

3.8 NOISE

This section includes a summary of applicable regulations related to noise and vibration, a description of ambient-noise conditions, and an analysis of potential short-term construction and long-term operational-source noise impacts associated with the project. Mitigation measures are recommended as necessary to reduce significant noise impacts. Additional data is provided in Appendix E, Noise Measurement Data and Noise Modeling Calculations.

The Truckee-Tahoe Airport is the closest airport to the Project, located over 8 miles north of the proposed Project and Alternative A sites. The project boundary is not located in the Plan Area of the Truckee-Tahoe Airport Land Use Compatibility Plan (Foothill Airport Land Use Commission 2004), the land use plan of any other airport, or within the vicinity of an active private airstrip where people would be exposed to excessive aircraft-generated noise levels.

The proposed Project and Alternative A would not affect the type or number of aircraft operations at the Truckee-Tahoe Airport. Similarly, no changes to levels of activity by recreational watercraft, motorcycles, off-road vehicles, and over-snow vehicles are anticipated with implementation of the proposed Project or the Alternative A because they are not expected to result in additional recreational boating facilities, trails, or recreation areas for these types of vehicles. Furthermore, the types of recreational watercraft, motorcycles, off-road vehicles, and over-snow vehicles, as well as on-road vehicles, would not change. Thus, single-event noise thresholds associated with these sources would not change as a result of the project and are not evaluated.

The project would not result in new residential or tourist accommodation uses, and therefore, compatibility with existing noise levels on new receptors is not evaluated further. In addition, no operational vibration sources (e.g., railroads, transit stations) are proposed so operational vibration impacts are not discussed further.

Changing the pattern of ownership of parcels as part of the larger land exchange being contemplated by TCPUD and the Conservancy by itself would have no noise impacts. The potential environmental effects from construction and operation of the proposed Project on a portion of APN 093-160-064, currently owned by the Conservancy, are assessed in this section and other resource sections in Chapter 3, "Environmental Setting, Environmental Impacts, and Mitigation Measures," and in Chapter 5, "Other CEQA-Mandated Sections," of this EIR. The purpose of the land exchange is to consolidate ownership and increase land management efficiencies for the agencies and no other physical changes are proposed for the affected parcels.

Before discussing the noise setting for the project, background information on sound, noise, vibration, and common noise descriptors is needed to provide context and a better understanding of the technical terms and regulations referenced throughout this section. The following are the noise descriptors used throughout this section.

- ▶ **Equivalent Continuous Sound Level (L_{eq}):** L_{eq} represents an average of the sound energy occurring over a specified period. In effect, L_{eq} is the steady-state sound level containing the same acoustical energy as the time-varying sound level that occurs during the same period (Caltrans 2013a:2-48).
- ▶ **Percentile-Exceeded Sound Level (L_x):** L_x 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) (Caltrans 2013a:2-16).
- ▶ **Maximum Sound Level (L_{max}):** L_{max} is the highest instantaneous sound level measured during a specified period (Caltrans 2013a:2-48; FTA 2006:2-16).
- ▶ **Day-Night Level (L_{dn}):** L_{dn} is the energy average of A-weighted sound levels occurring over a 24-hour period, with a 10-dB "penalty" applied to sound levels occurring during nighttime hours between 10 p.m. and 7 a.m. (Caltrans 2013a:2-48; FTA 2006:2-22).
- ▶ **Community Noise Equivalent Level (CNEL):** 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 during the nighttime hours between 10 p.m. and 7 a.m. and a 5-dB penalty applied to the sound levels occurring during evening hours between 7 p.m. and 10 p.m. (Caltrans 2013a:2-48). Many agencies and local jurisdictions in California often have established noise standards using the CNEL metric. The CNEL metric is not used by federal agencies and not commonly used in standards established by local communities outside of California.

3.8.1 Acoustic Fundamentals

Before discussing the noise setting for the project, background information about sound, noise, vibration, and common noise descriptors is needed to provide context and a better understanding of the technical terms referenced throughout this section.

SOUND, NOISE, AND ACOUSTICS

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium to the human ear. In the science of acoustics, the fundamental model consists of a sound (or noise) source, a receiver, and the propagation path between the two. The loudness of the noise source and obstructions or atmospheric factors affecting the propagation path to the receiver determines the sound level and characteristics of the noise perceived by the receiver. The field of acoustics deals primarily with the propagation and control of sound.

SOUND PRESSURE LEVELS AND DECIBELS

The amplitude of pressure waves generated by a sound source determines the loudness of that source. Sound pressure amplitude is measured in micro-pascals (mPa). One mPa is approximately one hundred billionth (0.0000000001) of normal atmospheric pressure. Sound pressure amplitudes for different kinds of noise environments can range from less than 100 to 100,000,000 mPa. Because of this huge range of values, sound is rarely expressed in terms of mPa. Instead, a logarithmic scale is used to describe sound pressure level (SPL) in terms of decibels.

Because decibels are logarithmic units, SPL cannot be added or subtracted through ordinary arithmetic. Under the decibel scale, a doubling of sound energy corresponds to a 3-dB increase. That is, when two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dB higher than if only one of the sound sources was producing sound under the same conditions. For example, if one automobile generates 70 dB when it passes an observer, two cars passing simultaneously would not produce 140 dB; rather, they would combine to produce 73 dB.

A-WEIGHTED DECIBELS

The decibel scale alone does not adequately characterize how humans perceive noise. The dominant frequencies of a sound have a substantial effect on the human response to that sound. Although the intensity of the sound is a purely physical quantity, the loudness or human response is determined by the characteristics of the human ear.

Human hearing is limited in the range of audible frequencies as well as in the way it perceives the SPL in that range. In general, people are most sensitive to the frequency range of 1,000–8,000 hertz (Hz) and perceive sounds within that range better than sounds of the same amplitude in higher or lower frequencies. To approximate the response of the human ear, sound levels of individual frequency bands are weighted, depending on the human sensitivity to those frequencies. Then, an “A-weighted” sound level (expressed in units of dBA) can be computed based on this information.

The A-weighting network approximates the frequency response of the average young ear when listening to most ordinary sounds. When people make judgments of the relative loudness or annoyance of a sound, their judgment correlates well with the A-scale sound levels of those sounds. Thus, noise levels are typically reported in terms of A-weighted decibels, or dBA. Table 3.8-1 describes typical A-weighted noise levels for various noise sources.

Table 3.8-1 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 —	Theater, large conference room (background)
Quiet suburban nighttime	— 30 —	Library, Bedroom at night
Quiet rural nighttime	— 20 —	
	— 10 —	Broadcast/recording studio
Lowest threshold of human hearing	— 0 —	Lowest threshold of human hearing

Source: Caltrans 2013a:Table 2-5

HUMAN RESPONSE TO CHANGES IN NOISE LEVELS

As discussed above, the doubling of sound energy results in a 3-dB increase in sound. However, given a sound level change measured with precise instrumentation, the subjective human perception of a doubling of loudness will usually be different from what is measured. Under controlled conditions in an acoustical laboratory, the trained, healthy human ear is able to discern 1-dB changes in sound levels when exposed to steady, single-frequency (“pure-tone”) signals in the mid-frequency (1,000–8,000 Hz) range. 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).

In typical noisy environments, changes in noise of 1–2 dB are generally not perceptible. However, it is widely accepted that people are able to begin to detect sound level increases of 3 dB in typical noisy environments. Further, a 5-dB increase is generally perceived as a distinctly noticeable increase, and a 10-dB increase is generally perceived as a doubling of loudness. Therefore, a doubling of sound energy (e.g., doubling the volume of traffic on a highway) that would result in a 3-dB increase in sound would generally be perceived as barely detectable.

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 (e.g., 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 and RMS vibration velocity are normally described in inches per second (in/sec) or in millimeters per second. 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 [Federal Transit Agency (FTA) 2006:7-5, Caltrans 2013a:6].

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 2006:7-4; Caltrans 2013b:7). This is based on a reference value of 1 micro inch per second.

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 2006:7-8; Caltrans 2013b:27).

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 to 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 2006:7-5).

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

Table 3.8-2 summarizes the general human response to different ground vibration-velocity levels.

Table 3.8-2 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 μ inch/second and based on the root mean square (RMS) velocity amplitude.

Source: FTA 2006:7-8

3.8.2 Regulatory Setting

FEDERAL

Federal Transit Administration

To address the human response to ground vibration, the Federal Transit Administration (FTA) has established the Ground-Borne Vibration (GBV) Impact Criteria for General Assessment that is used for evaluating human response to ground-borne vibration, based on land use type and frequency of events. These guidelines are presented in Table 3.8-3.

Table 3.8-3 Ground-Borne Vibration (GBV) Impact Criteria for General Assessment

Land Use Category	GBV Impact Levels (VdB re 1 micro-inch/second)		
	Frequent Events ¹	Occasional Events ²	Infrequent Events ³
<i>Category 1:</i> Buildings where vibration would interfere with interior operations.	65 ⁴	65 ⁴	65 ⁴
<i>Category 2:</i> Residences and buildings where people normally sleep.	72	75	80
<i>Category 3:</i> Institutional land uses with primarily daytime uses.	75	78	83

Notes: VdB = vibration decibels referenced to 1 μ inch/second and based on the root mean square (RMS) velocity amplitude.

¹ "Frequent Events" is defined as more than 70 vibration events of the same source per day.

² "Occasional Events" is defined as between 30 and 70 vibration events of the same source per day.

³ "Infrequent Events" is defined as fewer than 30 vibration events of the same source per day.

⁴ This criterion is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration-sensitive manufacturing or research would require detailed evaluation to define acceptable vibration levels.

Source: FTA 2006

TAHOE REGIONAL PLANNING AGENCY

Thresholds

TRPA has established environmental thresholds for nine resources, including noise. There are two noise threshold indicators: single noise events and cumulative noise events. The Tahoe Basin's status in 2015 was Somewhat Worse Than Target for single noise events and for cumulative noise. However TRPA's 2015 *Threshold Evaluation Report* (TRPA 2016) indicates that for the indicators, there is either little or no change, as compared to the previous Threshold Evaluation, or insufficient evidence to determine a trend. Individual thresholds are discussed separately below.

Single Noise Events

A noise event can be defined as an unexpected increase in acoustic energy. Single Noise Event Threshold Standards adopted by TRPA are based on the numerical value associated with the maximum measured level in acoustical energy during an event. This threshold establishes maximum noise levels for aircraft, watercraft, motor vehicles, motorcycles, off-road vehicles, and snowmobiles. As discussed above, these thresholds would not apply to the project and are therefore not discussed in further detail.

Cumulative Noise Events

TRPA adopted CNEL standards for different zones within the region to account for expected levels of serenity. The standards, established in the Goals and Policies, apply to the entire Lake Tahoe region. Noise standard included in the relevant plan area are discussed below under the Placer County Tahoe Basin Area Plan (Area Plan) discussion.

The noise limitations established in Chapter 68 of the TRPA Code, including the noise standards of individual plan area statements, community plans, and area plans, do not apply to noise from TRPA-approved construction or maintenance projects, or the demolition of structures, provided that such activities are limited to the hours between 8:00 a.m. and 6:30 p.m. Further, the noise limitations of Chapter 68 shall not apply to emergency work to protect life or property.

Transportation Corridor Noise Standards

TRPA has also adopted maximum allowable CNEL noise standards for major transportation corridors in the basin. The established thresholds for U.S. 50 are 65 dBA CNEL and 55 dBA CNEL for State Routes [SR] 89, 207, 28, 267, and 431.

Goals and Policies

The Regional Plan Noise Subelement of the Goals and Policies includes a goal to attain and maintain CNEL standards that is relevant to the project (Goal N-2) (TRPA 2012:2-26 through 2-28). The underlying policy intended to help achieve that goal includes: establishing specific site design criteria for projects to reduce noise from transportation corridors and which may include using earthen berms, and barriers (Policy N-2.1). The transportation corridor CNEL values override land use-based CNELs within 300 feet of the applicable roadway (TRPA 2012:2-26).

Code of Ordinances

Chapter 68, Noise Limitations, of the TRPA Code is intended to implement the Noise Subelement of the Goals and Policies document and to attain and maintain the TRPA Environmental Threshold Carrying Capacities (shown below).

TRPA Code Section 68.4, "Community Noise Levels," states that TRPA shall use CNELs to measure community noise levels and that Area Plans, PASSES, and community plans, as appropriate, shall set forth CNELs that shall not be exceeded by any one activity or combination of activities. The CNELs set forth in the planning documents are based on the land use classification, the presence of transportation corridors, and the applicable threshold standard.

Placer County Tahoe Basin Area Plan

The Area Plan established maximum allowable community noise equivalent levels of 55 dBA CNEL for the North Tahoe High School Subdistrict, the area where the proposed Project and Alternative A are located.

STATE

California General Plan Guidelines

The State of California General Plan Guidelines 2017, published by the California Governor's Office of Planning and Research (OPR) (2017), provides 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. Citing EPA materials and the State Sound Transmissions Control Standards, the State's general plan guidelines recommend interior and exterior CNEL of 45 and 60 decibels (dB) for residential units, respectively (OPR 2017:378).

California Department of Transportation

In 2013, Caltrans published the Transportation and Construction Vibration Manual (Caltrans 2013b). The manual provides general guidance on vibration issues associated with construction and operation of projects in relation to human perception and structural damage. Table 3.8-4 presents recommendations for levels of vibration that could result in damage to structures exposed to continuous vibration.

Table 3.8-4 Caltrans Recommendations Regarding Levels of Vibration Exposure

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

Notes: PPV = Peak Particle Velocity; in/sec = inches per second

Source: Caltrans 2013b

LOCAL

Policies and ordinances of local agencies applicable to the project are described in this section.

Placer County

The Placer County General Plan Noise Element contains noise policies and standards (e.g., exterior and interior noise-level performance standards for new projects affected by or including non-transportation noise sources, and maximum allowable noise exposure levels for transportation noise sources) (Placer County 2013). The Placer County Noise Ordinance (Placer County Code Article 9.36) contains noise limits for sensitive receptors (Placer County 2004). The applicable policies and standards contained in the General Plan and Ordinance are summarized below. Placer County land use noise standards are shown in Table 3.8-5.

Placer County General Plan

Policies from the Placer County General Plan that are relevant to the project are described 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 [as shown below in Table 3.8-6] 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 performance standards [as shown in Table 3.8-5] 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.

The maximum allowable noise exposure limits for transportation noise sources in Placer County are summarized in Table 3.8-5.

Placer County Noise Ordinance

Article 9.36, Noise, of the Placer County Code defines sound level performance standards for sensitive receptors. Relevant standards are listed below.

Article 9.36 Noise

Noise level standards for sensitive receptors from Placer County Code Article 9.36 are shown in Table 3.8-7 below. 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 dB or exceed the sound level standards (as set forth in Table 3.8-7), whichever is greater.

Table 3.8-5 Placer County Allowable L_{dn} Noise Levels Within Specified Zone Districts¹ Applicable to New Projects Affected by or Including Non-Transportation Noise Sources

Zone District of Receptor	L_{dn} (dB) at Property Line of Receiving Use	Interior Spaces (dB) 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

Table 3.8-5 Placer County Allowable L_{dn} Noise Levels Within Specified Zone Districts¹ Applicable to New Projects Affected by or Including Non-Transportation Noise Sources

Zone District of Receptor	L _{dn} (dB) at Property Line of Receiving Use	Interior Spaces (dB) ²
Unclassified	-	-
Farm/Agriculture Exclusive ⁶	-	-
Recreation and Forestry	70	-

Notes: L_{dn}= Day-Night Noise Level; dB= decibels

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 dB.

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. Increase emissions above those normally allowable should be limited to a one-time 5 dB 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 offsite 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 dB will be considered acceptable outdoor exposure at a residence.

Source: Placer County 2013

Table 3.8-6 Placer County Maximum Allowable Noise Exposure for Transportation Noise Sources

Land Use	Outdoor Activity Areas ¹	Interior Spaces	
	L _{dri} /CNEL	L _{dri} /CNEL	L _{eq} dB 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

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_{dri}/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB L_{dri}/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 General Plan 2013

Table 3.8-7 Placer County Noise Ordinance Noise Level Standards for Sensitive Receptors^{1,2}

Sound Level Descriptor (dB)	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

Notes: dB = decibel

¹ Each of the sound level standards specified in this table shall be reduced by five dB 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 five dB.

² If the intruding sound source is continuous and cannot reasonably be discontinued or stopped for a time period whereby the ambient sound level can be measured, the sound level measured while the source is in operation shall be compared directly to the sound level standards in this table.

Source: Placer County 2004

Each of the sound level standards specified in Table 13-7 shall be reduced by 5 dB 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 dB.

Section 9.36.030 Exemptions

According to Section 9.36.030, "Exemptions," some noise-generating activities are exempt from the above noise ordinance standards. These are listed below.

- ▶ 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.

- ▶ 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.

17.02.050 Interpretation

According to Section 17.02.050, "Interpretation," when conflicts occur between county standards and standards adopted by ordinance in any applicable community plans, including those areas within the jurisdiction of TRPA, the provisions of the community plans shall apply.

3.8.3 Environmental Setting

EXISTING NOISE ENVIRONMENT

Existing Noise- and Vibration-Sensitive Land Uses

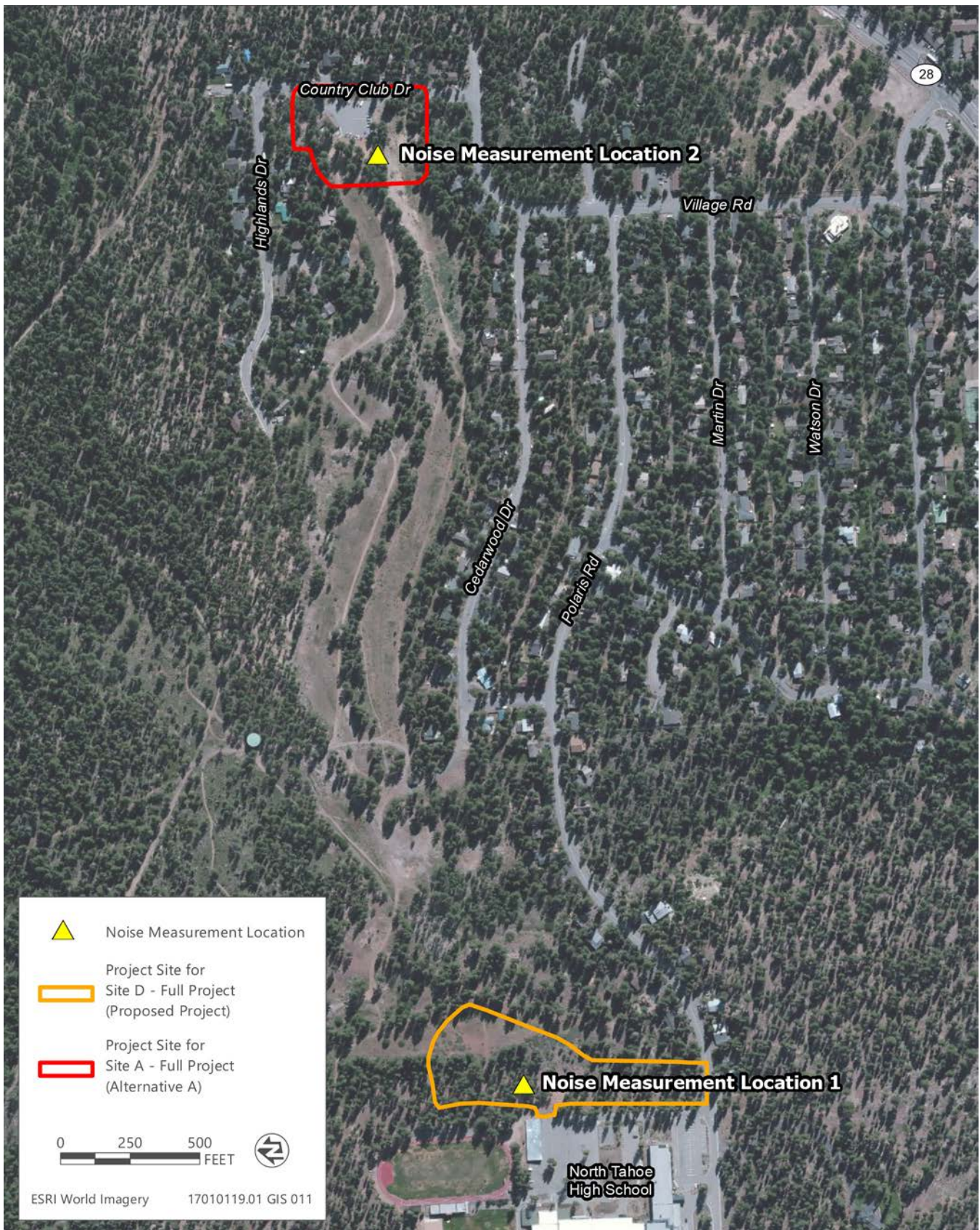
Noise-sensitive land uses are generally considered to include those uses where noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels, and because of the potential for nighttime noise to result in sleep disruption. Additional land uses such as schools, transient lodging, historic sites, cemeteries, and places of worship are also generally considered sensitive to increases in noise levels. These land use types are also considered vibration-sensitive land uses in addition to commercial and industrial buildings where vibration would interfere with operations within the building, including levels that may be well below those associated with human annoyance.

Existing noise sensitive receptors nearest to the proposed Project site include a residence located 370 feet south of the Schilling Lodge and parking lot, along Polaris Road, the North Tahoe High School located approximately 335 feet to the west, and the North Middle School located approximately 480 feet to the west. The access driveway to the proposed Project site is an estimated 200 feet from the closest residence. The nearest sensitive receptors to the Alternative A site include residences located approximately 120 feet north of this site and 120 feet east of this site, across Country Club Drive.

Existing Noise Sources and Ambient Levels

To characterize the existing ambient noise environment at the project site, long-term, multiple-day, ambient noise level measurements were conducted at the proposed Project site and the Alternative A site locations in the project area between August 23, 2018 and August 31, 2018. The locations of the noise monitoring sites are shown in Figure 3.8-1. A Larson Davis Laboratories LXT precision integrating sound level meter was used for the ambient noise level measurement surveys. The meter was calibrated before use with Larson Davis Laboratories Model CAL200 acoustical calibrator to ensure measurement accuracy. The measurement equipment meets all pertinent specifications of the American National Standards Institute. The results of the ambient noise measurement survey are summarized in Table 3.8-8.

The predominant noise source in the project area is vehicle traffic on the surrounding roadway network (e.g., State Route [SR] 28, Polaris Road, Village Drive, and Old Mill Road). Existing traffic noise levels on roadway segments in the project area were modeled using calculation methods consistent with FHWA Traffic Noise Model, Version 2.5 (FHWA 2004) and using average daily traffic (ADT) volumes provided in the traffic analysis conducted by LSC Transportation Consultants, Inc (see Appendix C). Table 3.8-9 summarizes the modeled existing traffic noise levels at 100 feet from the centerline of each area roadway segments, and lists distances from each roadway centerline to the 65, 60, and 55 CNEL traffic noise contours. For further details on traffic-noise modeling inputs and parameters, refer to Appendix E.



Source: Adapted by Ascent Environmental in 2019

Figure 3.8-1 Noise Measurement Locations

Table 3.8-8 Summary of Existing Ambient Noise Measurements

Location ¹	Date and Time	A-Weighted Sound Level (dB)		
		CNEL	L _{eq} Range	Average L _{eq}
1 (Proposed Project Site)	Started on August 23, 2018 at 12:49 p.m. and ended on August 28, 2018 at 6:58 a.m.	Day 1: 42.1 Day 2: 44.6 Day 3: 42.0 Day 4: 43.1	22.0 to 36.4	36.4
2 (Alternative A Site)	Started on August 28, 2018 at 1:34 p.m. and ended on August 31, 2018 at 9:35 a.m.	Day 1: 42.5 Day 2: 41.5	23.0 to 46.0	36.5

¹ Refer to Figure 3.8-1 for ambient noise level measurement locations

Source: Data collected by Ascent Environmental in 2018

Table 3.8-9 Summary of Modeled Existing Traffic Noise Levels

Roadway Segment/Segment Description	CNEL at 100 feet from Roadway Centerline	Distance (feet) from Roadway Centerline to CNEL Contour		
		65	60	55
Winter Weekday				
Village Road, between Polaris Road and Country Club Drive	45.1	5	10	22
Old Mill Road, North of SR 28	44.4	4	9	20
Polaris Road from Village Drive to Old Mill Road	46.7	6	13	28
Polaris Road, East of North Tahoe High School	49.5	9	20	43
Winter Weekend/Holiday				
Village Road, between Polaris Road and Country Club Drive	47.2	7	14	30
Old Mill Road, North of SR 28	37.7	2	3	7
Polaris Road from Village Drive to Old Mill Road	38.0	2	3	7
Polaris Road, East of North Tahoe High School	40.7	2	5	11
Summer Daily				
Village Road, between Polaris Road and Country Club Drive	44.3	4	9	19
Old Mill Road, North of SR 28	45.7	5	11	24
Polaris Road from Village Drive to Old Mill Road	41.1	3	5	12
Polaris Road, East of North Tahoe High School	40.7	2	5	11
State Route 28 (east/west of site)	59.7	44	96	206

Notes: CNEL = Community Noise Equivalent Level

All modeling assumes average pavement, level roadways (less than 1.5% grade), constant traffic flow, and does not account for shielding of any type or finite roadway adjustments. All noise levels are reported as A-weighted noise levels. For additional details, refer to Appendix E for detailed traffic data, and traffic-noise modeling input data and output results.

Source: Data modeled by Ascent Environmental in 2019

3.8.4 Environmental Impacts and Mitigation Measures

METHODS AND ASSUMPTIONS

Construction Noise and Vibration

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 FTA's *Guide on Transit Noise and Vibration Impact Assessment* methodology (FTA 2006) and FHWA's *Roadway Construction Noise Model User's Guide* (FHWA 2006). Reference levels for noise and vibration emissions for specific equipment or activity types are well documented and the usage thereof common practice in the field of acoustics.

Operational Noise

With respect to non-transportation noise sources (e.g., stationary) associated with project implementation, the assessment of long-term (operational-related) impacts was based on reconnaissance data, reference noise emission levels, and measured noise levels for activities associated with project operation (e.g., outdoor events, amplified sound), and standard attenuation rates and modeling techniques.

To assess potential long-term (operation-related) noise impacts resulting from project-generated increases in traffic, noise levels were estimated using calculations consistent with the Federal Highway Administration's Traffic Noise Model Version 2.5 (FHWA 2004) and project-specific traffic data (Appendix C). The analysis is based on the reference noise emission levels for automobiles, medium trucks, and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and ground attenuation factors. Note that the modeling conducted does not account for any natural or human-made shielding (e.g., the presence of walls or buildings) or reflection off building surfaces.

SIGNIFICANCE CRITERIA

CEQA Criteria

In accordance with Appendix G of the State CEQA Guidelines, the Project would result in a significant impact if it would:

- ▶ generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or in other applicable local, state, or federal standards; or
- ▶ generate excessive groundborne vibration or groundborne noise levels.

TRPA Criteria

Based on the TRPA Initial Environmental Checklist, impacts from the Project would be significant if it would:

- ▶ result in an increase in existing CNEL beyond those permitted in the applicable Plan Area Statement, Community Plan, or Master Plan;
- ▶ result in the exposure of people to severe noise levels;
- ▶ result in the placement of uses that would generate an incompatible noise level in close proximity to existing residential or tourist accommodation uses; or
- ▶ result in exposure of existing structures to levels of ground vibration that could result in structural damage.

Considering the CEQA and TRPA Checklist described above, both established for the purpose of identifying potential noise impacts, the following significance criteria will be used to evaluate noise impacts from the project. Therefore, a noise impact is considered significant if implementation of the project would result in any of the following:

- ▶ **Construction noise:** a substantial temporary increase in ambient noise levels in the project vicinity above levels existing without the project (i.e., construction noise levels that impact noise-sensitive receptors during non-daylight hours, for which construction noise is not exempt from TRPA's noise standards);
- ▶ **Construction vibration:** vibration levels exceeding Caltrans's recommended standards, shown in Table 3.8-4, with respect to the prevention of structural building damage (0.2 in/sec PPV for normal) or FTA's GBV Impact Criteria for General Assessment (Table 3.8-3) for evaluating human response (80 VdB for residential uses) at nearby existing vibration-sensitive land uses;
- ▶ **Operational stationary noise:** increase existing noise levels beyond those permitted in the Area Plan of 55 dBA CNEL; or
- ▶ **Operational traffic noise:** a substantial permanent increase in ambient noise levels in the project vicinity of the project in excess of TRPA roadway corridor standards of 55 dBA CNEL for SR 28 or Area Plan standard of 55 dBA CNEL. For roadways that currently exceed applicable standards, project-generated increases in noise would be considered substantial if they exceed 3 dB.

ENVIRONMENTAL EFFECTS OF THE PROJECT

Impact 3.8-1: Construction Noise

The proposed Project and Alternative A would result temporary construction-related noise. However, the project would comply with TRPA-required conditions of approval, limiting construction activities from 8:00 a.m. and 6:30 p.m., daily. Therefore, existing nearby sensitive receptors would not be substantially affected by construction noise and the proposed Project and Alternative A would have a **less-than-significant** impact related to temporary increases in noise.

Proposed Project

Construction activities for the proposed Project would result in short-term noise during grading and site preparation, paving activities, and building construction, all of which require the use of heavy-duty equipment that generate varying noise levels. Construction-generated noise levels would fluctuate depending on the type, number, and duration of equipment used. The effects of construction noise largely depend on the type of construction activities occurring on any given day, noise levels generated by those activities, distances to noise-sensitive receptors, and the existing ambient noise environment at nearby receptors. Construction equipment would vary by phase, but the entire construction process would include operation of dozers, excavators, loaders/backhoes, paving equipment, forklifts, and haul trucks. Noise generated from these pieces of equipment would be intermittent and short as typical use is characterized by periods of full-power operation followed by extended periods of operation at lower power, idling, or powered-off conditions.

The grading and site preparation phase typically generates the most substantial noise levels because the onsite equipment associated with grading, compacting, and excavation are the noisiest. Site preparation equipment and activities include graders, dozers, and excavators. Because this is typically the loudest phase, it was assumed that one grader, one dozer, and one excavator could be operating simultaneously, generating the loudest anticipated noise levels for the overall construction activities. Noise emission levels from these types of construction equipment are shown in Table 3.8-10.

Table 3.8-10 Noise Levels Generated by Typical Construction Equipment

Equipment Type	Maximum Noise Level (dB L_{max}) at 50 feet ¹	Hourly Noise Level (dB L_{eq}) at 50 feet ^{1,2}
Grader	85	81
Dozer	85	81
Loader	80	76
Combined Noise Level at 50 feet	88.6	84.7

Notes: dB = decibels; L_{max} = maximum sound level; L_{eq} = equivalent continuous sound level

¹ Assumes all equipment is fitted with a properly maintained and operational noise control device, per manufacturer specifications. Noise levels listed are manufacturer-specified noise levels for each piece of heavy construction equipment.

² Assumes typical usage factors.

Source: Federal Transit Administration 2006; data modeled by Ascent Environmental 2019

Based on the reference noise levels listed in Table 3.8-10 and accounting for typical usage factors for each piece of equipment, onsite construction activities could generate a combined average noise level of approximately 85 dB L_{eq} and 89 dB L_{max} at 50 feet from the Schilling Lodge and parking areas.

The daytime noise exposure level was estimated for the closest noise-sensitive receptor that could be adversely affected by construction noise. The attenuated noise levels at existing noise sensitive receptors (i.e., North Tahoe High School located 335 feet from the proposed Project site and a residence located 370 feet south of the Schilling Lodge and parking lot, along Polaris Road), would be approximately 63 dBA L_{eq} /67 dBA L_{max} and 62 dBA L_{eq} /66 dBA L_{max} , respectively. Construction noise at the residence closest to construction of the proposed Project site driveway (about 200 feet) would be approximately 69 L_{eq} /73 dBA L_{max} . These estimates are conservative because the modeling assumes that the noise-generating equipment would operate simultaneously in proximity to each other, combining to affect the same receptor location. Detailed inputs and parameters for the estimated construction noise attenuation calculations are provided in Appendix E.

Note that the aforementioned estimated noise levels at the North Tahoe Middle School and North Tahoe High School would exceed Placer County daily L_{eq} noise standards of 55 dBA, but not their L_{max} standards of 70 dBA. Construction noise at the closest residence could exceed the Placer County L_{max} standard briefly during construction of the access driveway. Nonetheless, and as discussed in Section 2.5.3, "Construction Schedule and Activities" under Chapter 2, "Description of the Proposed Project and Alternative Evaluated in Detail," construction activities would be limited to the less noise-sensitive hours (e.g., daytime) of 8:00 a.m. to 6:30 p.m., daily, consistent with TRPA standard conditions of approval. In addition, these time limits would be within the daytime hours identified by Placer County, and therefore would not conflict with applicable local standards.

When evaluating potential noise impacts, temporary short-term noise occurring during the less sensitive times of the day, when people are active, out of their homes, or otherwise not sleeping, are generally considered less of a nuisance and less likely to disrupt sleep, or otherwise result in significant noise exposure. Thus, considering that construction activities would occur during the daytime hours, in accordance with typical TRPA-required conditions of approval limiting construction activities from 8:00 a.m. and 6:30 p.m., overall construction activities would be temporary, construction noise would fluctuate, and the loudest levels would occur for a shorter duration than the overall construction duration, and therefore, existing nearby sensitive receptors would not be substantially affected by construction noise. The proposed Project would not result in a substantial temporary increase in noise that exceeds a local (i.e., TRPA, Placer County) noise standard and this impact would be **less than significant**.

Alternative A

The Alternative A would include construction of a new lodge and parking lot similar to that described for the proposed Project, with the addition of some demolition activities associated with removal of the existing Highlands Community Center. Nonetheless, the equipment types and anticipated loudest construction activity would be the

same as described above for the proposed Project. Therefore, reference noise levels for construction activities shown above in Table 3.8-10 are used for this analysis as well.

Based on the reference noise levels listed in Table 3.8-10 and accounting for typical usage factors for each piece of equipment, onsite construction activities for the Alternative A could generate a combined average noise level of approximately 85 dB L_{eq} and 89 dB L_{max} at 50 feet from the Schilling Lodge and parking areas. The nearest sensitive receptors to the Alternative A site include residences located approximately 120 feet north of the site and 120 feet east of the site, across Country Club Drive. The daytime noise exposure level was estimated for these receptor locations (i.e., a residence located 120 feet from the site), and the attenuated noise would be approximately 75 dBA L_{eq} and 79 dBA L_{max} . These estimates are conservative because the modeling assumes that the noise-generating equipment would operate simultaneously in proximity to each other, combining to affect the same receptor location. Detailed inputs and parameters for the estimated construction noise attenuation calculations are provided in Appendix E.

Similar to the discussion above for the proposed Project, construction activity for Alternative A would be limited from 8:00 a.m. and 6:30 p.m. daily, overall construction activities would be temporary, construction noise would fluctuate, and the loudest levels would occur for a shorter duration than the overall construction duration, and therefore, existing nearby sensitive receptors would not be substantially affected by construction noise.

Alternative A would not result in a substantial temporary increase in noise that exceeds a local (i.e., TRPA, Placer County) noise standard and this impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

Impact 3.8-2: Construction Vibration

The proposed Project and Alternative A would result in temporary construction-related vibration. However, sensitive receptors and structures are located beyond distances that could result in disturbance or structural damage. Further, construction activities would be limited to the less sensitive times of the day. Therefore, existing nearby sensitive receptors would not be substantially affected by construction vibration and the proposed Project and Alternative A would have a **less-than-significant** impact from temporary increases in vibration.

Proposed Project

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.

Proposed project construction would include various types of equipment including, excavators, dozers, cranes, loaders, trucks, and others. Primary sources of vibration during construction activities is generally associated with pile driving and blasting, none of which are proposed for this project. Therefore, this analysis focusses on other large equipment such as dozers.

According to FTA, vibration levels associated with typical dozers are 0.089 in/sec PPV and 87 VdB at 25 feet. Based on FTA's recommended procedure for applying a propagation adjustment to these reference levels, vibration levels from grading equipment could exceed Caltrans recommended level of 0.2 in/sec PPV with respect to the structural damage within 15 feet of construction activities and could exceed FTA's maximum acceptable level of 80 VdB with respect to human response within 45 feet of construction activities. The closest existing residences and schools are located between 200 and 480 feet from proposed construction activity, and therefore, would not be exposed to vibration levels that could cause structural damage or disturb people. Further, as discussed above in Impact 3.8-1, construction activity would take place during the less sensitive daytime hours. This impact would be **less than significant**.

Alternative A

The Alternative A would include construction of a new lodge and parking lot similar to that described for the proposed Project, with the addition of some demolition activities associated with removal of the existing Highlands Community Center. Nonetheless, the equipment types and anticipated greatest source of vibration would be the same as described above for the proposed Project.

According to FTA, vibration levels associated with typical dozers are 0.089 in/sec PPV and 87 VdB at 25 feet. Based on FTA's recommended procedure for applying a propagation adjustment to these reference levels, vibration levels from grading equipment could exceed Caltrans recommended level of 0.2 in/sec PPV with respect to the structural damage within 15 feet of construction activities and could exceed FTA's maximum acceptable level of 80 VdB with respect to human response within 45 feet of construction activities. Existing residences are located approximately 120 feet from proposed construction activity at the Alternative A site, and therefore, would not be exposed to vibration levels that could cause structural damage or disturb people. Further, as discussed above in Impact 3.8-1, construction activity would take place during the less sensitive daytime hours. This impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

Impact 3.8-3: Operational Event Noise

The proposed Project and Alternative A would be similar to what occurs in the project vicinity now. long-term increases in noise associated with outdoor recreational and sporting events at the Schilling Lodge. The increases in noise would not exceed applicable Area Plan noise standards (i.e., 55 dBA CNEL). Use of amplified sound would be required to comply with TCPUD rules and regulations and Placer County noise ordinance for operating hours; however, the use of amplified sound at the Schilling Lodge could result in exposure of sensitive receptors to noise levels that exceed the Placer County daytime (7:00 a.m. to 10:00 p.m.) noise standard of 50 dBA L_{eq} for amplified sound sources. This impact would be **significant** for the proposed Project and Alternative A.

Proposed Project

The Schilling Lodge would provide internal and external space for a variety of uses and events. Regarding long-term increases in operational noise, the primary (i.e., loudest) noise sources would be associated with community, private, and special events occurring at the Schilling Lodge. Events that could occur at the Schilling Lodge would be similar in nature to events that currently occur at the existing Highlands Community Center, located at the Alternative A site. The Schilling Lodge location would be adjacent to the North Tahoe High School and associated outdoor sporting facilities that currently host regular outdoor sporting events.

Of all types of events that could occur at the Schilling Lodge, premier events such as ski races, bike races, and other recreational events would generate the most people and associated noise. Noise sources would generally include people talking, cheering, and children playing. Other smaller events include meetings of various local private groups (e.g., Boy Scouts, homeowners' association meetings, business meetings, private gatherings, weddings), but these events would typically take place indoor and would not generate noise that could disturb nearby residents. Outdoor events could include the use of amplified sound as well. The focus of this analysis is noise associated with large, occasional sporting/recreational events and the use of amplified speakers.

As discussed above, noise measurements were conducted at the proposed Project site and vicinity. During the duration of the measurements conducted at the proposed Project site, the first day of school at the North Tahoe High School was captured. Measurements conducted at the Alternative A site captured noise associated with a big mountain bike event and an adult softball game in the evening. Based on the measurements conducted, for these temporary events, hourly noise levels ranged from approximately 22 dBA L_{eq} to 44 dBA L_{eq} and CNEL noise levels ranged from 42.0 dBA CNEL to 44.6 dBA CNEL. Considering that the measurement location was approximately in the center of the proposed Project site, recorded noise levels would be representative of the loudest noise generated during these types of events.

Future, similar events that could occur at the proposed Project site would not result in noise levels that exceed 55 dBA CNEL, the applicable maximum allowable noise standard set by the Area Plan. Nonetheless, it is important to note that these noise-generating activities would be temporary in nature, having minimal effect on existing CNEL levels. In addition, noise associated with the recreational facilities would be similar to what occurs in the project vicinity now. Further, the TRPA Code of Ordinances exempts certain outdoor events (e.g., concerts, races), provided they comply with daytime (8:00 a.m. to 10:00 p.m.) and event duration requirements. Therefore, exempt activities would not be subject to compliance with adopted CNEL noise levels or be included in ambient noise measurements to establish CNEL attainment. All events would be required to comply with TCPUD rental agreement rules and regulations to hold an event at the Schilling Lodge. Consistent with standard TCPUD rules and regulations, events would be required to take place during normal operating hours (i.e., 8:00 a.m. to 10:00 p.m.).

In addition to event noise described above, amplified sound could be used during certain events. Similar to the discussion above for special events, use of the speaker would comply with TCPUD rules and regulations, thus operating during the daytime hours (i.e., 8:00 a.m. to 10:00 p.m.), and within Placer County daytime hours of 7:00 a.m. to 10:00 p.m. Thus, this analysis only considers Placer County's daytime standards for sensitive receptors.

Reference noise levels for an outdoor speaker at a similar land use were used in this analysis. A loud speaker facing away from the receiving land use was measured at 60.6 dBA at 75 feet and when directed toward the receiving land use, measured at 76.0 dBA L_{eq} at 75 feet (WJV Acoustics 2016). Considering these reference noise levels, noise from the outdoor speaker would attenuate, from distance alone, to 59.1 dBA L_{eq} at the North Tahoe High School (i.e., 335 feet from the proposed Project site) and 58.0 dBA L_{eq} at the nearest residential receptor (i.e., 370 feet from the proposed Project site), exceeding the Placer County daytime noise standard of 50 dBA L_{eq} (adjusted down 5 dB for amplified sound sources).

With implementation of the proposed Project, TCPUD would continue to operate the existing community center, which could include small events and meetings similar to those that occur today. The proposed Project would not result in an increase in the number or types of events that could occur at the existing community center; thus, there would be no operational noise impacts at the existing community center.

Project-generated long-term noise associated with amplified sound at the Schilling Lodge could result in exposure of sensitive receptors to noise levels that exceed the Placer County daytime (7:00 a.m. to 10:00 p.m.) noise standard of 50 dBA L_{eq} for amplified sound sources. This impact would be **significant**.

Alternative A

With the Alternative A, existing activities occurring at the Highlands Community Center would continue to occur but would increase in frequency compared to existing conditions. The events and associated noise sources that would occur at the Alternative A site would be the same as those described above for the proposed Project, and therefore, reference noise levels discussed above would be the same. Because noise levels associated with existing events do not exceed applicable standards (i.e., 55 dBA CNEL), and future events would be similar to existing events, project-generated increases in noise would not be anticipated to result in a substantial increase in noise such that applicable standards would be exceeded. However, the use of amplified sound attenuated to the nearest receptor from the Highlands Community Center site (i.e., 120 feet away) would result in noise levels of 70.6 dBA L_{eq} , exceeding Placer County's daytime (7:00 a.m. to 10:00 p.m.) standard for sensitive receptors. This impact would be **significant**.

Mitigation Measures

Mitigation Measure 3.8-3 Minimize Amplified Sound

This mitigation measure would apply to the proposed Project.

- ▶ Building design and layout shall be such that any outdoor amplified speakers face away from offsite sensitive land uses and oriented/located such that the building structure is between the receiving land use and the attached speaker. Building design, layout, and final speaker location shall be identified in final site plans and approved by Placer County before issuance of building permits.

- ▶ To ensure receiving land uses are not exposed to noise levels that exceed Placer County daytime noise standards of 50 dBA L_{eq} , outdoor speakers shall be tuned such that combined noise levels from all proposed speakers do not exceed 71 dBA L_{eq} at 50 feet from the source. Sound levels shall be measured in accordance with Placer County Code Chapter 9.36.040 and proof of acceptable noise levels shall be provided to Placer County at the time of final building inspection.

This mitigation measure would apply to Alternative A.

- ▶ Building design and layout shall be such that any outdoor amplified speakers face away from offsite sensitive land uses and oriented/located such that the building structure is between the receiving land use and the attached speaker. Building design, layout, and final speaker location shall be identified in final site plans and approved by Placer County before issuance of building permits.
- ▶ To ensure receiving land uses are not exposed to noise levels that exceed Placer County daytime noise standards of 50 dBA L_{eq} , outdoor speakers shall be tuned such that combined noise levels from all proposed speakers do not exceed 59 dBA L_{eq} at 50 feet from the source. Sound levels shall be measured in accordance with Placer County Code Chapter 9.36.040 and proof of acceptable noise levels shall be provided to Placer County at the time of final building inspection.

Significance after Mitigation

Implementation of Mitigation Measure 3.8-3 would require building design to act as a barrier between amplified sound sources and receiving land uses, reducing the noise levels at receiving land uses. Further, additional requirements for speakers to meet performance standards (i.e., 71 dBA L_{eq} for the proposed Project and 59 dBA L_{eq} for Alternative A) would ensure that noise levels would attenuate to below Placer County noise standards at receiving land uses. Impacts would be reduced to **less than significant**.

Impact 3.8-4: Operational Traffic Noise

The proposed Project and Alternative A would result in traffic, and associated noise, increases along local roads and SR 28, with the greatest increase occurring during the summer months of the year. However, traffic noise increases would not result in an increase that exceeds applicable Area Plan noise standards (i.e., 55 dBA CNEL) and no increase in noise would occur on SR 28. Therefore, the proposed Project and Alternative A would have a **less-than-significant** impact from long-term increases in traffic noise.

Proposed Project

The Area Plan establishes a 55 dBA CNEL noise standard as the maximum allowable noise exposure level, to preserve the serene environment and protect the health of people and wildlife. In addition, TRPA has established maximum allowable noise levels for major roadways in the basin, including a 55 dBA CNEL standard for SR 28. Because these standards are designed to protect and enhance the character of the project area, projects that do not result in noise levels that exceed these standards would not result in negative impacts to residences, visitors, or the overall ambient character of the project vicinity. Thus, traffic-noise increases, perceptible or not, that remain below these standards would not result in exposure of people to severe noise levels and are the basis for this analysis.

The proposed Project would result in increases in traffic and associated traffic noise as a result of events taking place at the new lodge. Visitation at the lodge is and would continue to be driven by the cross-country ski trails, use of the trails in the summer, special and other events at the lodge and would not be driven by the lodge itself. Thus, the traffic analysis assumes a conservative 10 percent increase in the daily visitation at the lodge over existing conditions. Traffic noise modeling was conducted for existing and existing plus project conditions during the winter and summer months. Existing, existing plus project, and the net change as a result of the proposed Project are shown below in Table 3.8-11.

Based on the modeling conducted, in all cases, with the exception of SR 28, traffic noise levels would not exceed 55 dBA CNEL. Regarding SR 28, traffic increases would be so minimal that traffic noise would not increase from existing conditions. Thus, based on the modeling conducted, project-generated increases in long-term traffic noise would not result in an increase in noise levels that exceed any applicable local standard or expose people to severe noise levels. This impact would be **less than significant**.

Table 3.8-11 Summary of Modeled Existing and Existing Plus Proposed Project Traffic Noise Levels

Roadway Segment/Segment Description	CNEL at 100 Feet from Roadway Centerline		
	Existing	Existing Plus Proposed Project	Change
Winter Weekday			
Village Road, between Polaris Road and Country Club Drive	45.1	43.6	-1.5
Old Mill Road, North of SR 28	44.4	45.4	+0.9
Polaris Road from Village Drive to Old Mill Road	46.7	47.6	+0.9
Polaris Road, East of North Tahoe High School	49.5	50.3	+0.8
Winter Weekend/Holiday			
Village Road, between Polaris Road and Country Club Drive	47.2	44.9	-2.3
Old Mill Road, North of SR 28	37.7	42.6	+4.9
Polaris Road from Village Drive to Old Mill Road	38.0	44.1	+6.1
Polaris Road, East of North Tahoe High School	40.7	46.4	+5.6
Summer Daily			
Village Road, between Polaris Road and Country Club Drive	44.3	36.9	-7.4
Old Mill Road, North of SR 28	45.7	44.6	-1.2
Polaris Road from Village Drive to Old Mill Road	41.1	43.8	+2.6
Polaris Road, East of North Tahoe High School	40.7	47.2	+6.4
State Route 28 (East/West of the proposed Project site)	59.7	59.7	0.0
Notes: CNEL = Community Noise Equivalent Level			
All modeling assumes average pavement, level roadways (less than 1.5% grade), constant traffic flow, and does not account for shielding of any type or finite roadway adjustments. All noise levels are reported as A-weighted noise levels. For additional details, refer to Appendix E for detailed traffic data, and traffic-noise modeling input data and output results.			
Source: Data modeled by Ascent Environmental in 2019			

Alternative A

Similar to the discussion above for the proposed Project, Alternative A would also result in slight increases in traffic. However, because there is an existing similar use at the Alternative A site, increases under this alternative would be less in comparison to the proposed Project. Traffic noise modeling was also conducted for this alternative and is shown below in Table 3.8-12.

Based on the modeling conducted, on all roadway segments, with the exception of SR 28, traffic noise levels would not exceed 55 dBA CNEL. Regarding SR 28, traffic increases would be so minimal that traffic noise would not increase from existing conditions. Thus, based on the modeling conducted, project-generated increases in long-term traffic noise would not result in an increase in noise levels that exceed any applicable local standard or expose people to severe noise levels. This impact would be **less than significant**.

Table 3.8-12 Summary of Modeled Existing and Existing Plus Alternative A Traffic Noise Levels

Roadway Segment/Segment Description	CNEL at 100 Feet from Roadway Centerline		
	Existing	Existing Plus Alternative A Site	Change
Winter Weekday			
Village Road, between Polaris Road and Country Club Drive	45.1	45.8	0.7
Old Mill Road, North of SR 28	44.4	44.4	0.0
Polaris Road from Village Drive to Old Mill Road	46.7	46.7	0.0
Polaris Road, East of North Tahoe High School	49.5	49.5	0.0
Winter Weekend/Holiday			
Village Road, between Polaris Road and Country Club Drive	47.2	47.8	0.6
Old Mill Road, North of SR 28	37.7	37.7	0.0
Polaris Road from Village Drive to Old Mill Road	38.0	38.0	0.0
Polaris Road, East of North Tahoe High School	40.7	40.7	0.0
Summer Daily			
Village Road, between Polaris Road and Country Club Drive	44.3	46.4	2.1
Old Mill Road, North of SR 28	45.7	45.7	0.0
Polaris Road from Village Drive to Old Mill Road	41.1	41.7	0.0
Polaris Road, East of North Tahoe High School	40.7	40.7	0.0
State Route 28 (East/West of the Alternative A site)	59.7	59.7	0.0

Notes: CNEL = Community Noise Equivalent Level

All modeling assumes average pavement, level roadways (less than 1.5% grade), constant traffic flow, and does not account for shielding of any type or finite roadway adjustments. All noise levels are reported as A-weighted noise levels. For additional details, refer to Appendix E for detailed traffic data, and traffic-noise modeling input data and output results.

Source: Data modeled by Ascent Environmental in 2019

Mitigation Measures

No mitigation is required for this impact.

CUMULATIVE IMPACTS

Construction Noise and Vibration Levels

Impacts related to short-term project-related construction noise and vibration levels are localized in nature, based on audibility and distance to sensitive receptors. The proposed Project and Alternative A potential construction noise and vibration impacts are discussed in Impacts 3.8-1 and 3.8-2, above. The construction noise and vibration sources from construction of the proposed Project in conjunction with other cumulative projects would not accumulate to cause broader environmental impacts, so by their nature, cumulative impacts would not occur. Therefore, the contribution of construction noise and vibration from the proposed Project or Alternative A **would not be cumulatively considerable**.

Operational Event Noise

Noise generated by outdoor events and gatherings at the Schilling Lodge would primarily influence the immediate project vicinity, as noise levels would diminish at increasing distances from the source. Further, anticipated noise levels from the events would not exceed applicable standards, and therefore, noise levels at increasing distance from the proposed Project site and Alternative A site would be even lower, thus would not combine with other area sources. Further, events at the Schilling Lodge would be infrequent and temporary and would implement Mitigation Measure 3.8-3 that would require amplified noise at events to meet performance standards to ensure that noise levels would be below Placer County noise standards and reduce the impact to a less-than-significant level. Considering the anticipated low noise volumes described in Impact 3.8-3, above, and the temporary and infrequent nature of the events, noise would not combine with noise sources from cumulative projects to result in substantial increases in noise. Therefore, the contribution from the proposed Project or Alternative A **would not be cumulatively considerable**.

Operational Traffic Noise

Operation of the project would result in additional traffic on local roads associated with events taking place at the Schilling Lodge as described in Impact 3.8-4, above. In the future cumulative scenario, additional growth and development is anticipated associated with the cumulative projects in Table 3.1-2 that would likely also result in additional traffic on local and regional roadways. However, traffic increases associated with the proposed Project are directly associated with the anticipated size of the events being held at the lodge, which would not change in the cumulative scenario. Visitation at the lodge is and would continue to be driven by the cross-country ski trails, use of the trails in the summer, special and other events at the lodge and would not be driven by the lodge itself. Thus, the traffic analysis assumes a conservative 10 percent increase in the daily visitation at the lodge over existing conditions. Additionally, for the proposed Project, there would be a minor change in travel routes for accessing the Schilling Lodge instead of the Existing Lodge, which would redistribute some of the vehicle trips in the Highlands neighborhood. Thus, similar to the project-level noise analysis for the proposed Project and Alternative A in Impact 3.8-4, project-generated traffic increases in the future cumulative scenario would not result in traffic noise that exceeds established local standards. Therefore, the contribution from the proposed Project or Alternative A **would not be cumulatively considerable**.