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3.7 Noise

3.7.1 Introduction

This section describes the existing conditions related to noise and vibration within the plan area, which encompasses unincorporated and incorporated Humboldt County, as well as the regulatory framework. This section also evaluates the possible impacts related to noise and vibration that could result from implementation of the RCAP and CEQA GHG Emissions Thresholds.

3.7.2 Environmental Setting

Characteristics of Noise

Sound is a vibratory disturbance created by a moving or vibrating source, which is capable of being detected by the hearing organs. Noise is defined as sound that is loud, unpleasant, unexpected, or undesired and may therefore be classified as a more specific group of sounds. The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance, and, in the extreme, hearing impairment.¹ Noise levels are commonly measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound pressure levels so that they are consistent with the human hearing response, which is most sensitive to frequencies around 4,000 Hertz and less sensitive to frequencies around and below 100 Hertz. Decibels are measured on a logarithmic scale that quantifies sound intensity in a manner similar to the Richter scale used to measure earthquake magnitudes. A doubling of the energy of a noise source, such as doubling of roadway vehicle volume, would increase the noise level by 3 dBA; reducing the energy in half would result in a 3 dBA decrease.²

Human perception of noise has no simple correlation with sound energy: the perception of sound is not linear in terms of dBA or in terms of sound energy. Two sources do not “sound twice as loud” as one source. It is widely accepted that the average healthy ear can barely perceive changes of 3 dBA, increase or decrease (i.e., twice the sound energy); that a change of 5 dBA is readily perceptible; and that an increase (or decrease) of 10 dBA sounds twice (or half) as loud.

Sound changes in both level and frequency spectrum as it travels from the source to the receptor. The most obvious change is the decrease in level as the distance from the source increases. The manner in which noise reduces with distance depends on factors such as the type of sources (e.g., point or line, the path the sound will travel, site conditions, and obstructions). Noise levels from a point source typically attenuate, or drop off, at a rate of 6 dBA per doubling of distance (e.g., construction, industrial machinery, ventilation units). Noise from a line source (e.g., roadway, pipeline, railroad) typically attenuates at about 3 dBA per doubling of distance. The propagation of noise is also affected by the intervening ground, known as ground absorption. A hard site, such as a parking lot or smooth body of water, receives no additional ground attenuation and the changes in noise levels with distance (drop-off rate) result from simply the geometric spreading of the source. An additional ground attenuation value of 1.5 dBA per doubling of distance applies to a soft site (e.g., soft dirt, grass, or scattered bushes and trees). Noise levels may also be reduced by

¹ California Department of Transportation (Caltrans). 2013. *Technical Noise Supplement to the Traffic Noise Analysis Protocol*. (CT-HWANP-RT-13-069.25.2) September. <https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tens-sep2013-a11y.pdf> (accessed September 2024).

² Crocker, Malcom. 2007. *Handbook of Noise and Vibration Control Book*, ISBN: 978-0-471-39599-7, Wiley-VCH, October.

intervening structures. The amount of attenuation provided by this “shielding” depends on the size of the object and the frequencies of the noise levels. Natural terrain features such as hills and dense woods, and man-made features such as buildings and walls, can substantially alter noise levels. Generally, any large structure blocking the line of sight will provide at least a 5-dBA reduction in source noise levels at the receptor.³ Structures can substantially reduce exposure to noise as well. The FHWA’s guidelines indicate that modern building construction generally provides an exterior-to-interior noise level reduction of 20 to 35 dBA with closed windows.

The effect of noise is not a function of loudness alone. The time of day when noise occurs and the duration of the noise are also important factors of project noise impact. Most noise that lasts for more than a few seconds is variable in its intensity. Consequently, a variety of noise descriptors have been developed. One of the most frequently used noise metrics is the equivalent noise level (L_{eq}); it considers both duration and sound power level. L_{eq} is defined as the single steady A-weighted level equivalent to the same amount of energy as that contained in the actual fluctuating levels over time. Typically, L_{eq} is summed over a one-hour period. L_{max} is the highest root mean squared (RMS) sound pressure level within the sampling period, and L_{min} is the lowest RMS sound pressure level within the measuring period.

Noise that occurs at night tends to be more disturbing than that occurring during the day. Community noise is usually measured using Day-Night Average Level (L_{dn}), which is the 24-hour average noise level with a +10 dBA penalty for noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours; it is also measured using Community Noise Equivalent Level (CNEL), which is the 24-hour average noise level with a +5 dBA penalty for noise occurring from 7:00 p.m. to 10:00 p.m. and a +10 dBA penalty for noise occurring from 10:00 p.m. to 7:00 a.m. Noise levels described by L_{dn} and CNEL usually differ by about 1 dBA or less. The relationship between the peak-hour L_{eq} value and the L_{dn} /CNEL depends on the distribution of roadway noise during the day, evening, and night. Quiet suburban areas typically have CNEL noise levels in the range of 40 to 50 dBA, while areas near arterial streets are in the 50 to 60-plus CNEL range. Normal conversational levels are in the 60 to 65-dBA L_{eq} range; ambient noise levels greater than 65 dBA L_{eq} can interrupt conversations.⁴ Table 3.7-1 briefly defines measurement descriptors and other sound terminology used in this section.

³ Federal Highway Administration (FHWA). 2011. *Highway Traffic Noise: Analysis and Abatement Guidance*. (FHWAHEP-10-025). December.

https://www.fhwa.dot.gov/Environment/noise/regulations_and_guidance/analysis_and_abatement_guidance/revguidance.pdf (accessed September 2024).

⁴ Federal Transit Administration (FTA). 2018. *Transit Noise and Vibration Impact Assessment*. Available at: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf (accessed October 2022).

Table 3.7-1 Sound Terminology

Term	Definition
Sound	A vibratory disturbance created by a vibrating object which, when transmitted by pressure waves through a medium such as air, can be detected by a receiving mechanism such as the human ear or a microphone.
Noise	Sound that is loud, unpleasant, unexpected, or otherwise undesirable.
Ambient Noise	The composite of noise from all sources near and far in a given environment.
Decibel (dB)	A unitless measure of sound on a logarithmic scale, which represents the squared ratio of sound-pressure amplitude to a reference sound pressure. The reference pressure is 20 micropascals, representing the threshold of human hearing (0 dB).
A-Weighted Decibel (dBA)	An overall frequency-weighted sound level that approximates the frequency response of the human ear.
Equivalent Noise Level (L_{eq})	The average sound energy occurring over a specified time period. In effect, L_{eq} is the steady-state sound level that in a stated period would contain the same acoustical energy as the time-varying sound that actually occurs during the same period.
Ambient Noise	The composite of noise from all sources near and far in a given environment.
Maximum and Minimum Noise Levels (L_{max} and L_{min})	The maximum or minimum instantaneous sound level measured during a measurement period.
Day-Night Level (DNL or 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 between 10:00 p.m. and 7:00 a.m. (nighttime).
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 between 7:00 p.m. and 10:00 p.m. and 10 dB added to the A-weighted sound levels occurring between 10:00 p.m. and 7:00 a.m.

Characteristics of Vibration

Groundborne vibration of concern in environmental analysis consists of the oscillatory waves that move from a source through the ground to adjacent structures. The number of cycles per second of oscillation makes up the vibration frequency, described in terms of Hertz. The frequency of a vibrating object describes how rapidly it oscillates. The normal frequency range of most groundborne vibration that can be felt by the human body is from a low of less than 1 Hertz up to a high of about 200 Hertz.⁵ Typically, groundborne vibration generated by human activities attenuates rapidly with distance from the source of the vibration.

While people have varying sensitivities to vibrations at different frequencies, in general they are most sensitive to low-frequency vibration. Vibration in buildings, such as from nearby construction activities, may cause windows, items on shelves, and pictures on walls to rattle. Vibration of building components can also take the form of an audible low-frequency rumbling noise, referred to as groundborne noise. Groundborne noise is usually only a problem when the originating vibration spectrum is dominated by frequencies in the upper end of the range (60 to 200 Hertz), or when foundations or utilities, such as sewer and water pipes, physically connect the structure and the vibration source.⁶

⁵ Crocker, Malcolm J. (Editor). 2007. Handbook of Noise and Vibration Control Book. ISBN: 978-0-471-39599-7, Wiley-VCH. October 2007.

⁶ Federal Transit Administration (FTA). 2018. *Transit Noise and Vibration Impact Assessment* https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf (accessed September 2024).

Vibration energy spreads out as it travels through the ground, causing the vibration level to diminish with distance away from the source. High-frequency vibrations diminish much more rapidly than low frequencies, so low frequencies tend to dominate the spectrum at large distances from the source. Discontinuities in the soil strata can also cause diffractions or channeling effects that affect the propagation of vibration over long distances.⁷ When a building is impacted by vibration, a ground-to-foundation coupling loss will usually reduce the overall vibration level. However, under rare circumstances, the ground-to-foundation coupling may amplify the vibration level due to structural resonances of the floors and walls.

Vibration amplitudes are usually expressed in peak particle velocity (PPV). The PPV is normally described in inches per second (in/sec). PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal. PPV is often used in the monitoring of blasting vibration and other construction activity because it is related to the stresses that are experienced by buildings.⁸ Table 3.7-2 summarizes the vibration damage criteria recommended by the FTA for evaluating the potential for architectural damage to buildings.

Table 3.7-2 Criteria for Vibration Damage Potential

Building Category	PPV (in/sec)
I. Reinforced concrete, steel, or timber (no plaster)	0.5
II. Engineered concrete and masonry (no plaster)	0.3
III. Non-engineered timber and masonry buildings	0.2
IV. Buildings extremely susceptible to vibration damage	0.12

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

Source: Federal Transit Administration (FTA). 2018. *Transit Noise and Vibration Impact Assessment*. Available at: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf (accessed September 2024).

Noise- and Vibration-Sensitive Land Uses

Noise exposure goals for various types of land uses reflect the varying noise sensitivities associated with those uses. Noise-sensitive land uses are typically defined as single and multi-family residential; hotels and motels; group homes, hospital and extended medical facilities; churches; schools and other learning institutions; and libraries. Vibration-sensitive receptors, which are similar to noise-sensitive receptors, include residences and institutional uses, such as schools, churches, and hospitals. Vibration-sensitive receptors also include buildings where vibrations may interfere with equipment that is affected by vibration levels that may be well below those associated with human annoyance (e.g., recording studios or medical facilities with sensitive equipment). Noise- and vibration-sensitive land uses are located throughout Humboldt, with sensitive uses clustered particularly in populated areas such as Arcata, Blue Lake, Eureka, Ferndale, Fortuna, Rio Dell, Trinidad, and McKinleyville.

⁷ Caltrans. 2020 *Transportation and Construction Vibration Guidance Manual*. (CT-HWANP-RT-20-365.01.01) September. <https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tcvgm-apr2020-a11y.pdf> (accessed September 2024).

⁸ Caltrans. 2020 *Transportation and Construction Vibration Guidance Manual*. (CT-HWANP-RT-20-365.01.01) September. <https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tcvgm-apr2020-a11y.pdf> (accessed October 2022).

Existing Noise Conditions and Sources

Existing noise conditions in Humboldt are generally dominated by transportation sources, with additional noise generated from industrial sources. These sources are described further below.

Transportation Sources

The predominant source of noise in Humboldt County is motor vehicles. Motor vehicle noise is characterized by a high number of individual events that can create a sustained noise level in proximity to noise-sensitive uses. Roadways with the highest roadway vehicle volumes and speeds produce the highest noise levels. In Humboldt County, these roadways would include U.S. 101 and State Highways 36, 96, 211, 255, and 299. Traffic noise contours are included in Table 13-B of the Humboldt County General Plan, with CNEL ranging from 63.1 to 73.4 in areas adjacent to these roadways.⁹

Airport noise is an additional noise source in Humboldt, with noise levels ranging from 50 dB to 75+ dB in the vicinity of the airports. The Humboldt County Airport Land Use Compatibility Plan (ALUCP) contains noise contours for each public airport in the County, which includes:¹⁰

- California Redwood Coast – Humboldt County Airport
- Dinsmore Airport
- Garberville Airport
- Kneeland Airport
- Murray Field Airport
- Rohnerville Airport
- Samoa Field Airport
- Shelter Cove Airport

Rail noise sources have historically been present in Humboldt County through the North Coast Railroad Authority rail corridor. The rail corridor was transferred to the Great Redwood Trail Agency to convert the rail line into a trail network, and trains do not currently run through the Humboldt along this rail corridor.

Industrial Sources

Other noise sources in Humboldt County include industrial uses such as gravel and mining operations. According to the Humboldt County General Plan Noise Element, gravel operations are located in the communities of Blocksburg, Blue Lake, Bridgeville, Capetown, Carlotta, Dyerville, Fortuna, Garberville, Hoopa, Maple Creek, Martin’s Ferry, Orleans, Petrolia, Scotia, and Willow Creek. Other sources identified by the Noise Element include shipping operations in Fields Landing, a pulp mill, cogeneration plant, and shipping operations in Samoa, and a mill in Scotia.¹¹ These sources can include mechanical equipment and mobile sources such as heavy trucks hauling material. Local governments typically regulate noise from industrial activities through enforcement

⁹ Humboldt, County of. 2017. General Plan Noise Element. <https://humboldt.gov.org/DocumentCenter/View/61989/Chapter-13-Noise-Element-PDF> (accessed November 2024).

¹⁰ Humboldt County Airport Land Use Commission. 2021. Humboldt County Airport Land Use Compatibility Plan. <https://humboldt.gov.org/DocumentCenter/View/95080/2021-Airport-Land-Use-Compatibility-Plan-adopted-04132021-33-MB> (accessed October 2024)

¹¹ Humboldt, County of. 2017. General Plan Noise Element. <https://humboldt.gov.org/DocumentCenter/View/61989/Chapter-13-Noise-Element-PDF> (accessed November 2024).

of noise ordinance standards, implementation of general plan policies and imposition of conditions of approval for building or grading permits. In general, industrial sources tend to be located away from sensitive land uses.

3.7.3 Regulatory Framework

Federal Regulations

Federal Transit Administration Transit and Noise Vibration Impact Assessment Manual

The FTA provides reasonable criteria for assessing construction noise impacts based on the potential for adverse community reaction in their *Transit and Noise Vibration Impact Assessment Manual*. For residential uses, the daytime noise threshold is 80 dBA L_{eq} for an 8-hour period.¹²

Code of Federal Regulations Title 14, Part 150

The Federal Aviation Administration (FAA) enforces Title 14, Part 150 of the Code of Federal Regulations, which governs airport noise compatibility programs and identifies land uses that are normally compatible with various levels of noise exposure. The FAA has determined that sound levels up to 45 dB CNEL are acceptable within residential buildings. Flightpaths from the ACV Airport are located over Humboldt County and would require implementation of the FAA standards.

State Regulations

California General Plan Guidelines

State law requires general plans to include a noise element under Government Code Section 65302(f). The California General Plan Guidelines, published by the Governor's Office of Planning and Research, indicate acceptable, specific land use types in areas with specific noise exposure. The guidelines also offer adjustment factors that may be used to arrive at noise acceptability standards that reflect the noise control goals of the community, the community's sensitivity to noise, and the community's assessment of the relative importance of noise pollution. These guidelines are advisory, and local jurisdictions have the authority to set specific noise standards based on local conditions.

California Building Code

California Code of Regulations Title 24, Building Standards Administrative Code, Part 2, Chapter 12, and the California Building Code codify the State noise insulation standards. These noise standards apply to new construction in California to control interior noise levels as they are affected by exterior noise sources and interior noise sources from separate areas. The regulations specify that interior noise levels shall not exceed 45 dB CNEL/ L_{dn} in any habitable room, as well as specifying sound transmission class requirements for walls, floors, and ceilings around sleeping units.

California Green Building Code

California Green Building Standards Code 2019 (CALGreen) Section 5.507.4, Acoustical Control, regulates construction of non-residential uses within the 65 dB CNEL/ L_{dn} contour of an airport, freeway, expressway, railroad, industrial noise source, or other fixed source. According to Section

¹² FTA. 2018. *Transit Noise and Vibration Impact Assessment* https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf (accessed September 2024).

5.507.4.1.1 “buildings exposed to a noise level of 65 dB $L_{eq}(1\text{-hr})$ during any hour of operation shall employ sound-resistant assemblies as determined by a prescriptive method (CALGreen Section 5.507.4.1) or performance method (CALGreen Section 5.507.4.2).

Projects may demonstrate compliance through the prescriptive method if wall and roof-ceiling assemblies exposed to the noise source meet a composite sound transmission class (STC) rating of at least 50 or a composite outdoor/indoor transmission class (OITC) rating of no less than 40, with exterior windows of a minimum STC of 40 or OITC of 30. Projects may demonstrate compliance through the performance method if wall and roof-ceiling assemblies exposed to the noise source are constructed to provide an interior noise environment that does not exceed 50 dB $L_{eq}\text{-1Hr}$ in occupied areas during hours of operations.

California Occupational Safety and Health Administration Worker Safety Requirements

The California Occupational Safety and Health Administration (Cal OSHA) assumes primary responsibility for developing and enforcing workplace safety regulations in California. Section 5096 of the California Occupational Safety and Health Administration Cal OSHA regulations pertains to control of harmful exposures in workplaces, including for noise.¹³ The permissible exposure level is that workers should not be exposed to noise levels exceeding 90 dBA averaged over an 8-hour work shift, with a sliding scale for shorter durations (i.e., greater noise exposure is allowed the shorter the noise exposure duration).

Local Regulations

To identify, appraise and remedy noise and vibration problems in local communities, each City and County in the state is required to adopt a noise element as part of its general plan. Local governments use the Governor's Office of Land Use and Climate Innovation's General Plan Guidelines, to prepare general plan noise elements. Each noise element is required to analyze and quantify current and projected noise levels associated with local noise sources, including, but not limited to: highways and freeways, primary arterials and major local streets, rail operations, air traffic associated with the airports; local industrial plants; and other ground stationary sources that contribute to the community noise environment. Beyond statutory requirements, local jurisdictions are free to adopt their own goals and policies in their noise elements, although most jurisdictions have chosen to adopt noise/land use compatibility guidelines that are similar to those recommended by the State. A brief overview of each jurisdiction's noise element and relevant noise policies are described below.

General Plans

HUMBOLDT COUNTY GENERAL PLAN NOISE ELEMENT

The Noise Element of the Humboldt County General Plan contains the following applicable goals, policies, and standards related to noise:

- **N-P1 Minimize Noise from Stationary and Mobile Sources.** Minimize stationary noise sources and noise emanating from temporary activities by applying appropriate standards for average and short-term noise levels during permit review and subsequent monitoring.

¹³ California Occupational Safety and Health Administration (Cal OSHA). Section 5096. Exposure Limits for Noise. [https://www.dir.ca.gov/title8/5096.html#:~:text=C2%A75096.,Exposure%20Limits%20for%20Noise.&text=\(a\)%20Protection%20against%20the%20effects,level%20meter%20at%20slow%20response](https://www.dir.ca.gov/title8/5096.html#:~:text=C2%A75096.,Exposure%20Limits%20for%20Noise.&text=(a)%20Protection%20against%20the%20effects,level%20meter%20at%20slow%20response) (accessed November 2024).

Regional Climate Action Plan and CEQA GHG Emissions Thresholds

- **N-P4 Protection from Excessive Noise.** Protect persons from existing or future excessive levels of noise which interfere with sleep, communication, relaxation, health or legally permitted use of property.
- **N-S4 Noise Study Requirements.** When a discretionary project has the potential to generate noise levels in excess of Plan standards, a noise study together with acceptable plans to assure compliance with the standards shall be required. The noise study shall measure or model as appropriate, Community Noise Equivalent Level (CNEL) and Maximum Noise Level (Lmax) levels at property lines and, if feasible, receptor locations. Noise studies shall be prepared by qualified individuals using calibrated equipment under currently accepted professional standards and include an analysis of the characteristics of the project in relation to noise levels, all feasible mitigations, and projected noise impacts. The Noise Guidebook published by the U.S. Department of Housing and Urban Development, or its equivalent, shall be used to guide analysis and mitigation recommendations.
- **N-S7 Short-term Noise Performance Standards (Lmax).** The following noise standards in Table 3.7-3, unless otherwise specifically indicated, shall apply to all property within their assigned noise zones and such standards shall constitute the maximum permissible noise level within the respective zones.

Table 3.7-3 Humboldt County Short-Term Noise Standards

Zoning Classification	Day (maximum)	Night (maximum)
	6:00 a.m. to 10:00 p.m. dBA	10:00 p.m. to 6:00 a.m. dBA
MG, MC, AE, TPZ,TC, AG, FP, FR, MH	80	70
CN, MB, ML, RRA, CG, CR C-1, C-2, C-3	75	65
RM, R-3, R-4	65	60
RS, R-1, R-2, NR	65	60

CITY OF ARCATA GENERAL PLAN – NOISE ELEMENT

The City of Arcata General Plan Noise Element sets an example for business and industry by considering the acoustic concerns and future noise impacts of City operations and business includes. The Noise Element includes the following policies that would be applicable to the proposed plan:¹⁴

- **N-1 Noise Attenuation.** Reduce, or eliminate, noise impacts at their source by providing enclosures, barriers, and other on-site noise attenuation measures for noise generating activities. Monitor noise levels to ensure that acceptable noise levels are maintained on adjacent sites.
 - **N-1a Noise attenuation measures.** Noise attenuation measures, and stationary noise source controls shall include the use of barriers, setbacks, site design, baffles, enclosures, silencers, and improved facade construction techniques.
 - **N-1b Noise attenuation.** Where noise attenuation measures are required, the emphasis of such measures shall be placed upon site planning and project design. The use of noise barriers shall be considered a means of achieving the noise standards only after all other practical design-related noise attenuation measures have been integrated into the project.

¹⁴ Arcata, City of. 2024. Noise Element. https://www.cityofarcata.org/DocumentCenter/View/14362/General-Plan-204520240717_CI_WEB (accessed November 2024).

- **N-3 Transportation Noise Sources and Levels.** Establish acceptable noise levels for land uses and activities that will protect community residents from the harmful effects of excessive noise exposure due to transportation noise sources. Maintain interior and exterior noise standards that will achieve land use compatibility with respect to community noise.
 - **N-3b Roadway projects.** To minimize noise impacts, the following criteria may be used as a test of significance for roadway projects:
 1. Where existing traffic noise levels are less than 60 dBA L_{dn} at the outdoor activity areas of noise receptors, a +5 dBA L_{dn} increase in noise levels due to a roadway improvement project will be considered significant.
 2. Where existing traffic noise levels range between 60 and 65 dBA L_{dn} at the outdoor activity areas of noise receptors, a +3 dBA L_{dn} increase in noise levels due to a roadway improvement project will be considered significant.
 3. Where existing traffic noise levels are greater than 65 dBA L_{dn} at the outdoor activity areas of noise receptors, a + 1.5 dBA L_{dn} increase in noise levels due to a roadway improvement project will be considered significant.
- **N-4 Acoustical Analysis Requirements.** Establish a consistent procedure and framework for conducting and reviewing acoustical analyses. N-4a Noise-sensitive land uses. Where receptor land uses are potentially exposed to existing or projected exterior noise levels exceeding the levels specified in Table N-2 or the performance standards of Table N-1, an acoustical analysis shall be required as part of the environmental review process, so that noise mitigation may be included in the project design. An acoustical analysis prepared pursuant to the Noise Element shall:
 - Be the financial responsibility of the applicant.
 - Be prepared by a qualified person experienced in the fields of environmental noise assessment and architectural acoustics.
 - Include representative noise level measurements, with sufficient sampling periods and locations, to adequately describe local conditions and the predominant noise sources.
 - Recommend appropriate mitigation to achieve compliance with the adopted policies and standards of the Noise Element, giving preference to proper site planning and design over mitigation measures, which require the construction of noise barriers or structural modifications to buildings, which contain noise-sensitive land uses.
 - Estimate noise exposure after prescribed mitigation measures are implemented.
- **N-5 Intrusive and Intermittent Noise Sources.** Protect community residents from the effects of excessive, intrusive, and intermittent noise. Set standards for intrusive and intermittent noise sources for both daytime and nighttime periods. Intrusive noise sources have a qualitative aspect that can be annoying. These sources may contain a tonal component, which is absent from the existing general background noise. They may also be rhythmic, reoccurring, or impulsive in nature, or comprised mainly of music or speech. Intrusive noise can result in annoyance or interference with sleep. These types of noise sources can include, but are not limited to, industrial processes, warning horns, backup alarms, and pressure release devices.
 - **N-5a Intrusive noise.** When intrusive noise sources have been identified, the detrimental effects (sleep interference or the potential for annoyance) shall be disclosed to neighboring receptor properties.
 - **N-5b Noise levels due to non-transportation sources.** Noise levels due to non-transportation sources, which may be intermittent or recurring, impulsive noises, pure

tones, or noises consisting primarily of speech or music, shall be subject to the criteria contained within Table N-1, with a -5 dBA penalty applied to the criteria.

- **N-5c Rhythmic, reoccurring, or impulsive noise sources.** When noise sources have been identified to be rhythmic, reoccurring, or impulsive in nature or comprised mainly of music or speech, they may comply with applicable noise level criteria and still be annoying to individuals. When these types of noise sources have been identified, they may be subject to additional attenuation or mediation.
- **N-5d Construction site tool or equipment noise.** The following shall apply to construction noise from tools and equipment: 1. The operation of tools or equipment used in construction, drilling, repair, alteration or demolition shall be limited to between the hours of 8 a.m. and 7 p.m. Monday through Friday, and between 9 a.m. and 7 p.m. on Saturdays and Sundays. 2. Heavy equipment shall not operate on Sundays and City recognized holidays. This shall apply to construction noise from tools and equipment that are subject to the review of the City and that may affect receptor uses. This policy shall not apply to emergency work of public service utilities, City sponsored and/or grant funded projects, or by variance under a noise ordinance or authorization by the appropriate City review authority.
- **N-5e Stationary and construction equipment noise.** All stationary and construction equipment shall be maintained in good working order, and fitted with factory approved muffler systems.
- **N-5f Noise Ordinance.** The City of Arcata shall enforce its citywide noise ordinance. The City shall periodically review and update its noise ordinance.

CITY OF BLUE LAKE GENERAL PLAN – NOISE ELEMENT

The City of Blue Lake General Plan Noise Element contains recommendations for noise control in the city. The policies are not aimed at the project-level, and instead are recommendations for the city to establish a noise ordinance and provide educational materials on noise hazards.¹⁵

CITY OF EUREKA GENERAL PLAN – NOISE ELEMENT

The City of Eureka’s Noise Element contains goals and policies to regulate noise in the city. The following policies relate to the proposed plan:¹⁶

- **N-1.2 Protect Existing Industries.** Protect established agricultural, fishing and industrial uses from incompatible adjacent uses to reduce the potential for noise complaints and allow their routine operations to continue.
- **N-1.3 Land Use Compatibility.** Consider the compatibility of new development with the existing noise environment when reviewing discretionary proposals.
- **N-1.4 New Noise-Sensitive Development.** Require development of new noise-sensitive land uses (such as hospitals, convalescent homes, schools, churches, and wildlife habitat) that are proposed in areas exposed to existing or projected exterior noise levels in Figure N-2 or interior noise levels exceeding the levels specified in Table N-3 or the performance standards of Table N-4 to mitigate noise impacts.

¹⁵ Blue Lake, City of. 1975. General Plan Noise Element. https://bluelake.ca.gov/wp-content/uploads/2023/05/BL-General-Plan_Public-Safety-Noise-Scenic-Hwy-Elements_1975.pdf (accessed October 2024).

¹⁶ Eureka, City of. 2018. 2040 General Plan. <https://www.eurekaca.gov/DocumentCenter/View/1190/2040-General-Plan-PDF?bidId=> (accessed October 2024).

- **N-1.5 New Stationary Noise Sources.** Require new stationary noise sources to mitigate noise impacts on noise-sensitive uses in which exterior level noises exceed the standards in Table N-4 (shown below in Table 3.7-5).

Table 3.7-5 City of Eureka Noise Level Performance Standards for Stationary Noise Sources

Noise Level Descriptor	Daytime 7 a.m. to 10 p.m.	Nighttime 10 p.m. to 7 a.m.
Hourly Leq, dBA	55	45
Maximum level, dBA	70	65

Source: Eureka, City of. 2018. 2040 General Plan. <https://www.eurekaca.gov/DocumentCenter/View/1190/2040-General-Plan-PDF?bidId=> (accessed October 2024).

- **N-1.6 Noise Mitigation.** Emphasize site planning and project design for all development requiring noise mitigation measures. Consider noise barriers only following the integration of all other practical design-related noise mitigation measures into the project.
- **N-1.7 Frequent, High-Noise Events.** Require development of noise-sensitive uses proposed in areas subject to frequent, high-noise events (such as aircraft overflights, or truck traffic) to adequately evaluate and mitigate the potential for noise-related impacts. Implement mitigation to ensure noise-related annoyance, sleep disruption, speech interference, and other similar effects are minimized using metrics and methodologies appropriate to the effect(s) to be assessed and avoided.
- **N-1.8 Acoustical Analysis.** Require an acoustical analysis as part of the environmental review process for development of noise-sensitive land uses.
- **N-1.11 Roadway Mitigation Measures.** Include noise mitigation measures in the design of any improvements along existing streets and highways. When feasible, measures should consider natural buffers or the use of setbacks between roadways and adjoining noise sensitive uses.
- **N-1.10 High Noise Generating Uses.** Locate new industrial uses or other high noise generating uses away from noise-sensitive land uses and minimize excessive noise through project design features that include noise control and landscape buffers.
- **N-1.13 Construction Noise.** Minimize construction-related noise and vibration by limiting construction activities within 500 feet of noise-sensitive uses to between 7:00 a.m. to 7:00 p.m., unless further restricted through permitting.
- **N-1.14 Vibration.** Require an assessment of vibration-induced construction activities and development near highways and rail lines, in close proximity to historic buildings and archaeological sites, to ensure no damage occurs.

CITY OF FERNDALE GENERAL PLAN – ELEMENT

The City of Ferndale General Plan Final Draft Noise Element contains the following noise policies applicable to the proposed plan:¹⁷

¹⁷ Ferndale, City of. 2016. General Plan Noise & Air Quality Elements. [https://ci.ferndale.ca.us/wp/general-plan/Final%20Draft%20Noise%20Air%20Quality%20Elements%20for%20April%2021%202016%20\(rfs\).pdf](https://ci.ferndale.ca.us/wp/general-plan/Final%20Draft%20Noise%20Air%20Quality%20Elements%20for%20April%2021%202016%20(rfs).pdf)

- **1.1 Stationary and Mobile Sources.** The City will apply appropriate average and short-term noise level standards during the permit review process and during subsequent monitoring to minimize stationary noise sources and noise emanating from temporary activities.
- **1.2 Noise Compatibility Standards.** The City shall ensure compatibility with adjacent and noise-sensitive land uses by adopting noise standards by land use type.
- **1.3 New Construction.** Amend the Noise Ordinance for residential uses, to limit exterior noise levels to 60 dBA L_{dn} and interior noise levels of 45 dBA L_{dn} .
- **1.4 Noise Attenuation.** If all other practical design-related mitigation measures do not attenuate noise to established standards, the City will consider the use of noise barriers.
- **1.5 Noise Reduction Design.** The City shall incorporate buffers, screening, routing coordination, and other traffic control measures at time of street upgrades and extensions. The City will encourage the use of berms and increased building setbacks in the design of noise-sensitive land uses that are adjacent to collector roads and commercial or industrial areas.

CITY OF FORTUNA GENERAL PLAN – HEALTH AND SAFETY ELEMENT

The City of Fortuna’s noise policies are contained in the General Plan Health and Safety Element. The following noise policies relate to the proposed plan:¹⁸

- **HS-4.3 Noise Problem Areas.** The City shall identify and evaluate potential noise problem areas on a continuing basis.
- **HS-4.4 Noise Source Isolation.** The City shall require uses that generate high levels of noise and ground-borne vibration to be separated or shielded from sensitive receptors,
- **HS-4.5 New Construction.** The City shall strive to limit exterior noise levels for existing and future dwellings in residential areas to levels of 60 dBA L_{dn} and interior noise levels of 45 dBA L_{dn} .
- **HS-4.6 Noise Reduction Mechanisms.** The City shall encourage the use of berms and increased building setbacks, or both, in the design of noise-sensitive land uses that are adjacent to major roads, commercial, or industrial areas.
- **HS-4.7 Noise Barriers.** The City shall consider the use of noise barriers (as a means of achieving the noise standards) only if all other practical design-related noise mitigation measures have been insufficient.
- **HS-4.8 Noise Reduction/Design.** The City shall lessen noise increases along the city’s arterial and collector roads through project design of streets (including providing buffers to the extent feasible and screening), coordination of routing, and other traffic control measures.

CITY OF RIO DELL GENERAL PLAN – NOISE ELEMENT

The City of Rio Dell Noise Element states that ambient noise levels in the city shall not be allowed to reach annoying or dangerous sound levels. This would occur through the following unnumbered policies applicable to the proposed plan:¹⁹

- Rio Dell shall maintain acceptable noise levels for its residents and business community.

¹⁸ Fortuna, City of. 2010. Health and Safety Element.

https://cms8.revize.com/revize/fortunaca/Document%20center/Department/Planning%20Division/General%20Plan%20and%20EIR%20documents/Fortuna%20General%20Plan%202030%20-%20Policy%20Document_web.pdf (accessed October 2024).

¹⁹ Rio Dell, City of. 2001. Noise Element. https://www.cityofriodell.ca.gov/sites/g/files/vyhlf8526/f/uploads/noise_element_2001.pdf (accessed October 2024).

Regional Climate Action Plan and CEQA GHG Emissions Thresholds

- Rio Dell Planning Commission shall consider the noise impact upon nearby residential areas of commercial development.

The Noise Element also states that the city would take appropriate remedial action if dangerous or harmful noise levels appear within the city. City of Rio Dell Noise Element states that ambient noise levels in the city shall not be allowed to reach annoying or dangerous sound levels.

CITY OF TRINIDAD GENERAL PLAN – NOISE ELEMENT

The City of Trinidad General Plan Noise Element contains recommendations for noise control in the city. The policies are not aimed at the project-level, and instead are recommendations for the City to establish a noise ordinance and provide educational materials on noise hazards.

County and Municipal Codes

HUMBOLDT COUNTY CODE

The Humboldt County Code does not contain any relevant noise regulations that would apply to the proposed plan.

CITY OF ARCATA MUNICIPAL CODE

The City of Arcata Land Use Code (Title 9 of the Municipal Code) addresses noise throughout the City in Title III – Planning and Project Design Standards, Section 9.30.050. Section 9.30.050(D) contains the maximum allowable noise levels for stationary sources in the city, as shown in Table 3.7-6.

Table 3.7-6 City of Arcata Maximum Allowable Noise Levels – Stationary Sources

Noise Level Descriptor	Maximum Exterior Noise Level			Maximum Interior Noise Level		
	7 a.m. to 7 p.m.	7 p.m. to 10 p.m.	10 p.m. to 7 a.m.	7 a.m. to 7 p.m.	7 p.m. to 10 p.m.	10 p.m. to 7 a.m.
Dwellings, Transient Lodging, Hospitals, Extended Care, and Similar Uses						
Hourly Leq, dBA	55 dBA	50 dBA	45 dBA	45 dBA	40 dBA	35 dBA
Meeting Facilities, Auditoriums, Theaters, Libraries, Schools, and Similar Uses						
Hourly Leq, dBA	55 dBA	55 dBA	n/a	40 dBA	40 dBA	n/a

Source: Arcata, City of. Municipal Code. <https://www.codepublishing.com/CA/Arcata/> (accessed October 2024).

The City of Arcata Municipal Code does not contain construction noise limits, but does limit construction hours to 8:00 a.m. and 7:00 p.m., Monday through Friday, and between 9:00 a.m. and 7:00 p.m. on Saturdays, and also does not allow construction on Sundays and holidays.

CITY OF BLUE LAKE MUNICIPAL CODE

The City of Blue Lake Municipal Code contains noise standards in Section 17.24.280 that are intended to protect the community health, safety, and general welfare by limiting exposure to the unhealthful effects of noise. Section 17.24.280(C)(3) contains the maximum allowable noise levels in the city, as shown in Table 3.7-7.

Table 3.7-7 City of Blue Lake Maximum Allowable Noise Levels

Noise Level Descriptor	Maximum Exterior Noise Level			Maximum Interior Noise Level		
	7 a.m. to 7 p.m.	7 p.m. to 10 p.m.	10 p.m. to 7 a.m.	7 a.m. to 7 p.m.	7 p.m. to 10 p.m.	10 p.m. to 7 a.m.
Dwellings, Transient Lodging, Hospitals, Extended Care, and Similar Uses						
Hourly Leq, dBA	55 dBA	50 dBA	45 dBA	45 dBA	40 dBA	35 dBA
Meeting Facilities, Auditoriums, Theaters, Libraries, Schools, and Similar Uses						
Hourly Leq, dBA	55 dBA	55 dBA	n/a	40 dBA	40 dBA	n/a

Source: Blue Lake, City of. 2018. Municipal Code. <https://ecode360.com/44213723> (accessed October 2024).

Construction noise is exempt from the noise limits if construction occurs between 8:00 a.m. and 6:00 p.m., Monday through Friday, and between 9:00 a.m. and 5:00 p.m. on Saturdays, and does not occur on Sundays or holidays.

CITY OF EUREKA MUNICIPAL CODE

The City of Eureka does not have a noise ordinance or any relevant noise regulations that would apply to the proposed plan.

CITY OF FERNDALE MUNICIPAL CODE

The City of Ferndale Nuisance Ordinance 06-04 and Traffic Ordinance 04-01 have established regulations for the control of noise. Nuisance Ordinance 06-04, Section 4.03.3.j mandates that property be maintained in such a way that it does not pose a health, safety or fire hazard or an attractive nuisance to children. One prohibited activity is vehicle or vessel repair in a residential zone which might make substantially interferes with the reasonable enjoyment of property by other persons, because of the substances, odors, noise, or visual clutter created by the repair. Section 7.04 of the Nuisance Ordinance outlines activities considered to be unlawful including excessive noise from residences and automobiles. Additionally, Section 7.04.2(d) refers to construction noise within the City. Construction activities are limited to between 7 a.m. and 7 p.m. on weekdays and 8 a.m. to 7 p.m. on weekends with no construction allowed on Federal holidays.

Noise abatement, related to truck noise specifically, at a city level is enforced by the City of Ferndale Traffic Ordinance 04-01. Section 5.20 Truck Routes mandates that motor trucks exceeding a maximum gross weight limit of three tons must follow a specific truck route within the City. The designated truck route starts at the intersection of Wildcat Road and Ocean Avenue, then proceeds easterly along Ocean Avenue until it intersects with Main Street. From there, it continues along Main Street until reaching the easterly boundary line of the City of Ferndale. This carefully planned truck route effectively confines truck-related noise exclusively to the prescribed pathway through town.

CITY OF FORTUNA MUNICIPAL CODE

The City of Fortuna does not currently have a noise ordinance, and the city's existing Zoning Ordinance does not currently address noise.

CITY OF RIO DELL MUNICIPAL CODE

The City of Rio Dell does not currently have a noise ordinance, and the city’s existing Zoning Ordinance does not currently address noise except for “Cottage Industry” uses, which are not relevant to the RCAP.

CITY OF TRINIDAD MUNICIPAL CODE

The City of Trinidad Municipal Code does not have a noise ordinance or any relevant noise regulations that would apply to the proposed plan.

Airport Land Use Compatibility Plan

An ALUC is responsible for preparing the region’s ALUCPs and ensuring compatible land uses in the vicinity of airports within their jurisdiction. The Humboldt County ALUC prepared the Humboldt County ALUCP that contains noise contours for each public airport in the County, which includes:²⁰

- California Redwood Coast – Humboldt County Airport
- Dinsmore Airport
- Garberville Airport
- Kneeland Airport
- Murray Field Airport
- Rohnerville Airport
- Samoa Field Airport
- Shelter Cove Airport

3.7.4 Impacts and Mitigation Measures

Significance Criteria

Humboldt County utilizes the following 2024 CEQA Guidelines Appendix G significance criteria questions related to Noise.

Would the RCAP and CEQA GHG Emissions Thresholds:

- 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) If 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, expose people residing or working in the project area to excessive noise levels?

²⁰ Humboldt County Airport Land Use Commission. 2021. Humboldt County Airport Land Use Compatibility Plan. <https://humboldt.gov/DocumentCenter/View/95080/2021-Airport-Land-Use-Compatibility-Plan-adopted-04132021-33-MB> (accessed October 2024)

Approach to Analysis

Construction Noise

Construction noise levels that could occur with implementation of the RCAP are based on reference noise levels published by the FTA.

Operational Noise

Individual projects that may be implemented under the RCAP would be located in a variety of jurisdictions with varying noise level standards and restrictions. As a result, the analysis does not use specific quantitative thresholds to evaluate plan impacts but rather generally discusses the resultant noise levels that could occur during operation of RCAP-related projects (including but not limited to renewable energy infrastructure such as wind turbines) and the relationship between the types of noise levels likely to be produced during individual future projects under the proposed plan and local jurisdictions' noise level standards.

Groundborne Vibration

Vibration levels that could occur with implementation of the RCAP are based on reference vibration levels published by the FTA.

EIR Scoping Comments Consideration

No comments relevant to CEQA were received in response to the EIR NOP specific to noise and/or vibration.

CEQA GHG Thresholds Analysis and RCAP EIR Focus Approach

The CEQA GHG Emissions Thresholds is a guidance document and does not propose development or changes to land use designations and zoning. Thus, implementation of the CEQA GHG Emissions Thresholds would not result in direct construction or operational impacts related to noise and vibration. Therefore, the analysis in this section focuses on the potential for the RCAP to result in impacts related to noise and vibration in Humboldt.

Specific Thresholds of Significance

For purposes of this analysis, the following thresholds of significance are used to evaluate the significance of noise and vibration resulting from implementation of the RCAP.

Construction Noise

As discussed under Section 3.7.3, *Regulatory Framework*, jurisdictions in Humboldt do not have quantitative construction noise thresholds. Development facilitated by the RCAP could have a significant impact if temporary construction noise during permitted daytime hours exposed noise-sensitive receptors to significantly adverse noise levels. The FTA provides reasonable criteria for assessing construction noise impacts based on the potential for adverse community reaction in their *Transit and Noise Vibration Impact Assessment Manual*.²¹ For residential uses, the daytime noise threshold is 80 dBA $L_{eq(8hr)}$. Construction noise would be significant if it exceeds this threshold.

²¹ FTA. 2018. *Transit Noise and Vibration Impact Assessment*. https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf (accessed October 2024).

Operational Noise

STATIONARY NOISE

Noise level standards for operational noise for each jurisdiction in Humboldt are described in Section 3.7.3, *Regulatory Framework*. These standards are often used as CEQA significance thresholds for stationary noise, but their applicability can depend on project-specific details, location, and hours of operation. Examples of these standards are contained in Table 3.7-3 (Humboldt County), Table 3.7-4 (City of Arcata Noise Element), Table 3.7-5 (City of Eureka), Table 3.7-6 (City of Arcata Municipal Code), and Table 3.7-7 (City of Blue Lake). Exterior noise standards from these tables range from 45 dBA during nighttime hours to 55 dBA during daytime hours. Ferndale also includes a residential noise standard of 45 dBA during the nighttime hours. Other jurisdictions in Humboldt, such as Ferndale, Rio Dell, Fortuna, and Trinidad, do not specify quantitative stationary noise standards. This analysis broadly considers the potential for operational noise generated by individual projects that may be implemented under the proposed RCAP to exceed noise standards.

TRANSPORTATION NOISE

A project normally has a significant effect on the environment related to noise if it substantially increases the ambient noise levels for adjoining areas. Most people can detect changes in sound levels of approximately 3 dBA under normal, quiet conditions. Changes of 1 to 3 dBA are detectable under quiet, controlled conditions. Changes of less than 1 dBA are usually indiscernible. A change of 5 dBA is readily discernible to most people in an exterior environment. Based on this, the following thresholds of significance are used to assess transportation-related operational noise impacts from individual future projects that may be implemented under the RCAP at sensitive receptor locations:

- Greater than 1.5 dBA CNEL increase for ambient noise environments of 65 dBA CNEL and higher
- Greater than 3 dBA CNEL increase for ambient noise environments of 60-64 CNEL
- Greater than 5 dBA CNEL increase for ambient noise environments of less than 60 dBA CNEL

Vibration

Vibration criteria from the FTA are used to evaluate potential construction vibration impacts related to potential building damage from construction.²² Construction vibration impacts from development would be significant if vibration levels exceed the FTA criteria shown in Table 3.7-2 above.

Exposure to Aircraft Noise

For individual future projects that may be implemented under the proposed RCAP located within the vicinity of a private airstrip or an airport land use plan, impacts would be significant if the project exposes people residing or working in the project area to excessive airport noise levels.

²² FTA. 2018. *Transit Noise and Vibration Impact Assessment*. https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf (accessed October 2024).

Impact Evaluation

Noise Levels

Significance Criterion a: Would the proposed plan 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 NOI-1 CONSTRUCTION AND OPERATIONAL ACTIVITIES ASSOCIATED WITH PROJECTS AND INFRASTRUCTURE UNDER THE RCAP WOULD GENERATE A SUBSTANTIAL TEMPORARY AND PERMANENT INCREASE IN AMBIENT NOISE LEVELS IN EXCESS OF STANDARDS. MITIGATION MEASURES NOI-1 AND NOI-2 WOULD REDUCE CONSTRUCTION AND OPERATIONAL NOISE IMPACTS TO THE EXTENT FEASIBLE, BUT IMPACTS WOULD REMAIN SIGNIFICANT AND UNAVOIDABLE.

Construction

Noise from individual construction projects and infrastructure facilitated by the RCAP may temporarily increase noise levels at nearby noise-sensitive receptors. At this stage of planning, project-level details are not available for future projects that would be carried out under the RCAP; therefore, it is not possible to determine exact noise levels, locations, or time periods for construction of such projects, or construction noise at adjacent properties. Noise estimates for typical construction activities have been provided below in Table 3.7-8. As shown in the table, average noise levels associated with the use of heavy equipment at construction sites can range from about 76 to 101 dBA at 50 feet from the source, depending upon the types of equipment in operation at any given time and the phase of construction.

Table 3.7-8 Typical Construction Noise Levels (dBA)

Equipment	Typical Level 25 Feet from the Source	Typical Level 50 Feet from the Source	Typical Level 100 Feet from the Source	Typical Level 200 feet from the Source	Typical Level 800 Feet from the Source
Air Compressor	86	80	74	68	56
Backhoe	86	80	74	68	56
Concrete Mixer	91	85	79	73	61
Grader	91	85	79	73	61
Pile driver (Impact)	107	101	95	89	77
Pile driver (Sonic)	101	95	89	83	71
Jack Hammer	94	88	82	76	64
Paver	91	85	79	73	61
Saw	82	76	70	64	52
Scraper	91	85	79	73	61
Truck	90	84	78	72	60

Source: FTA. 2018. *Transit Noise and Vibration Impact Assessment*. https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf (accessed October 2024).

Noise generated by construction activity would be variable depending on the project and intensity of equipment used. Projects under the RCAP may require the operation of heavy-duty equipment that generate high noise levels, especially those that require significant grading, excavation, soil movement, and/or demolition activities. The loudest equipment included in Table 3.7-8, impact or sonic pile drivers, is typically only used when deep foundations must be placed and are not a common activity. Activities such as building construction and paving tend to use less intensive equipment. Noise levels from point sources such as construction sites typically attenuate at a rate of about 6 dBA per doubling of distance. Therefore, areas within 100 feet of construction site with a single piece of heavy-duty equipment operating, not including pile driving, may be exposed to noise levels exceeding the FTA's daytime construction noise threshold for residential uses of 80 dBA $L_{eq(8hr)}$. Areas within 600 feet of impact pile drivers may also be exposed to noise levels exceeding 80 dBA $L_{eq(8hr)}$.

Many projects facilitated by the RCAP would not require the use of heavy equipment, such as minor energy and water efficiency retrofits or policy-focused measures to encourage adoption and use of ZEVs and decarbonized off-road equipment and, thus, would not be anticipated to result in significant construction noise impacts. However, some projects may involve substantial construction such as renewable energy infrastructure installation promoted by RCAP Measures BE-1 and BE-2, transportation-related infrastructure development promoted by RCAP Measures T-1 Urban and Rural, T-2 Urban and Rural, and T-4, a new organic waste processing facility facilitated by RCAP Measure SW-1, and new or expanded recycled water facilities facilitated by Measure WW-2. Future projects occurring under these measures would require the use of heavy equipment and have the potential to produce construction noise that exceeds the applicable significance threshold.

The County and Cities of Arcata, Blue Lake, Eureka, and Ferndale include specific regulations in their noise elements, ordinance code, and/or municipal codes that restrict construction activities to specific times and days. Such local policies serve to reduce the impacts of noise on surrounding communities by prohibiting construction during the night when people are engaged in noise-sensitive activities like sleeping. However, sensitive receptors may still be exposed to substantial construction noise since, at this time, project-level details and locations are not known for future projects under the RCAP, including if nighttime construction would be required. Therefore, it is not possible to determine exact noise levels, locations in proximity to sensitive receptors, or time periods for construction of such projects, or construction noise at adjacent properties. Construction noise levels associated with future projects may exceed the FTA daytime construction noise limits or not be consistent with the permitted construction hours for the County or specific Cities, and impacts would be potentially significant.

Implementation of Mitigation Measure NOI-1, which requires various construction best management practices such as compliance with the FTA's 80 dBA threshold for residential land uses, would reduce impacts from construction noise. However, even with application of Mitigation Measures NOI-1, construction noise from projects and infrastructure under the RCAP may not be able to be reduced below applicable FTA, County, and/or City thresholds, and impacts would remain significant and unavoidable.

Operation

STATIONARY EQUIPMENT

Projects under the RCAP that would not install new mechanical equipment or wind turbines, including but not limited to building retrofit projects and bicycle and pedestrian paths per RCAP

Measures BE-3 Urban and Rural, BE-4, BE-7, T-1 Urban and Rural, T-2 Urban and Rural, and T-4, would be expected to generate minor or negligible operational noise compared to existing noise conditions. Additionally, RCAP measures that seek to decarbonize buildings, equipment, and appliances, such as RCAP Measures BE-5 and BE-7, have the potential to reduce stationary noise, such as noise produced by generators.

However, future projects under the RCAP may also install new infrastructure with mechanical equipment that would generate new on-site operational noise. These could include potential solar array, battery storage, wind energy production, and hydrogen projects per RCAP Actions BE-1a, BE-2a, BE-2b, BE-2f, BE-2g, BE-2i, BE-3c, BE-4c, BE-5b, BE-6b, BE-7c, BE-8a, BE-8c, BE-8d, T-6h, T-6i, T-10d, and CS-2f. In addition, new organic waste processing and recycled water facilities promoted by RCAP Measures SW-1 and WW-2 would also include mechanical equipment that would generate new on-site operational noise. Mechanical equipment may include heating, ventilation, and air conditioning (HVAC) equipment, transformers, and generators. Noise levels from mechanical equipment depend on the type and size of unit needed for each individual project. In addition, the orientation and location of the equipment (e.g., if it is placed on a rooftop or ground-level or if there are intervening structures in between the equipment and sensitive receptors) would affect noise levels at nearby sensitive receptors.

Wind energy projects per RCAP Actions BE-2f, BE-8a, BE-8c, BE-8d would generate noise from the “whooshing” noise produced by the blades moving through the air, in addition to typical mechanical equipment described above. Wind turbine operational sound can depend on atmospheric conditions, including air flow patterns and turbulence, as well as nearby topography and intervening structures. According to the U.S. Department of Energy, studies have shown that small-to-medium wind turbines (defined as residential/markets/distributed turbines) generate noise only slightly above ambient wind noise, while large wind turbines (defined as utility-scale) produce noise levels between 35 to 45 dB at a distance of 300 meters.²³

Existing noise sensitive receptors could be affected by operational noise occurring on-site at future project sites that would install new infrastructure with mechanical equipment or wind turbines, as the noise may exceed County and City noise ordinances, which can have limits as low as 45 dBA L_{eq} . Project-level analysis for future projects under the plan would be required to include an evaluation of noise impacts at the nearest sensitive receptors and compare estimated noise levels to the respective County and City noise level standards. The severity of the impacts would vary depending upon the type and intensity of the individual project, its proximity to sensitive receptors, and predicted noise level compared to the applicable County and/or City standards. As a result, it would be speculative to analyze project-level operational noise impacts of individual future projects that may be implemented under the proposed plan, and it cannot be determined at this time if operation of future projects would result in a substantial permanent increase in noise levels or exceedance of the applicable standards. Therefore, it is conservatively assumed that operational activities associated with projects under the RCAP that would install new infrastructure with mechanical equipment or wind turbines could result in potentially significant operational noise impacts.

Implementation of Mitigation Measure NOI-2 would reduce impacts from operational noise, and it is expected that in most cases future project noise could be reduced to the applicable County or City noise standards or lower. However, due to a lack of specific details and location information for future RCAP projects, even with implementation of Mitigation Measure NOI-2, operational noise

²³ U.S. Department of Energy. 2024. Wind Turbine Sound. <https://windexchange.energy.gov/projects/sound> (accessed January 2025).

from projects under the RCAP could impact nearby noise sensitive receptors and exceed acceptable standards. Therefore, it is conservatively concluded that operational noise impacts related to stationary equipment would remain significant and unavoidable.

TRANSPORTATION NOISE – ROADWAY VEHICLES

Operations and maintenance roadway vehicle trips related to individual future projects under the RCAP would be minimal and distributed throughout the plan area. Many of these facilities are expected to require only a few on-site employees or infrequent maintenance trips, resulting in a relatively minor number of average daily trips. In general, a doubling of roadway volume would increase roadway noise in an area by 3 dBA, and a 40 percent increase in roadway volume would increase roadway noise by 1.5 dBA in an area. However, the limited number of RCAP-related operational trips, would not have the potential to increase roadway volume by 40 percent or double traffic roadway volume even on low-volume local roadways. Therefore, roadway vehicle noise levels would not increase greater than 1.5 dBA CNEL for ambient noise environments of 65 dBA CNEL and higher, greater than 3 dBA CNEL for ambient noise environments of 60-64 CNEL, or greater than 5 dBA CNEL for ambient noise environments of less than 60 dBA CNEL. In addition, according to Section 3.7, *Transportation*, there would be an overall net decrease in vehicle trips and associated roadway volume under the RCAP due to RCAP Measures T-1 Urban and Rural, T-2 Urban and Rural, T-3, T-4, and T-5, that would encourage alternative methods of transportation and decreased vehicle miles traveled. The increased adoption of electric vehicles encouraged by the RCAP through measures such as Measures T-4 and T-6 would also result in reduced roadway vehicle noise. Therefore, the RCAP may have the effect of reducing individual vehicle trips and roadway vehicle noise regionally. Therefore, operational transportation noise impacts from roadway vehicle noise would be less than significant.

TRANSPORTATION NOISE – TRANSIT

RCAP actions related to transit projects include RCAP Actions T-1b Urban, T-2a Urban, T-2c Urban, T-2d Urban, T-2e Urban, T-2a Rural, T-2b Rural, T-2c Rural, T-2e Rural, T-2g Rural, T-4a, T-3a, T-3b, T-3c, T-5b, and T-5f. As the Humboldt area does not have an active passenger rail service, these policies are focused on bus-related services.

The FTA has developed a screening procedure to identify locations where a bus project may cause a noise impact. The screening distances for requiring noise assessments for various types of projects is presented in Table 3-7-9. Transit services within these screening distances along new routes or existing routes with increased service may expose sensitive receptors to new or increased bus noise. Therefore, impacts from transit noise would be potentially significant.

Table 3-7-9 Screening Distances for Noise Assessments – Bus Transit Projects (in feet)

Type of Project		Unobstructed	Intervening Buildings
Busway		500	250
BRT on Exclusive Roadway		200	100
Bus Facilities	Access Roads	100	50
	Transit Mall	225	150
	Transit Center	225	150
	Storage and Maintenance	350	225
	Park and Ride Lots with Buses	225	150

Source: Federal Transit Administration (FTA). 2018. *Transit Noise and Vibration Impact Assessment*. Available at: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf (accessed September 2024).

Implementation of Mitigation Measure NOI-2 would reduce impacts from transit noise, and it is expected that in most cases future project noise could be reduced to the applicable County or City noise standards or lower. However, due to a lack of specific details and location information for future RCAP projects that involve new or expanded transit services, even with implementation of Mitigation Measure NOI-2, transit noise could impact nearby noise sensitive receptors and exceed acceptable standards. Therefore, it is conservatively concluded that operational noise impacts related to transit projects would remain significant and unavoidable.

Mitigation Measures

The following mitigation measure would apply if a future RCAP-related project would potentially generate a substantial temporary or permanent increase in ambient noise levels during construction and/or operation:

NOI-1 IMPLEMENT CONSTRUCTION NOISE REDUCTION MEASURES

The reviewing agency (County or specific City) shall implement the following noise reduction measures, where applicable, for projects that result in construction noise impacts, and where feasible and necessary based on project and site-specific considerations. Project-specific environmental documents may adjust these mitigation measures as necessary to respond to site-specific conditions.

To reduce construction noise levels to achieve applicable standards, the reviewing agency for a project under the RCAP shall implement the measures identified below, where feasible and necessary.

- The reviewing agency shall ensure that, where residences or other noise sensitive uses are located within 100 feet of construction sites that would use heavy-duty construction equipment, appropriate measures shall be implemented to ensure compliance with the FTA’s daytime construction noise threshold for residential uses of 80 dBA $L_{eq(8hr)}$. Specific techniques may include but are not limited to: restrictions on construction timing, use of sound blankets on construction equipment, and the use of temporary walls and noise barriers to block and deflect noise.

- Designate an on-site construction complaint and enforcement manager for projects within 300 feet of sensitive receptors.
- The reviewing agency shall post phone numbers for the on-site enforcement manager at construction sites along with complaint procedures and who to notify in the event of a problem.
- For projects that require pile driving within 600 feet of sensitive receptors, the implementing agencies shall implement caisson drilling or similar techniques as opposed to impact pile driving, where feasible. This shall be accomplished through the placement of conditions on the project during its individual environmental review.
- The reviewing agency shall ensure that equipment and trucks used for project construction utilize the best available noise and vibration control techniques, including mufflers, intake silencers, ducts, engine enclosures and acoustically attenuating shields or shrouds.
- The reviewing agency shall ensure that impact equipment (e.g., jack hammers, pavement breakers and rock drills) used for project construction be hydraulically or electrically powered wherever feasible to avoid noise associated with compressed air exhaust from pneumatically powered tools.
- The following timing restrictions shall apply to RCAP project construction activities located within 1,000 feet of a dwelling unit, except where timing restrictions are already established in local codes or policies, or avoidance of these workhours is infeasible.
 - Monday through Friday: 7 a.m. to 6 p.m.
 - Saturday: 9 a.m. to 5 p.m.
- The reviewing agency shall locate stationary noise and vibration sources as far from sensitive receptors as feasible. Stationary noise sources that must be located near existing receptors will be adequately muffled.

NOI-2 PREPARE OPERATIONAL NOISE STUDY AND IMPLEMENT IDENTIFIED MEASURES

For projects under the RCAP that install mechanical equipment and/or wind turbines, or that add new or increased transit service within the bus transit project screening distances listed in the FTA's *Transit Noise and Vibration Impact Assessment*, the reviewing agency (County or specific City) shall implement measures identified in a noise study, where applicable, for projects that result in operational noise impacts, and where feasible and necessary based on project and site-specific considerations. Project specific environmental documents may adjust these mitigation measures as necessary to respond to site-specific conditions.

The reviewing agency of a RCAP project that would install mechanical equipment, wind turbines, and/or new or increased transit service shall complete a detailed noise study based on project-specific details and location. Such a noise study shall identify the ambient noise levels in the project area, characterize the nearest sensitive receptors, estimate the noise levels proximate receptors will experience during operation of the individual project, compare estimated noise levels to the County or specific city noise level standards, outline any measures that are necessary to reduce operational noise levels, and determine the amount of noise reduction that would occur with implementation of these measures. Noise reduction measures may include, but would not be limited to, alternative site design, alternative orientation of noise sources, and construction of permanent berms and/or barriers. Noise reduction measures shall be implemented to reduce noise levels to the noise level standards or below, as feasible.

Level of Significance

Significant and Unavoidable

Groundborne Vibration and Noise

Significance Criterion b: Would the proposed plan result in generation of excessive groundborne vibration or groundborne noise levels?

IMPACT NOI-2 PROJECT AND INFRASTRUCTURE FACILITATED BY THE RCAP COULD GENERATE GROUNDBORNE VIBRATION DURING CONSTRUCTION, POTENTIALLY AFFECTING NEARBY LAND USES. OPERATION OF FUTURE DEVELOPMENT WOULD NOT RESULT IN SUBSTANTIAL VIBRATION. IMPACTS FOR CONSTRUCTION VIBRATION WOULD BE LESS THAN SIGNIFICANT WITH MITIGATION.

Construction

Construction of projects and infrastructure facilitated by the RCAP could intermittently generate groundborne vibration that could reach nearby properties. Table 3.7-10 lists groundborne vibration levels from various types of construction equipment at various distances.

Table 3.7-10 Vibration Source Levels for Construction Equipment

Equipment	Approximate Vibration Level (in/sec PPV)			
	25 feet from Source	50 feet from Source	100 feet from Source	200 feet from Source
Caisson Drilling	0.089	0.031	0.011	0.004
Jackhammer	0.035	0.012	0.004	0.002
Large Bulldozer	0.089	0.031	0.011	0.004
Loaded Truck	0.076	0.027	0.010	0.003
Pile Driver (impact)	Upper range	1.519	0.537	0.190
	Typical	0.644	0.228	0.081
Pile Driver (sonic)	Upper range	0.734	0.260	0.092
	Typical	0.170	0.060	0.021
Small Bulldozer	0.003	0.001	<0.001	<0.001
Vibratory Roller	0.21	0.074	0.026	0.009

Source: Federal Transit Administration (FTA). 2018. *Transit Noise and Vibration Impact Assessment* Available at: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf (accessed October 2024).

As shown in Table 3.7-10, buildings and structures could experience the strongest vibration during the use of pile drivers and vibratory rollers. Vibration levels from pile-drivers could approach 1.519 in/sec PPV at a distance of 25 feet and 0.190 in/sec at 100 feet from the source, and vibration levels from vibratory rollers could approach 0.21 in/sec PPV at a distance of 25 feet and 0.026 at 100 feet from the source. The use of pile driving equipment is dictated by site soils and the need for secure or deep foundational pilings based on building height or design, and, thus, cannot be predicted with reasonable certainty during a plan-level analysis.

The vibration criteria for architectural damage to buildings recommended by the FTA, as shown in Table 3.7-2, is 0.12 in/sec PPV for historic structures and 0.2 in/sec PPV for older residential structures. Vibration levels from typical equipment such as bulldozers and jackhammers would not

exceed FTA thresholds for historic structures and residential buildings at a distance of 25 feet or greater. However, vibration levels may exceed FTA thresholds from pile driving equipment and vibratory rollers that could be necessary to construct infrastructure projects, such as those under RCAP Actions BE-1a, BE-2a, BE-2b, BE-2f, BE-2g, BE-2i, BE-3c, BE-4c, BE-5b, BE-6b, BE-7c, BE-8a, BE-8c, BE-8d, T-6h, T-6i, T-10d, and CS-2f. Therefore, impacts from construction of projects and infrastructure under the RCAP that use pile driving equipment or vibratory rollers would be potentially significant.

Impacts associated with vibration from construction would be minimized, including avoidance of damaging an historic resource, through implementation of Mitigation Measure NOI-3. Therefore, construction vibration impacts would be reduced to less than significant levels with mitigation.

Operation

Operation with individual projects proposed under the RCAP would not include sources of substantial vibration such as railroad and subway projects. Therefore, operational groundborne vibration impacts would be less than significant.

Mitigation Measure

The following mitigation measure would apply if a future RCAP-related project would potentially generate excessive groundborne vibration or groundborne noise levels during construction and/or operation:

NOI-3 PREPARE AND IMPLEMENT CONSTRUCTION VIBRATION CONTROL PLAN

Prior to issuance of a building permit for a project requiring pile driving during construction within 135 feet of fragile structures such as historical resources, 100 feet of non-engineered timber and masonry buildings (e.g., most residential buildings), or within 75 feet of engineered concrete and masonry (no plaster); or a vibratory roller within 40 feet of fragile historical resources or 25 feet of any other structure, the reviewing agency (County or specific city) for projects under the RCAP shall prepare a groundborne vibration analysis to assess and mitigate potential vibration impacts related to these construction activities. This vibration analysis shall be conducted by a qualified and experienced acoustical consultant or engineer. The vibration levels shall not exceed FTA architectural damage thresholds (e.g., 0.12 in/sec PPV for fragile or historical resources, 0.2 in/sec PPV for non-engineered timber and masonry buildings, and 0.3 in/sec PPV for engineered concrete and masonry). If vibration levels would exceed this threshold, alternative uses such as drilling piles as opposed to pile driving or static rollers as opposed to vibratory rollers shall be used. If necessary, construction vibration monitoring shall be conducted to ensure FTA vibration thresholds are not exceeded.

Level of Significance

Less Than Significant with Mitigation

Airport Activity Noise

Significance Criterion c: For location 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 proposed plan expose people residing or working in the project area to excessive noise levels?

IMPACT NOI-3 PROJECT AND INFRASTRUCTURE FACILITATED BY THE RCAP MAY EXPERIENCE INCREASED NOISE LEVELS FROM NEARBY AIRPORTS. AIRPORTS IN THE PLAN AREA HAVE GENERALLY MINOR NOISE CONTOURS; IN ADDITION, CONSTRUCTION CONTRACTORS AND MAINTENANCE EMPLOYERS WOULD BE REQUIRED TO COMPLY WITH CAL OSHA NOISE REGULATIONS. CONSTRUCTION WORKERS AND MAINTENANCE EMPLOYEES WOULD NOT BE EXPOSED TO EXCESSIVE NOISE LEVELS FROM AIRCRAFT NOISE, AND IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Construction

Airports are located throughout the plan area (see *Existing Noise Conditions and Sources* for a list of airports). Noise contours are provided for each airport in the Humboldt ALUCP.²⁴ The airports are generally small, and their noise contours have a minor reach. The primary airport is the California Redwood Coast – Humboldt County Airport, with a 65 dBA CNEL noise contour that does not extend past the airport property.

Construction workers associated with RCAP projects constructed near the airports may be intermittently exposed to elevated noise levels during aircraft take-off and landing events. Contractors would be required to comply with Cal OSHA regulations related to worker exposure to noise. Section 5096 of these regulations sets duration-based noise exposure limits for workers that require provision of personal protective equipment should exposure exceed the specified limits. The requisite adherence to these regulations would reduce worker exposure to high noise levels such that they would not expose workers to excessive noise levels. In addition, as mentioned above, the airports within the plan area have small noise contours that would be unlikely to overlap with the areas where projects under the RCAP would be constructed. As such, construction workers would not be exposed to excessive noise levels from aircraft noise. Therefore, construction impacts related to consistency with noise land use compatibility standards and effects of airport activity noise would be less than significant.

Operation

As described above, airports in Humboldt are generally small, and their noise contours have a minor reach. The primary airport is the California Redwood Coast – Humboldt County Airport, with a 65 dBA CNEL noise contour that does not extend past the airport property.

Future RCAP projects that would require employees for regular maintenance and operations, would include projects such as renewable energy infrastructure, organic waste processing facilities, and recycled water facilities encouraged by RCAP Measures BE-1, BE-2, T-6, T-10, CS-2, SW-1, and WW-2. Maintenance and operations employees associated with RCAP projects operated near the airports may be intermittently exposed to elevated noise levels during aircraft take-off and landing events. Employers would be required to comply with California Occupational Safety and Health Administration (Cal OSHA) regulations related to worker exposure to noise. Section 5096 of these

²⁴ Humboldt County Airport Land Use Commission. 2021. Humboldt County Airport Land Use Compatibility Plan. <https://humboldt.gov/DocumentCenter/View/95080/2021-Airport-Land-Use-Compatibility-Plan-adopted-04132021-33-MB> (accessed October 2024)

regulations sets duration-based noise exposure limits for workers that require provision of personal protective equipment should exposure exceed the specified limits. The requisite adherence to these regulations would reduce employee exposure to high noise levels such that they would not expose employees to excessive noise levels. In addition, as mentioned above, the airports within the plan area have small noise contours that would be unlikely to overlap with the areas where projects under the RCAP would be located and operated. As such, maintenance employees would not be exposed to excessive noise levels from aircraft noise. Therefore, operational impact related to consistency with noise land use compatibility standards and effects of airport activity noise would be less than significant.

Mitigation Measures

No mitigation is required.

Level of Significance

Less Than Significant without Mitigation

3.7.5 Cumulative Impacts

The geographic scope of the cumulative noise analysis is the unincorporated and incorporated areas of Humboldt County. The cumulative analysis considers the population, employment, service population, and households growth projected for Humboldt County through 2030 included in Table 3-1 (see Chapter 3.0, *Environmental Impact Analysis*).

Construction Noise

Construction noise generated by projects and infrastructure under the RCAP, in combination with construction activities for other cumulative projects that may be constructed simultaneously, could, without mitigation, substantially increase noise levels in the vicinity of sensitive receptors if constructed within close proximity to one another. Mitigation Measure NOI-1 has been identified to help reduce construction noise from projects and infrastructure under the RCAP. However, construction noise may still exceed thresholds after mitigation, and impacts from the proposed plan are significant and unavoidable. Therefore, if construction of cumulative projects occurs in close proximity to each other and simultaneously, noise from individual construction projects have a chance of combining to create significant cumulative impacts. Although this scenario is unlikely, and mitigation measures would be implemented to the extent feasible, the potential remains for a cumulatively considerable increase in construction noise from projects and infrastructure under the RCAP. Therefore, the cumulative impact related to construction noise would be significant and unavoidable.

Operational Noise

Stationary Noise

Projects and infrastructure under the RCAP would introduce new stationary noise sources, including new mechanical equipment and wind turbines, to the ambient noise environment within the plan area. Mitigation Measure NOI-2 has been identified to help reduce operational noise from projects and infrastructure under the RCAP. In addition, the phasing out of gas- and diesel-powered equipment in favor of electric-powered equipment would help to reduce operational noise throughout Humboldt. However, operational noise associated with future RCAP projects may still

exceed thresholds after mitigation, and impacts from the proposed plan are significant and unavoidable. Proposed plan sources may combine with other nearby cumulative projects to result in higher noise levels. Operational noise from these sources is localized and rapidly attenuates due to the effects of intervening structures and topography that block the line of sight and due to other noise sources closer to receptors that obscure project-related noise. However, if operational noise from cumulative projects occurs in close proximity to each other and simultaneously, noise from individual projects have a chance of combining to create significant cumulative impacts. Although this scenario is unlikely, and mitigation measures would be implemented to the extent feasible, the potential remains for a cumulatively considerable increase in operational noise from development under the RCAP. Therefore, the cumulative impact related to operational noise would be significant and unavoidable.

Transportation Noise

Cumulative projects would add additional roadway vehicles to roadways and transit facilities in the plan area that would have the effect of increasing transportation-related noise. However, projects and infrastructure under the RCAP would contribute a minor amount of traffic, with some projects requiring only a few employees or infrequent maintenance trips. In addition, the RCAP would result in a net decrease in vehicle trips regionally and increased adoption of ZEVs, and, therefore, may reduce transportation noise throughout Humboldt. As such, future projects under the RCAP would contribute a minor amount of traffic noise and would not be cumulatively considerable. Therefore, the cumulative impact related to operational transportation noise would be less than significant.

Groundborne Vibration

Although there could be other cumulative projects simultaneously under construction near a project facilitated by the RCAP, the potential for construction groundborne vibration impacts is within relatively close distances (e.g., within approximately 40 feet of a vibratory roller or 135 feet of an impact pile driver). Cumulative construction projects would not be anticipated to be within these close distances, such as having multiple vibratory rollers operating within 40 feet of each other or two impact pile drivers operating within 135 feet of each other and in proximity to a sensitive structure. Furthermore, projects and infrastructure under the RCAP would implement Mitigation Measure NOI-3 to reduce construction vibration impacts to less than significant. Therefore, cumulative groundborne vibration impacts would be less than significant.

Airport Noise

Employees associated with operation of projects and infrastructure under the RCAP would not be exposed to excessive noise levels from aircraft noise. Projects and infrastructure under the RCAP would not increase airport activity and noise, and would not increase cumulative airport noise exposure with cumulative projects in the plan area. Therefore, the cumulative impact related to operational airport noise exposure would be less than significant.

Overall Level of Cumulative Significance

Significant and Unavoidable

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