3.12 Noise and Vibration

This section describes the regulatory and environmental setting for noise and vibration. It also describes noise and vibration impacts that would result from implementation of the Climate Action 2020: Community Climate Action Plan (CAP) and includes mitigation for significant impacts, where feasible and appropriate.

3.12.1 Environmental Setting

This section describes the fundamentals of environmental noise and vibration and also describes the sources of noise and vibration present in Sonoma County (County). This information is drawn and modified from the *Sonoma County General Plan 2020 Environmental Impact Report* (EIR) (Sonoma County 2006).

3.12.1.1 Fundamentals of Environmental Noise and Vibration

Overview of Noise and Sound

Noise is commonly defined as unwanted sound that annoys or disturbs people and potentially causes an adverse psychological or physiological effect on human health. Because noise is an environmental pollutant that can interfere with human activities, an evaluation of noise is necessary when considering the environmental impacts of a proposed project.

Sound is mechanical energy (vibration) transmitted by pressure waves over a medium such as air or water. Sound is characterized by various parameters, including the rate of oscillation of the sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). In particular, the sound pressure level is the most common descriptor used to characterize the loudness of an ambient (existing) sound level. Although the decibel (dB) scale, a logarithmic scale, is used to quantify sound intensity, it does not accurately describe how sound intensity is perceived by human hearing. The human ear is not equally sensitive to all frequencies in the entire spectrum, so noise measurements are weighted more heavily for frequencies to which humans are sensitive in a process called *A-weighting*, written as *dBA* and referred to as *A-weighted decibels*.

Table 3.12-1 defines the sound measurements and other terminology used in this chapter, and Table 3.12-2 summarizes typical A-weighted sound levels for different noise sources.

Table 3.12-1. Definition of Sound Measurements

Sound Measurements	Definition
Decibel (dB)	A unitless measure of sound on a logarithmic scale, which indicates the squared ratio of sound pressure amplitude to a reference sound pressure amplitude. The reference pressure is 20 micropascals.
A-Weighted Decibel (dBA)	An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
C-Weighted Decibel (dBC)	The sound pressure level in decibels as measured using the C-weighting filter network. The C-weighting is very close to an unweighted or flat response. C-weighting is used only in special cases when low-frequency noise is of particular importance. A comparison of measured A- and C-weighted levels gives an indication of low-frequency content.
Maximum Sound Level (L_{max})	The maximum sound level measured during the measurement period.
Minimum Sound Level (L_{min})	The minimum sound level measured during the measurement period.
Equivalent Sound Level (L_{eq})	The equivalent steady-state sound level that, in a stated period of time, would contain the same acoustical energy.
Percentile-Exceeded Sound Level (L_{xx})	The sound level exceeded xx % of a specific time period. L_{10} is the sound level exceeded 10% of the time. L_{90} is the sound level exceeded 90% of the time. L_{90} is often considered to be representative of the background noise level in a given area.
Day-Night Level (L_{dn})	The energy average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the A-weighted sound levels occurring during the period from 10:00 p.m. to 7:00 a.m.
Community Noise Equivalent Level (CNEL)	The energy average of the A-weighted sound levels occurring during a 24-hour period, with 5 dB added to the A-weighted sound levels occurring during the period from 7:00 p.m. to 10:00 p.m. and 10 dB added to the A-weighted sound levels occurring during the period from 10:00 p.m. to 7:00 a.m.
Vibration Velocity Level (or Vibration Decibel Level, VdB)	The root-mean-square velocity amplitude for measured ground motion, expressed in dB.
Peak Particle Velocity (Peak Velocity or PPV)	A measurement of ground vibration, defined as the maximum speed (measured in inches per second) at which a particle in the ground is moving relative to its inactive state. PPV is usually expressed in inches per second.
Frequency: Hertz (Hz)	The number of complete pressure fluctuations per second above and below atmospheric pressure.

Table 3.12-2. Typical A-Weighted Sound Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	—110—	Rock band
Jet flyover at 1,000 feet		
	—100—	
Gas lawnmower at 3 feet		
	—90—	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	—80—	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawnmower, 100 feet	—70—	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	—60—	
		Large business office
Quiet urban daytime	—50—	Dishwasher in next room
Quiet urban nighttime	—40—	Theater, large conference room (background)
Quiet suburban nighttime		
	—30—	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	—20—	
		Broadcast/recording studio
	—10—	
	—0—	

Source: California Department of Transportation 2013.

In general, human sound perception is such that a change in sound level of 1 dB cannot typically be perceived by the human ear, a change of 3 dB is barely noticeable, a change of 5 dB is clearly noticeable, and a change of 10 dB is perceived as doubling or halving the sound level, if sound levels increase or decrease, respectively.

Different types of measurements are used to characterize the time-varying nature of sound. These measurements include the equivalent sound level (L_{eq}), the minimum and maximum sound levels (L_{min} and L_{max}), percentile-exceeded sound levels (such as L_{10}, L_{20}), the day-night sound level (L_{dn}), and the community noise equivalent level (CNEL). L_{dn} and CNEL values differ by less than 1 dB. As a matter of practice, L_{dn} and CNEL values are considered to be equivalent and are treated as such. These measurements are defined in Table 3.12-1.

For a point source, such as a stationary compressor or construction equipment, sound attenuates (i.e., lessens in intensity), based on geometry, at a rate of 6 dB per doubling of distance. For a line source such as free-flowing traffic on a freeway, sound attenuates at a rate of 3 dB per doubling of distance (California Department of Transportation 2013). Atmospheric conditions, including wind,

temperature gradients, and humidity, can change how sound propagates over distance and affect the level of sound received at a given location. The degree to which the ground surface absorbs acoustical energy also affects sound propagation. Sound that travels over an acoustically absorptive surface such as grass attenuates at a greater rate than sound that travels over a hard surface such as pavement. The increased attenuation is typically in the range of 1 to 2 dB per doubling of distance. Barriers such as buildings and topography that block the line of sight between a source and receiver also increase the attenuation of sound over distance.

Community noise environments are generally perceived as *quiet* when the 24-hour average noise level is below 45 dBA, *moderate* in the 45 to 60 dBA range, and *loud* above 60 dBA. Very noisy urban residential areas are usually around 70 dBA CNEL. Along major thoroughfares, roadside noise levels are typically between 65 and 75 dBA CNEL. Increments of 3 to 5 dB to the existing 1-hour L_{eq}, or to the CNEL, are commonly used as thresholds for an adverse community reaction to a noise increase. However, there is evidence that incremental thresholds in this range may not be sufficiently protective in areas where noise-sensitive uses are located and CNEL is already high (i.e., above 60 dBA). In these areas, limiting noise increases to 3 dB or less is recommended (Federal Transit Administration 2006). Noise intrusions that cause short-term interior levels to rise above 45 dBA at night can disrupt sleep. Exposures to noise levels greater than 85 dBA for 8 hours or longer can cause permanent hearing damage.

Overview of Groundborne Vibration

Operation of heavy construction equipment, particularly pile-driving equipment and other impact devices (e.g., pavement breakers), create seismic waves that radiate along the surface of and downward into the ground. These surface waves can be felt as ground vibration. Vibration from operation of this equipment can result in effects that range from annoyance of people to damage to structures. Variations in geology and distance result in different vibration levels with different frequencies and displacements. In all cases, vibration amplitudes decrease with increasing distance.

Perceptible groundborne vibration is generally limited to areas within a few hundred feet of construction activities. As seismic waves travel outward from a vibration source, they cause rock and soil particles to oscillate. The actual distance that these particles move is usually only a few ten-thousandths to a few thousandths of an inch. The rate or velocity (in inches per second) at which these particles move is the commonly accepted descriptor of the vibration amplitude, referred to as the *peak particle velocity* (PPV).

Vibration amplitude attenuates over distance. It is a complex function of how energy is imparted into the ground and the soil or rock conditions through which the vibration is traveling. The following equation is used to estimate the vibration level at a given distance for typical soil conditions. PPV_{ref} is the reference PPV at 25 feet (Table 3.12-3).

$$PPV = PPV_{ref} \times (25/Distance)^{1.5}$$

Table 3.12-3 summarizes typical vibration levels generated by construction equipment at a reference distance of 25 feet and other distances, as determined through use of the attenuation equation above.

Table 3.12-3. Vibration Source Levels for Construction Equipment

Equipment	PPV at 25 Feet	PPV at 50 Feet	PPV at 75 Feet	PPV at 100 Feet	PPV at 175 Feet
Pile driver (sonic/vibratory)	0.734	0.2595	0.1413	0.0918	0.0396
Hoe ram	0.089	0.0315	0.0171	0.0111	0.0048
Large bulldozer	0.089	0.0315	0.0171	0.0111	0.0048
Loaded trucks	0.076	0.0269	0.0146	0.0095	0.0041
Jackhammer	0.035	0.0124	0.0067	0.0044	0.0019
Small bulldozer	0.003	0.0011	0.0006	0.0004	0.0002

Source: Federal Transit Administration 2006.
PPV = peak particle velocity

Table 3.12-4 and Table 3.12-5 summarize guidelines developed by the California Department of Transportation (Caltrans) for damage and annoyance potential from the transient and continuous vibration that is usually associated with construction activity. The pieces of equipment or activities that are typical of continuous vibration include excavation equipment, static compaction equipment, tracked vehicles, traffic on a highway, vibratory pile drivers, pile-extraction equipment, and vibratory compaction equipment. The pieces of equipment or activities that are typical of single-impact (transient) or low-rate repeated impact vibration include impact pile drivers, blasting, drop balls, "pogo stick" compactors, and crack-and-seat equipment.

Groundborne vibration can also be quantified by the root-mean-square (RMS) velocity amplitude, which is useful for assessing human annoyance; the RMS amplitude is expressed in terms of the velocity level in decibel units (VdB). The background vibration velocity level in residential areas is usually around 50 VdB or lower. The vibration velocity level threshold of perception for humans is approximately 65 VdB. Most perceptible indoor vibration is caused by sources within buildings, such as the operation of mechanical equipment, the movement of people, or the slamming of doors. Typical outdoor sources of perceptible groundborne vibration are heavy construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the groundborne vibration from traffic is rarely perceptible.

Table 3.12-4. Vibration Damage Potential Threshold Criteria Guidelines

	Maximum PPV (in/sec)	
Structure and Condition	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
Newer residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Source: California Department of Transportation 2004.
Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.
PPV = peak particle velocity

Table 3.12-5. Vibration Annoyance Potential Criteria Guidelines

Structure and Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4

Source: Federal Transit Administration 2006.

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

PPV = peak particle velocity

3.12.1.2 Existing Noise Sources

Sources from Land Uses

The production of noise is an inherent part of many industrial, commercial, and agricultural processes, even when the best available noise control technology is applied. Noise production within industrial or commercial facilities is controlled indirectly by federal and state employee health and safety regulations (i.e., from the Occupational Safety and Health Administration [OSHA] and California Division of Occupational Safety and Health [known as Cal-OSHA]), but exterior noise emissions from such operations have the potential to exceed locally acceptable standards at nearby noise-sensitive land uses.

Several major industrial sources in the County generate significant noise levels and result in noise-related land use conflicts. These sources include industrial mineral resource extraction and processing facilities, geothermal developments, wineries, solid waste disposal facilities, and other industrial operations (such as lumber remanufacturing and landscape supply companies). Other significant noise sources in the County include the Infineon Raceway during racetrack activity.

Sources from Transportation

Roadways

Vehicular traffic is the largest contributor to noise levels in unincorporated Sonoma County. Exhibits 7.7-5 and 7.7-6 of the *Sonoma County General Plan 2020 EIR*, Appendix 7.7, show the distances from state highways in the County and County roadway centerlines to the existing 60 and 65 dB L_{dn} noise contours. Noise-sensitive land uses located within these contours are potentially affected by traffic noise, in accordance with the land use compatibility criteria.

Airports

Six airports in Sonoma County are open for public use: two are privately owned (Sonoma Skypark and Sonoma Valley), three are owned by cities (Cloverdale, Healdsburg, and Petaluma), and one is County owned (Sonoma County Airport). Sonoma County Airport is the only airport within the County for commercial airline service. The Sonoma County Airport Land Use Commission (ALUC) adopted the

Sonoma County Comprehensive Airport Land Use Plan (CALUP), which identifies compatible land uses in the areas adjacent to the airports with respect to noise, airspace, and safety. All six Sonoma County airports are subject to the regulations of the ALUC and the CALUP.

Noise exposure contours for airports use the CNEL metric to be consistent with the requirements of California Airport Noise Regulations (California Code of Regulations [CCR] Title 21) and land use compatibility planning guidelines adopted by the ALUC. The 55, 60, and 65 dB CNEL contours are shown in the CALUP, which includes a noise compatibility criterion of 60 dB CNEL for residential uses. This criterion is consistent with the transportation noise standards recommended in the *Sonoma County General Plan 2020*, Noise Element. Although the California Airport Noise Regulations require airports to ensure compatible land uses within the 65 dB CNEL contour, the ALUC recommendations recognize the rural nature of Sonoma County and the fact that ambient noise levels are lower in the County than in urbanized jurisdictions.

Existing Noise Levels

A community noise survey was conducted for the *Sonoma County General Plan 2020 EIR* to document noise exposure in representative areas of the County with noise-sensitive land uses. Noise-sensitive land uses in this survey included all residential uses, schools, long-term care facilities (e.g., hospitals, nursing homes), churches, and libraries.

The community noise survey results indicate that typical noise levels in noise-sensitive areas range from 45 to 55 dB L_{dn}. These are relatively low noise levels and typical of small communities and rural areas. In more developed areas, increased local traffic would result in higher noise levels, in the range of 55 to 65 dB L_{dn}.

3.12.1.3 Existing Groundborne Vibration Sources

The most common sources of groundborne vibration are construction activities, roadway truck traffic, and trains. A large loaded truck can generate groundborne vibration velocity levels as high as about 77 VdB at 50 feet from the source (Federal Transit Administration 2006). As described above, the vibration velocity threshold of perception for humans is approximately 65 VdB. Therefore, a large loaded truck can potentially produce vibration that is perceptible. However, large delivery trucks traveling on smooth, well-maintained roads rarely produce perceptible groundborne vibration.

3.12.2 Regulatory Setting

3.12.2.1 Federal

Generally, the federal government sets noise standards for transportation-related noise sources that are closely linked to interstate commerce. These sources include aircraft, locomotives, and trucks. No federal noise standards are directly applicable to implementation of the CAP.

3.12.2.2 State

The state government sets noise standards for transportation noise sources such as automobiles, light trucks, and motorcycles. Noise sources associated with industrial, commercial, and construction activities are generally subject to local control through noise ordinances and general plan policies.

California Code

Title 24 of the CCR, Part 2, California Noise Insulation Standards, establishes minimum noise insulation standards to protect persons within new hotels, motels, dormitories, long-term care facilities, apartment houses, and dwellings other than single-family residences. Under this regulation, interior noise levels attributable to exterior noise sources cannot exceed 45 L_{dn} in any habitable room.

3.12.2.3 Local

Appendix C, *Local General Plan Goals, Objectives, and Policies*, provides a list of the goals, objectives, and policies in the local general plans of the participating jurisdictions including those related to noise and vibration. Appendix E, *Local Land Use and Noise Compatibility Standards & Noise Ordinances*, contains local land use compatibility standards and noise ordinances for each jurisdiction. These goals, objectives, and policies were reviewed to assess whether the project is consistent with the general plans of participating jurisdictions. Disclosure of this consistency analysis is for informational purposes. An additional purpose of providing a list of relative local policies is, where appropriate, to provide the context within which the CAP will be locally implemented. As described in the CAP, most of the CAP measures represent implementation of many of the priorities outlined in existing local policies.

Inconsistencies with general plan policies are not necessarily considered significant impacts under the California Environmental Quality Act (CEQA) unless they are related to physical impacts on the environment that are significant in their own right.

Implementation of the CAP is consistent with the applicable general plan goals, objectives, and policies of the participating jurisdictions in relation to noise and vibration.

3.12.3 Impacts Analysis

3.12.3.1 Methodology

This analysis is based on a review of existing noise and vibration sources. Effects related to noise and vibration are analyzed qualitatively and focused on the CAP's potential to expose people to noise levels in excess of local standards.

3.12.3.2 Significance Criteria

State CEQA Guidelines Appendix G (14 CCR 15000 et seq.) identifies the significance criteria to be considered when determining whether a project could have significant impacts related to noise.

An impact would be considered significant if construction or operation of the project would have any of the following consequences:

- Expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies.
- Expose persons to or generate excessive groundborne vibration or groundborne noise levels.
- Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.

- Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.
- Be located within an airport land use plan area or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport and expose people residing or working in the project area to excessive noise levels.
- Be located in the vicinity of a private airstrip and expose people residing or working in the project area to excessive noise levels.

3.12.3.3 Impacts and Mitigation Measures

Impact NOI-1a: Implementation of the CAP could generate noise levels in excess of local standards or result in a substantial temporary increase in ambient noise levels during construction (less than significant).

Evaluation of noise impacts generally requires site-specific analysis. The CAP is a policy-level document. It does not include any site-specific designs or proposals or grant any entitlements for development that would have the potential to expose people to or generate noise levels in excess of local standards. As a policy document, the CAP would have no direct impact related to noise. However, future implementation of activities supported by the CAP could expose people to or generate noise levels in excess of local standards or result in a substantial increase in ambient noise levels during construction.

There are several CAP measures that promote the construction of new facilities or retrofits to existing buildings to improve energy efficiency and increase renewable energy use, increase solid waste diversion, increase recycled and greywater use, improve water efficiency, and increase the capture/use of methane from landfills and dairies. The CAP also promotes mixed-use and transit-oriented development in city centers, consistent with existing land use plans. Furthermore, several CAP measures promote minor changes to the existing streetscape, such as traffic-calming improvements and additional transit, pedestrian, and bicycle facilities to promote increased transit accessibility.

Table 3.12-6 lists equipment that is likely to be used for construction. For each equipment type, the table shows the corresponding acoustical usage factor (i.e., the percentage of time the equipment is typically in operation) and the L_{max} value at 50 feet.

Table 3.12-6. Typical Construction Noise Emission Levels

Equipment	Acoustical Use Factor	L_{max} at 50 Feet (dBA)
Backhoe	40%	78
Compressor	40%	78
Concrete mixer truck	40%	79
Concrete saw	20%	90
Crane	16%	81
Dozer	40%	82
Excavator	40%	81
Front-end loader	40%	79
Generator	50%	81
Grader	40%	85
Jackhammer	20%	89
Paver	50%	77
Pneumatic Tools	50%	85
Impact pile driver	20%	101
Roller	20%	80
Truck	40%	74
Welder	40%	74

Source: Federal Highway Administration 2006.
L_{max} – maximum sound level
dBA = A-weighted decibel

There is presently no basis to conclude that construction of these facilities will generate noise levels in excess of local standards for continuous and intermittent construction noise. Where there is the potential for these impacts, they are routinely addressed through project-level environmental review and permitting. Many existing city and county policies and ordinances address such impacts. Where existing ordinances do not address these impacts, then project-level CEQA review will assess the specific significance of the project impact and, where appropriate, identify mitigation to address those impacts. In particular, this impact is routinely addressed with standard mitigation identified during project-level review such as employing noise-reducing construction practices including muffling construction equipment exhaust, prohibiting construction activities to certain days and times, and using noise-reducing enclosures or shielding around noise-generating equipment. Thus, impacts related to substantial increases in ambient noise levels are considered to be less than significant at this time.

Impact NOI-1b: Implementation of the CAP could generate noise levels in excess of local standards or result in a substantial permanent increase in ambient noise levels during operation (less than significant).

There are several CAP measures that promote the construction of new facilities or retrofits to existing buildings to improve energy efficiency and increase renewable energy use, increase solid waste diversion, increase recycled water treatment and use, and increase the capture/use of methane from landfills and dairies. Most of these new facilities would be constructed within or on existing buildings (e.g., rooftops, wastewater treatment plants, landfills, dairies). Such improvements would most likely not be a new source of excessive noise.

Several CAP measures promote additional transit facilities and operations as well as pedestrian and bicycle facilities to reduce vehicle fuel use by encouraging a shift in the mode of transportation that people use. The CAP also includes measures that promote mixed-use and transit-oriented development in city centers, consistent with existing land use plans. Together, new mixed-use/infill development in city centers and additional transit operations could generate noise levels in excess of local standards and increase ambient noise levels. However, any mixed-use and transit-oriented development in city centers would be subject to further CEQA analysis of project-specific impacts and compliance with local land use and noise compatibility standards. Furthermore, the CAP would not represent a change in local land use policies. Thus, impacts related to substantial increases in ambient noise levels are considered to be less than significant at this time.

Impact NOI-2: Implementation of the CAP could expose people to or generate excessive groundborne vibration or groundborne noise levels (less than significant).

As noted above, most of the new facilities promoted by the CAP would be constructed within or on existing buildings (e.g., rooftops, wastewater treatment plants, landfills, dairies). These minor improvements to existing structures would most likely not require construction methods that would generate excessive groundborne vibration or groundborne noise levels. In addition, these improvements would not result in an increase in the number of large trucks or add any sources of permanent operational groundborne vibration.

Although construction details are unknown, construction of new facilities may require the use of impact tools that are typically associated with substantial vibrational impacts, such as pile drivers, jackhammers, impact hammers, and earth compaction tools. The operation of heavy-duty construction equipment could generate localized groundborne vibration in the vicinity of the construction activity. Depending on the proximity of the new facilities to receptors and existing structures, construction activities could generate excessive ground vibration and potentially disturb nearby receptors or damage surrounding existing structures. In city centers, the construction of mixed-use and transit-oriented development is likely to be in proximity to existing structures. Construction-generated groundborne vibration may structurally damage surrounding structures, and this could result in a significant impact. However, the CAP would not change local land use plans. Therefore, the potential for vibration effects due to the construction of mixed-use, infill, or transit-oriented development is part of the existing potential from prior adoption of current land use plans. It is not a new impact related to the CAP. Where there is the potential for these impacts, they are routinely addressed through project-level environmental review and permitting. Many existing city and county policies and ordinances address such impacts. Where existing ordinances do not address these impacts, then project-level CEQA review will assess the specific significance of the project impact and, where appropriate, identify mitigation to address those impacts. In particular, this impact is routinely addressed with standard mitigation identified during project-level review such as preparing vibration monitoring plans and incorporating project-specific methods for minimizing or reducing vibrational impacts on nearby vibration-sensitive structures. Thus, impacts related to excessive groundborne vibration or groundborne noise levels are considered to be less than significant at this time.

Impact NOI-3: New development promoted by the CAP could be located within airport land use plan areas, within 2 miles of a public airport, or within the vicinity of a private airstrip and expose people residing or working in the project area to excessive noise levels (less than significant).

As noted above, the CAP would promote the construction of several new commercial or industrial facilities related to recycled water, solid waste, renewable energy, and energy efficiency. This may result in additional employees. The CAP would also promote mixed-use, transit-oriented, and infill development as well as affordable housing near transit stations but only as consistent with existing land use plans.

New development could be located in proximity to one of six public airports or private airstrips, exposing people residing or working in these areas to excessive noise levels from aviation activities. However, the CAP does not directly involve the construction or operation of any structures. Any structures that could be constructed or projects that would be undertaken under the CAP would be subject to further CEQA analysis of project-specific impacts and applicable federal, state, and local aviation safety regulations. Local regulations require compliance with the adopted Sonoma County CALUP, which identifies compatible land uses in the areas adjacent to the airports with respect to noise, airspace, and safety. Through compliance with local regulations, impacts associated with excessive aviation noise would be less than significant.

3.12.3.4 Cumulative Impacts

Impact C-NOI-1: Implementation of the CAP, in combination with other foreseeable development in the surrounding area, could have a significant cumulative impact from noise (less than considerable contribution).

The geographic context for the evaluation of cumulative construction noise impacts and stationary-source operational noise impacts is generally very small (i.e., a few hundred feet) because noise diminishes rapidly with distance (6 dBA per doubling of distance for point and stationary sources). For cumulative operational noise impacts from traffic, the geographic context is generally larger; thus, overall growth in the County is considered when assessing potential cumulative impacts. The context for cumulative noise impacts considers the effects of the CAP in combination with other development in Sonoma County.

Implementation of CAP policies to reduce greenhouse gas emissions could promote the construction of new facilities. Although the locations for the facilities promoted by the CAP are unknown, if the construction of a nearby project occurs at the same time as construction of a CAP-promoted facility, cumulative construction noise effects could occur. Where there is the potential for these cumulative impacts, they are routinely addressed through project-level environmental review and permitting. Many existing city and county policies and ordinances address such impacts. Where existing ordinances do not address these impacts, then project-level CEQA review will assess the specific significance of the project impact and, where appropriate, identify mitigation to address those impacts. In particular, this impact is routinely addressed with standard mitigation identified during project-level review such as employing noise-reducing construction practices and preparing vibration monitoring plans. As such, cumulative noise impacts from projects in furtherance of the CAP would require site-specific analysis and at present is speculative.