AND MITIGATION MEASURES

Impact 4.11-1: Exposure of existing sensitive receptors to construction noise

Buildout of the PRSP area is assumed to occur mostly within 20 years whereas full buildout of the net SAP area could take place over the next 80 years. Therefore, various levels of construction could occur throughout the net SAP area at any given time. Construction activities would include site preparation, road improvements, utility infrastructure installation, and building construction. While specific construction intensity, duration, and locations is not known at this time, reference noise levels for typical construction activities associated with land development were used to assess peak construction noise. Based on those reference levels, construction noise could reach levels of up to 90.5 dBA L_{eq} and 96.6 dBA L_{max} . In addition, some construction work, such as utility installation and roadway improvements may occur during nighttime hours, as is typical with this type of construction, to reduce traffic impacts, and, therefore, could expose existing and future sensitive receptors to noise levels that may disrupt sleep and exceed Placer County nighttime noise limits of 45 dBA L_{eq} and 65 dBA L_{max} . Thus, construction activities could result in a substantial (i.e., 5 dB) temporary and periodic increase in noise during daytime or nighttime hours at existing and future sensitive land uses. This impact would be **potentially significant**.

The effects of construction noise resulting from implementation of the project depend on the type of construction activities occurring on any given day; noise levels generated by those activities; distances to noise sensitive receptors; potential noise attenuating features such as topography, vegetation, and existing structures;

and the existing ambient noise environment in the receptor's vicinity. Construction generally occurs in several discrete stages, each phase requiring a specific complement of equipment with varying equipment type, quantity, and intensity. These variations in the operational characteristics of the equipment change the effect they have on the noise environment of the project area and in the surrounding area for the duration of the construction process. Additionally, for evaluation of construction noise, activities that occur during the more noise-sensitive evening and nighttime hours are of greater concern than daytime noise. Because exterior ambient noise levels typically decrease during the late evening and nighttime hours as traffic volumes and commercial activities decrease, construction activities performed during these more noise-sensitive periods are more conspicuous and can result in increased annoyance and potential sleep disruption for occupants of nearby residences. Construction-related noise is discussed separately below for the various project components.

Net SAP Area

Based on current market forecasts, full buildout of the project is anticipated to take over 80 years. The sequence and pace for constructing various land uses and facilities would be market driven; therefore, a specific construction schedule has not been developed. During some years there may be several elements under construction simultaneously and during other years there may be very little construction activity. Construction activities in the net SAP area would initially be required for installation of all required backbone infrastructure, such as storm drainage, water and wastewater improvements, roadway improvements, and new or expanded utilities (e.g., electrical distribution lines, wastewater drainage pipes).

Construction noise can be characterized based on the type of activity and associated equipment needed and, in this analysis, is evaluated by considering noise levels associated with site preparation/foundation work, utility improvements (e.g., trenching, pipe/transmission line installation), roadway improvements (e.g., grading, paving), and vertical construction (e.g., residential, commercial, or other structures), with and without pile driving. Reference noise levels for typical construction equipment required for these activities are shown below in Table 4.11-10. Assuming simultaneously operating equipment and typical reference noise levels for construction equipment, representative noise levels for the various types of construction activity are shown below in Table 4.11-11.

Table 4.11-10 Noise Emission Levels from Construction Equipment

Equipment Type	Typical Noise Level (L_{max} dBA) @ 50 feet
Backhoe	80
Concrete Mixer	85
Compactor	80
Crane/Lift	85
Dozer	85
Dump Truck	84
Excavator	85
Flat Bed Truck	84
Front End Loader	80
Generator	70
Grader	85
Impact Pile Driver	95
Paver	89
Roller	85
Pickup Trucks	55

Notes: Assumes all equipment is fitted with a properly maintained and operational noise control device, per manufacturer specifications. Noise levels listed are manufacture-specified noise levels for each piece of heavy construction equipment.

Source: FTA 2006

Table 4.11-11 Noise Emission Levels from Construction Activities

Construction Activity	Noise Level (L _{eq} dBA) @ 50 feet	Noise Level (L _{max} dBA) @ 50 feet
Site Preparation/Foundation Work	87.5	91.5
Building Construction	86.2	90.9
Building Construction with Pile Driving	90.5	96.6
Roadway Construction/Improvements	87.2	91.1
Utility Installation/Improvements	88.1	92.1

Notes: Assumes all equipment is fitted with a properly maintained and operational noise control device, per manufacturer specifications. Noise levels listed are manufacture-specified noise levels for each piece of heavy construction equipment.

Source: FTA 2006

Based on reference noise levels for typical construction equipment and activities, building construction noise without pile driving could range from 86.2 dBA L_{eq} to 90.9 dBA L_{max} (at 50 feet from the source) and with pile driving could range from 90.6 dBA L_{eq} to 96.6 dBA L_{max}. Refer to Appendix L for modeling inputs and results.

Construction activities would occur throughout the net SAP area with varying construction schedules and construction-noise levels depending on the specific scale and type of development under construction. Currently, few existing residences are located within the net SAP area (scattered residences in the northwest portion, see Exhibit 4.11-1) that could be affected by initial construction work. The off-site existing sensitive receptors nearest to the net SAP area include residential land uses within 50 feet to the west of the southwestern corner of the net SAP area boundary. Additional existing sensitive receptors are located south of the PRSP area, as discussed below.

Considering that the existing net SAP area is largely undeveloped (with the exception of some light industrial and business park land uses, the WRSL, Thunder Valley Casino Resort, and a few rural residences), existing ambient noise levels throughout the undeveloped portions of the plan area are relatively low, consistent with the existing rural setting; therefore, the addition of construction activities of 86.2 dBA L_{eq} or greater would result in a substantial (i.e., 5 dB) increase in temporary noise at nearby off-site and on-site residences. In addition, if construction were to occur outside of Placer County daytime hours (7:00 a.m. to 10:00 p.m.) when construction noise is exempt from the Placer County Noise Ordinance, construction-noise would exceed maximum allowable noise limits of 45 dBA L_{eq} and 65 dBA L_{max} at existing receptors.

With development of the net SAP area over the next 80 years, additional sensitive land uses would be constructed that could be exposed to noise levels associated with construction of subsequent development. Although individual construction activity location, duration, and intensity for subsequent development is unknown, based on the proposed land use map and land use types that would be developed, it is likely that site preparation, road improvements, and building construction of future development could occur close to future sensitive receptors, exposing them to construction-noise levels of up to 90.5 dBA L_{eq} and 96.6 dBA L_{max}. In addition, some construction work, such as utility installation and roadway improvements may occur during nighttime hours, as is typical with this type of construction, to reduce traffic impacts, and could expose proposed future sensitive receptors to noise levels that may disrupt sleep and exceed Placer County nighttime noise limits of 45 dBA L_{eq} and 65 dBA L_{max}.

SAP Policy N-1.7 requires the County to impose conditions on new development within the SAP area that would limit hours of construction and construction noise levels to protect sensitive receptors from excessive construction noise. SAP Program N-4 implements SAP noise policies by requiring specific noise reduction measures to be implemented by the project construction manager for any construction occurring within 3,000 feet of a sensitive land use. Measures identified in SAP Program N-4 include distance requirements for equipment staging, equipment idling time limitations, properly maintained equipment, adjustable back-up alarms, alternate (quieter) construction procedures, and noise attenuation measures.

Noise reduction would be achieved with implementation of SAP policies and implementation programs; however, depending on individual construction-noise levels and proximity to sensitive receptors, achieving nighttime standards of 45 dBA L_{eq} may not always be feasible. Future construction activities could result in a substantial (i.e., 5 dB) temporary or periodic increase in noise during daytime or nighttime hours at existing and future sensitive land uses. This impact is considered significant.

PRSP Area

The PRSP area is envisioned to develop over 20 years and ultimately form into several distinct neighborhoods, connected by roads and other public facilities, including a system of multi-use pedestrian and bicycle trails. Primary land uses include a university campus, commercial, retail, public facilities such as schools, residential, recreational, open space, and associated transportation facilities (e.g., roads, bicycle lanes).

Unlike the eastern portion of the net SAP area, the PRSP area is entirely undeveloped, and existing noise levels are similar to the undeveloped portions of the net SAP area. Construction activities would be similar to those described above for the net SAP area, including site preparation/foundation work, utility improvements (e.g., trenching, pipe/transmission line installation), roadway improvements (e.g., grading, paving), and vertical construction (e.g., residential, commercial, and other structures).

Existing residential land uses exist adjacent to the southern boundary of the PRSP area. Proposed land uses within the PRSP area include residential; public facilities; and mixed-use office, commercial, and educational. Construction associated with these land uses would require all types of activities discussed above, thus potentially exposing existing adjacent residential land uses to noise levels of up to 90.5 dBA L_{eq} and 96.6 dBA L_{max} . Also, similar to the net SAP area, as the PRSP area continues to develop, additional sensitive land uses would be constructed that could be exposed to noise levels associated with construction of subsequent development within the PRSP area.

Construction in the PRSP area would comply with SAP policies and implementation programs. As described above for the SAP area, SAP Policy N-1.7 requires the County to impose conditions on new development within the SAP area to minimize construction noise. More specifically, SAP Program N-4 implements SAP noise policies by requiring specific noise reduction measures for construction near a sensitive land use. These requirements are discussed in the net SAP evaluation above and are detailed specifically under Regulatory Setting.

Similar to impacts discussed above for the net SAP, even with implementation of SAP policies and implementation programs, future construction activities could result in a substantial (i.e., 5 dB) temporary or periodic increase in noise during daytime or nighttime hours at existing and future sensitive land uses. This impact would be significant.

Other Supporting Infrastructure

Implementation of the PRSP requires development of a variety of utilities and roadway infrastructure outside the SAP area boundary, including several roadway extensions, roadway expansions, intersection improvements, pipeline extensions, and development of off-site retention facilities. Each are addressed separately below.

Pleasant Grove Retention Facility

Construction of the retention facility would include excavation and earth movement, some minor paving, and installation of small equipment such as weir structures. Primary sources of noise would result from earth moving and excavation activities associated with graders, excavators, and haul trucks. Construction noise would be similar to that described above for site preparation/foundation work and could result in noise levels of up to 87.5 dBA L_{eq} and 91.5 dBA L_{max} (at 50 feet from the source). One residence is located approximately 2,500 feet to the south west of the proposed retention facility where excavation could occur (i.e., acoustical center of nearest disturbance area) and approximately 600 feet from the proposed retention facility boundary. Thus, this residence could be exposed to noise levels of 53.5 dBA L_{eq} and 57.5 dBA L_{max} to 65.9 dBA L_{eq} and 69.9 dBA L_{max} , depending on the location of construction activity. The residence is located

outside the Roseville city limit, so Placer County standards would apply. Construction noise is exempt from the Placer County Noise ordinance provided that it occurs during the hours of 6:00 a.m. and 8:00 p.m., Monday through Friday, and between 8:00 a.m. and 8:00 p.m. Saturday and Sunday, typically hours when people are not sleeping and less susceptible to noise. If construction activities were to occur during nighttime hours when construction noise is not exempt, excavation activities would exceed Placer County standards of 45 dBA L_{eq} and would expose the existing sensitive receptor to a substantial (i.e., 5 dB) increase in noise. Site preparation and excavation activities do not necessarily need to be conducted at night and thus limiting this work to daytime hours would minimize noise exposure. However, because the construction schedule and details are uncertain at this time, and because the project is outside the SAP and would not be required to implement SAP policies and implementation programs to reduce construction noise, this impact would be potentially significant.

Off-Site Transportation and Utility Improvements

Off-site improvements include roadway improvements such as road widening and extension, sewer line installations and connections, and relocation and installation of transmission lines. Specific details regarding each roadway and utility improvement are provided in Section 3, "Project Description." Similar to noise levels discussed above, utility improvements may result in levels of 88.1 dBA L_{eq} and 92.1 dBA L_{max} (at 50 feet from the source) and roadway improvement work may result in levels of 87.2 dBA L_{eq} and 91.1 dBA L_{max} .

In some cases, off-site improvements would occur before land development and in areas currently undeveloped. However, other off-site improvement construction work would occur near existing development and sensitive receptors. Road improvement work on Woodcreek Oaks Boulevard and Fiddymont Road could occur within 50 feet of existing residential land uses. In addition, infrastructure connections (e.g., sewer and water line) along Grove Hill Way and Fiddymont Road could also occur within 50 feet of existing residences. Further, as the net SAP area and PRSP area develop over time, additional roadway improvement and utility infrastructure improvements would be required, resulting in future construction work occurring close to proposed future development. Thus, similar to impacts discussed above, if utility and roadway improvement construction work were to occur at night, which is typical for this type of construction, and close to sensitive land uses, City of Roseville noise standards of 45 dBA L_{eq} and 65 dBA L_{max} would be exceeded at nearby sensitive receptors and, considering the relatively quiet nighttime hours, would result in a substantial (i.e., 5 dB) temporary increase in noise. Because these improvements would occur outside the SAP and would not be required to implement SAP policies and implementation programs to reduce construction noise, this impact would be potentially significant.

Conclusion

Development of the project would occur over the next 80 years and would result in various levels of construction throughout the project area. Construction activities would include site preparation, road improvements, utility infrastructure installation, and building construction. Proposed SAP Policies N-1.7, Construction Noise and Vibration, N-1.4, Acoustical Analysis, and SAP Program N-4 would require that future construction activities comply with noise limits and conditions imposed by Placer County, as appropriate and applicable, thus minimizing exposure to construction noise levels. However, based on reference noise levels for typical construction activities associated with land use development, construction noise could reach levels of up to 90.5 dBA L_{eq} and 96.6 dBA L_{max} (at 50 feet from the source). Considering the existing rural nature of the SAP area, existing noise levels are relatively low and future construction activities would result in a substantial (i.e., 5 dB) increase in noise. In addition, some construction work, such as utility installation and roadway improvements may occur during nighttime hours, as is typical with this type of construction, to reduce traffic impacts, and could expose existing and future sensitive receptors to noise levels that may disrupt sleep and exceed Placer County and City of Roseville nighttime noise limits of 45 dBA L_{eq} and 65 dBA L_{max} . Thus, construction activities could result in a substantial (i.e., 5 dB) temporary or periodic increase in noise during daytime or nighttime hours at existing and future sensitive land uses. This impact would be **potentially significant**.

Mitigation Measures

Mitigation Measure 4.11-1: Implement construction-noise reduction measures for daytime or nighttime construction (Other Supporting Infrastructure)

The County shall coordinate with the City of Roseville to ensure that construction activities that will take place in the vicinity of sensitive land uses (i.e., places where people sleep, reside, or work), comply with the appropriate noise reduction measures, such that noise levels do not exceed City of Roseville noise standards. Appropriate noise-reducing measures shall be determined at the time of grading/improvement plan submittal and may include, but not be limited to, specific measures included in SAP Program N-4. Implementation of noise-reducing measures would be the responsibility of the project construction manager or contractor.

Significance after Mitigation

Implementation of Mitigation Measure 4.11-1 would provide substantial reductions in daytime and nighttime construction noise levels by including noise reduction measures such as ensuring proper equipment use; locating equipment away from sensitive land uses; and requiring the use of enclosures, shields, and noise curtains (noise curtains typically can reduce noise by up to 10 dB [EPA 1971]). Reductions of up to 43 dB would be required during utility installation and infrastructure that could take place during nighttime hours. Reductions of this magnitude are not expected to be achieved under all circumstances with implementation of Mitigation Measure 4.11-1. In addition, the County does not have jurisdiction over the Pleasant Grove Retention Facility site or off-site transportation and utility improvement areas and cannot require the implementation of Mitigation Measure 4.11-1. Thus, this impact would be **significant and unavoidable**.

Impact 4.11-2: Exposure of sensitive receptors to construction and operational vibration

Potential vibration impacts could occur when project-related construction activities are close (i.e., within 550 feet) to existing or future planned sensitive land uses. It is unknown at this time where specific pile-driving activities would be required and to what extent they would occur. Therefore, it is possible that pile-driving and other vibration-inducing construction activities could occur near sensitive land uses. Specifically, the potential exists for pile driving to occur within 100 feet of a structure, exceeding Caltrans recommended levels for structural damage (i.e., 0.2 in/sec PPV), and within 550 feet of a sensitive land use, exceeding FTA recommended levels for vibration annoyance (i.e., 72 VdB). SAP Program N-5 requires a vibration control plan for pile-driving activities near structures and identifies several vibration control measures, including setbacks, monitoring, alternative methods of installing piles, predrilling pile holes, limiting hours, etc. Implementing SAP Program N-5 would minimize construction-related vibration effects. Development occurring within the net SAP area could result in the placement of new sensitive land uses close (i.e., within 350 feet) to the existing UPRR tracks on the eastern portion of the net SAP area, exposing new sensitive receptors to levels that exceed FTA-recommended vibration levels of 65 VdB for infrequent events, such as passing trains on the UPRR tracks. However, SAP Policy N-1.8 Rail Operations Vibration Exposure would require a site-specific vibration assessment to ensure all new development in proximity to the existing rail line would not be exposed to excessive vibration levels. Impacts related to vibration would be **less than significant**.

Net SAP Area

Construction

Construction activities generate varying degrees of temporary ground vibration, depending on the specific construction equipment used and activities involved. Ground vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. The effects of ground vibration may be imperceptible at the lowest levels, result in low rumbling sounds and detectable vibrations at moderate levels, and, at high levels, can cause annoyance and sleep disturbance.

When considering new construction, pile driving generates the highest vibration levels and is, therefore, of greatest concern when evaluating construction-related vibration impacts. According to FTA, vibration levels associated with pile driving are 1.518 in/sec PPV at 25 feet. Based on FTA's recommended procedure for

applying a propagation adjustment to these reference levels, vibration levels from pile driving could exceed the threshold of significance of 0.2 in/sec PPV for structural damage within 100 feet of pile-driving activities (refer to Appendix L for modeling details).

Vibration levels can also result in interference or annoyance impacts for residences or other land uses where people sleep, such as residences, hotels, and hospitals. According to FTA, vibration levels associated with pile driving are 112 VdB at 25 feet (FTA 2006). FTA vibration annoyance potential criteria depend on the frequency of the vibration events. When vibration events occur more than 70 times per day, as would likely be the case with pile driving, they are considered “frequent events.” Frequent events in excess of 72 VdB are considered to result in a significant vibration impact. Based on FTA’s recommended procedure for applying propagation adjustments to these reference levels, vibration levels from pile driving could exceed threshold of significance for “frequent events” within 550 feet of a sensitive land use (refer to Appendix L for modeling details).

No existing off-site sensitive receptors are located within distances where vibration impacts could occur. Some existing residential land uses and other land uses (e.g., Thunder Valley Casino Resort) are located within the net SAP area and could be exposed to vibration activities associated with new construction if they were to occur near these existing structures. Further, potential vibration impacts could occur when future construction activities take place near (i.e., within 550 feet) future planned sensitive land uses. It is unknown at this time where specific pile-driving activities would be required and to what extent they would occur. Therefore, it is possible that pile-driving and other vibration-inducing construction activities could occur near future sensitive land uses. Specifically, the potential exists for pile driving to occur within 100 feet of a structure, exceeding the threshold of significance for structural damage, and within 550 feet of a sensitive land use, exceeding thresholds of significance for vibration annoyance.

SAP Policy N-1.7 requires the County to impose conditions on new development within the SAP area that would limit hours of construction and construction noise levels to protect sensitive receptors from excessive construction noise. SAP Program N-5 provides specific requirements to minimize the effects of construction-related vibration, especially vibration associated with pile driving. SAP Program N-5 requires a vibration control plan for pile-driving activities occurring within 100 feet of any building and 550 feet of an occupied structure. Several specific vibration control measures are included to prevent vibration-related structural damage and disturbance of occupants, including setbacks, monitoring, alternative methods of installing piles, predrilling pile holes, and limiting hours. (See SAP Program N-5 above for details.) Implementing SAP Program N-5 would minimize construction-related vibration effects, and the impact would be less than significant.

Operation

Operation of development resulting from implementation of the net SAP area would not result in any new or additional major sources of ground vibration, such as commercial railways, passenger rail transit lines, or major transit stations; therefore, the focus of this analysis is on the placement of new sensitive land uses or structures near the existing UPRR tracks. Regarding vibration impacts on proposed development that could be located near the UPRR tracks, human disturbance (rather than structural damage) is the primary concern. This is because all new development that could potentially be located close to existing UPRR facilities would be constructed in accordance with all current building code requirements and new materials that would not be prone to damage from vibration levels associated with passing trains on the UPRR tracks.

Based on FTA guidance, sensitive land uses such as schools and places of worship located within 150 feet of the centerline of the UPRR tracks could be exposed to levels that exceed 75 VdB. Land uses that are even more sensitive, such as residences, laboratories, and medical facilities located within 350 feet of the centerline of UPRR track could be exposed to levels that exceed 65 VdB. Thus, new sensitive land uses located within 350 feet of the existing UPRR track could be exposed to excessive vibration-noise levels. However, proposed SAP Policy N-1.8 Rail Operations Vibration Exposure would require a vibration assessment be conducted by the project proponent before the approval of new vibration-sensitive land uses that would be located within 350 feet of the existing rails lines. The policy requires that the project proponent demonstrate to the County that all available and feasible design measures be incorporated into the project design to ensure vibration levels do not exceed applicable acceptable levels. Considering the requirements of this

policy, future development would be designed and located in a manner that does not result in substantial vibration levels to new sensitive receptors and this impact would be less than significant.

PRSP Area

Construction

Similar to the net SAP area, the PRSP area is undeveloped, and construction activities would be similar to those described above for the net SAP area, including site preparation/foundation work, utility improvements (e.g., trenching, pipe/transmission line installation), roadway improvements (e.g., grading, paving), and vertical construction (e.g., residential, commercial, other structures) requiring pile driving. Existing residential land uses lie adjacent to the southern boundary of the PRSP area. Proposed land uses within the PRSP area include residential, public facilities, and mixed-uses of office, commercial, and research. Development of these land uses would require all types of construction activities discussed above, thus potentially exposing existing adjacent residential land uses to vibration levels that exceed the recommended Caltrans and FTA levels for structural damage and human disturbance, respectively. In addition, as the PRSP area continues to develop, new sensitive receptors could be exposed to vibration levels associated with construction of future adjacent structures. Vibration associated with construction activities could expose existing and future planned receptors to excessive vibration levels.

Construction in the PRSP area would comply with SAP Program N-5, which, as described above under the net SAP area discussion, minimizes the effects of construction-related vibration by requiring a vibration control plan for pile-driving activities occurring within 100 feet of any building and 550 feet of an occupied structure. Several specific vibration control measures are included to prevent vibration-related structural damage and disturbance of occupants, including setbacks, monitoring, alternative methods of installing piles, predrilling pile holes, limiting hours, etc. Implementing SAP Program N-5 would minimize construction-related vibration effects, and the impact would be less than significant.

Operations

Similar to the discussion above for the net SAP area, passing trains on the UPRR tracks are the primary source of ground vibration in the vicinity of the PRSP area. However, proposed development within the PRSP area would not be located at distances within which new sensitive land uses could be exposed to excessive vibration associated with passing trains, so no effect to structural integrity would result. There would be no impact.

Other Supporting Infrastructure

Pleasant Grove Retention Facility

Operation of the drainage facilities would not result in any new vibration sources. This impact focuses on construction activities. Pile-driving and other major vibration-inducing construction activities (e.g., vibratory rollers, crack-and-seat equipment) are not associated with earth moving and excavation that would be required for construction of the retention basin. For example, vibration levels from a dozer would exceed 0.2 in/sec PPV and 80 VdB within the immediate vicinity of the dozer (i.e., 5 feet). No construction activity would occur this close to existing or future structures. Thus, existing residential land uses would not be exposed to vibration levels that could cause structural damage or annoyance. Typical construction activities may result in some levels of ground vibration but not levels that could result in structural damage or disturbance. This impact would be less than significant.

Off-Site Transportation and Utility Improvements

Operation of the off-site improvements would not result in any new vibration sources. This impact focuses on construction activities. Pile-driving and other major vibration-inducing construction activities (e.g., vibratory rollers, crack-and-seat equipment) are not associated with earth moving and excavation that would be required for construction of the sewer, transmission, and utility lines or roadway improvements. For example, vibration levels from a dozer would exceed 0.2 in/sec PPV and 80 VdB within the immediate vicinity of the dozer (i.e., 5 feet). No construction activity would occur this close to existing or future structures. Thus, existing off-site residential land uses would not be exposed to vibration levels that could cause structural

damage or annoyance. Typical construction activities may result in some level of ground vibration but not levels that could result in structural damage or disturbance. This impact would be less than significant.

Conclusion

Potential vibration impacts could occur when future construction activities take place close (i.e., within 550 feet) to existing or future planned sensitive land uses. It is unknown at this time where specific pile-driving activities would be required and to what extent they would occur. Therefore, it is possible that pile-driving and other vibration-inducing construction activities could occur near sensitive land uses. Specifically, the potential exists for pile driving to occur within 100 feet of a structure, exceeding Caltrans recommended levels for structural damage, and within 550 feet of a sensitive land use, exceeding FTA recommended levels for vibration annoyance. However, SAP Policy N-1.7 requires the County to impose conditions on new development within the SAP area that would limit hours of construction and construction noise levels to protect sensitive receptors from excessive construction noise. SAP Program N-5 provides specific requirements to minimize the effects of construction-related vibration, especially vibration associated with pile driving. SAP Program N-5 requires a vibration control plan for pile-driving activities occurring within 100 feet of any building and 550 feet of an occupied structure. Several specific vibration control measures are included to prevent vibration-related structural damage and disturbance of occupants, including setbacks, monitoring, alternative methods of installing piles, predrilling pile holes, limiting hours, etc. (See SAP Program N-5 above for details.) Implementing SAP Program N-5 would minimize construction-related vibration effects, and the impact would be **less than significant**.

Mitigation Measures

No mitigation is required.

Impact 4.11-3: Exposure of existing sensitive receptors to new stationary noise sources

The project would result in the development of various land uses (e.g., residential, lodging, entertainment, commercial, office, industrial, retail, and university). Noise sources associated with these land uses include mechanical equipment, such as HVAC units, backup emergency generators, vehicular and human activity in parking lots, loading dock and delivery activities at commercial/retail land uses, amplified sound, activities at outdoor recreational land uses, and new electric transmission lines and substations. New substations and entertainment land uses would not be located within distances that could expose existing sensitive receptors to excessive noise levels. However, exact locations, building footprints, and building orientation have not been identified; therefore, it is unknown specifically where other future stationary noise sources may be located. Considering the relatively large scale of potential development, it is possible that new stationary noise sources would result in excessive noise levels at existing sensitive receptors and exceed applicable Placer County and SAP noise standards. Proposed SAP Policy N-1.6 Exposure to Existing Sensitive Receptors provides distance setback recommendations for new stationary sources locating near sensitive land uses. SAP Program N-3 implements Policy N-1.6 by providing specific siting requirements and noise reduction features for stationary noise sources to comply with County noise standards. This impact would be **less than significant**.

This impact assesses the long-term exposure of existing sensitive receptors to increased operational-source noise levels from proposed land use development. This impact analysis evaluates nontransportation noise sources that would occur because of project operation. Transportation-generated noise is addressed separately below in the discussion of Impact 4.11-5.

Net SAP Area

Existing residential land uses that could be exposed to new stationary noise sources from development occurring within the net SAP area include four agriculture-related residential land uses in the northwestern portion of the net SAP area. Some existing nonresidential sensitive land uses, including the Bridgewater Christian Church, Crosspointe Community Church, Creekside Church, Placer County Superior Court, and Placer Center for Health, are located near the eastern edge of the net SAP area boundary (see Exhibit 4.11-1 for

specific locations). An existing residential neighborhood is located just south of the net SAP area and PRSP area boundary within the City of Roseville. Impacts on these receptors are discussed below under “PRSP Area.”

Buildout of the net SAP area would result in development of various land uses (e.g., residential, lodging, commercial, industrial, retail). Typically, noise sources associated with residential land uses, such as lawn mowers and landscaping maintenance equipment are exempt from Placer County Noise ordinance. In addition, noise associated with recreational land uses such as parks and schools and emergency equipment are also exempt because they do not typically disturb people or disrupt people’s sleep. Thus, this analysis focuses on stationary sources, such as HVAC units, mechanical equipment such as generators and other industrial equipment, loading docks, and parking lots associated with commercial, entertainment-oriented land uses, and new transmission lines and substations.

Note that the Placer County L_{eq} standards are numerically less than the L_{max} standards, thus achieving L_{eq} standards would require further distances from the source as compared to achieving the L_{max} standards. Thus, for purposes of this analysis complying with L_{eq} standards would also meet L_{max} standards although L_{max} standards would be achieved at closer distances than reported here, which are based on L_{eq} standards.

Mechanical Equipment

Mechanical equipment could be a primary noise source associated with new commercial, industrial, and retail land uses. The noise sources could take the form of fans, pumps, air compressors, chillers, or cooling towers. Noise levels associated with HVAC units and diesel backup generators would be similar to noise levels associated with other mechanical equipment such as pumps, air compressors, and exhaust pipes. Thus, this analysis of mechanical equipment is representative of typical noise sources associated with commercial and industrial land uses.

Noise levels from HVAC equipment vary substantially depending on unit efficiency, size, and location, but generally range from 45 to 70 dB L_{eq} at a distance of 50 feet (EPA 1971). Assuming the higher, more conservative value of these reference noise levels, HVAC units located within 180 feet of noise-sensitive land uses could exceed the County’s noise standard for daytime noise (i.e., 55 dBA L_{eq}). In addition, HVAC units located within 440 feet of noise-sensitive land uses could exceed the County’s noise standard for nighttime noise (i.e., 45 dBA L_{eq}).

The specific locations of new HVAC units on proposed structures are not known at this time. However, because of the amount of proposed new construction, and the potential proximity of housing to nonresidential uses associated with the housing concepts in several of the SAP’s land use designations, it is possible that HVAC units located on new structures within the industrial, innovation center, business park, general commercial, and entertainment mixed-use land uses could result in substantial noise exposure to existing sensitive land uses.

Backup generators may be used to supply necessary power requirements to vital systems within facilities constructed on the commercial/industrial and mixed-use land uses. Reference noise-level measurements of emergency generators with rated power outputs from 50 to 125 kilowatts result in noise levels ranging from 61 to 73 dB L_{eq} and 63–84 dB L_{max} at a distance of 45 feet (EPA 1971, FHWA 2006). Assuming the higher, more conservative value of these reference noise levels, emergency electrical generators located within 200 feet of noise-sensitive land uses could exceed the County’s noise standard for daytime noise (i.e., 55 dBA L_{eq}). In addition, generators located within 500 feet of noise-sensitive land uses could exceed the County’s noise standard for nighttime noise (i.e., 45 dBA L_{eq}).

As discussed above, proposed development includes various land uses that could result in the placement of new mechanical equipment close (i.e., within 500 feet) to existing sensitive land uses. Although specific building footprint locations, building orientations, and specific location of stationary equipment are not known at this time, considering the density of proposed development, it is possible that new emergency electrical generators could be located within distances that could expose existing sensitive receptors to noise levels that exceed the Placer County daytime and nighttime noise standards for sensitive receptors.

Parking Lot Activities

The project would result in new parking facilities to serve new commercial, industrial, and entertainment-oriented land uses. Noise levels from parking lots can vary depending on the number of vehicles at any given time in the parking lot, the speed at which vehicles are traveling, and the types of vehicles present. Typical noise sources include car engines running/idling, doors slamming, car alarms going off, cars honking, and people talking. Reference noise levels for parking lots associated with mixed-use development including lodging, residential, and commercial/retail uses were available from parking lots located at Squaw Valley Resort (Placer County 2016). These parking lots would be similar to parking lots needed for large regional retail/commercial centers but would be much larger than parking requirements for smaller neighborhood retail/commercial land uses. Thus, for purposes of this analysis reference noise levels would be considered representative of future proposed parking lots. Based on available reference noise levels, typical noise levels from parking lot activities could reach 59.8 L_{eq} and 78.1 L_{max} at 15 feet from the noise source (i.e., car slamming door). Therefore, based on this information and the reference noise level for a parking lot, noise from new parking facilities could exceed the Placer County daytime noise standard (i.e., 55 dBA L_{eq}) within 20 feet and the nighttime standard (i.e., 45 dBA L_{eq}) within 50 feet of existing sensitive receptors.

Loading Dock and Delivery Activity

Noise sources associated with loading dock and delivery activities can include trucks idling, on-site truck circulation, trailer-mounted refrigeration units, pallets dropping, and the operation of forklifts. These activities could occur primarily within industrial, commercial, and mixed-use land uses. In addition, the WRSL is located at the intersection of Fiddymont Road and Athens Avenue within the net SAP area. On-site operations include dumping and material processing, such as grinding and crushing of waste or recyclables. Noise levels would be similar to those described above for loading dock and delivery activities. Specific noise-monitoring data available for the WRSL would also apply to commercial loading activity at any new future sites that include loading activities (Placer County 2015). Because of the constant operating patterns of the WRSL, the 24-hour L_{dn} /CNEL standard was also considered in this evaluation.

The WRSL CEP EIR estimated that worst-case 1-hour L_{eq} values from the landfill would be approximately 77 dBA at a distance of 100 feet and have a 24-hour average noise level of 59 dBA L_{dn} /CNEL at 2,000 feet. Based on these reference noise levels, the residential 60 dBA L_{dn} /CNEL noise levels would be exceeded within 1,834 feet, the daytime L_{eq} standard (i.e., 55 dBA L_{eq}) within 700 feet, and the nighttime standard (i.e., 45 dBA L_{eq}) within 1,600 feet from the WRSL. Thus, new loading dock activities located within 1,834 feet of existing residential land uses would result in exceedances of Placer County exterior allowable noise limit of 60 dBA L_{dn} /CNEL.

Transmission Corona Noise and Electric Substations

Audible noise from power lines is primarily attributable to point source corona effect (crackling and hissing hum-like sound) resulting from small variability in the conductor materials. Such noise is common and not harmful and routinely occurs when air is ionized around a gap, a burr (raised area), a small irregularity, or some noninsulated component during the conductance of electricity through power lines. Corona is also produced when power lines break down over time and their fastener components loosen, resulting in an air gap. Corona noise is most prominent during periods of rain, fog, or high humidity. Pacific Gas and Electric Company (PG&E) may require development of an additional 230-kilovolt (kV) tower line that would likely run parallel (within the existing PG&E easement) to the existing 230-kV line in the plan area.

In addition to new transmission lines, development within the net SAP area may require additional PG&E electrical substations including the Athens Substation that would be located on the east side of Industrial Avenue, north of Twelve Bridges Drive and south of the new SR 65 bypass that extends over Industrial Avenue. In addition, another substation may be required within the PRSP area and adjacent to the existing RPP2. This substation is discussed below under "PRSP Area." At substation sites, the primary sources of operating noise would be the on-site transformers. Noise from transformers is similar to coronal noise from power lines (i.e., a slight humming sound) and thus a reference noise level for a 230-kV transmission line of 49.6 dBA at 18 feet is used in this analysis (PG&E 2010). Based on this reference noise level, Placer County nighttime noise standards of 45 dBA L_{eq} would be exceeded if a new transmission line or substation were located within 35

feet of an existing sensitive land use. The California Public Utilities Commission requires a minimum vertical clearance of 12 feet from structures for transmission lines from 22.5 to 300 kV (General Order 95). Thus, new transmission lines could potentially result in noise levels that exceed Placer County standards at existing sensitive receptors, depending on final design and location. The new substation would not be located within distances that could result in noise levels that exceed Placer County noise limits (i.e., 35 feet).

Entertainment District

The Entertainment Mixed-Use (EMU) designation provides for entertainment-oriented and visitor-serving uses that would draw customers from beyond west Placer County. The EMU designation also anticipates the potential need for residential uses to support the workforce employed in the area. Potential future development within this area may include entertainment venues (e.g., sports arena, concert hall) or indoor/outdoor recreation uses. Indoor venues, such as music and concert halls and indoor recreation uses, typically are enclosed and therefore do not affect adjacent land uses, so this analysis focuses on outdoor uses, such as sports arenas and outdoor recreation uses. Typical noise associated with these land uses would include parking lot activities (discussed above), people talking and laughing, and amplified sound. The focus of this discussion is amplified sound which has the greatest potential to disturb nearby land uses.

A reference noise level for amplified sound is 100 dBA L_{eq} at 5 feet from the source (City of Sacramento 2013). Based on this reference noise level and assuming typical attenuation rates, sound from amplified speakers would attenuate to 55 dBA L_{eq} (Placer County daytime standard) at 250 feet and 45 dBA L_{eq} at 600 feet (Placer County nighttime standard). No existing sensitive land uses are located adjacent to the proposed EMU designation within these distances and there would be no impact.

Net SAP Area Summary

The land use development that could occur within the net SAP area would include various new stationary sources, as described above. No existing sensitive land uses are located adjacent to the proposed EMU designation within distances that could result in excessive noise. However, specific location of new HVAC units, mechanical equipment, loading docks/industrial equipment, or electricity transmission facilities associated with new commercial structures is not known at this time. Thus, because of the amount of proposed new construction and mix of various land uses, it is possible that new stationary sources associated with new development could result in substantial noise exposure that exceed Placer County daytime and nighttime noise limits to existing sensitive land uses. Proposed SAP Policy N-1.6 provides setback distance requirements for new stationary sources (e.g., loading docks, HVAC units, generators, parking lots, transmission lines, substations) to minimize noise exposure at existing sensitive receptors. SAP Program N-3 implements Policy N-1.6 by providing specific siting requirements and noise reduction features for stationary noise sources to comply with County noise standards. This policy and implementation program would ensure that new sources would not exceed Placer County noise standards at sensitive receptors and this impact would be less than significant.

PRSP Area

There are no existing sensitive land uses located within the PRSP area. Existing sensitive land uses that could be affected by project-generated stationary sources include residential land uses located south of the PRSP area within the City of Roseville. New development that would occur in the PRSP area that would be located closest to existing sensitive receptors within the City of Roseville includes the Active Adult Neighborhood and the Campus Arcade Neighborhood. These districts would consist primarily of residential land uses and some recreational land uses such as regional and neighborhood parks. These land uses do not include stationary noise sources that could result in long-term substantial increases in noise to adjacent existing residences in the City of Roseville.

Placer Ranch Substation

A PG&E substation is planned for the PRSP area, immediately adjacent to PG&E's 230-kV transmission line and the RPP2 in the southeastern portion of the PRSP area. Existing sensitive receptors include the residences located to the south of the PRSP area within the City of Roseville. However, the new substation would not be located within distances that could result in noise levels that exceed Placer County noise limits (i.e., 35 feet).

PRSP Area Summary

New development in the PRSP area that would be located closest to existing sensitive receptors within the City of Roseville includes primarily residential and recreation uses, which do not typically include stationary noise sources that could expose existing receptors to excessive noise levels. In addition, a new PG&E substation would be constructed near the existing RPP2. The new substation would be located more than 35 feet from existing residences and, therefore, operational noise levels would be minimal and would not expose existing receptors to excessive noise levels. This impact would be less than significant.

Other Supporting Infrastructure

Pleasant Grove Retention Facility

The proposed off-site retention facility would serve the project's stormwater retention needs. The retention basin would include channelized land and weirs to direct flow. No specific stationary sources have been identified at this time to be included at the retention basin. However, should stationary equipment such as pumps be needed to direct flows, noise levels would be similar to those discussed above for mechanical equipment such as generators and HVAC units. Considering these reference noise levels, no existing receptors are located within 500 feet of the proposed drainage facilities. This impact would be less than significant.

Off-Site Transportation and Utility Improvements

Off-site improvements would include wet and dry utility upgrades and installation and roadway extension and expansion. The proposed off-site roadway and utility improvements would not include stationary noise sources that could expose sensitive receptors to noise levels above County standards. This impact would be less than significant.

Conclusion

Although specific building footprint locations, building orientations, and locations of stationary equipment are not known at this time, considering the density of proposed development, it is possible that new stationary noise sources (e.g., mechanical equipment, commercial parking lots, commercial loading and docking) could be located within distances that expose existing sensitive receptors to noise levels that exceed the Placer County daytime and nighttime noise standards for sensitive receptors. Proposed SAP Policy N-1.6 Exposure to Existing Sensitive Receptors provides distance setback recommendations for new stationary sources locating near sensitive land uses. SAP Program N-3 implements Policy N-1.6 by providing specific siting requirements and noise reduction features for stationary noise sources to comply with County noise standards. This policy and implementation program would ensure that new sources would not exceed Placer County noise standards at sensitive receptors and this impact would be **less than significant**.

Mitigation Measures

No mitigation is required.

Impact 4.11-4: Exposure of new sensitive receptors to existing and new stationary noise sources

Buildout of the project area would result in development of various land uses and associated stationary sources, including mechanical equipment such as HVAC units and backup generators, vehicular and human activity in parking lots, loading dock and delivery activities at commercial/retail land uses, amplified sound associated with entertainment land uses, and noise associated with transmission lines and substations. Because of the nature of mixed-use development, and the wide range of development density proposed, new sensitive land uses may be located adjacent or within distances to these noise sources that could result in exceedances of 24-hour L_{dn} /CNEL noise standards for various land uses, or noise limits established for sensitive receptors. Further, new residential land uses proposed within the PRSP area may be exposed to excessive noise from the existing RPP2. This impact would be **potentially significant**.

This impact assesses the long-term exposure of proposed new sensitive receptors to future operational-source noise levels from other proposed land use development. This impact analysis evaluates

nontransportation noise sources that would occur as a result of project operation. Transportation-related noise is evaluated below in Impact 4.11-5.

Net SAP Area

Proposed SAP Noise Standards

In addition to the Placer County noise limits for sensitive receptors, the SAP includes proposed allowable noise limits (exterior and interior) for various land uses which range from 70 dBA $L_{dn}/CNEL$ to 75 dBA $L_{dn}/CNEL$ (exterior), depending on the land use. Refer to Table 4.11-8 above for specific standards by land use. Note that proposed allowable exterior noise limits for the SAP differ from those identified in the Placer County General Plan but interior noise limits are the same. For example, allowable noise limits for lodging (i.e., hotels, motels) and places of worship in the SAP is 65 dBA $L_{dn}/CNEL$ compared to 60 dBA $L_{dn}/CNEL$ in the Placer County General Plan. Although proposed SAP exterior land use compatibility noise standards are higher than those identified for Placer County, land-use-based noise standards are intended to provide flexibility in exterior limits to achieve the desired ambient environment of a specific region. Thus, SAP policies have been designed with consideration of the proposed development type, which includes a variety of land uses and higher densities than other portions of the County, where lower exterior noise limits would be unachievable. It is important to note that the interior noise limits (45 dBA $L_{dn}/CNEL$) are still required throughout the net SAP area, PRSP area, and the entire county to protect people from sleep disturbance. Therefore, the impact of adopting new noise policies that differ from adopted *Placer County General Plan* noise limits would be less than significant.

Net SAP Area Development

Buildout of the net SAP area would result in development of various land uses and associated noise sources. Similar to the discussion above for Impact 4.11-3, this impact focuses on new stationary sources not exempt from Placer County Noise Ordinance. New stationary sources and noise levels would be the same as those discussed above for Impact 4.11-3. Because of the nature of mixed-use and density of development that is proposed, new sensitive land uses may be located adjacent to these sources or within distances that could result in noise levels that exceed Placer County noise limits for sensitive receptors.

Considering the reference noise levels discussed above for mechanical equipment and commercial loading dock activities, mechanical equipment (assumed generator is representative of all mechanical equipment types) could exceed 70 dBA $L_{dn}/CNEL$ within 100 feet and loading dock activities within 200 feet from the source. Thus, new receptors located within these distances could be exposed to noise levels that exceed 70 dBA $L_{dn}/CNEL$. For land uses subject to exterior noise limits of 75 dBA $L_{dn}/CNEL$, mechanical equipment would exceed 75 dBA $L_{dn}/CNEL$ within 65 feet and commercial loading docks would exceed 75 dBA $L_{dn}/CNEL$ within 120 feet from the source.

However, Policy N-1.3 requires new non-residential development to comply with land use-based noise standards (Table 4.11-8), applicable to existing or planned noise-sensitive uses. It further requires new development to prepare an acoustical analysis, to include all necessary mitigation, to ensure new noise sources do not exceed Placer County noise standards. Further, proposed SAP Policy N-1.4 requires development applications that propose new sensitive land uses, to prepare an acoustical analysis and include all necessary mitigation measures, such that Placer County land use-based noise standards are not exceeded (Table 4.11-8 and 4.11-9) at new receptors. This impact is less than significant.

PRSP Area

Buildout of the PRSP area would result in development of various land uses and associated noise sources, similar to those discussed above for Impact 4.11-3. As described above for the net SAP area, this impact focuses on new noise sources associated with land uses other than residential and their effects on new future land use types. Noise levels from new land use development would be similar to those discussed above. New sensitive land uses developed within the PRSP area over time could potentially be located close to the new noise sources. Because of the nature of mixed-use and density of development that is proposed, new sensitive land uses may be located adjacent to these sources or within distances that could result in noise

levels that exceed Placer County daytime and nighttime noise limits for sensitive receptors. This impact would be potentially significant.

In addition to the Placer County noise limits for sensitive receptors, the SAP includes proposed allowable noise limits for various land uses which range from 70 dBA $L_{dn}/CNEL$ to 75 dBA $L_{dn}/CNEL$, depending on the land use. Refer to Table 4.11-8 above for specific standards by land use. Considering the reference noise levels discussed above for mechanical equipment and commercial loading dock activities, mechanical equipment (assumed generator is representative of all mechanical equipment types) could exceed 70 dBA $L_{dn}/CNEL$ within 100 feet and loading dock activities within 200 feet from the source. Thus, new nonresidential land uses located within these distances could be exposed to noise levels that exceed 70 dBA $L_{dn}/CNEL$. For land uses subject to exterior noise limits of 75 dBA $L_{dn}/CNEL$, mechanical equipment would exceed 75 dBA $L_{dn}/CNEL$ within 65 feet, and commercial loading docks would exceed 75 dBA $L_{dn}/CNEL$ within 120 feet from the source. Thus, new nonresidential land uses located within these distances could be exposed to noise levels that exceed maximum allowable limits. Noise associated with the proposed substation and new transmission lines could result in 56.3 dBA $L_{dn}/CNEL$ at 18 feet from the source. These levels would not exceed applicable land use compatibility limits for any land use.

Roseville Power Plant 2

Based on reference noise levels for the PRR2, the average noise level at 400 feet from the noise source (i.e., gas turbines) was calculated at 49.4 dBA L_{eq} , and the maximum noise levels were measured to be 55 dBA L_{max} at 789 feet from the source (NCPA 2002, j. c. brennan & associates 2015).

Future sensitive land uses that would be developed as part of the Campus Arcade Neighborhood and the Town Center land use designations could potentially be located close to the existing RPP2. Assuming reference noise levels, the RPP2 would result in noise that exceeds maximum allowable Placer County exterior residential noise levels of 60 dBA $L_{dn}/CNEL$ at 275 feet from the existing RPP2. Placer County daytime noise limits (i.e., 55 dBA L_{eq}) for sensitive receptors could be exceeded within 240 feet, and nighttime noise limits (i.e., 45 dBA L_{eq}) could be exceeded within 590 feet of the existing RPP2. Considering maximum operating noise levels and Placer County L_{max} standards, that are numerically higher than the L_{eq} standards, compliance with the L_{max} standards would be achieved if the L_{eq} ones are met. For example, Placer County daytime L_{max} standards of 70 dBA would be achieved at 210 feet and nighttime L_{max} standards of 65 dBA achieved at 325 feet.

Based on the proposed land uses (Exhibit 3-8) in the PRSP area, new residences would likely be located as close as 500 feet from the existing RPP2. At 500 feet, Placer County L_{max} standards would not be exceeded at any future sensitive receptor, but the Placer County nighttime standard of 45 dBA L_{eq} could be exceeded at the edge of new sensitive land uses. See Exhibit 4.11-2. The draft PRSP indicates that a masonry wall would be located around the existing RPP2 site but does not provide specific performance criteria to ensure adequate sound attenuation would be achieved. This impact would be potentially significant.

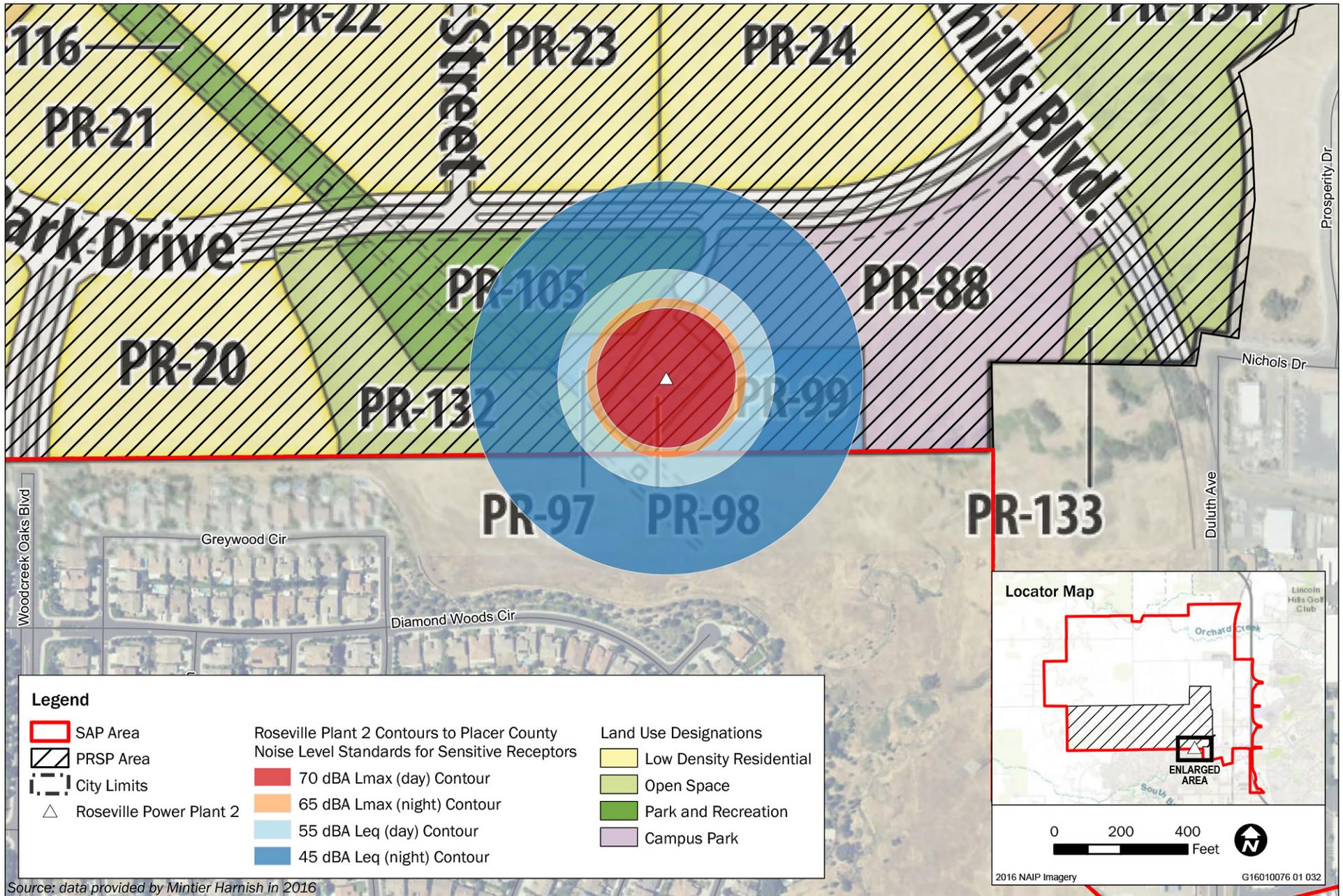
Off-Site Improvements

Pleasant Grove Retention Facility

The proposed off-site stormwater retention facility would be constructed to serve the project's stormwater retention needs. The retention basin would include channelized land and weirs to direct flow. No specific stationary noise sources have been identified at this time to be included at the retention basin. However, should stationary equipment such as pumps be needed to direct flows, noise levels would be similar to those discussed above for mechanical equipment such as generators and HVAC units. No new receptors are proposed in this area; therefore, there would be no impact.

Off-Site Transportation and Utility Improvements

The proposed off-site improvements would include wastewater system installation, dry utility upgrades, potable water and recycled water system installations, and extensions and expansions of roadways. These improvements would not be considered stationary noise sources and no new receptors are proposed in areas where off-site improvements would be located. There would be no impact.



Legend		Roseville Plant 2 Contours to Placer County Noise Level Standards for Sensitive Receptors		Land Use Designations	
	SAP Area		70 dBA Lmax (day) Contour		Low Density Residential
	PRSP Area		65 dBA Lmax (night) Contour		Open Space
	City Limits		55 dBA Leq (day) Contour		Park and Recreation
	Roseville Power Plant 2		45 dBA Leq (night) Contour		Campus Park

Source: data provided by Mintier Harnish in 2016

Exhibit 4.11-2

Roseville Power Plant 2 Noise Contours



Conclusion

Buildout of the net SAP and PRSP areas would result in development of various land uses and associated stationary sources including HVAC units, backup emergency generators, vehicular and human activity in parking lots, loading dock and delivery activities at commercial/retail land uses, noise from sports events and entertainment land uses, and noise associated with transmission lines and substations. Because of the nature of mixed-use, high-density development that is proposed, new sensitive land uses may be located adjacent or within distances to these sources that could result in exceedances of 24-hour L_{dn} /CNEL noise standards for various land uses, or noise limits established for sensitive receptors. Proposed SAP policies would require evaluation of new sources and new sensitive receptors at the time of application review and Placer County would require appropriate mitigation to ensure compliance with noise standards, at that time. However, new residential land uses proposed within the PRSP area may be exposed to excessive noise from the existing RPP2 and other sources depending on final site plan and proximity of sources to existing or new receptors within the PRSP area. This impact would be **potentially significant**.

Mitigation Measures

Mitigation Measure 4.11-4a: Conduct site-specific noise study (Net SAP Area and PRSP Area)

To prevent future sensitive land uses from disturbance during the sensitive times of the day, project proponents of a residential land use or a structure containing residential units shall, before approval of small-lot tentative maps, provide to the County a site-specific noise study prepared by a qualified acoustical engineer addressing interior and exterior noise levels at sensitive land uses. The noise study shall consider the types of land uses being proposed in the same building or in the vicinity as the residential units in a mixed-use structure and existing noise sources adjacent to the proposed structure. The noise study shall confirm, using approved calculation methodologies, that building design and materials are sufficient to maintain a maximum 45 dB L_{dn} /CNEL interior noise level, with windows closed, in residential units given the reasonably foreseeable noise generation sources within the building, and existing noise sources adjacent to the building. If the study shows such standards would not be met with the design as proposed, the project proponent shall implement recommendations of the study that are shown to achieve the standards.

Mitigation Measure 4.11-4b: Reduce exposure to new sensitive land uses from the existing Roseville Power Plant 2 (PRSP Area)

- ▲ Before approval of small-lot tentative maps, the project proponent shall demonstrate that the building occupants of new residential or other sensitive land use within the PRSP area are not exposed to noise levels from the RPP2 that exceed Placer County land use compatibility standards (e.g., 60 dBA L_{dn} /CNEL for residential uses), daytime and nighttime noise limits for sensitive receptors (i.e., 45 dBA L_{eq} /65 dBA L_{max} [night], 55 dBA L_{eq} /70 dBA L_{max} [day]).
- ▲ If achievement of the Placer County noise standards cannot be met by providing adequate setback of at least 590 feet from the RPP2 (i.e., distance at which nighttime L_{eq} standard is met), then the County shall require a sound wall be constructed between the existing RPP2 and any new sensitive receptors. The sound wall shall be designed by an acoustical engineer and constructed and placed in a manner that achieves, at a minimum, a 5 dB reduction in sound.

Significance after Mitigation

Proposed SAP Policy N-1.6 and Program N-3 would require that all stationary noise sources are oriented, located, and designed in such a way that reduces noise exposure to ensure that stationary noise sources would comply with Placer County noise standards for sensitive receptors. Implementation of Mitigation Measure 4.11-4a would require an acoustical study to determine appropriate design considerations to ensure that interior noise limits are achieved for all sensitive land uses. Mitigation Measure 4.11.4b requires new residential development to consider appropriate site design parameters, including a sound wall. A sound wall would achieve a 5-dB reduction, which would be sufficient to achieve the Placer County daytime and nighttime noise standards for sensitive receptors at a distance of 500 feet from the RPP2. This impact would be reduced to a **less-than-significant** level.

Impact 4.11-5: Exposure of new and existing sensitive receptors to project-generated transportation noise

Development of the project area would result in new and expanded roadways to serve future development as well as long-term traffic and associated noise increases on affected roadways. Existing residential development within the City of Roseville located to the south of the net SAP and PRSP area boundary would be exposed to substantial increases in traffic noise levels that exceed maximum allowable City of Roseville residential noise standards of 60 dBA L_{dn} /CNEL. Future development would result in the construction of new sensitive land uses (e.g., houses, schools, churches, hospitals) that could be located close to existing or future planned roads that would generate traffic noise levels that exceed applicable maximum allowable noise standards for various land uses. In addition, new land use development could occur near the existing UPRR tracks, exposing these new receptors to noise levels that exceed applicable noise standards. This impact would be **potentially significant**.

SAP Area

Development occurring within the net SAP area would generate additional traffic volumes on existing roadways (including roadways proposed for expansion) and would introduce new traffic on new roadways and roadway extensions. Increases in traffic could expose existing sensitive receptors surrounding the SAP area, specifically to the south within the City of Roseville, to increased traffic noise, as well as expose future planned receptors to noise levels that exceed maximum allowable transportation noise levels established in the Placer County General Plan and Noise Ordinance and proposed in SAP policies, as well as City of Roseville noise standards, as applicable.

Traffic noise modeling was conducted using project-specific average daily trip volumes for affected roadways. Reported traffic noise levels in this discussion represent additional traffic that would occur with development of the project. It should be noted that this analysis differs somewhat from most other analyses in the Draft EIR because, rather than focusing on the portion of the project area that excludes the PRSP area (i.e., net SAP area), this analysis of traffic noise includes traffic generated from development of the SAP area, including the PRSP area. The PRSP impact evaluation that follows this discussion isolates the potential traffic noise impacts caused by PRSP area development without the net SAP development.

Table 4.11-12 below summarizes roadway segments that would experience substantial (i.e., 5 dB) increases in noise and roadways that would result in exceedances of maximum allowable exterior noise levels of 60 dBA L_{dn} /CNEL as a result of the project, as this is the most stringent noise standard (i.e., most sensitive land use). Bolded segments represent segments that currently do not exceed the County's 60 dBA L_{dn} /CNEL standard, but as a result of project-generated traffic, would exceed it. Impacts on existing and new sensitive receptors are discussed separately.

Table 4.11-12 Summary of Modeled Substantial (5 dB or greater) Traffic Noise Level Increases from Existing to Existing Plus Project Conditions

Roadway Segment			L_{dn} /CNEL (dB) at 100 feet from Roadway Centerline		Net Change (dB)
Road	From	To	Existing Conditions	Existing Plus Project Conditions	
Fiddymment Road	Blue Oaks Boulevard	Hayden Parkway	64.0	70.8	+6.7
Fiddymment Road	Hayden Parkway	Blue Oaks Boulevard	63.2	70.6	+7.4
Fiddymment Road	Angus Road	North	63.3	72.9	+9.5
Fiddymment Road	Moore Road	East Catlett Road	58.5	68.9	+10.4
Fiddymment Road	East Catlett Road	Athens Avenue	58.7	68.7	+10.1
Fiddymment Road	Athens Avenue	Sunset Boulevard	64.5	69.6	+5.2

Table 4.11-12 Summary of Modeled Substantial (5 dB or greater) Traffic Noise Level Increases from Existing to Existing Plus Project Conditions

Roadway Segment			L _{dn} /CNEL (dB) at 100 feet from Roadway Centerline		Net Change (dB)
Road	From	To	Existing Conditions	Existing Plus Project Conditions	
Angus Road/Casa Sedona Drive	Fiddymment Road	Crocker Ranch Road	58.0	68.6	+10.6
Crocker Ranch Road	Angus Road	Blue Oaks Boulevard	61.4	68.1	+6.7
Woodcreek Oaks Boulevard	Parkside Way	North	58.1	68.7	+10.6
Sunset Boulevard	Foothills Boulevard	Placer Corporate Drive	65.0	70.4	+5.3
Sunset Boulevard	Placer Corporate Drive	State Route 65	66.0	72.1	+6.1
Sunset Boulevard	Foothills Boulevard	Industrial Avenue	61.1	71.4	+10.3
Twelve Bridges Drive	Industrial Avenue	State Route 65	62.2	68.3	+6.0
Industrial Avenue	Athens Avenue	Sunset Boulevard	64.2	69.6	+5.4
Moore Road	Fiddymment Road	Nelson Lane	58.8	69.0	+10.2
Moore Road	Nelson Lane	State Route 65	56.2	67.1	+11.0
Nelson Lane	State Route 65	Moore Road	56.6	64.7	+8.0
South Dowd Road	William Lane	Moore Road	51.3	63.9	+12.6
Athens Avenue	Industrial Avenue	Foothills Boulevard	62.0	69.1	+7.0
Foothills Boulevard	Athens Avenue	Sunset Boulevard	61.1	67.8	+6.7
Foothills Boulevard	Placer Parkway	Campus Park Boulevard	58.8	69.6	+10.8
Foothills Boulevard	Campus Park Boulevard	Sunset Boulevard	58.8	67.4	+8.6
East Catlett Road	South Dowd Road	Fiddymment Road	47.5	63.4	+16.0
Parkside Way	Woodcreek Oaks Boulevard	New Meadow Drive	57.1	61.8	+4.7

Notes: CNEL = Community Noise Equivalent Level; dB = A-weighted decibels; L_{dn} = day-night average noise level

The net change may not be the exact difference between existing and existing plus project conditions because of rounding.

Bold values represent noise increases on roadways currently not exceeding residential maximum allowable noise limits of 60 dBA L_{dn}/CNEL that would exceed limits as a result of the project.

Refer to Section 4.14, "Transportation and Circulation," and Appendix M for detailed traffic data and traffic-noise modeling input data L_{dn} and output results.

Source: Data modeled by Ascent Environmental in 2017

Existing Sensitive Receptors

Traffic noise modeling was conducted for existing and existing plus project traffic conditions. In accordance with Placer County and City of Roseville noise ordinances, traffic noise increases of 5 dB or greater would be considered substantial. In addition to substantial increases in traffic noise, Placer County, the proposed SAP policies, and the City of Roseville have maximum allowable exterior and interior transportation-noise limits for various land uses.

Based on the modeling conducted, the existing residential neighborhood within the City of Roseville south of the project area would experience the greatest increases in noise. Noise increases would occur on existing and newly expanded roads that could impact existing receptors. Impacts were identified where existing residences would be exposed to substantial increases in traffic noise and where maximum allowable residential noise standards would be exceeded as a result of traffic noise increases. Existing residential land uses are located within 100 feet of identified road segments that would experience substantial increases in noise. In addition, existing residents are located along Parkside Way, which currently does not exceed

allowable exterior noise levels of 60 dBA L_{dn} /CNEL, but would exceed 60 dBA L_{dn} /CNEL as a result of the project. Thus, traffic noise increases associated with development of the project would result in substantial (i.e., 5 dB) increases in noise that would be perceptible to existing sensitive receptors, and noise levels on some of the identified roadway segments would increase from below the residential maximum exterior noise limit to above it. All new/extended roads would result in exceedances of 60 dBA L_{dn} /CNEL at 100 feet from the roads centerline (Table 4.11-13). This impact would be significant.

Table 4.11-13 Significant (i.e., exceed 60 dBA L_{dn} /CNEL) Increases in Traffic Noise Associated with New or Extended Roads

Roadway Segment			L_{dn} /CNEL (dB) at 100 feet from Roadway Centerline	
Road	To	From	SAP (Including PRSP)	PRSP Only
Campus Park Drive	Foothills Boulevard	East	+64.7	+64.6
Campus Park Drive	Foothills Boulevard	University Village Drive	+66.0	+65.3
Campus Park Drive	Fiddymont Road	Foothills Boulevard	+65.5	+67.5
Campus Park Drive	Fiddymont Road	Maple Park Drive	+67.8	+67.5
Campus Park Drive	Maple Creek Circle	C Street	+60.5	+61.0
Campus Park Drive	C Street	B Street	+60.5	+61.0
University Village Drive	Campus Park Boulevard	Sunset Boulevard	+68.0	+66.9
University Village Drive	Sunset Boulevard	Foothills Boulevard	+63.7	NA
Sunset Boulevard	University Village Drive	College Park Drive	+68.7	+68.5
Sunset Boulevard	Foothills Boulevard	University Village Drive	+66.8	+66.7
Sunset Boulevard	Fiddymont Road	College Park Drive	+66.3	+66.7
Sunset Boulevard	Fiddymont Road	Maple Park Drive	+64.6	+64.2
Sunset Boulevard	Maple Creek Circle	C Street	+61.8	+61.0
Sunset Boulevard	C Street	B Street	+61.3	NA
Sunset Boulevard	B Street	A Street	+61.1	NA
Foothills Boulevard	Sunset Boulevard	University Village Drive	+64.4	+63.1
Foothills Boulevard	University Village Drive	College Park Drive	+63.8	+62.1
College Park Drive	Foothills Boulevard	Westbrook Boulevard	+66.1	+66.1
College Park Drive ¹	Sunset Boulevard	Woodcreek Oaks Boulevard	+68.6	+68.1
Woodcreek Oaks Boulevard ¹	College Park Drive	Northpark Drive	+70.5	+69.9
Fiddymont Road	Placer Parkway	Campus Park Boulevard	+70.6	+66.7
Fiddymont Road	Campus Park Boulevard	Sunset Boulevard	+70.8	+70.0
Fiddymont Road ¹	Sunset Boulevard	Settlers Ridge Drive	+71.4	+70.8
Maple Park Drive	Campus Park Boulevard	Sunset Boulevard	+63.4	+64.1
Whitney Ranch Parkway	Industrial Avenue	State Route 65	+71.8	NA

Notes: CNEL = Community Noise Equivalent Level; dB = A-weighted decibels; L_{dn} = day-night average noise level; NA= not applicable

The net change may not be the exact difference between existing and existing plus project conditions because of rounding.

Refer to Section 4.14, "Transportation and Circulation," and Appendix L for detailed traffic data, and traffic-noise modeling input data and output results.

1: These segments are part of the project by would be developed within the City of Roseville, outside the jurisdiction of Placer County.

Source: Data modeled by Ascent Environmental in 2017

Future Sensitive Receptors

As development occurs over the projected 80-year buildout period, new sensitive land uses could be placed in proximity to new or existing roads that could be exposed to noise levels that exceed applicable SAP or Placer County allowable noise limits for various land uses. Existing noise levels on project-affected roadways are shown above in Table 4.11-3 and Appendix L. Future projected traffic noise levels were modeled based on traffic increases that would result from buildout of the project, shown above in Tables 4.11-2 and 4.11-13.

New residential land uses are identified in the PRSP area but would also be allowed in several net SAP area land use designations, including Innovation Center, Light Industrial, Urban Reserve, Entertainment/Mixed-Use, and General Commercial. Although proximity to specific roadway segments and associated noise levels are not known at this time, based on the noise modeling conducted, new sensitive receptors could be exposed to noise levels of up to 80.9 dBA $L_{dn}/CNEL$ associated with SR 65 and, for nonhighway facilities, as high as 71.8 dBA $L_{dn}/CNEL$ (from Whitney Ranch Parkway) These are the modeled highest noise levels that any receptor could be exposed to (Appendix L). The 60 dBA $L_{dn}/CNEL$ noise contour from SR 65 extends 1,575 feet from the centerline, and the 60 dBA $L_{dn}/CNEL$ contour from Whitney Ranch Parkway extends 360 feet from the centerline. Thus, new receptors located within the 60 dBA $L_{dn}/CNEL$ contour of existing, new, or expanded roads could be exposed to noise levels that exceed exterior noise limits. Exterior noise levels of above 70 dBA $L_{dn}/CNEL$ could result in exceedances of interior noise standards of 45 dBA. Thus, new development occurring within the SAP area could be exposed to interior noise that exceeds applicable standards if located within the 70 dBA $L_{dn}/CNEL$ contour of existing, new, or expanded roads. All new/extended roads would result in exceedances of 60 dBA $L_{dn}/CNEL$ at 100 feet from the roads centerline (4.11-13). For a complete list of contour distances associated with all roads see Appendix L.

In addition to automobile-related traffic noise, a UPRR track crosses the net SAP area, parallel to SR 65. Based on 24-hour measurements conducted in 2005 for the City of Lincoln's General Plan Noise Element, the operating noise levels from this railroad line are 70 dBA $L_{dn}/CNEL$ at a distance of 900 feet from the tracks and 84 dBA $L_{dn}/CNEL$ at 35 feet from the tracks. Based on these reference noise levels, the 60 dBA $L_{dn}/CNEL$ contour would extend to approximately 3,625 feet. These levels take into account the combined effect of warning horns and passing trains over a 24-hour period. New sensitive receptors located within 3,625 feet of the existing railroad tracks would be exposed to noise levels that exceed 60 dBA $L_{dn}/CNEL$.

SAP Implementation Program N-2 requires project applicants in the SAP area to prepare an acoustical analysis to ensure that specific building siting, orientation, and materials are adequate to maintain the County's maximum 45 dB $L_{dn}/CNEL$ interior noise level. Site planning and building construction would be developed to achieve the necessary noise reduction, based on site-specific parameters. New sensitive land uses would be designed to meet interior noise standards thus minimizing noise exposure during the more sensitive times of the day. This impact would be less than significant.

Placer Ranch Specific Plan

To support development within the PRSP area, new roadways would be constructed, and some existing roadways would be expanded. Specifically, new east-west arterial streets Campus Park Boulevard and Sunset Boulevard would extend westerly from existing Foothills Boulevard to Fiddymont Road and ultimately connect to future planned roadways in the Amoruso Specific Plan west of Placer Ranch within the City of Roseville. In addition, Woodcreek Oaks Boulevard would be extended north from its current terminus at the Roseville city limits into Placer Ranch.

Table 4.11-14 below summarizes roadway segments that would experience a 5-decibel or greater increase in noise and segments that result in noise levels that exceed 60 dBA $L_{dn}/CNEL$. Bolded values represent segments that currently do not exceed 60 dBA $L_{dn}/CNEL$ but as a result of project-generated traffic would exceed 60 dBA $L_{dn}/CNEL$.

Table 4.11-14 Summary of Modeled Substantial (5 dB or greater) Traffic Noise Level Increases from Existing to Existing Plus PRSP Conditions

Roadway Segment			L _{dn} /CNEL (dB) at 100 feet from Roadway Centerline		Net Change (dB)
Road	To	From	Existing Conditions	Existing (Plus Project) Conditions	
Fiddymment Road	Blue Oaks Boulevard	Hayden Parkway	64.0	70.2	+6.1
Fiddymment Road	Angus Road	North	63.3	72.5	+9.2
Fiddymment Road	Moore Road	East Catlett Road	58.5	65.9	+7.4
Fiddymment Road	East Catlett Road	Athens Avenue	58.7	66.4	+7.7
Angus Road/Casa Sedona Drive	Fiddymment Road	Blue Oaks Boulevard	58.0	67.9	+9.9
Crocker Ranch Road	Angus Road	Blue Oaks Boulevard	61.4	67.6	+6.2
Woodcreek Oaks Boulevard	Parkside Way	North	58.1	69.1	+11.1
Moore Road	Fiddymment Road	Nelson Lane	58.8	66.0	+7.2
Moore Road	Nelson Lane	State Route 65	56.2	61.4	+5.2
Nelson Lane	State Route 65	Moore Road	56.6	64.3	+7.7
Foothills Boulevard	Athens Avenue	Sunset Boulevard	58.8	67.4	+8.6
Foothills Boulevard	Placer Parkway	Athens Avenue	58.8	67.1	+8.2
Foothills Boulevard	Campus Park Boulevard	Sunset Boulevard	58.8	67.0	+8.2
Parkside Way	Woodcreek Oaks Boulevard	New Meadow Drive	57.1	60.9	+3.8
South Dowd Road	William Lane	Moore Road	51.3	56.9	+5.7

Notes: CNEL = Community Noise Equivalent Level; dB = A-weighted decibels; L_{dn} = day-night average noise level

The net change may not be the exact difference between existing and existing plus project conditions because of rounding.

Bold values represent noise increases on roadways currently not exceeding residential maximum allowable noise limits of 60 dBA L_{dn}/CNEL that would exceed limits as a result of the project.

Refer to Section 4.14, "Transportation and Circulation," and Appendix L for detailed traffic data, and traffic-noise modeling input data and output results.

Source: Data modeled by Ascent Environmental in 2014

Existing Sensitive Receptors

Traffic noise modeling was conducted for existing and existing plus PRSP area traffic conditions. Traffic noise increases of 5 dB or greater would be considered substantial and would be perceptible to nearby receptors. In addition to substantial increases in traffic noise, Placer County, the proposed SAP policies, and the City of Roseville have maximum allowable exterior and interior transportation-noise limits for various land uses (Tables 4.11-6 and 4.11-9).

Based on the modeling conducted, the existing residential neighborhood within the City of Roseville south of the PRSP area would experience the greatest increases in noise. Impacts were identified where existing residences in this area would be exposed to substantial increases in noise and where maximum allowable noise standards would be exceeded as a result of traffic noise increases. Existing residential land uses are located within 100 feet of identified road segments that would experience substantial increases in noise. Thus, traffic noise increases associated with development of the PRSP area would result in substantial (i.e., 5 dB) increases in noise that would be perceptible to existing sensitive receptors. In addition, noise levels on some of the identified roadway segments would increase from below the residential maximum exterior noise limit of 60 dBA L_{dn}/CNEL to as high as 69.1 dBA L_{dn}/CNEL. All new/extended roads would result in exceedances of 60 dBA L_{dn}/CNEL at 100 feet from the roadway centerline (Table 4.11-13). This impact would be significant.

Future Sensitive Receptors

Regarding future land development, new sensitive receptors (e.g., residences, schools, churches, hospitals, university housing) would be located throughout the PRSP area. Refer to Exhibit 3-8 for PRSP district locations and land uses. As development continues, new sensitive land uses may be placed in proximity to new roads located within the PRSP area or expanded/improved roads, such as Fiddymont Road and Sunset Boulevard, that could result in noise level exposure that exceed applicable SAP or Placer County allowable noise limits for various land uses. Noise modeling was conducted for all proposed new roadways that would be located within the PRSP area, shown in Table 4.11-13, above.

New sensitive receptors would be exposed to noise levels that exceed 60 dBA L_{dn} /CNEL if placed close to new or expanded roads (Table 4.11-13) or existing roads that would experience substantial increases in noise and exceed 60 dBA L_{dn} /CNEL (Table 4.11-14). For a complete list of 60 dBA L_{dn} /CNEL contour distances associated with all roads see Appendix L. The only roadway segments that would not result in potential impacts to nearby receptors include Campus Park Drive between B Street and A Street, C Street between Campus Park Boulevard, and Sunset Boulevard between C Street and A Street (i.e., roadways where the 60 dBA L_{dn} /CNEL contour is less than 50 feet from the road).

In addition to automobile-related traffic noise, UPRR tracks cross the SAP area (and PRSP area) from the City of Roseville, along the eastern side of the SAP area, parallel to SR 65. Based on 24-hour measurements conducted in 2005 for the City of Lincoln's General Plan Noise Element, the operating noise levels from this railroad line are 70 dBA L_{dn} /CNEL at a distance of 900 feet from the tracks and 84 dBA L_{dn} /CNEL at 35 feet from the tracks. Based on these reference line source noise levels, the 60 dBA L_{dn} /CNEL contour would extend to approximately 3,625 feet. These levels take into account the combined effect of warning horns and passing trains over a 24-hour period. New sensitive receptors located within 3,625 feet of the existing railroad tracks would be exposed to noise levels that exceed 60 dBA L_{dn} /CNEL.

As described above for net SAP, SAP Implementation Program N-2 requires project applicants in the SAP area to prepare an acoustical analysis to ensure that specific building siting, orientation, and materials are adequate to maintain the County's maximum 45 dB L_{dn} /CNEL interior noise level. Site planning and building construction would be developed to achieve the necessary noise reduction, based on site-specific parameters. New sensitive land uses would be designed to meet interior noise standards thus minimizing noise exposure during the more sensitive times of the day. This impact would be less than significant.

Other Supporting Infrastructure

Pleasant Grove Retention Facility

Long-term increases in traffic noise are associated with trip generating land uses such as residential, commercial, office, and retail uses. The proposed off-site retention facility would be constructed to serve volumetric stormwater retention needs and would not result in increases in long-term traffic or associated noise. There would be no impact.

Off-Site Transportation and Utility Improvements

Off-site improvements would include roadway extensions/expansions, wastewater system installation, dry utility upgrades and installation and potable water and recycled water system installations. Utility improvements would not result in traffic or associated noise increases. Long-term increases in traffic noise are associated with trip generating land uses such as residential, commercial, office, and retail uses and would occur on new or expanded roadways as a result of development associated with the project. Specifically, the Fiddymont Road, Woodcreek Oaks Boulevard, and Foothills Boulevard extensions, as shown in Table 4.11-13, would result in substantial increases in noise. This impact would be significant.

Conclusion

As shown by the modeling conducted, project-generated traffic would result in substantial (i.e., 5 dB) long-term increases in noise as well as noise levels that exceed Placer County and proposed SAP maximum allowable levels of for sensitive land uses. Depending on the specific location of future land development and specific land uses located close to high-volume roads, exterior and interior noise limits could potentially

be exceeded at future planned sensitive land uses, as well as at existing sensitive land uses. Regarding future sensitive land uses, implementing Program N-2 would minimize potential noise impacts to future sensitive land uses by requiring a site-specific acoustic analysis to verify that the specific siting, orientation, and building materials appropriately achieve the County's interior noise standard. However, regarding existing sensitive land uses, traffic noise would increase by more than 5 dB on many of the project-affected roadways in places where sensitive receptors currently exist, such as along Fiddymment Road from Angus Road north towards Sunset Boulevard. This impact would be **potentially significant**.

Mitigation Measures

Mitigation Measure 4.11-5a: Reduce noise levels associated with new, expanded, or extended roads (Net SAP Area and PRSP Area)

Before finalizing roadway design for roadway expansion or new roadway construction, a design-level acoustical study shall be prepared to identify specific roadway design considerations, which shall be incorporated into final road design and approved by Placer County for roadways that result in a substantial increase in noise identified by Tables 4.11-12, 4.11-13, and 4.11-14. Roadway segments outside of Placer County are excluded (Fiddymment Road extension, Foothills Boulevard extension, and Woodcreek Oaks Boulevard extension). The following design features shall be considered:

- ▲ Roadway design shall provide sufficient setback between occupied structures that are defined as sensitive land uses by Placer County (or planned future sensitive land uses) and the roadway to minimize noise exposure to the extent feasible.
- ▲ In locations where setback is not feasible to reduce noise levels at existing or planned future sensitive receptors, roadway design shall incorporate quiet pavement types such as rubberized concrete achieving at least a 4-dB decrease in traffic noise where feasible.
- ▲ Where existing sensitive receptors are located such that neither setback, nor quiet pavement, can reduce traffic noise from new or expanded roads associated with the project, the County shall coordinate with property owners of the existing residences regarding installation of sound walls along property lines to minimize traffic noise to meet exterior noise standards (city or County, as applicable) and, if necessary to meet the 45-dBA interior noise standards, upgrading windows that face the new or extended roadway.

Mitigation Measure 4.11-5b: Reduce noise levels associated with new, expanded, or extended roads (Other Supporting Infrastructure)

The County shall coordinate with the City of Roseville to ensure that, for new roadways or roadways expansions that would result in substantial increases in noise (i.e., 5 dB or more), a design-level acoustical study is conducted and available design measures are incorporated to reduce noise impacts at sensitive receptors. Roadways that would result in substantial increases in noise include Fiddymment Road, Woodcreek Oaks Boulevard, and Foothills Boulevard extensions. Specific design considerations may include those specified in Mitigation Measure 4.11-5b.

Mitigation Measure 4.11-5c: Reduce transportation noise levels within the PRSP area (PRSP Area)

Before approval of small-lot tentative maps, the project proponent shall conduct a design-level acoustic study for noise-sensitive land uses within the noise contours identified below in Table 4.11-15 and Exhibit 4.11-3, and 3,625 feet from the UPRR tracks. The noise study shall provide recommendations to ensure that specific site design and building placement do not exceed the exterior noise standards (identified in Table 4.11-15 for each applicable land use) and the 45 dBA L_{dn} /CNEL interior noise standard. Recommendations shall include, but shall not be limited to, the following measures:

- ▲ Noise-sensitive outdoor use areas (e.g., backyards, common areas, outdoor dining, playgrounds) shall be located as far away from adjacent roadways and/or railroad tracks as possible and buildings shall be oriented to shield noise-sensitive spaces whenever possible.
- ▲ If noise standards cannot feasibly be met through site design measures identified above, noise barriers shall be placed between the transportation noise source and the receptor. Noise barriers shall be constructed of concrete cinderblock (or other solid material of similar density), shall be designed consistent with PRSP design guidelines, and shall completely block line-of-sight between the noise source and receptor such that traffic noise levels are reduced by up to 10 dB.

Table 4.11-15 Distance from Roadway Centerline to Relevant Noise Contours

(ID) Road Name	From	To	ADT	L _{dn} /CNEL @ 100 Feet	Distance to Contour (L _{dn} /CNEL)			
					75 dBA (Park, Playground, Golf Course)	70 dBA (Restaurant w/ Outdoor Seating)	65 dBA (Hotel, Motel, Child/ Adult Day Care, Church)	60 dBA (Residential)
(184) Foothills Blvd	Athens Ave	Sunset Blvd	18,300	67.4	19	42	90	194
(300) Foothills Blvd	Placer Parkway	Campus Park Blvd	15,500	67.1	17	37	81	174
(303) Foothills Blvd	Campus Park Blvd	Sunset Blvd	22,200	67.0	22	48	104	223
(304) Sunset Blvd	Foothills Blvd	Industrial Ave	28,000	68.5	26	56	120	258
(305) Campus Park Dr	Foothills Blvd	East	8,800	64.6	12	26	55	119
(306) Campus Park Dr	Foothills Blvd	University Village Dr	12,800	65.3	15	33	71	154
(307) University Village Dr	Campus Park Blvd	Sunset Blvd	18,500	66.9	20	42	91	197
(308) University Village Dr	Sunset Blvd	Foothills Blvd	2,100	58.4	5	10	21	46
(309) Sunset Blvd	University Village Dr	College Park Dr	26,200	68.5	25	53	115	248
(310) Sunset Blvd	Foothills Blvd	University Village Dr	17,600	66.7	19	41	88	190
(311) Foothills Blvd	Sunset Blvd	University Village Dr	9,100	63.1	12	27	57	123
(312) Foothills Blvd	University Village Dr	College Park Dr	7,200	62.1	11	23	49	105
(314) College Park Dr	Foothills Blvd	Westbrook Blvd	15,300	66.1	17	37	80	173
(315) Woodcreek Oaks Blvd	College Park Dr	Northpark Dr	36,400	69.9	31	67	143	309
(316) College Park Dr	Sunset Blvd	Woodcreek Oaks Blvd	24,200	68.1	24	51	109	235
(317) Campus Park Dr	Fiddymnt Rd	Foothills Blvd	21,100	67.5	21	46	100	215
(318) Sunset Blvd	Fiddymnt Rd	College Park Dr	17,300	66.7	19	41	87	188
(319) Fiddymnt Rd	Placer Pkwy	Campus Park Blvd	20,900	66.7	21	46	99	214
(320) Fiddymnt Rd	Campus Park Blvd	Sunset Blvd	44,900	70.0	36	77	166	357
(321) Fiddymnt Rd	Sunset Blvd	Settlers Ridge Dr	53,000	70.8	40	86	185	398
(324) Campus Park Dr	Fiddymnt Rd	Maple Park Dr	21,000	67.5	21	46	99	214
(325) Sunset Blvd	Fiddymnt Rd	Maple Park Dr	8,100	64.2	11	24	52	113
(326) Maple Park Dr	Campus Park Blvd	Sunset Blvd	7,900	64.1	11	24	52	111
(327) Campus Park Dr	Maple Creek Cir	C St	3800	61.0	7	15	32	68
(328) Sunset Blvd	Maple Creek Cir	C St	4500	61.7	8	16	35	76

Table 4.11-15 Distance from Roadway Centerline to Relevant Noise Contours

(ID) Road Name	From	To	ADT	L _{dn} /CNEL @ 100 Feet	Distance to Contour (L _{dn} /CNEL)			
					75 dBA (Park, Playground, Golf Course)	70 dBA (Restaurant w/ Outdoor Seating)	65 dBA (Hotel, Motel, Child/ Adult Day Care, Church)	60 dBA (Residential)
(329) C St	Campus Park Blvd	Sunset Blvd	1100	55.6	3	6	14	30
(330) Campus Park Dr	C St	B St	3800	61.0	7	15	32	68
(331) Sunset Blvd	C St	B St	2800	59.6	6	12	26	56
(332) Campus Park Dr	B St	A St	1000	55.2	3	6	13	28
(333) Sunset	B St	A St	2800	59.6	6	12	26	56

Notes: ADT= Average Daily Trips; L_{dn} = day-night noise level; CNEL= community equivalent noise level; dBA= A-weighted decibel

Source: Modeled by Ascent Environmental 2017

Significance after Mitigation

Implementation of SAP Program N-2 would ensure that site planning and building construction would be developed to achieve the necessary noise reduction, based on site-specific parameters. New sensitive land uses would be designed to meet interior noise standards thus minimizing noise exposure during the more sensitive times of the day.

However, regarding existing sensitive land uses, traffic noise would increase by more than 5 dB on many of the project-affected roadways in places where sensitive receptors currently exist, such as along Fiddymment Road from Angus Road north towards Sunset Boulevard. In addition, Placer County cannot ensure that measures specified by Mitigation Measure 4.11-5b would be implemented by the City of Roseville. Further, the addition of project-generated transportation noise would result in exceedance of the 60 dBA L_{dn}/CNEL standard for transportation noise on many roads including new noise sources associated with newly constructed or extended roads. Exterior noise levels at existing noise-sensitive residences could be remediated only by implementing such actions as relocating roadways, building sound walls, and relocating sensitive receptors, but in the case of the project, not all of these measures would be feasible. For example, constructing a concrete cinderblock noise barrier in some instances could block driveway access (i.e., residential driveways), but leaving gaps in the sound barrier for driveways reduces the effectiveness of noise barriers and would thus not reduce future traffic noise levels to below the established significance threshold. Also, property owners of existing residential uses affected by increased traffic noise may not agree to the installation of sound walls on their properties. In addition, the traffic noise reduction from the use of “quiet” pavement would diminish over time because of normal wear and tear from traffic and weather. Further, increases in traffic noise would be as high as 16 dB on East Catlett Road from South Dowd Road to Fiddymment Road and new noise sources would be as loud as 71.8 dBA L_{dn}/CNEL on Whitney Ranch Road from Industrial Avenue to SR 65, representing a substantial permanent increase in noise. This impact would be **significant and unavoidable**.

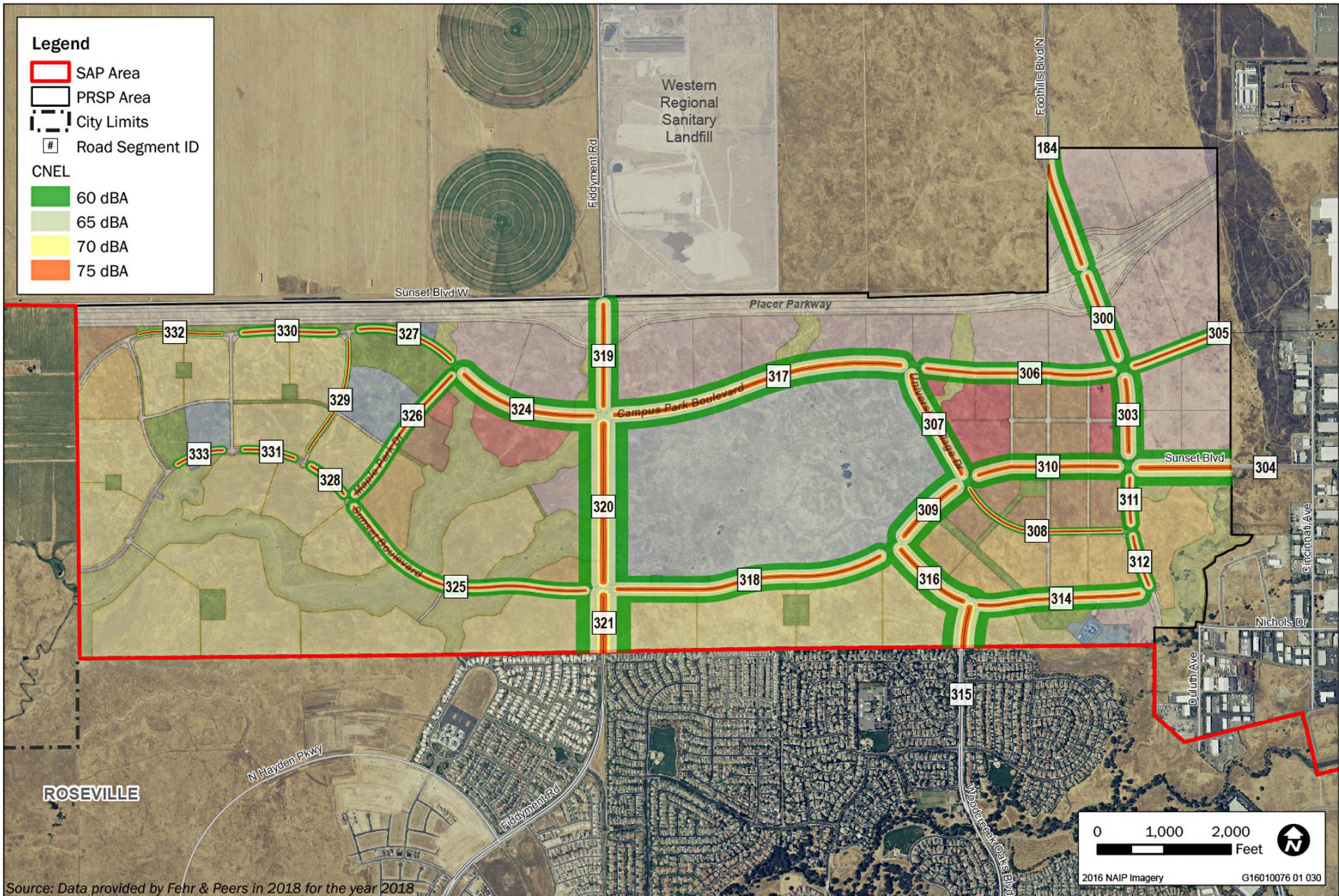


Exhibit 4.11-3

Placer Ranch Specific Plan Roadway Noise Contours



CUMULATIVE IMPACTS

Cumulative Impact 4.11-6: Cumulative short-term construction noise

Noise dissipates rapidly from its source. Cumulative impacts from construction-generated noise could result if construction activities of other planned projects were to take place in close enough proximity to project-generated construction such that noise effects would cumulatively combine. Several new large developments are planned in the region. See Table 4.0-2 for a list of reasonably foreseeable projects in the project area. The closest projects to the SAP include Amoruso Ranch, Creekview Specific Plan, West Roseville Specific Plan, Lincoln Village 5, SUD-B, Lincoln Village 7, Whitney Ranch, Lincoln 270, and Twelve Bridges Specific Plan. Other projects that could foreseeably be developed in the broader project area include Lincoln Village 1, Bickford Ranch Specific Plan, Sierra Vista Specific Plan, Placer Vineyards Specific Plan, among others (Table 4.0-2 includes the full list). Implementation of these projects would add urban development to more than 50,000 acres of primarily undeveloped land in the project area. These projects would also bring over 100,000 residential units and millions of square feet of commercial, office, and industrial floor area.

Development in the net SAP and PRSP areas would occur over the next 80 years and 20 years, respectively, and would result in various levels of construction throughout the SAP area. Implementation of SAP Program N-4 would provide substantial reductions in day and nighttime construction noise levels by ensuring proper equipment use; locating equipment away from sensitive land uses; and requiring the use of enclosures, shields, and noise curtains (noise curtains typically can reduce noise by up to 10 dB [EPA 1971]). However, project-generated noise may occur during nighttime hours when people are easily disturbed and would result in substantial increases in noise within the net SAP area for the next 80 years. Thus, even with incorporation of mitigation measures, construction activity may continue to expose people to substantial noise levels, resulting in a significant cumulative impact.

Given that additional large-scale development and specific plan-type projects are planned for the surrounding area, construction activities associated with these cumulative projects may also result in substantial temporary or periodic noise increases during daytime and nighttime, further contributing to the substantial increase in construction noise. Thus, combined construction of the project and other projects would add to the overall disruptive nature of construction noise over a period lasting many years, regardless of whether the noise is exempt from ordinances. The addition of cumulative projects to the impact would still add to the overall addition of construction noise. While the construction activities would follow various noise mitigation measures and ordinances, construction activities in the net SAP and PRSP areas over the next 80 years would result in a considerable contribution to a cumulatively significant impact. Because no additional mitigation is available to reduce this effect, the impact would be **significant and unavoidable**.

Cumulative Impact 4.11-7: Cumulative vibration

Cumulative impacts from construction-generated vibration could result if other future planned construction activities were to take place very close to other construction activities and cumulatively combine with construction vibration from the project. See the description of foreseeable projects in the discussion of Cumulative Impact 4.11-6, above.

Operational vibration sources include operations on the UPRR tracks. However, impacts would be isolated to new receptors constructed close to this existing source. No new long-term vibration sources would result from the project and this impact focuses on construction vibration.

Vibration associated with construction activities is of primary concern within proximity (e.g., 550 feet) of sensitive land uses. At increasing distances from the source, vibration levels dissipate rapidly and have less potential to cause disturbance to people or damage to structures. In addition, vibration generated from construction is typically associated with pile-driving activities that only occur during discrete phases of construction and for intermittent and brief periods at a time. For these reasons, even with additional large development projects and plans anticipated for future development, vibration impacts would remain local

and would not combine with vibration source from other construction activities even if construction activities at other future development were to occur simultaneously with project construction activities. Further, project-generated vibration levels would be reduced to the extent feasible by SAP Program N-5, which limits vibration activities to less sensitive times of the day and requires the use of quieter alternatives to impact pile driving. Therefore, because vibration levels generated by the cumulative projects would be limited to the vicinity of construction activities for those projects, and because vibration impacts of development proposed under the SAP and PRSP would be minimized to the extent feasible, cumulative construction-generated vibration impacts would be **less than significant**.

Cumulative Impact 4.11-8: Cumulative long-term operational noise (stationary and transportation)

Cumulative noise levels could be affected by additional buildout of surrounding land uses and increases in vehicular traffic on affected roadways. See the description of foreseeable projects in the discussion of Cumulative Impact 4.11-6, above.

Regarding stationary noise increases, the proposed project would result in land use development that typically includes stationary noise sources such as noise from HVAC units, electrical generators, parking lots, commercial loading docks, amplified sound associated with events or other entertainment-related uses, and new electrical substations and transmission lines. Although project-specific mitigation is in place that would reduce noise exposure to existing and future planned sensitive receptors, development of the net SAP and PRSP areas would result in long-term land use changes and associated noise level increases that would be substantial. However, although there would be an overall increase in noise levels associated with the project and other planned development, new stationary noise sources associated with the SAP, including the PRSP, would be too far away from other existing and future stationary noises in the region to combine in such a way that a significant impact would result.

In addition, traffic generated by future planned development in the region would result in additional traffic-related noise on surrounding roadways. In the future cumulative no project scenario, noise levels on existing roadways would range from 45 dBA CNEL to 80 dBA CNEL, exceeding Placer County residential land use-based noise standard of 60 dBA L_{dn} along many roadways. Thus, without the project there would be a future cumulative adverse cumulative noise condition. The project's contribution to cumulative traffic increases on existing roads would result in noise increases by as much as 14.4 dB (on South Dowd Road from William Lane to Moore Road) and, combined with traffic from other development in the area, could result in future traffic noise levels as high as 80.8 dBA L_{dn} /CNEL (on Interstate 80 from Atlantic Street to Taylor Road). Further, new roads would be constructed to support future development in the area, including development associated with the project. The addition of these roadways could result in noise levels of up to 71 dBA L_{dn} /CNEL (on Placer Parkway between Fiddymont Road and Foothills Boulevard) where currently no traffic noises exists. Thus, the project's contribution to cumulative traffic volumes in the area would result in additional substantial (i.e., 5 dB) increases in noise as well as additional noise sources within the SAP area. The project would result in a considerable contribution to a cumulatively significant impact. Because no additional mitigation is available to reduce this effect, the impact would be **significant**.

Mitigation Measures

Implement Mitigation Measures 4.11-5a and 4.11-5b.

Significance after Mitigation

Implementation SAP Program N-2 would ensure that site-specific planning would include all technologically feasible measures to reduce transit noise to the extent possible. Further, site planning and building construction would be developed to achieve the necessary noise reduction, based on site-specific parameters. New sensitive land uses would be designed to meet interior noise standards thus minimizing noise exposure during the more sensitive times of the day. However, specific building location and orientation of new receptors (and thus noise exposure levels) are not known at this time. Further, long-term increases in noise would be as high as 14 dB, representing a substantial permanent increase in noise on affected roadways and the surrounding areas. After implementation of mitigation measures the project would still result in a considerable contribution to a cumulatively significant impact. This impact would be **significant and unavoidable**.