

4.6 Noise and Vibration

This section analyzes noise impacts from buildout of the Santa Barbara County Last-Mile Broadband Program (“Broadband Program” or “Project”). Impacts related to noise from construction, building operations, traffic, and flight operations are addressed. This section describes the physical environmental and regulatory setting, the criteria and thresholds used to evaluate the significance of impacts, the methods used in evaluating these impacts, and the results of the impact assessment.

4.6.1 Environmental Setting

Overview of Noise and Vibration

The following discussion describes the characteristics of noise and vibration. These characteristics are used to assess potential impacts at sensitive land uses. Noise- and vibration-sensitive land uses include locations where people reside or where the presence of unwanted sound could adversely affect the use of the land. Residences, senior facilities, schools, hospitals, guest lodging, libraries and some passive recreation areas are examples of typical noise- and vibration-sensitive land uses.

Noise

Noise level (or volume) is generally measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound power levels to be consistent with that of human hearing response, which is most sensitive to frequencies around 4,000 Hertz (about the highest note on a piano) and less sensitive to low frequencies (below 100 Hertz). In addition to the actual instantaneous measurement of sound levels, the duration of sound is important since sounds that occur over a long period of time are more likely to be an annoyance or cause direct physical damage or environmental stress. One of the most frequently used noise metrics that considers both duration and sound power level is the equivalent noise level (Leq). The Leq is defined as the single steady A-weighted level that is equivalent to the same amount of energy as contained in fluctuating levels of sound over a period of time. Typically, Leq is summed over a one-hour period.

Sound pressure is measured on a logarithmic scale with the 0 dB level based on the lowest detectable sound pressure level that people can perceive (an audible sound that is not zero sound pressure level). Based on the logarithmic scale, a doubling of sound energy is equivalent to an increase of 3 dB and a sound that is 10 dB less than the ambient sound level has no effect on ambient noise. Because of the nature of the human ear, a sound must be about 10 dB greater than the reference sound to be judged as twice as loud. In general, a 3-dBA change in community noise levels is noticeable, while changes of 1 to 2 dBA generally are not perceived. Quiet suburban areas typically have noise levels in the range of 40 to 50 dBA, while noise levels along arterial streets are generally in the 50 to 60+ dBA range. Normal conversational levels are in the 60-65 dBA range and ambient noise levels greater than that can interrupt conversations.

Noise levels typically attenuate at a rate of 6 dBA per doubling of distance from point sources such as industrial machinery. Noise from roads typically attenuates at a rate of about 4.5 dBA per doubling of distance over absorptive ground surfaces (e.g., grass). Noise from roads typically attenuates at about 3 dBA per doubling of distance over reflective ground surfaces (e.g., pavement).

The actual time period in which noise occurs is also important since noise that occurs at night tends to be more disturbing than that which occurs during the daytime. To evaluate community noise on a 24-hour basis, the day-night average sound level was developed (Ldn). Ldn is the time average of all A-weighted levels for a 24-hour period with a 10 dB upward adjustment added to those noise levels occurring between 10:00 p.m. and 7:00 a.m. to account for the general increased sensitivity of people to nighttime noise levels. The Community Noise Equivalent Level (CNEL) is identical to the Ldn with one exception. The CNEL adds 5 dB to evening noise levels (7:00 p.m. to 10:00 p.m.). Thus, both the Ldn and CNEL noise measures represent a 24-hour average of A-weighted noise levels with Ldn providing a nighttime adjustment and CNEL providing both an evening and nighttime adjustment.

Vibration

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Vibration can be a serious concern, causing buildings to shake and rumbling sounds to be heard. In contrast to noise, vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings and is usually measured in inches per second. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (VdB) is commonly used to measure RMS. The decibel notation acts to compress the range of numbers required to describe vibration.

High levels of vibration may cause physical personal injury or damage to buildings. However, groundborne vibration levels rarely affect human health. Instead, most people consider groundborne vibration to be an annoyance that can affect concentration or disturb sleep. In addition, high levels of groundborne vibration can damage fragile buildings or interfere with equipment that is highly sensitive to groundborne vibration (e.g., electron microscopes).

In contrast to noise, groundborne vibration is not a phenomenon that most people experience every day. The background vibration velocity level in residential areas is usually 50 RMS or lower which is well below the threshold of perception for humans (human perception is around 65 RMS). Most perceptible indoor vibration is caused by sources within buildings, such as operation of mechanical equipment, movement of people, or slamming of doors. Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If the roadway is smooth, the vibration from traffic is rarely perceptible.

Noise and Vibration Sources

Ambient noise levels in Santa Barbara County vary widely depending upon proximity to noise generators, such as major roads, airports, and rail lines. The major noise sources in the County are described below.

Motor Vehicle Traffic

Motor vehicles, including cars/light trucks, buses, and various types of trucks, are the most substantial source of noise in most of Santa Barbara County. This can be attributed to the extensive network of major, primary, and secondary arterials located throughout the County, as well as the large number of vehicle trips that occur each day.

The primary roadway corridor noise source in the County is US 101, due to both the high traffic volumes experienced and the high speed of traffic. In 2017, daily traffic on US 101 averaged around 112,750 vehicles per day through the City of Santa Barbara and ranging from a low of 21,200 near SR 246, to a high of 139,000 at Mission Street in Santa Barbara (Caltrans 2017). As a result, noise levels along the entire US 101 corridor exceed 65 dBA CNEL near the freeway. Along the South Coast, existing land uses within approximately 400 feet of the freeway centerline may be exposed to noise levels over 65 dBA CNEL and in the North County, land uses within approximately 200 feet of the freeway centerline may be exposed to noise levels over 65 dBA CNEL. Noise-sensitive land uses in the vicinity of the freeway corridor therefore have the potential to be exposed to noise in excess of what the County normally considers acceptable.

Traffic on other major transportation corridors also generates noise in excess of 65 dBA CNEL within certain distances from centerline of the freeway/roadway. In the Santa Barbara area, noisy road corridors include portions of State Street and Hollister Avenue. Traffic on several roads in the Santa Maria area, including State Routes 135 and 166, also generates noise in excess of normally acceptable standards for noise sensitive uses.

Aircraft Operation

Both the Santa Barbara and Santa Maria airports have commercial and general aviation activities. Because of the level of activity at these airports, noise generated at these airports is audible in the surrounding communities. Therefore, land uses in the surrounding areas have been planned to ensure that noise levels remain at acceptable levels for the various uses.

The Lompoc and Santa Ynez airports are general aviation airports, with little commercial traffic and no jet operations. While these general aviation airports do not generate as much noise as Santa Barbara or Santa Maria, flight operations have also had impacts on the nearby residential areas because of their location.

In addition to the four active County airports, flight operations at Vandenberg Space Force Base, located near the City of Lompoc, generate aircraft noise. While these operations are limited, the resulting 60-65 dB contour extends into a portion of the City of Lompoc as shown in Figure 4-1 of the Vandenberg Space Force Base Land Use Compatibility Plan (SBCAG 2019). As a federal facility, Vandenberg Space Force Base is exempt from County and City noise controls. Nevertheless, the Air Force has developed measures to reduce noise impacts from flight operations in the areas surrounding the base.

In addition to airplanes, helicopter flights occur throughout the County. These flights typically follow major and primary arterials with the exception of police patrol activities. Other flight-related activities include tourist sightseeing, Coast Guard, Santa Barbara County Sheriff's Department for search and rescue operations, and Southern California Edison for power infrastructure work. Cottage Hospital in

Santa Barbara is verified as a Level II Trauma Center and provides helicopter emergency medical services. Helicopters traveling to Cottage Hospital follow the US 101 corridor until turning inland at Junipero Street toward the hospital. Although single-event noise exposure resulting from helicopter operations may be considered a nuisance, the relatively low frequency and short duration of these operations do not significantly affect average daily noise levels anywhere in the County.

Railroad Operations

Train operations on the Union Pacific Railroad and the Santa Maria Valley Railroad generate noise within proximity to the railroad lines. Noise is generated during rail operations by locomotives starting and stopping, trains braking, the connection and disconnection of cars, train whistles, and track noise (the trains' wheels running on the track). The Union Pacific Railroad right-of-way traverses the County through much of its coastal area, passing through the cities of Carpinteria, Santa Barbara, Goleta and Guadalupe. The Santa Maria Valley Railroad originates in the City of Santa Maria and travels westward through Santa Maria to connect with the Union Pacific railroad line in Guadalupe.

Amtrak provides the only commercial intercity passenger rail transportation available in Santa Barbara County. Its trains share the Union Pacific Railroad main line tracks. Two AMTRAK trains, the Pacific Surf liner has five daily round trips and the Coast Starlight has once a day round trips that serves Santa Barbara County.

Noise-sensitive land uses within approximately 800 feet of the tracks could be exposed to noise levels above 65 dBA (Santa Barbara County Comprehensive Plan, Noise Element, 2009). In the northern part of the County, much of the rail corridor is located in open areas. In the southern part of the County, train tracks are generally located much closer to residences.

4.6.2 Regulatory Setting

Various federal agencies have set standards for transportation-related noise and vibration sources that are closely linked to interstate commerce, such as aircraft, locomotives, and trucks. The State sets noise standards for those noise sources that are not preempted from regulation, such as automobiles, light trucks, and motorcycles. Noise and vibration sources associated with industrial, commercial, and construction activities are generally subject to local control through noise ordinances and general plan policies.

Federal

Relevant federal regulations include those established by the Federal Highway Administration (FHWA), Federal Transit Administration (FTA), Federal Aviation Administration (FAA), and Department of Housing and Urban Development (HUD).

Federal Highway Administration

Traffic Noise

Traffic noise impacts, as defined in 23 CFR § 772.5, occur when the predicted noise level in the design year approach or exceed the noise abatement criteria (NAC) specified in 23 CFR § 772, or a predicted noise level substantially exceeds the existing noise level (a “substantial” noise increase). A “substantial increase” is defined as an increase of 12 dB Leq during the peak hour of traffic. For sensitive uses, such

as residences, schools, churches, parks, and playgrounds, the NAC for interior and exterior spaces is 57 dB Leq and 66 dB leq, respectively, during the peak hour of traffic noise. **Table 4.6-1, Noise Abatement Criteria (NAC)**, summarizes NAC corresponding to various land use activity categories. Activity categories and related traffic noise impacts are determined based on the actual land use in a given area.

**TABLE 4.6-1
NOISE ABATEMENT CRITERIA (NAC)**

| Activity Category | Hourly Leq | Hourly L10 ^a | Analysis Location | Description of Activity Category |
|-------------------|------------|-------------------------|-------------------|---|
| A | 57 | 60 | Exterior | Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose |
| B | 67 | 70 | Exterior | Residential |
| C | 67 | 70 | Exterior | Active sport areas, amphitheatres, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails and trail crossings |
| D | 52 | 55 | Interior | Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools and television studios |
| E | 72 | 75 | Exterior | Hotels, motels, offices, restaurants/bars and other developed lands, properties or activities not included in A-D or F |
| F | | | | Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical) and warehousing |
| G | | | | Undeveloped lands that are not permitted |

NOTES:

^a L10 is the level of noise exceeded for 10% of the time

Source: Santa Barbara County Association of Governments (SBCAG), Connected 2050: Regional Transportation Plan & Sustainable Communities Strategy (RTP/SCS)

Federal regulations also establish noise limits for medium and heavy trucks (more than 4.5 tons, gross vehicle weight rating) under 40 CFR Part 205, Subpart B. The federal truck pass by noise standard is 80 dB at 15 meters from the vehicle pathway centerline. These controls are implemented through regulatory controls on truck manufacturers. The FHWA regulations for noise abatement apply to federal or federally-funded projects involving the construction of a new highway or significant modification of an existing freeway when the project would result in a substantial noise increase or when the predicted noise levels approach or exceed the NAC.

Railroad Noise

Federal regulations for railroad noise are contained in 40 CFR Part 201 and 49 CFR Part 210. The regulations set noise limits for locomotives and are implemented through regulatory controls on locomotive manufacturers.

Federal and Federal-Aid Highway Projects

Title 23 of the Code of Federal Regulations (23 CFR § 772) provides procedures for preparing operational and construction noise studies and evaluating noise abatement for federal and federal-aid highway projects. Under 23 CFR § 772.5, projects are categorized as Type I, II, or III projects.

FHWA defines Type I projects as the construction of a highway on a new location, the physical alteration of an existing highway which significantly changes either the horizontal or vertical alignment, or increases the number of through-traffic lanes. Type I projects include those that create a completely new noise source, increase the volume or speed of traffic, or move the traffic closer to a receiver. Type I projects include the addition of an interchange, ramp, auxiliary lane, or truck-climbing lane to an existing highway, or widening an existing ramp by a full lane width for its entire length. Under 23 CFR § 772.11, noise abatement must be considered for Type I projects if the project is predicted to result in a traffic noise impact. In such cases, 23 CFR § 772 requires that the project sponsor “consider” noise abatement before adoption of the environmental document. This process involves identification of noise abatement measures that are reasonable, feasible, and likely to be incorporated into the project as well as noise impacts for which no apparent solution is available

Type II projects implement noise abatement on an existing highway. For a Type II project to be eligible for Federal-aid funding, an agency must develop and implement a Type II program in accordance with section 772.7(e). Type II projects include installation of noise barriers or other noise abatement along an existing highway where noise levels have increased, or retrofitting existing noise abatement features that have been damaged or are not structurally sound.

Type III projects are Federal or Federal-aid highway projects that do not meet the classification of a Type I or Type II project. Noise analysis is not required for Type III projects. Projects unrelated to increased noise levels, such as striping, lighting, signing, and landscaping projects, are considered Type III projects.

Federal Aviation Administration

Aircraft operated in the U.S. are subject to federal requirements regarding noise emissions levels. These requirements are set forth in Title 14 CFR, Part 36. Part 36 establishes maximum acceptable noise levels for specific aircraft types, taking into account the model year, aircraft weight, and number of engines.

Federal Transit Administration

The FTA has developed guidance to evaluate noise impacts from operation of surface transportation modes (i.e. passenger cars, trucks, buses, and rail) in the 2006 FTA Transit Noise Impact and Vibration Assessment. All mass transit projects receiving federal funding must use these guidelines to predict and assess potential noise and vibration impacts. As ambient levels increase, smaller increments of change are allowed to minimize community annoyance related to transit operations.

The criteria for environmental impact from groundborne vibration are based on the maximum levels for a single event. **Table 4.6-2, Construction Vibration Damage Criteria**, lists the potential vibration damage criteria associated with construction activities, as suggested in the *Transit Noise and Vibration Impact Assessment* (FTA 2018).

**TABLE 4.6-2
CONSTRUCTION VIBRATION DAMAGE CRITERIA**

| Building Category | PPV (inch/sec) | Approximate Lv^a |
|---|-----------------------|-----------------------------------|
| Reinforced-concrete, steel or timber (no plaster) | 0.50 | 102 |
| Engineered concrete and masonry (no plaster) | 0.30 | 98 |
| Non-engineered timber and masonry buildings | 0.20 | 94 |
| Buildings extremely susceptible to vibration damage | 0.12 | 90 |

NOTES:

PPV = peak particle velocity; LV = velocity in decibels; inch/sec = inches per second

^a Root-mean-square velocity in decibels (VdB) re 1 microinch per second.

SOURCE: FTA 2018, *Table 7-5*

Federal Transit Administration (FTA) guidelines show that a vibration level of up to 102 VdB (equivalent to 0.5 inch/sec in Root Mean Square (RMS)) (FTA 2018) is considered safe for buildings consisting of reinforced concrete, steel, or timber (no plaster), and would not result in any construction vibration damage. For a non-engineered timber and masonry building, the construction vibration damage criterion is 94 VdB (0.2 inch/sec in RMS).

Based on Table 8-3 in the FTA’s *Transit Noise and Vibration Impact Assessment* (FTA 2018), interpretation of vibration criteria for detailed analysis is 78 VdB for residential uses during daytime hours. During nighttime hours, the vibration criterion is 72 VdB. For office and office buildings, the FTA guidelines suggest that a vibration level of 84 VdB should be used for detailed analysis.

U.S. Department of Housing and Urban Development

The mission of HUD includes fostering “a decent, safe, and sanitary home and suitable living environment for every American.” Accounting for acoustics is intrinsic to this mission as safety and comfort can be compromised by excessive noise. To facilitate the creation of suitable living environments, HUD has developed a standard for noise criteria. The basic foundation of the HUD noise program is set out in the noise regulation 24 CFR Part 51 Subpart B, Noise Abatement and Control.

HUD's noise policy requires noise attenuation measures be provided when proposed projects are to be located in high noise areas. Within the HUD Noise Assessment Guidelines, potential noise sources are examined for projects located within 15 miles of a military or civilian airport, 1,000 feet from a road or 3,000 feet from a railroad.

HUD exterior noise regulations state that 65 dBA Ldn noise levels or less are acceptable for residential land uses and noise levels exceeding 75 dBA Ldn are unacceptable. HUD's regulations do not contain standards for interior noise levels. The HUD regulations establish a goal of 45 decibels, and the attenuation requirements are focused on achieving that goal. The HUD guidelines assume that with standard construction methods and materials, any building will provide sufficient attenuation so that if the exterior level is 65 dBA Ldn or less, the interior level will be 45 dBA Ldn or less. Noise criteria are consistent with FHWA and related state requirements.

State

Relevant State noise regulations include those established by the California Department of Health Services and the California Department of Transportation (Caltrans), as well as standards in the California Code of Regulations. The Governor’s Office of Planning and Research have also established guidelines regarding sound level and land use compatibility. There are no adopted State policies or standards for ground-borne vibration. However, Caltrans recommends that extreme care be taken when sustained pile driving occurs within 7.5 meters (25 feet) of any building, 15 to 30 meters (50 to 100 feet) of a historic building or near a building in poor condition.

State of California General Plan Guidelines

The Governor’s Office of Planning and Research is required to adopt and periodically revise guidelines for the preparation and content of local general plans. The 2017 General Plan Guidelines (Governor’s Office of Planning and Research, 2017) establish land use compatibility guidelines. Where a noise level range is denoted as “normally acceptable” for the given land use, the highest noise level in that range should be considered the maximum desirable for conventional construction that does not incorporate any special acoustic treatment. The acceptability of noise environments classified as “conditionally acceptable” or “normally unacceptable” will also depend on the anticipated amount of time that will normally be spent outside the structure and the acoustic treatment to be incorporated in structural design.

With regard to noise-sensitive residential uses, the recommended exterior noise limits are 60 dBA CNEL for single-family residences and 65 dBA CNEL for multi-family residences. The recommended maximum interior noise level is 45 dBA CNEL, which could normally be achieved using standard construction techniques if exterior noise levels are within the levels described above. The State of California Land Use Compatibility Matrix is shown below in **Table 4.6-3**.

TABLE 4.6-3
NOISE AND LAND USE COMPATIBILITY MATRIX - CALIFORNIA

| Land Use | Community Noise Exposure CNEL (dBA) | | | |
|--|-------------------------------------|---------------------------------------|------------------------------------|-----------------------------------|
| | Normally Acceptable ^a | Conditionally Acceptable ^b | Normally Unacceptable ^c | Clearly Unacceptable ^d |
| Residential – Low density, Single-Family, Duplex, Mobile Homes | 50 – 60 | 55 – 70 | 70 – 75 | 75 – 85 |
| Residential – Multiple Family | 50 – 65 | 60 – 70 | 70 – 75 | 75 – 85 |
| Transient Lodging – Motel, Hotels | 50 – 65 | 60 – 70 | 70 – 75 | 75 – 85 |
| Schools, Libraries, Churches, Hospitals, Nursing Homes | 50 – 70 | 60 – 70 | 70 – 80 | 80 – 85 |
| Auditoriums, Concert Halls, Amphitheaters | NA | 50 – 70 | NA | 65-85 |
| Sports Arenas, Outdoor Spectator Sports | NA | 50 – 75 | NA | 70-85 |
| Playgrounds, Neighborhood Parks | 50 – 70 | NA | 67.5 – 75 | 72.5 – 85 |
| Golf Courses, Riding Stables, Water Recreation, Cemeteries | 50 – 75 | NA | 70 – 80 | 80 – 85 |
| Office Buildings, Business Commercial and Professional | 50 – 70 | 67.5 – 77.5 | 75 – 85 | NA |
| Industrial, Manufacturing, Utilities, Agriculture | 50 – 75 | 70 – 80 | 75 – 85 | NA |

Community Noise Exposure CNEL (dBA)

| Land Use | Normally Acceptable ^a | Conditionally Acceptable ^b | Normally Unacceptable ^c | Clearly Unacceptable ^d |
|----------|----------------------------------|---------------------------------------|------------------------------------|-----------------------------------|
|----------|----------------------------------|---------------------------------------|------------------------------------|-----------------------------------|

NOTES:

- ^a **Normally Acceptable** – Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
- ^b **Conditionally Acceptable** – New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.
- ^c **Normally Unacceptable** – New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
- ^d **Clearly Unacceptable** – New construction or development should generally not be undertaken.

NA: Not Applicable

SOURCE: Office of Planning and Research, State of California General Plan Guideline Appendix D, 2017

California Department of Transportation

The State of California establishes noise limits for vehicles licensed to operate on public roads. For heavy trucks, the State passby standard is consistent with the federal limit of 80 dB. The State passby standard for light trucks and passenger cars (less than 4.5 tons gross vehicle rating) is also 80 dB at 15 meters from the centerline.

Section 216 of the California Streets and Highways Code relates to the noise effects of a proposed freeway project on public and private elementary and secondary schools. Under this code, a noise impact occurs if, as a result of a proposed freeway project, noise levels exceed 52 dBA Leq in the interior of public or private elementary or secondary classrooms, libraries, multipurpose rooms, or spaces. If a project results in a noise impact under this code, noise abatement must be provided to reduce classroom noise to a level that is at or below 52 dBA Leq. If the noise levels generated from roadway sources exceed 52 dBA Leq prior to the construction of the proposed freeway project, then noise abatement must be provided to reduce the noise to the level that existed prior to construction of the project.

California’s Airport Noise Standards

The State of California has the authority to establish regulations requiring airports to address aircraft noise impacts near airports. The State of California's Airport Noise Standards, found in Title 21 of the California Code of Regulations, identify a noise exposure level of 65 dB CNEL as the noise impact boundary around airports. Within the noise impact boundary, airport proprietors are required to ensure that all land uses are compatible with the aircraft noise environment or the airport proprietor must secure a variance from Caltrans.

California Noise Insulation Standards

The California Noise Insulation Standards found in Title 24 of the California Code of Regulations set requirements for new multi-family residential units, hotels, and motels that may be subject to relatively high levels of transportation-related noise. For exterior noise, the noise insulation standard is 45 dBA Ldn in any habitable room and requires an acoustical analysis demonstrating how dwelling units have been

designed to meet this interior standard where such units are proposed in areas subject to noise levels greater than 60 dBA Ldn.

California Aeronautics Act

The State Aeronautics Act (Public Utilities Code, Section 21670 et seq.) requires the establishment of Airport Land Use Commissions (ALUCs), which are responsible for developing airport land use compatibility plans (ALUCPs) for noise-compatible land uses in the immediate proximity of a commercial or public airport (Section 21675). ALUCs have two major roles: preparation and adoption of airport land use compatibility plans, which address policies for both noise and safety and review of certain local government land use actions and airport plans for consistency with the land use compatibility plan.

The ALUCP is the major tool for ALUC land use regulation. The intent of the ALUCP is to encourage compatibility between airports and the various land uses that surround them. ALUCPs typically include the development of noise contours to identify excessive airport-related noise levels and measures to reduce noise levels. For example, Monterey Regional Airport encourages noise abatement procedures related to quiet departure techniques.

The Aeronautics Division of the California Department of Transportation has published the *California Airport Land Use Planning Handbook* (Caltrans 2011). The purpose of the *California Airport Land Use Planning Handbook* is to provide guidance for conducting airport land use compatibility planning. This handbook includes a section related to noise and states, "The basic strategy for achieving noise compatibility in the vicinity of an airport is to prevent or limit development of land uses that are particularly sensitive to noise. Common land use strategies are ones that either involve few people (especially people engaged in noise-sensitive activities) or generate significant noise levels themselves (such as other transportation facilities or some industrial uses)."

Within the SBCAG region, SBCAG is serves as the ALUC and is responsible for protecting public health, safety and welfare by ensuring that vacant lands in the vicinity of airports are planned and zoned for uses compatible with airport operations. The Santa Barbara County Airport Land Use Plan was adopted in 1993 (SBCAG 1993).

Local

The nine Priority Areas in the County include: the City of Guadalupe and unincorporated areas or communities including portions of Cuyama/New Cuyama, Casmalia, Los Alamos, Los Olivos, Jonata Park, Refugio Canyon, Highway 246 Corridor (five neighborhoods between Lompoc and Buellton), and East of Santa Maria (including the Garey, Sisquoc, and Tepusquet Road communities).

County of Santa Barbara

County Code

Chapter 14 of the County Code, referred to as the Santa Barbara County Grading Code, regulates construction noise within the County. Chapter 14 does not establish noise level limits; however, Section 14-22 restricts grading activities to daytime hours, which is generally considered the least noise-sensitive time. Section 14-22 states:

No grading work (except for emergency operations), which requires a grading permit under the provisions of this chapter shall take place between the hours of 7:00 p.m. and 7:00 a.m. (or as required within the land use permit), unless the director finds that such operation is not likely to cause significant public nuisance or must, by necessity, be accomplished at other times and authorizes such night operations in writing.

Comprehensive Plan and Environmental Thresholds and Guidelines Manual

The County of Santa Barbara has adopted noise policies in its Comprehensive Plan Noise Element (adopted 1979, republished May 2009). The policies establish interior and exterior noise limits for noise compatibility, which are identified in the County of Santa Barbara Environmental Thresholds and Guidelines Manual (County 2020). The thresholds identify noise-sensitive land uses as:

1. Residential, including single- and multi-family dwellings, mobile home parks, dormitories, and similar uses.
2. Transient lodging, including hotels, motels, and similar uses.
3. Hospitals, nursing homes, convalescent hospitals, and other facilities for long-term medical care.
4. Public or primary educational facilities, libraries, churches, and places of public assembly.

The noise level standard for outdoor living areas of new noise-sensitive land uses is 65 dBA CNEL. Outdoor living areas generally include backyards of single-family residences and individual patios or common outdoor activity areas of multi-family developments. The maximum noise exposure for indoor living areas in new noise-sensitive land uses is 45 dBA CNEL. To reduce construction impacts, the County of Santa Barbara Environmental Thresholds and Guidelines Manual (County 2020) indicates that construction within 1,600 feet of sensitive receivers shall be limited to weekdays between the hours of 8:00 a.m. and 5:00 p.m., which is more restrictive than Section 14-22 of the County Code.

City of Guadalupe

The City of Guadalupe Noise Element of the General Plan includes Policy N-1.4, which requires construction contractors to implement construction noise reduction measures, such as restrict noise-generating activities at construction sites or in areas adjacent to construction sites to the hours between 7:00 a.m. and 6:00 p.m., Monday through Saturday. Construction shall be prohibited on Sundays and Federal holidays unless prior written approval is granted by the building official. Policy N-1.4 includes other noise reduction measures such as constructing temporary noise barriers between the noise source and receiver, where feasible and routing all construction traffic via designated truck routes where possible.

4.6.3 Analysis, Impacts and Mitigation

Methodology and Significance Thresholds

Pursuant to the *CEQA Guidelines*, potentially significant noise impacts would result if the project would:

- a) 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 applicable standards of other agencies
- b) Generate excessive groundborne vibration or groundborne noise levels

- c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels.

Thresholds a, b, and c are discussed further in this section. In addition to the *CEQA Guidelines*, the County of Santa Barbara *Environmental Thresholds and Guidelines Manual* (2020) contains criteria for determining the significance of noise impacts.

- If existing exterior noise levels, including at outdoor living areas, experienced by sensitive receptors is below 65 dBA CNEL, and if the proposed project will generate noise that will cause the existing noise levels experienced by the sensitive receptors to exceed 65 dBA CNEL – either individually or cumulatively when combined with other noise-generating sources – then the proposed project is presumed to have a significant impact.
- If existing exterior noise levels, including at outdoor living areas, experienced by sensitive receptors exceeds 65 dBA CNEL, and if the proposed project will generate noise that will cause the existing noise levels experienced by the sensitive receptors to increase by 3 dBA CNEL – either individually or cumulatively when combined with other noise-generating sources – then the proposed project is presumed to have a significant impact.
- If existing noise levels experienced by sensitive receptors in interior living areas is below 45 dBA CNEL, and if the proposed project will generate noise that will cause the existing noise levels experienced by the sensitive receptors in interior living areas to exceed 45 dBA CNEL – either individually or cumulatively when combined with other noise-generating sources – then the proposed project is presumed to have a significant impact.
- If existing noise levels experienced by sensitive receptors in interior living areas exceeds 45 dBA CNEL, and if the proposed project will generate noise that will cause the existing noise levels experienced by the sensitive receptors in interior living areas to increase by 3 dBA CNEL – either individually or cumulatively when combined with other noise-generating sources – then the proposed project is presumed to have a significant impact.
- Noise from grading and construction activity proposed occur within 1,600 feet of sensitive receivers, including schools, residential development, commercial lodging facilities, hospitals, or care facilities. This is based upon an assumed average construction noise level of 95 dBA at a distance of 50 feet from the source, which would result in a noise level of approximately 65 dBA at a distance of 1,600 feet. To mitigate this impact, construction within 1,600 feet of sensitive receptors shall be limited to weekdays between the hours of 8:00 a.m. to 5:00 p.m. only. Noise attenuation barriers and muffling of grading equipment may also be required. Construction equipment generating noise levels above 95 dBA may require additional mitigation.

The operational and construction noise limits used in this analysis are set at reasonable levels at which a substantial noise level increase as compared to ambient noise levels would occur. Because these noise limits are tailored to specific uses (e.g., exterior and interior areas), they account for typical ambient noise levels associated with each use such that an increase in ambient noise levels that exceeds these limits would be considered a substantial increase above ambient noise levels.

Impacts and Mitigation Measures

This section describes generalized noise and vibration impacts associated with the Broadband Program. The concurrent construction of the five near-term Priority Area projects analyzed in this Program EIR would be representative of future broadband projects of similar size and scale located in other areas of the

County. In general, implementation of future broadband projects envisioned by the Broadband Program could result in noise and vibration impacts as described in the following sections.

Threshold 1: Would the project 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 applicable standards of other agencies?

Impact Statement 1: Implementation of the Project, in combination with other development, would contribute to cumulative less than significant impacts in regards to construction and operational noise for past, present, and future development.

Noise impacts from construction activities are generally a function of the noise generated by construction equipment, equipment locations, the sensitivity of nearby land uses, and the timing and duration of the noise-generating activities. As discussed in Chapter 2, *Project Description*, a total of nine communities in the County have already been identified as “Priority Areas” under the Broadband Program. However, funding has not been secured for all Priority Areas and it is unknown if all locations will be funded. Nonetheless, for the purposes of this EIR and to provide for a conservative and environmentally protective analysis, air quality impacts for all of the nine Priority Areas are analyzed. While the specific size and location of all potential future broadband projects under the Broadband Program have not yet been identified, it is assumed that the nature and intensity of such future installation projects would be similar in scope and scale to those identified for the five near-term Priority Area projects. As such, for the purposes of analysis in this CEQA document, construction activities and methods employed for the five near-term Priority Area projects have been quantitatively analyzed and would be comparable to those necessary for the installation of future broadband facilities in other portions of the County.

Priority Area Projects

The Project would include the installation of fiber optic cable in various locations throughout the County. For the five near-term Priority Area communities, high-level engineering designs that indicate the location of new broadband lines within each community have been prepared. In general, the new fiber optic lines would be installed underground following public or private roadways with the intention to minimize or avoid disturbance of roadway surfaces wherever feasible. However, it is possible some fiber optic lines could be installed directly under roadways in areas with limited shoulder space or where existing conduit under the road may be used, thus avoiding new surface disturbance. The Project also includes installation and construction activities within those areas where lateral lines are installed between public or private roadways and individual businesses or residences. Individual residence or business connections typically would be installed within previously disturbed and/or developed areas (e.g., adjacent to driveways or in landscaped areas), and generally would avoid drainages and sensitive habitats. Lateral alignments would typically follow other utility installations. Although not anticipated, where subsurface installation of fiber optic cable is infeasible, aerial installation along existing utility poles will be undertaken.

While funding has not been secured for all Priority Areas, for the purposes of this analysis and to provide for a conservative and environmentally protective analysis, it is assumed that construction of the five near-term Priority Area projects could occur simultaneously and in which case would occur over a period of approximately 24 months beginning in Spring 2025, inclusive of required permitting and construction of the new facilities. It is anticipated that future broadband projects of similar size and scale located in

other areas of the County would require a comparable construction effort in terms of overall construction intensity, would employ a similar mix of construction methods and equipment, and would result in similar construction durations as those assumed for the five near-term Priority Area projects.

Construction sequencing would include linear-grubbing and land clearing; drilling; trenching and installation; site preparation; and paving. Project construction would require the use of mobile heavy equipment with high noise-level characteristics. Individual pieces of construction equipment expected to be used during Project construction could produce maximum noise levels of 80 dBA to 90 dBA Lmax and 76 dBA to 83 dBA Leq at a reference distance of 50 feet from the noise source, as shown in **Table 4.6-4, Construction Equipment Noise Levels**. The maximum noise levels would occur when equipment is operating under full power conditions and the equivalent noise levels account for the estimated usage factors. The estimated usage factors for the equipment are also shown in Table 4.6-4. The usage factors are based on the FHWA's Roadway Construction Noise Model User's Guide.¹

**TABLE 4.6-4
CONSTRUCTION EQUIPMENT NOISE LEVELS**

| Equipment | Estimated Usage Factor, % | Maximum Noise Level at 50 feet from Equipment, dBA (Lmax) | Equivalent Noise Level at 50 feet from Equipment, dBA (Leq) |
|------------------------|----------------------------------|--|--|
| Air Compressor | 40 | 80 | 76 |
| Bore/Drill Rig | 20 | 84 | 77 |
| Concrete Saw | 20 | 90 | 83 |
| Dozer | 40 | 85 | 81 |
| Excavator | 40 | 85 | 81 |
| Paver | 50 | 85 | 82 |
| Paving Equipment | 50 | 85 | 78 |
| Roller | 20 | 85 | 78 |
| Tractor | 40 | 84 | 80 |
| Tractor/Loader/Backhoe | 40 | 80 | 76 |

SOURCE: FHWA Roadway Construction Noise Model User's Guide, 2006.

A summary of construction noise impacts at existing nearest sensitive receptors is provided in **Table 4.6-5, Estimated Construction Noise Levels at Existing Off-Site Sensitive Receptors**, with supporting calculations provided in Appendix G of this Draft EIR. Calculations were based upon construction data consistent with the air quality and greenhouse gas (GHG) emissions analysis using the California Emissions Estimator Model (CalEEMod); however, it is important to note the noise analysis construction mix modeling is based upon a single Priority Area where the CalEEMod analysis accounts for all five near-term Priority Areas undergoing construction in different regions of the county simultaneously. Noise is a localized phenomenon and has the potential to adversely impact noise-sensitive receptors in a local area, whereas air pollutant and GHG emissions have the potential to adversely impact the County, the air

¹ Federal Highway Administration, Roadway Construction Noise Model User's Guide, 2006.
https://www.gsweventcenter.com/Draft_SEIR_References/2006_01_Roadway_Construction_Noise_Model_User_Guide_FHWA.pdf

basin, and, in the case of GHG emissions, the global environment. Thus, it is appropriate to assess noise impacts based on the localized construction of a single priority area.

As shown in Table 4.6-5, exterior construction noise levels are estimated to reach a maximum of 89.0 dBA L_{eq} at off-site noise-sensitive receptor locations, which could at times be located as close as 25 feet away from a construction area in the City of Guadalupe and unincorporated areas of the County. Construction activities associated with the Priority Area projects, as well as for future broadband installation projects, would move and progress along the linear alignment such that any one specific noise-sensitive receptor location would not be exposed to the full duration of construction noise from the full extent of construction activities. For instance, while it is anticipated that simultaneous construction of the five near-term Priority Area projects could occur over a period of approximately 24 months, any one specific noise-sensitive receptor location would not be exposed to construction noise for the full 24-month duration, but rather only for several days or several weeks as construction progresses and the noise-generating activity moves along the alignment. Thus, construction noise would be a temporary and short-term occurrence to any one specific sensitive receptor location.

Project construction noise levels are not anticipated to exceed the Santa Barbara County noise threshold of 95 dBA L_{eq} at a distance of 50 feet from the source. Nonetheless, some portions of the alignments for the Priority Areas, as well as for future yet-to-be-proposed installation projects, would occur in proximity to residential uses or other noise-sensitive land uses, which could at times be located within 1,600 feet. As per the County of Santa Barbara *Environmental Thresholds and Guidelines Manual* (2020), construction activity within 1,600 feet of a sensitive receptor shall be limited to between the hours of 8:00 a.m. and 5:00 p.m. Mondays through Fridays. Therefore, Mitigation Measure 4.6-1 is included to require the Project to comply with the construction hour requirements in the County of Santa Barbara *Environmental Thresholds and Guidelines Manual* (2020) that avoids noise-sensitive times of day for noise-generating construction activities within 1,600 feet of noise-sensitive land uses. Thus, based on the temporary and short-term nature of the construction noise levels affecting any sensitive receptor location and based on compliance with the construction hour requirements in Mitigation Measure 4.6-1, construction noise impacts from on-site construction activities would be mitigated to **less than significant**.

**TABLE 4.6-5
ESTIMATED CONSTRUCTION NOISE LEVELS AT EXISTING OFF-SITE SENSITIVE RECEPTORS**

| Receptor and Representative Distances to Project Site | Maximum Equivalent Construction Noise Level,^a (Exterior) Hourly L_{eq} at 25 feet / at 50 feet from Equipment (dBA) | Exceeds 95 dBA L_{eq} at 50 Feet?^b | Located Within 1,600 Feet of a Sensitive Receptor^b |
|--|--|---|--|
| Noise-Sensitive Receptor Location (at 25 feet from construction area) | 96 / 90 | No | Yes (some portions of the alignments) |
| Noise-Sensitive Receptor Location (at 50 feet from construction area) | 90 / 84 | No | Yes (some portions of the alignments) |
| Noise-Sensitive Receptor Location (at 100 feet from construction area) | 84 / 78 | No | Yes (some portions of the alignments) |

| Receptor and Representative Distances to Project Site | Maximum Equivalent Construction Noise Level, ^a (Exterior) Hourly L _{eq} at 25 feet / at 50 feet from Equipment (dBA) | Exceeds 95 dBA L _{eq} at 50 Feet? ^b | Located Within 1,600 Feet of a Sensitive Receptor ^b |
|--|--|---|--|
| Noise-Sensitive Receptor Location (at 200 feet from construction area) | 78 / 72 | No | Yes (some portions of the alignments) |
| Noise-Sensitive Receptor Location (at 400 feet from construction area) | 72 / 66 | No | Yes (some portions of the alignments) |
| Noise-Sensitive Receptor Location (at 800 feet from construction area) | 66 / 60 | No | Yes (some portions of the alignments) |

^a Estimated construction noise levels represent the worst-case condition when noise generators are located closest to noise-sensitive receptor locations.

^b If yes is listed - a potentially significant impact would occur and mitigation would be required based on the Santa Barbara County Environmental Thresholds and Guidelines Manual (2020).

SOURCE: ESA, 2024.

Off-Site Construction Noise

Delivery and haul truck trips would occur throughout the construction period. It is anticipated that construction for each Priority Area would require approximately 10 worker round trips, 10 vendor truck round trips, and 10 haul truck round trips per day. This would result in an average daily vehicle trip increase along local roadways within each Priority Area vicinity of approximately 30 round trips or 60 one-way trips (i.e., 30 inbound and 30 outbound trips), of which approximately 20 one-way trips would be from worker commute vehicles and approximately 40 one-way trips would be from vendor and haul trucks. A doubling of traffic volumes along a given local roadway is required to generate a traffic-related noise level increase of approximately 3 dBA, which is a barely perceptible change in noise. Given that some portions of the Priority Areas are located in residential neighborhoods and other portions are located between major roadways, an increase of 60 one-way trips per day along local roadways would not result in an overall doubling of traffic volumes. As such, while the Priority Areas and future yet-to-be-proposed installation sites are located in different regions of the County, the individual Priority Area projects would not be anticipated to result in a doubling of roadway traffic volumes on local roadways along the proposed alignments. Therefore, the Project would not generate a noise level increase of 3 dBA or more and off-site noise impacts from construction vehicle and truck trips would be **less than significant**.

Operation

Project operations that would not result in ongoing long-term increases in noise. Project operations would not include any stationary noise sources, and would generate only periodic noise from occasional inspection and maintenance vehicle trips and associated maintenance activities. Inspection and maintenance trips from workers would occur infrequently and would not contribute to an increase in daily vehicle trips. As a result, Project operations would result in a minimal increase in traffic trips, and therefore, operational vehicle trip increases would not generate a substantial increase in noise along local roadways. Impacts would be **less than significant**.

Future Broadband Projects

It is anticipated that future broadband projects, located in other areas of the County, would be of similar size and scale, with a comparable construction effort in terms of overall intensity, would employ a similar mix of construction methods and equipment, and would result in similar construction durations as those assumed for the Priority Area projects. Therefore, impacts would be potentially significant in terms of construction noise but would be less than significant in terms of project operations and off-site construction mobile noise. With the implementation of Mitigation Measure 4.6-1 potentially significant impacts associated with future broadband projects would be reduced to **less than significant**.

Mitigation Measures

Mitigation Measure 4.6-1: The applicant, including all contractors and subcontractors, shall limit construction activity, including equipment maintenance and site preparation, to the hours between 8:00 a.m. and 5:00 p.m. Monday through Friday. No construction shall occur on weekends or State holidays.

Significance After Mitigation: With implementation of the mitigation measure above, construction noise impacts would be reduced to a **less than significant** impact.

Cumulative Impacts

As discussed above, the Broadband Program Project may require, at times, noise-generating construction activity within 1,600 feet of a noise-sensitive receptor. Related projects may also result in noise-generating construction activity within 1,600 feet of a noise-sensitive receptor. Thus, the Project could result in a cumulatively considerable contribution to cumulative noise impacts. The Project would be required to implement Mitigation Measure 4.6-1, which would reduce the Project's noise impacts to less than significant. Related projects would also be required to comply with the County of Santa Barbara *Environmental Thresholds and Regulation Guidelines*, specifically ensuring that if noise-generating construction activities would occur within 1,600 feet of a noise-sensitive receptor, such activities would only be permitted to occur during the hours of 8:00 a.m. and 5:00 p.m. Monday through Friday so long as construction noise does not exceed 95 dBA L_{eq} at 50 feet from the source. Should any related project within the vicinity exceed 95 dBA L_{eq} at 50 feet, such projects would be required to implement additional mitigation measures such as sound barriers, enhanced equipment mufflers, and other noise-reducing measures so as not to create excessive construction noise. Thus, the Project along with past, present, and reasonably probable future projects would not result in other noise emissions, such as construction noise, adversely affecting a substantial number of people and cumulative impacts would be mitigated to **less than significant**.

Threshold 2: Generate excessive groundborne vibration or groundborne noise levels.

Impact Statement 2: Implementation of the Proposed Project, in combination with other development, would contribute to cumulative less than significant impacts in regards to ground-vibration damage to structures and human annoyance from construction and operation of past, present, and future projects.

Priority Area Projects

Structural Damage

Construction

Construction activities can generate varying degrees of groundborne vibration, depending on the construction procedures and the construction equipment used. The operation of construction equipment generates vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings located in the vicinity of the construction site varies depending on soil type, ground strata, and construction characteristics of the receptor buildings. The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibration at moderate levels, to slight damage at the highest levels. Groundborne vibration from construction activities rarely reaches levels that damage structures. The Caltrans guidance manual incorporates FTA standard vibration velocities for construction equipment operations (Table 18 of the Caltrans guidance manual). The PPV vibration velocities for the types of construction equipment that can generate perceptible vibration levels and that would be used for the Project are listed in **Table 4.6-6, Vibration Source Levels for Construction Equipment**.

Because vibration level in RMS is best for characterizing human response to building vibration and vibration level in PPV is best used to characterize potential for damage, this construction vibration impact analysis assessed the potential for building damages using vibration levels in PPV (inch/sec). Potential human annoyance is assessed in the next subsection using vibration levels in VdB.

**TABLE 4.6-6
 VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT**

| Equipment | Approximate PPV (in/sec) | | | | | Approximate RMS (VdB) | | | | |
|-----------------|--------------------------|---------|---------|---------|----------|-----------------------|---------|---------|---------|----------|
| | 25 Feet | 50 Feet | 60 Feet | 75 Feet | 100 Feet | 25 Feet | 50 Feet | 60 Feet | 75 Feet | 100 Feet |
| Large Bulldozer | 0.089 | 0.031 | 0.024 | 0.017 | 0.011 | 87 | 78 | 76 | 73 | 69 |
| Loaded Trucks | 0.076 | 0.027 | 0.020 | 0.015 | 0.010 | 86 | 77 | 75 | 72 | 68 |
| Wheel Loader | 0.076 | 0.027 | 0.020 | 0.015 | 0.010 | 86 | 77 | 75 | 72 | 68 |
| Fork Lift | 0.047 | 0.016 | 0.013 | 0.009 | 0.006 | 81 | 72 | 70 | 67 | 63 |
| Jackhammer | 0.035 | 0.012 | 0.009 | 0.007 | 0.004 | 79 | 70 | 68 | 65 | 61 |
| Small Bulldozer | 0.003 | 0.001 | 0.0008 | 0.0006 | 0.0004 | 58 | 49 | 47 | 44 | 40 |

SOURCE: FTA, Transit Noise and Vibration Impact Assessment, September 2018; ESA, 2024.

Because vibration impacts occur normally at or within buildings, the distance to the nearest sensitive uses, for vibration impact analysis purposes, is measured between the nearest off-site sensitive use buildings and the Project construction equipment area near the Project boundary. As shown in Table 4.6-6, drill rigs generate approximately 0.089 in/sec PPV when measured at 25 feet. FTA guidelines indicate that a vibration level of 0.5 inch/sec PPV is considered safe for buildings consisting of reinforced concrete, steel, or timber (no plaster), and would not result in any construction vibration damage. For a non-engineered timber and masonry building, the construction vibration damage criterion is 0.2 inch/sec PPV. As a conservative analysis, the FTA 0.2 PPV (in/sec) is used as a threshold of significance.

Based on the vibration data provided in Table 4.6-6, vibration velocities from construction equipment would range from approximately 0.003 to 0.089 inches per second PPV at 25 feet from the source of activity. The nearest off-site buildings to the Project Site that could be subjected to Project-related vibration structural damage include residential buildings at a distance of approximately 50 feet as measured from the Project Site boundary (i.e., the construction area for the proposed installation of fiber optic cable and associated broadband components) to the nearest residential building in both the City of Guadalupe and unincorporated areas of the County. Pile driving would not be used at the Project Site boundary and other vibration-generating equipment would normally operate at least 50 feet or more from the nearest off-site buildings. Thus, based on the vibration data provided in Table 4.6-6, the nearest off-site buildings would not be exposed to vibration levels that would cause structural damage and impacts would be **less than significant**.

Operation

The Project's operations would include typical commercial-grade stationary electrical equipment which would not produce vibration. In addition, the primary sources of transient vibration would include passenger and worker vehicle circulation within the proposed installation areas for periodic inspection and maintenance activities. Groundborne vibration generated by each of the above-mentioned activities would generate approximately up to 0.005 in/sec PPV adjacent to the Project Site.² The potential vibration levels from all Project operational sources at the closest existing sensitive receptor locations would be less than the significance threshold of 0.2 in/sec PPV significance threshold for potential residential building damage. As such, vibration impacts associated with operation of the Project would be below the significance threshold and impacts would be **less than significant** and mitigation measures would not be required.

Human Annoyance

Construction

The CEQA Thresholds Guide identifies residences, schools, motels and hotels, libraries, religious institutions, hospitals, nursing homes, and parks as sensitive uses. Off-site non-residential uses such as retail and commercial uses are not considered vibration sensitive receptors for human annoyance under CEQA. Groundborne noise specifically refers to the rumbling noise emanating from the motion of building room surfaces due to vibration of floors and walls and is perceptible only inside buildings.³ For typical buildings, groundborne vibration results in groundborne noise levels approximately 25 to 40

² This vibration estimate is based on data presented in the USDOT Federal Transit Administration, 2018; which is included in Appendix G of this Draft EIR.

³ Federal Transit Administration, Noise and Vibration Manual, 2018, Page 112,

decibels lower than the velocity level.⁴ According to the FTA *Noise and Vibration Manual*, most of the studies of groundborne vibration in this country have focused on urban rail transit and the problems with groundborne vibration and noise that are common when there is less than 50 feet between a subway structure and building foundations. Project construction would not create on-going and continuous groundborne vibration and noise like that of an urban rail transit system. Groundborne noise impacts would also be **less than significant**.

Nearby vibration-sensitive uses for potential human annoyance in the Project vicinity include residences approximately 50 feet from the Project Site (i.e., the construction area for the proposed installation of fiber optic cable and associated broadband components), with other residential structures at greater distances. At a distance of 50 feet or more, the maximum vibration level would be attenuated to groundborne vibration levels of 49 VdB to 78 VdB or less.

The Project would generate transient-linear vibrations from construction and not generate continuous vibrations. Vibration noise would not occur at 50 feet from a single residence while construction occurs. Thus, Project construction would not exceed the FTA's 78 VdB threshold for daytime events at the nearest noise-sensitive receiver locations (residences). In addition, construction vibration-generation activities would not occur during the nighttime hours when people normally sleep. Impacts would be **less than significant** and mitigation measures would not be required.

Operation

Post-construction on-site activities would include limited worker vehicle trips that would not be anticipated to generate excessive groundborne noise or vibration. Project operational vibration levels would be substantially less than during construction. As such, groundborne vibration and noise impact to human annoyance associated with the long-term operation of project would be **less than significant** and mitigation measures would not be required.

Future Broadband Projects

It is anticipated that Future Broadband Projects, located in other areas of the County, would be of similar size and scale, with a comparable construction effort in terms of overall intensity, would employ a similar mix of construction methods and equipment, and would result in similar construction durations as those assumed for the five Priority Area projects. Therefore, impacts from vibration in relation to building damage, human annoyance, and post-construction operation would be **less than significant**.

Mitigation Measures

None required.

Cumulative Impacts

As discussed above, the Broadband Program is not expected to result in ground-borne vibration damage or human annoyance during construction or once operational. Ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Man-made vibration issues are, therefore, usually confined to short distances from the source (i.e., 50 feet or less). Due to the rapid attenuation characteristics of ground-borne vibration, there is no expected potential for cumulative

⁴ Federal Transit Administration, *Noise and Vibration Manual*, 2018, Page 119.

construction- or operational-period impacts with respect to ground-borne vibration from All past, present, and reasonably future projects. Therefore, cumulative vibration impacts would be **less than significant**.

Threshold 3: For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?

Impact Statement 3: Implementation of the Proposed Project would not result in the Project being located within the vicinity of a private airstrip or airport land use plan. Therefore, the Airport operations would result in a less than significant impact.

The Project is located within 2 miles of New Cuyama Airport (L88), which is a privately owned airstrip which is open to the public for use. This airstrip is located in the New Cuyama/Cuyama Priority Area and is located approximately 850 feet to the south of the nearest proposed fiber optic cable. Noise contours for the proposed airport are unavailable; however, based on public online resources provided by New Cuyama, the primary usage of the airport is to provide rapid response services such as emergency airlifts to hospitals to the residents of Cuyama. In addition, it is used by small aircrafts, such as private planes and helicopters, visiting the region or stopping over, but does not include infrastructure for commercial flights.. The layout of the airstrip is directed in a manner that would not result in the generation of excessive noise levels where workers would be active within the New Cuyama/Cuyama Priority Area. Given this information, noise from the New Cuyama Airport may result in occasional aircraft activity in the areas workers may be active; however, it would be barely perceptible and intermittent. The next nearest airport and airfield in proximity to the Project Site is the Lompoc City Airport (LPC) approximately 2.1 miles to the west of the River Park priority area. The River Park priority area is located outside of the 60 dBA CNEL contour from the airport as shown in Exhibit A-5 in the Santa Barbara County Airport Land Use Commission. Therefore, construction or operation of the Project would not expose people to excessive airport related noise levels. Impacts would be **less than significant** and mitigation measures would not be required.

Mitigation Measures

None required.

Cumulative Impacts

The Proposed Project along with all other past, present, or reasonably foreseeable future projects located within the County's ALUP Planning Area/AIA are required to be consistent with the ALUP policies. In addition to the Proposed Project, future projects would be potentially located within 2 miles from the Lompoc City Airport and New Cuyama Airport or within their sphere of influence.

The ALUP Land Use Compatibility Table 4.6-3 identifies land use by category, including residential, commercial, and industrial land use. The elements of the Proposed Project generally fall within the commercial land use compatibility categories. Almost all the cumulative projects are residential or commercial in nature. The compatibility criteria provided in the Land Use Compatibility Table advises review of noise insulation needs for residential, commercial, and recreational land uses in areas exposed to CNEL 65 dB–70 dB within the ALUP CNEL Contour. The same criteria apply to commercial land

uses in areas exposed to exposed to CNEL 70 dB–75 dB within the ALUP CNEL Contour. While the ALUP advises avoiding development of residential uses, reduction of interior noise levels to acceptable levels is typically achieved through standard residential and commercial building construction practices, and thus is reasonably foreseeable that no significant noise impacts would occur within the cumulative projects. As such, people residing or working in the cumulative projects that would occur within the Lompoc City Airport or New Cuyama Airport would not be exposed to excessive noise from airport operations. Impacts would be **less than significant**.

4.6.4 References

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