DOCKETED	
Docket Number:	23-OPT-02
Project Title:	Darden Clean Energy Project
TN #:	252972
Document Title:	CEC App_Section 5-3_Noise_Darden Clean Energy
Description:	This section presents the noise impact assessment related to the Darden Clean Energy Project.
Filer:	Evelyn Langsdale
Organization:	Rincon Consultants
Submitter Role:	Applicant Consultant
Submission Date:	11/6/2023 2:57:38 PM
Docketed Date:	11/6/2023

5.3 Noise

This section presents the noise impact assessment related to the Darden Clean Energy Project (Project). This section relies on information from the Noise Study prepared for the Project (Appendix J). Section 5.3.1 describes the existing noise setting, including sensitive receptors and existing noise levels. Section 5.3.2 provides an overview of the regulatory setting related to noise. Section 5.3.3 identifies potential impacts that may result from Project construction and operation (including maintenance), as well as mitigation measures that should be considered during Project operation. Section 5.3.4 discusses cumulative impacts. Section 5.3.5 presents laws, ordinances, regulations, and standards (LORS) applicable to noise. Section 5.3.6 identifies regulatory agency contacts. Section 5.3.7 describes permits required for the Project related to noise. Section 5.3.8 provides references for this section.

5.3.1 Environmental Setting

5.3.1.1 Overview of Sound Measurement

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.

Human Perception of Sound

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 traffic volume, would increase the noise level by 3 dB; dividing the energy in half would result in a 3 dB decrease.

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 (8 times the sound energy); and that an increase (or decrease) of 10 dBA sounds twice (or half) as loud.

Sound Propagation and Shielding

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 by 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 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. Structures can substantially reduce exposure to noise as well. The Federal Highway Administration's (FHWA) guidelines indicate that modern building construction generally provides an exterior-to-interior noise level reduction of 20 to 35 dBA with closed windows.

Descriptors

The impact 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 impacts. 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.

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 hours (10:00 p.m. to 7:00 a.m.). It is also measured using the Community Noise Equivalent Level (CNEL), which is the 24-hour average noise level with an additional 5 dBA penalty to noise occurring during evening hours, between 7:00 p.m. and 10:00 p.m., and an additional 10 dBA penalty to noise occurring during the night, between 10:00 p.m. and 7:00 a.m., to account for the added sensitivity of humans to noise during these hours. Noise levels described by L_{dn} and CNEL usually differ by about 1 dBA. The relationship between the peak-hour L_{eq} value and the L_{dn}/CNEL depends on the distribution of noise generation during the day, evening, and night.

Groundborne Vibration

Vibration refers to groundborne noise and perceptible motion. Groundborne vibration is almost exclusively a concern inside buildings and is rarely perceived as a problem outdoors, where the motion may be discernible, but without the effects associated with the shaking of a building, there is less adverse reaction.

Typical outdoor sources of vibration that propagate through the ground and create perceptible groundborne vibration in nearby buildings include construction equipment, steel-wheeled trains, and traffic on rough roads. If the roadway is smooth, vibration from rubber-tired traffic is rarely perceptible.

Vibration amplitudes are usually expressed in peak particle velocity (PPV), or root mean squared (RMS) vibration velocity. The PPV and RMS velocity are 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 monitoring of blasting vibration because it is related to the stresses that are experienced by buildings. The vibration velocity level threshold of perception for humans is approximately 0.035 in/sec PPV.

5.3.1.2 Local Land Use and Noise Sources

The Project site is on a flat plain which is sparsely populated with scattered residential and commercial land uses. The primary sources of noise on-site and in the surrounding area include motor vehicles, wind, and agricultural activities (e.g., farming equipment). The greatest vehicle noise occurs from vehicles on South Sonoma Avenue and West Mount Whitney Avenue. In addition, vehicle noise is generated from vehicle travel on Interstate 5.

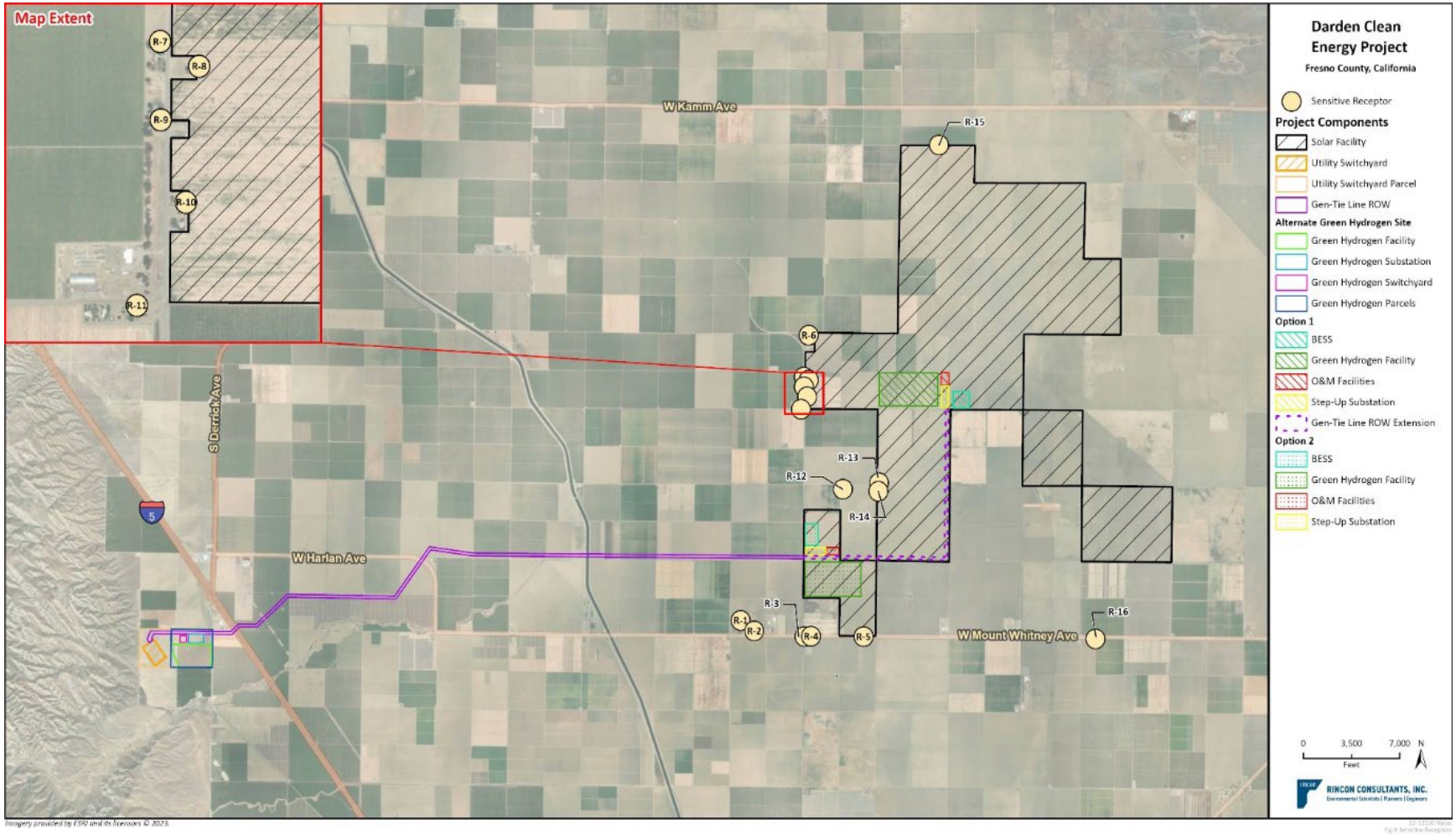
Sensitive Receptors

Noise sensitive land uses identified in the Fresno County General Plan (2000) include residential, school, library, church, hospital, and nursing home uses. Other sensitive receptors are identified as transient lodging and motel and hotel uses. The CEC identifies residences, hospitals, libraries, schools, places of worship, or other facilities where quiet is an important attribute of the environment as noise-sensitive land uses (Title 20, California Code of Regulations, Section 1704, Appendix B).

Vibration-sensitive receptors, which are similar to noise-sensitive receptors, include residences and institutional uses, such as schools, churches, and hospitals. However, vibration-sensitive receptors also include buildings where vibrations may interfere with vibration-sensitive 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) or historic buildings that could sustain damage from strong vibrations.

The Project site is immediately adjacent to sensitive receptors identified in the Fresno County General Plan and in the CEC's Appendix B (Title 20, California Code of Regulations, Section 1704, Appendix B). The sensitive receptors adjacent to the Project site include single family residents along South Sonoma Avenue, South Napa Avenue, and West Stroud Avenue. Additional nearby sensitive receptors from the Project site include single family residents along West Mt Whitney Avenue and West Cerini Avenue. Sensitive receptors are shown in Figure 5.3-1. As shown in Figure 5.3-1, sensitive receptors are concentrated at the western portion of the solar facility. No sensitive receptors are located in proximity to the utility switchyard or alternate green hydrogen facility.

Figure 5.3-1 Location of Sensitive Receptors



5.3.1.3 Existing Baseline Noise Environment

Noise Measurements

To evaluate existing noise levels in the area, six 15-minute noise measurements (ST1 through ST6) and one 24-hour noise measurement (LT-1) were taken on and near the Project site on April 24, 2023, and April 25, 2023, using an Extech, Model 407780A, ANSI Type II integrating sound level meter. In addition, a 25-hour noise measurement was taken at South Sonoma Avenue and West Harlan Avenue near the Project site on July 18, 2023, and July 19, 2023, also using the Extech in accordance with the CEC's requirements in Appendix B (Title 20, California Code of Regulations, Section 1704, Appendix B).

Figure 5.3-2 shows the locations of the noise measurements. The noise measurement locations were chosen to provide a representative range of ambient noise levels across the Project site and in the nearby area, especially near existing noise-sensitive residences and roadways. On April 24, 2023, and April 25, 2023, the daily high temperature was 84 degrees F with 75 percent humidity. The average wind was 3.8 miles per hour and there was no precipitation. On July 18, 2023, and July 19, 2023, the daily high temperature was 100- and 104-degrees Fahrenheit, respectively, with 60 percent humidity. The average wind was 2.5 miles per hour and there was no precipitation. The short-term noise measurement results are shown in Table 5.3-1. Table 5.3-2 reports traffic counts taken concurrently with short-term sound measurement levels. The 24-hour long-term noise measurement results are shown in Table 5.3-3, and 25-hour long-term measurement results are shown in Table 5.3-4[1]. Detailed noise meter outputs are included in Appendix J.

[1] The 24-hour long-term noise measurement is an industry standard to characterize ambient noise levels. To meet CEC's requirements for Opt-In Application (Title 20, California Code of Regulations, Section 1704, Appendix B), a 25-hour noise measurement was also taken.

Figure 5.3-2 Noise Measurement Locations

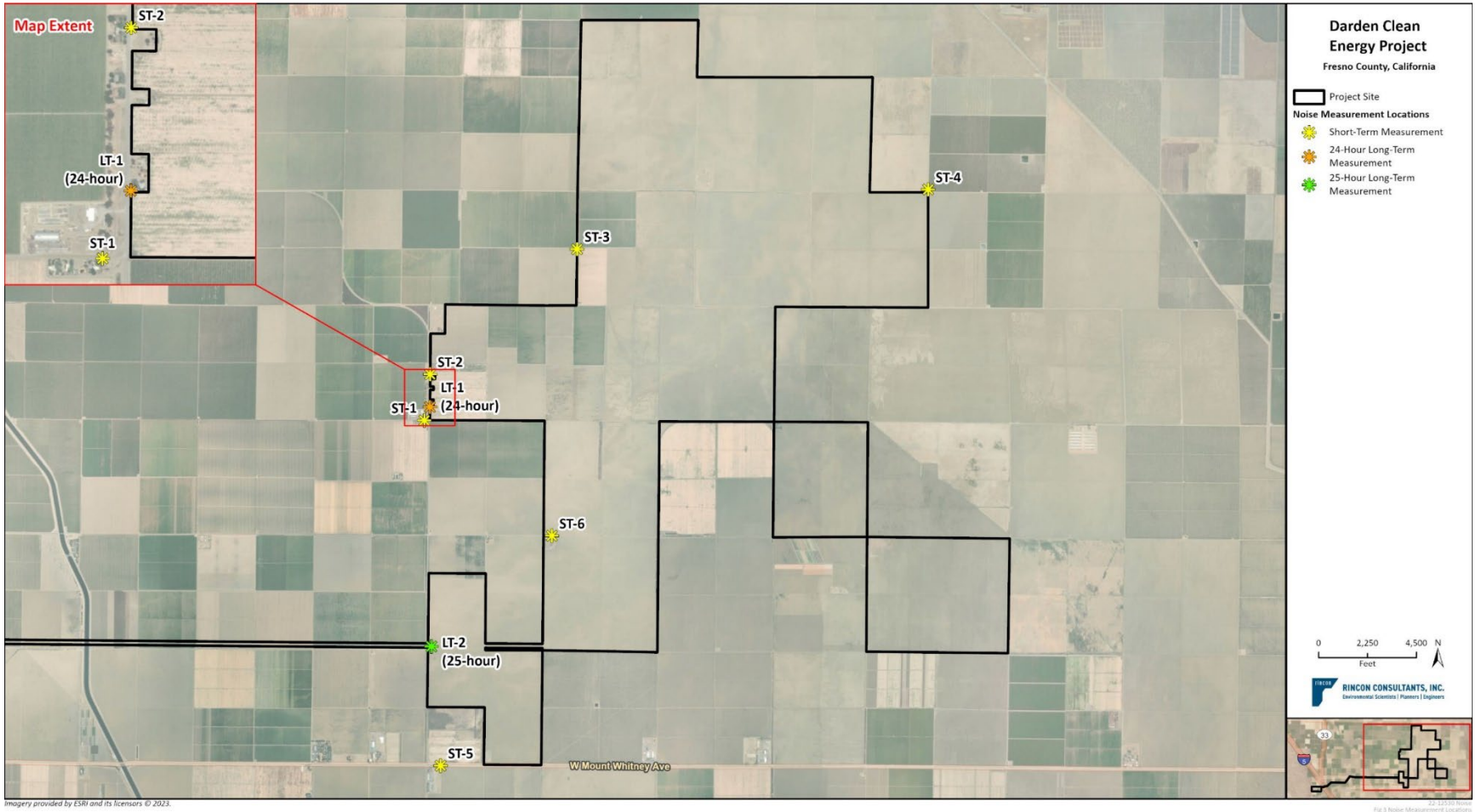


Table 5.3-1 Short-Term Noise Monitoring Results in the Project Site Vicinity

Measurement Location		Sample Times	Approximate Distance to Primary Noise Source	L_{eq} (dBA)	L_{min} (dBA)	L_{max} (dBA)
ST-1	Approximately 10 feet east from the shoulder of South Sonoma Avenue and West Davis intersection	10:45 – 11:00 a.m.	Approximately 35 feet from West Davis centerline	64.5	33.3	84.2
ST-2	West side of South Sonoma Avenue	11:27 – 11:42 a.m.	Approximately 15 feet from South Sonoma Avenue centerline	58.7	33.5	78.3
ST-3	North Side of South Napa Avenue	12:37 – 12:52 p.m.	Approximately 15 feet from South Napa Avenue centerline	63.3	32.0	84.1
ST-4	Approximately 110 feet south of South Yuba Avenue and West Clarkson Avenue intersection.	1:05 – 1:20 p.m.	Approximately 22 feet from South Yuba Avenue centerline	53.3	31.9	77.7
ST-5	North side of West Mount Whitney Avenue, and approximately 610 feet east of West Mount Whitney Avenue and South Sonoma Avenue intersection.	2:10 – 2:25 p.m.	Approximately 50 feet from West Mount Whitney Avenue centerline	67.3	36.5	85.0
ST-6	North of West Cerini Avenue and 300 yards west of South Napa Avenue	1:42 – 1:57 p.m.	Approximately 15 feet from West Cerini Avenue centerline	53.3	31.9	77.7

L_{eq} = average noise level equivalent; dBA = A-weighted decibel (for these measurements, the L_{eq} was over a 15-minute period).; L_{min} = minimum instantaneous noise level; L_{max} = maximum instantaneous noise level

See Figure 5.3-2 for noise measurement locations and Appendix J for noise levels exceeded 10 percent (L10), 50 percent (L50) and 90 percent (L90) of the time.

Source: Appendix J

Table 5.3-2 Traffic Counts During Short-Term Sound Level Monitoring

Measurement	Roadway	Traffic	Autos	Medium Trucks	Heavy Trucks
ST-1	South Sonoma Avenue – at West Davis Avenue	15-minute count	5	1	3
		One-hour equivalent	20	4	12
Distribution			**55.6%**	**11.1%**	**33.3%**
ST-2	South Sonoma Avenue	15-minute count	10	2	2
		One-hour equivalent	40	8	8
Distribution			**71.4%**	**14.3%**	**14.3%**
ST-3	South Napa Avenue	15-minute count	0	1	0
		One-hour equivalent	0	4	0
Distribution			**0%**	**100%**	**0%**

Measurement	Roadway	Traffic	Autos	Medium Trucks	Heavy Trucks
ST-4	South Yuba Avenue – at West Clarkson Avenue	15-minute count	0	0	0
		One-hour equivalent	0	0	0
Distribution			**0%**	**0%**	**0%**
ST-5	West Mount Whitney Avenue – at South Sonoma Avenue	15-minute count	14	6	5
		One-hour equivalent	56	24	20
Distribution			**56%**	**24%**	**20%**
ST-6	West Cerini Avenue – west of South Napa Avenue	15-minute count	0	0	0
		One-hour equivalent	0	0	0
Distribution			**0%**	**0%**	**0%**

Source: Appendix J

Table 5.3-3 24-Hour Long-Term Noise Measurement Results

Sample Time	dBA L_{eq}	Sample Time	dBA L_{eq}
24-hour Measurement – April 24 – 25, 2023			
11:20 a.m.	49	11:20 p.m.	52
12:20 p.m.	52	12:20 a.m.	39
1:20 p.m.	54	1:20 a.m.	30
2:20 p.m.	49	2:20 a.m.	35
3:20 p.m.	54	3:20 a.m.	34
4:20 p.m.	52	4:20 a.m.	51
5:20 p.m.	66	5:20 a.m.	57
6:20 p.m.	45	6:20 a.m.	57
7:20 p.m.	58	7:20 a.m.	44
8:20 p.m.	59	8:20 a.m.	55
9:20 p.m.	58	9:20 a.m.	55
10:20 p.m.	58	10:20 a.m.	53
24-hour Noise Level (dBA CNEL)			**61**

dBA = A-weighted decibels; L_{eq} = equivalent noise level; CNEL = community equivalent noise level

See Figure 5.3-2 for approximate noise measurement locations.

Source: Appendix J

Table 5.3-4 25-Hour Long-Term Noise Measurement Results

Sample Time	dBA L_{eq}	Sample Time	dBA L_{eq}
25-hour CEC Measurement – July 18 – 19, 2023			
3:45 p.m.	55	4:45 a.m.	60
4:45 p.m.	40	5:45 a.m.	65
5:45 p.m.	49	6:45 a.m.	53
6:45 p.m.	58	7:45 a.m.	51
7:45 p.m.	53	8:45 a.m.	59
8:45 p.m.	50	9:45 a.m.	54
9:45 p.m.	52	10:45 a.m.	54
10:45 p.m.	46	11:45 a.m.	52
11:45 p.m.	45	12:45 p.m.	60
12:45 a.m.	46	1:45 p.m.	66
1:45 a.m.	49	2:45 p.m.	55
2:45 a.m.	52	3:45 p.m.	44
3:45 a.m.	58		
25-hour Noise Level (dBA CNEL)			**64**

dBA = A-weighted decibels; L_{eq} = equivalent noise level; CNEL = community equivalent noise level

See Figure 5.3-2 for approximate noise measurement locations.

Source: Appendix J

5.3.2 Regulatory Setting

A review of existing relevant LORS was conducted to understand the regulatory context for noise surrounding the Project. These are detailed in Section 5.3.5, *Laws, Ordinances, Regulations, and Standards*.

5.3.3 Impact Analysis

The following subsections discuss the potential direct and indirect impacts related to noise from construction and operation and maintenance (O&M) of the Project.

5.3.3.1 Methodology

To assess the potential for temporary construction and long-term operational noise impacts, noise-sensitive receptors closest to the Project site were identified. The analysis includes two Project construction duration scenarios: 36-months and 18-months. In addition, the Project is considering two locations (Option 1 and Option 2) for the step-up substation, BESS, and green hydrogen components; as well as an alternate site location for the green hydrogen component. Applicant-provided construction data were used for the 36-month and 18-month construction scenarios.

Construction and Decommissioning Noise

The FHWA Roadway Construction Noise Model (RCNM) was used to estimate construction noise at nearby sensitive receptors. Construction noise modeling results are provided in Appendix J. RCNM provides reference noise levels at the standard distance of 50 feet and estimates noise levels at nearby sensitive receptors based on a standard noise attenuation rate of 6 dB per doubling of

distance (line-of-sight method of sound attenuation for point sources of noise such as construction equipment). Table 5.3-5 shows the noise levels associated with heavy construction equipment at a reference distance of 50 feet from the source. As shown in this table, noise levels at this distance for individual equipment can range from about 74 to 85 dBA, depending upon the types of equipment in operation at any given time and phase of construction.

Table 5.3-5 Typical Construction Equipment Noise Levels

Equipment	Acoustical Usage Factor (%)[1]	Measured L_{eq} (dBA at 50 feet)
Augur Drill Rig	20	84
Backhoe	40	78
Compactor (ground)	20	83
Concrete Mixer Truck	40	85
Crane	16	85
Dozer	40	82
Dump Truck	40	76
Excavator	40	81
Flat Bed Truck	40	74
Front End Loader	40	79
Generator	50	81
Grader	40	83
Pickup Truck	40	75
Pneumatic Tools	50	85
Roller	20	80
Scraper	40	84
Warning Horn	5	83
Welder/Torch	40	74

[1] The average fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a construction operation.

Source: Appendix J

Although construction equipment may operate near the Project's property lines, construction equipment would be mobile throughout the day and would average a farther distance from the nearest residential property line over a typical construction day. This analysis conservatively assumes that in addition to the distance from the property line to each noise-sensitive receptor, over the course of a typical construction day the equipment would average at least 100 feet from the property lines (internal to the Project site) from each noise-sensitive receptor during site preparation and PV panel system phases. The remaining construction phases are estimated from the boundary of the component being constructed to the sensitive receptor property line. Consistent with industry standard, the loudest three pieces of equipment for each phase were modeled for the 36-month construction scenario. For the accelerated 18-month construction schedule, the loudest five pieces of equipment for each phase were modeled.

At the end of the Project's useful life (anticipated to be 35 years), the proposed Project would be decommissioned in accordance with then-current decommissioning practices. At this time, it is not possible to quantitatively evaluate potential noise that would result from Project decommissioning,

due to technology or construction practices that would be available at that time. Decommissioning activities would require similar equipment and workforce as construction but would be substantially less intense. However, based on current decommissioning practices and as a reasonable worst-case scenario, this analysis assumes that noise impacts generated during future decommissioning would be similar to noise impacts generated during the construction phase of the Project.

Construction Traffic Noise

Noise levels from existing traffic and with-construction traffic along West Mount Whitney Avenue, South Colusa Avenue, State Route (SR)-145, and SR-269 were estimated in terms of average daily traffic L_{dn} (See Appendix J for noise calculations). Existing traffic volumes near the Project site are based on the Project's CEC Traffic Analysis prepared by VRPA Technologies, Inc (Appendix K). Daily vehicle trips for the 36-month and 18-month construction scenario would generate 2,400 worker and 280 haul trips and 3,010 worker and 345 haul trips, respectively. The total number of trips generated by the Project includes both inbound and outbound trips. The roadways were modeled conservatively using a straight-line analysis (i.e., assuming no attenuation from topography and a straight roadway).

Table 5.3-6 shows the estimated number of existing and construction-generated vehicle trips at the modeled roadway segments. Employee and truck trip distribution are shown in Figure 3-1a and Figure 3-1b of the CEC Traffic Analysis prepared for the Project by VRPA Technologies, Inc. The table also includes the estimated speeds and distances to sensitive receptors for each roadway used in the model. The modal split for the existing traffic was assumed to be 73.0 percent passenger cars, 4.6 percent medium trucks, and 22.4 percent heavy trucks for each of the roadway segments, based on the California Department of Transportation (Caltrans) truck trips percentage at the nearest state route.[2] Model results are included in Appendix J.

Table 5.3-6 Existing and Daily Construction Vehicle Trips

Roadway Segment	Speed Limit (mph)	Centerline Distance to Closest Sensitive Receptor (feet)	Existing Daily Vehicle Trips	Existing + Daily Construction Vehicle Trip (36-months)	Existing + Daily Construction Vehicle Trips (18-months)
West Mount Whitney Avenue – SR-33 to Colusa Avenue	55	30	1,800	2,040	2,100
West Mount Whitney – South Colusa Avenue to SR-145	55	300	2,200	4,090	4,570
South Colusa Avenue – SR-145 to West Mount Whitney	55	25	850	1,120	1,190
SR-145 – I-5 to South Colusa Avenue	55	150	3,300	3,570	3,640
SR- 145 – Colusa to West Mount Whitney Avenue	55	35	4,100	4,100	4,100
SR-145 – West Mount Whitney Avenue and SR-180 – 1 Lane	55	45	7,300	8,470	8,170

[2] Truck traffic counts from Caltrans between SR-33 and SR-145 are the nearest traffic volumes from the Project site. This modal split would best represent rural agriculture traffic around the Project site.

Roadway Segment	Speed Limit (mph)	Centerline Distance to Closest Sensitive Receptor (feet)	Existing Daily Vehicle Trips	Existing + Daily Construction Vehicle Trip (36-months)	Existing + Daily Construction Vehicle Trips (18-months)
SR-145 – West Mount Whitney Avenue and SR-180 – 2 Lanes	55	30	12,000	13,170	13,470
SR-269 – SR-198 and West Mount Whitney Avenue	55	40	4,100	4,820	5,000

Mph=miles per hour; SR = State Route.
Source: Appendix J

On-Site Operational Noise

On-site operational noise sources were modeled with SoundPLAN. Propagation of modeled stationary noise sources was based on ISO Standard 9613-2, "Attenuation of Sound during Propagation Outdoors, Part 2: General Method of Calculation." The assessment methodology assumes that all receptors would be downwind of stationary sources. This is a worst-case assumption for total noise impacts, since only some receptors would be downwind at any one time.

Operational noise sources from the Project include PV sub-arrays with associated electrical equipment (such as transformers and inverters), energy storage systems, substation equipment, green hydrogen facility, gen-tie line, and the utility switchyard. Assumptions for these sources in this analysis are described below.

Solar Sub-Array Inverters-Transformers

Transformers would be co-located with the inverters and switchboards, which would lie within a battery enclosure on a concrete pad or steel skid. The Applicant indicates that these units would generate a noise level of 66 dBA at source power. In addition, PV panel noise would come from the tracking motors, which are driven by motors to make brief, incremental adjustments to track the arc of the sun to maximize the solar effect.

BESS

BESS enclosures would each be approximately 40 or 52 feet long, with a width of 8 feet and a height of 8.5 feet, installed on concrete foundation. The battery storage component would have a footprint of approximately 35 acres and would be immediately adjacent to the step-up substation. Two locations (Option 1 and 2 sites) are being considered for the BESS. Battery systems would require air conditioners or heat exchangers and inverters. The BESS units would require between 610 and 1,220 electrical enclosures, which may house Tesla Megapacks 2XL or similar equipment, throughout the BESS component area. According to Tesla, in the Project area, a 50 percent load for the Megapack 2XLs can be assumed, which is estimated to generate a sound pressure level of 62 dBA at 10 meters per Megapack 2XL.

Step-Up Substation

The step-up substation would increase (step-up) the medium voltage of the PV collector system from 34.5 kV to 500 kV. The step-up substation would be located on approximately 20 acres within the solar facility. Two locations (Option 1 and 2 sites) are being considered for the step-up substation. Noise sources within the step-up substation would include eight transformers. Each

transformer would generate a noise level of 89 dBA L_{eq} at the source based on applicant-provided information.

Utility Switchyard

One utility-owned switchyard, approximately 40 acres in size, would serve as the facility required to electrically connect the Project generation onto the utility's 500 kV transmission network. The utility switchyard would be located on the west side of the Project and serve as a termination point for the gen-tie line and would initially loop in the Los Banos-Midway #2 500 kV transmission line. The utility switchyard would not include any equipment that is a substantial source of noise. No substantial sources of operational noise would be generated at the utility switchyard.

Green Hydrogen Facility

The green hydrogen facility would have noise generating components, such as mechanical equipment. However, specific noise levels of potential green hydrogen-related equipment have not been confirmed in the current stage of engineering and design for the green hydrogen facility. Therefore, the green hydrogen facility is analyzed qualitatively. Two approximately 225-acre locations within the solar facility (Option 1 and 2 sites) are being considered for the green hydrogen facility; an alternate location for the green hydrogen facility on approximately 100 acres adjacent to the utility switchyard is also being considered.

Gen-Tie

The gen-tie line would be up to approximately 15 miles in length and connect the solar facility to the utility switchyard. The gen-tie line would generate noise from the corona affect, which is a phenomenon associated with the electrical ionization of the air that occurs near the surface of the energized conductor and suspension hardware due to very high electric field strength. This is audible power line noise that is generated from electric corona discharge, which is usually experienced as a random crackling or hissing sound. The corona effect on the gen-tie line would generate a noise level of approximately 20 dBA at a distance of 50 feet.

Other Noise Sources

Noise levels from the PV tracking motors are discussed qualitatively due to the low and intermittent noise levels from these sources compared to the major noise sources above.

Operational Traffic Noise

Vehicle trips would be generated during Project O&M activities. The Project would generate 80 daily worker trips, based on the CEC Traffic Analysis. The existing plus project traffic volumes used in this analysis are shown in Table 5.3-7. The significance of the Project's increase in traffic noise was determined using the Federal Aviation Administration recommended threshold.

Table 5.3-7 Existing and Daily Operational Vehicle Trips

Roadway Segment	Speed Limit (mph)	Centerline Distance to Closest Sensitive Receptor (feet)	Existing Daily Vehicle Trips	Existing + Daily Operational Vehicle Trips
West Mounty Whitney Avenue –SR-33 to Colusa Avenue	55	30	1,800	2,000
West Mount Whitney – South Colusa Avenue to SR-145	55	300	2,200	2,500
South Colusa Avenue – SR-145 to West Mount Whitney	55	25	850	950
SR-145 – I-5 to South Colusa Avenue	55	150	3,300	3,650
SR- 145 – Colusa to West Mounty Whitney Avenue	55	35	4,100	4,440
SR-145 – West Mount Whitney Avenue and SR 180 - 1Lane	55	45	7,300	8,100
SR-145 – West Mount Whitney Avenue and SR 180 – 2 Lanes	55	30	12,000	13,290
SR-269 – SR-198 and West Mount Whitney Avenue	55	40	4,100	4,550

Mph=miles per hour; SR = State Route.
Source: Appendix J

Worker Construction and Operational Noise

During Project construction and operation, workers' exposure to temporary noise would vary depending on the construction phase of the Project and the proximity of the workers to the noise-generating activities. RCNM provides reference noise levels at the standard distance of 50 feet for individual equipment, as shown in Table 5.3-5, which can range from approximately 74 to 85 dBA, depending upon the types of equipment in operation at any given time and phase of construction. In addition, temporary use of helicopters during gen-tie and inverter, transformer, and electrical equipment construction phases would generate a noise level of approximately 95.9 dBA at 100 feet. Operational noise from the Project components would include transformers, inverters, batteries, and solar tracking. It is assumed workers would be exposed temporarily to noise levels at the source of noise generating equipment during construction and operation.

5.3.3.2 Impact Evaluation Criteria

The potential for impacts related to noise were evaluated using relevant criteria described in the California Environmental Quality Act (CEQA) Environmental Checklist (Appendix G of the CEQA Guidelines). Specific to noise, the CEQA Environmental Checklist asks, would the project:

- Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Generate excessive groundborne vibration or groundborne noise levels; or
- For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels.

Construction Noise

As discussed in Section 5.3.5.3, *Local LORS*, Fresno County does not specify quantitative construction noise limits. This analysis uses the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment criteria. The FTA provides reasonable criteria for assessing construction noise impacts based on the potential for adverse community reaction. For residential and commercial uses, the daytime noise threshold is 80 and 85 dBA L_{eq}, respectively, for an 8-hour period.

On-site Operational Noise

Operational noise was assessed using Fresno County's strictest exterior nighttime noise standard of 45 dBA L_{eq} within 50 feet of structures associated with residential or other noise-sensitive land uses.

Traffic Noise

A Project would normally have a significant effect on the environment related to noise if it would substantially increase the ambient noise levels in the areas around the Project. The following thresholds of significance, consistent with those recommended by the Federal Aviation Administration, are used to assess traffic noise impacts 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 to 64 dBA CNEL.
- Greater than 5 dBA CNEL increase for ambient noise environments of less than 60 dBA CNEL.

Vibration

Vibration associated with construction of the Project has the potential to be an annoyance to nearby land users and sensitive receptors. Fresno County has not adopted limits for determining the significance of vibration impacts on structures or persons. The FTA criteria to evaluate potential damage to buildings from vibration are shown in Table 5.3-8. The FTA also provides criteria for acceptable levels of groundborne vibration based on typical human response. This analysis uses 72 vibration decibels (VdB) as a threshold for potentially annoying groundborne vibration to residential receptors, as shown in Table 5.3-9.

Table 5.3-8 FTA Groundborne Vibration Architectural Damage Criteria

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	0.02
IV. Buildings extremely susceptible to vibration damage[1]	0.12

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.

[1] Category IV applied to historic structures and buildings.

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

Source: Appendix J

Table 5.3-9 FTA Human Reaction to Typical Vibration Levels

Land Use Category	VdB (one microinch per second)
Category 1: Buildings where vibration could interfere with interior operations	65[1,2]
Category 2: Residences and buildings where people normally sleep	72[1]

VdB = Vibration Decibel

[1] Frequent Events: more than 70 events per day

[2] This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes.

Source: Appendix J

Impact NOI-1

Threshold:	Would the project result in generation of a substantial temporary 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?

Construction and Decommissioning Noise

This discussion focuses on the Project's potential to result in substantial temporary increases in noise due to construction. Potential operational noise impacts are discussed in Impact NOI-2. Construction and decommissioning of the Project would involve the use of noise-generating equipment during various phases, including transport of personnel and materials to the site, heavy machinery used in grading and clearing the site, pneumatic post drivers to install foundation supports for solar sub-array panels, as well as equipment used during construction of the proposed solar facility, step-up substation, gen-tie line, BESS, green hydrogen facility, and utility switchyard. Construction activities at the Project components were modeled for a 36-month and 18-month construction period.

Heavy construction activities would normally occur on-site between the hours of 6:00 a.m. and 7:00 p.m., which is between the acceptable hours for construction listed in the Fresno County Noise Ordinances (6:00 a.m. to 9:00 p.m., on weekdays). If construction activities needed to occur on the weekends it would be between 7:00 a.m. and 5:00 p.m. in accordance with Fresno County's Noise Ordinances.

Noise-sensitive receptors adjacent to Project construction along South Sonoma Avenue and South Sonoma Avenue include single-family residences. These land uses would experience a temporary increase in noise during construction of the Project. The following subsections detail the impacts to noise-sensitive receptors in proximity to the Project site and the gen-tie line corridor.

Nighttime Construction

Per Section 8.40.060 of the Fresno County Code, construction activities before 6:00 a.m. or after 9:00 p.m. on any day except Saturday or Sunday, or before 7:00 a.m. or after 5:00 p.m. on Saturday or Sunday would not be exempt from the exterior noise standards. Heavy construction activity involving pneumatic tools and graders would not occur during nighttime hours. The Project would not include use of heavy construction equipment outside of the hours specified and no earlier than 6:00 a.m. Therefore, nighttime construction noise would not occur and there would be no impact. Nighttime construction noise is not discussed further herein.

Solar Facility, Step-Up Substation, and Gen-Tie

Less Than Significant Impact.

Site Preparation (Phase 1)

Table 5.3-10 shows the estimated average noise level from the site preparation construction phase at the Project parcels to the nearest noise-sensitive land uses using RCNM for the 36-month and 18-month construction scenarios.

Table 5.3-10 Site Preparation Construction Noise Levels

Receptor	Distance from Construction (feet)[1]	36-Month Scenario Noise Level at Receptor (dBA L_{eq})	18-Month Scenario Noise Level at Receptor (dBA L_{eq})
Reference Distance	50	85	85
Single family residence on South Napa Avenue	100	79	79
Single-family residence on South Sonoma Avenue	163	74	75
Single-family residence on South Sonoma Avenue	271	70	71
Single family residence on South Sonoma Avenue	188	73	74
Single-family residence on West Elkhorn Avenue	533	64	65

[1] Distances include the distance from the Project parcel boundary to the receptors, plus 100 feet to account for construction equipment that would be mobile throughout the day and would average a farther distance (of approximately 100 feet) from the property line over a typical construction day.

Source: Appendix J

For the 36-month construction period, the loudest anticipated construction noise from site preparation would potentially involve the simultaneous use of a rubber-tired dozer, tractor, and grader. As shown in Table 5.3-10, site preparation noise levels analyzed would reach up to 79 dBA L_{eq} at noise-sensitive receptors. This would be below FTA's daytime construction noise threshold of 80 dBA L_{eq}. For the 18-month construction period, the loudest anticipated construction noise from site preparation construction would potentially involve the simultaneous use of a backhoe, roller, rubber-tired dozer, tractor, and grader. Noise from the accelerated 18-month construction scenario during site preparation would reach up to 79 dBA L_{eq} at noise-sensitive receptors, which would be below FTA's threshold of 80 dBA L_{eq} for residential uses. Most of the site preparation construction activities would occur farther from the boundary of each parcel and farther from nearby noise-sensitive receptors than analyzed, which would result in lower noise levels than analyzed above. Therefore, daytime construction noise impacts from site preparation would be less than significant.

PV Panel System (Phase 2)

The sensitive receptors closest to the PV panel system are residences east of South Napa Avenue, and east of South Sonoma Avenue with outdoor activity areas adjacent from the site. Table 5.3-11 shows noise levels at the nearest noise-sensitive receptors for the 36-month and 18-month construction scenarios.

Table 5.3-11 PV Panel System Construction Noise Levels

Receptor	Distance from Construction (feet)[1]	36-Month Scenario Noise Level at Receptor (dBA L_{eq})	18-Month Scenario Noise Level at Receptor (dBA L_{eq})
Reference Distance	50	85	86
Single family residence on South Napa Avenue	100	79	80[2]
Single-family residence on South Sonoma Avenue	163	74	75
Single-family residence on South Sonoma Avenue	271	70	71
Single family residence on South Sonoma Avenue	188	73	74
Single-family residence on South Yuba Avenue	533	64	65

[1] Distances include the distance from the Project parcel boundary to the receptors, plus 100 feet to account for construction equipment that would be mobile throughout the day and would average a farther distance (of approximately 100 feet) from the property line over a typical construction day.

[2] Construction equipment would generate 79.6 dBA.

Source: Appendix J

For the 36-month construction period, the loudest anticipated construction noise from PV panel system construction would potentially involve the simultaneous use of a rubber-tired dozer, grader, and a tractor. As shown in Table 5.3-11, simultaneous heavy equipment use during PV Panel System construction would generate a noise level of up to 79 dBA L_{eq} at noise-sensitive receptors. This would be below FTA's daytime construction noise threshold of 80 dBA L_{eq} for residential uses. For the 18-month construction period, the loudest anticipated construction noise from PV Panel System construction would potentially involve the simultaneous use of a bore/drill rig, backhoe, rubber-tired dozer, tractor, and grader. Noise from the accelerated 18-month construction scenario would reach a maximum 79.6 dBA L_{eq} at one noise-sensitive receptor, which would be below FTA's threshold of 80 dBA L_{eq} for residential uses. Most construction activities would occur farther from the boundary of each parcel and farther from nearby noise-sensitive receptors than analyzed, which would result in lower noise levels than analyzed above. Therefore, daytime construction noise impacts from the PV panel system would be less than significant.

Inverters, Transformers, Step-Up Substation, and Electrical (Phase 3)

The sensitive receptors closest to the inverters, transformers, and electrical equipment are residences along West Stroud Avenue. Two locations (Option 1 and 2 sites) are being considered for the step-up substation and the residences closest to the step-up substation are located along West Cerini Avenue. These residences would experience a temporary increase in noise during construction of the Project.

Table 5.3-12 shows construction noise levels at the nearest noise-sensitive receptor for both the 36-month and 18-month construction scenario.

Table 5.3-12 Inverters, Transformers, Step-Up Substation, and Electrical Construction Noise Levels

Receptor	Distance from Construction (feet)	36-Month Scenario Noise Level at Receptor (dBA L_{eq})	18-Month Scenario Noise Level at Receptor (dBA L_{eq})
Reference Distance	50	82	83
Inverter, Transformers, and Electrical Equipment			
Single-family residence nearest inverters, transformers, and electrical equipment.	721	59	60
Option 1 Step-Up Substation			
Single-family residence nearest the substation	6,920	40	40
Option 2 Step-Up Substation			
Single-family residence nearest the substation	4,225	44	44

Source: Appendix J.

For the 36-month construction period, the loudest anticipated construction noise from construction of the inverter, transformers, and electrical equipment would potentially involve the simultaneous use of a backhoe, tractor, and a trencher. As shown in Table 5.3-12, simultaneous heavy equipment use during inverter, transformer, and electrical construction would generate a noise level of up to 59 dBA L_{eq} at 721 feet from sensitive residential receptors. This would be below FTA's threshold of 80 dBA L_{eq} for residential uses exposed to daytime construction noise. For the 18-month construction scenario, the loudest anticipated construction noise would potentially involve the simultaneous use of a trencher, backhoe, tractor, welder, and crane. Noise from the accelerated 18-month construction scenario would reach up to 60 dBA L_{eq} at 721 feet from the nearest receptor and would be below FTA's daytime construction noise threshold of 80 dBA L_{eq} for residential uses.

The step-up substation is proposed at either of two locations (Option 1 or Option 2 sites). Simultaneous heavy equipment use during the 36-month step-up substation construction would generate a noise level at sensitive receptors of up to 44 dBA L_{eq} at 4,225 feet from the Option 2 site and 40 dBA L_{eq} at 6,920 feet from the Option 1 site. This would be below FTA's daytime construction threshold of 80 dBA L_{eq} for residential uses. For the 18-month construction period, the loudest anticipated construction noise from step-up substation construction would generate a noise level at sensitive receptors of up to 44 dBA L_{eq} at 4,225 feet from the Option 2 site and 40 dBA L_{eq} at 6,920 feet from the Option 1 site. This would also be below the FTA threshold.

The Project assumes Bell 500 helicopters would be utilized for approximately one month during this construction phase. The helicopters could operate 721 feet from the ground to the nearest sensitive receptor. Based on noise analyses prepared for similar transmission line work, the Bell 500 helicopters would generate 95.9 dBA at 100 feet. Based on a standard noise attenuation rate of 6 dBA per doubling of distance, helicopters would generate approximately 79 dBA L_{eq} at the noise-sensitive receptors. This would be below FTA's daytime construction noise threshold of 80 dBA L_{eq} for residential uses.

In addition, most construction activities would occur farther from the boundary of each parcel and farther from nearby noise-sensitive receptors than analyzed, which would result in lower noise levels, especially in later construction phases when the loudest noise-generating equipment, such as

pneumatic tools and graders, would no longer be used. Therefore, daytime construction noise impacts from the inverters, transformers, step-up substation, and electrical equipment would be less than significant.

Gen-Tie (Phase 4)

The gen-tie line may be routed along West Harland Avenue, up to ten miles west of the Project site, connecting to the utility switchyard. For the purposes of this analysis, at the closest point of construction, the gen-tie line would be located approximately 4,300 feet from the nearest single-family residence (a sensitive receptor) and 2,890 feet from Superior Almond Hulling LP, a commercial use. Helicopters would be used during construction of the gen-tie line. Table 5.3-13 shows construction noise levels at the nearest noise-sensitive receptor for both the 36-month and 18-month construction scenarios.

Table 5.3-13 Gen-Tie Construction Noise Levels

Receptor	Distance from Construction (feet)	36-Month Scenario Noise Level at Receptor (dBA L_{eq})	18-Month Scenario Noise Level at Receptor (dBA L_{eq})
Reference Distance	50	78	80
Single family residence on West Harlan Avenue	4,300	39	41
Superior Almond Hulling LP	2,890	42	45

Source: Appendix J

For the 36-month construction period, the loudest anticipated construction noise from gen-tie line construction would potentially involve the simultaneous use of a crane, aerial lift, and skid steer loader. As shown in Table 5.3-13, simultaneous heavy equipment use during gen-tie line construction would generate a noise level of up to 39 dBA L_{eq} at 4,300 feet from the nearest sensitive receptor and a noise level of up to 42 dBA L_{eq} at 2,890 feet from the nearest commercial building. For the 18-month construction scenario, the loudest anticipated construction noise would potentially involve the simultaneous use of a welder, crane, aerial lift, and two skid steer loaders. Noise associated with the accelerated schedule would reach up to 41 dBA L_{eq} at 4,300 feet from the nearest sensitive receptor and 45 dBA L_{eq} at 2,890 feet from the nearest commercial building. Noise associated with the accelerated construction schedule would be below FTA's threshold of 80 dBA L_{eq} for residential and 85 dBA L_{eq} for commercial uses.

The Project assumes Bell 500 helicopters would be utilized for approximately two months during this construction phase. The proposed helicopter activities could include the delivery of equipment and materials from staging yards to structure sites, structure placement, hardware installation, and conductor and/or optical ground wire stringing operations. The helicopters could operate 4,300 feet from the ground to the nearest sensitive receptor. Based on noise analyses prepared for similar transmission line work, Bell 500 helicopters would generate 95.9 dBA at 100 feet (SCE 2013). Based on a standard noise attenuation rate of 6 dBA per doubling of distance, helicopters would generate approximately 63 dBA L_{eq} at the nearest receptor. This would be below FTA's daytime construction noise thresholds of 80 dBA L_{eq} (8-hour) for residential land use and 85 dBA L_{eq} (8-hour) for commercial land uses. Therefore, daytime construction noise impacts from the gen-tie would be less than significant.

BESS

Less Than Significant Impact. Two locations (Option 1 and 2 sites) are being considered for the BESS. The Option 2 BESS site is located approximately 2,290 feet from outdoor areas of sensitive receptors along West Cerini Avenue, and the Option 1 BESS site is located approximately 7,145 feet from outdoor areas of sensitive receptors east of South Napa Avenue. Table 5.3-14 shows construction noise levels for the 36-month and 18-month construction scenarios for the BESS.

Table 5.3-14 BESS Construction Noise Levels

Receptor	Distance from Construction (feet)[1]	36-Month Scenario Noise Level at Receptor (dBA L_{eq})	18-Month Scenario Noise Level at Receptor (dBA L_{eq})
Reference Distance	50	83	83
Option 1			
Single-family residence on South Napa Avenue	7,145	39	40
Option 2			
Single-family residence on West Cerini Avenue	2,290	49	50

Source: Appendix J

For the 36-month construction period, the loudest anticipated construction noise from BESS construction would potentially involve the simultaneous use of a skid steer loader, trencher, and a tractor. As shown in Table 5.3-14, simultaneous heavy equipment use during the BESS construction would generate a noise level at sensitive receptors of up to 49 dBA L_{eq} at 2,290 feet from the Option 2 site and 39 dBA L_{eq} at 7,145 feet from the Option 1 site. This would be below FTA's daytime construction noise threshold of 80 dBA L_{eq} for residential uses. For the 18-month construction period, the loudest anticipated construction noise from BESS construction would potentially involve the simultaneous use of a skid steer loader, trencher, backhoe, crane, and a tractor. The accelerated 18-month construction scenario would generate a noise level at sensitive receptors of up to 50 dBA L_{eq} at 2,290 feet from the Option 2 site and 40 dBA L_{eq} at 7,145 feet from Option 1 site. This would also be below the FTA threshold. Most construction activities would occur farther from the boundary of each parcel and farther from nearby noise-sensitive receptors than analyzed, which would result in lower noise levels than analyzed above. Therefore, daytime construction noise impacts from the BESS would be less than significant.

Green Hydrogen Facility

Less than Significant Impact. Two locations (Option 1 and 2 sites) are being considered for the green hydrogen facility, plus an alternative green hydrogen facility site. The sensitive receptors closest to the green hydrogen facility are residences along West Mount Whitney Avenue and east of South Napa Avenue. The Option 2 green hydrogen facility site is approximately 2,720 feet from outdoor areas of sensitive receptors along West Mounty Whitney Avenue, and Option 1 is approximately 5,110 feet from outdoor areas of sensitive receptors east of South Napa Avenue. The alternative green hydrogen facility site is approximately 6.5 miles from Cantua Creek Childhood Education Center, the nearest sensitive receptor. Noise generating equipment from the alternative green hydrogen facility would attenuate per doubling distance and generate negligible noise levels at Cantua Creek Childhood Education Center. Therefore, construction noise from green hydrogen facility at the alternate site would be less than significant.

Table 5.3-15 shows construction noise levels for the Options 1 and 2 green hydrogen facility sites at the nearest noise-sensitive receptors for the 36-month and 18-month construction scenarios.

Table 5.3-15 Green Hydrogen Facility Construction Noise Levels

Receptor	Distance from Construction (feet)[1]	36-Month Scenario Noise Level at Receptor (dBA L_{eq})	18-Month Scenario Noise Level at Receptor (dBA L_{eq})
Reference Distance	50	85	86
Option 1			
Single-family residence on South Sonoma Avenue	5,110	44	45
Option 2			
Single family residence on West Mount Whitney Avenue	2,720	50	51

Source: Appendix J

For the 36-month construction period, the loudest anticipated construction noise from the green hydrogen facility would potentially involve the simultaneous use of a bore/drill rig, grader, and a tractor. As shown in Table 5.3-15, simultaneous heavy equipment use during green hydrogen facility construction would generate a noise level at sensitive receptors of up to 50 dBA L_{eq} at 2,720 feet from the Option 2 site and 44 dBA L_{eq} at 5,110 feet from the Option 1 site. This would be below FTA's daytime construction noise threshold of 80 dBA L_{eq} for residential uses. For the 18-month construction period, the loudest anticipated construction noise from green hydrogen facility construction would potentially involve the simultaneous use of a backhoe, bore/drill rig, rubber-tired dozer, tractor, and grader. The accelerated 18-month construction scenario would generate a noise level at sensitive receptors of up to 51 dBA L_{eq} at 2,720 feet from the Option 2 site and 45 dBA L_{eq} at 5,110 feet from the Option 1 site. This would also be below the FTA threshold. Most construction activities would occur farther from the boundary of each parcel and farther from nearby noise-sensitive receptors than analyzed, which would therefore result in lower noise levels than analyzed above. Therefore, daytime construction noise impacts from the green hydrogen facility would be less than significant.

Utility Switchyard

Less Than Significant Impact. The sensitive receptors closest to the utility switchyard are students located at Cantua Creek Childhood Education Center approximately 6.28 miles (33,158 feet) northeast of the Project site. Table 5.3-16 shows construction noise levels at the nearest noise-sensitive receptor and nearest commercial business, Tanimura + Antle Cooler business.

Table 5.3-16 Utility Facility Construction Noise Levels

Receptor	Distance from Construction (feet)[1]	36-Month Scenario Noise Level at Receptor (dBA L_{eq})	18-Month Scenario Noise Level at Receptor (dBA L_{eq})
Reference Distance	50	85	86
Cantua Creek Childhood Education Center	33,158	28	29
Tanimura + Antle Cooler business	5,320	44	45

Source: Appendix J

For the 36-month construction period, the loudest anticipated construction noise from utility switchyard construction would potentially involve the simultaneous use of a dozer, grader, and a tractor. As shown in Table 5.3-16, simultaneous heavy equipment use during utility switchyard construction would generate a noise level of up to 28 dBA L_{eq} at 6.28 miles (33,158 feet) from the nearest sensitive receptor and a noise level of up to 44 dBA L_{eq} at 5,320 feet from the nearest commercial land use. This would be below FTA's construction noise threshold of 80 dBA L_{eq} for residential uses and 85 dBA L_{eq} for commercial land uses. For the 18-month construction period, the loudest anticipated construction noise from site preparation construction would potentially involve the simultaneous use of a bore/drill rig, roller, grader, dozer, and tractor. Noise from the accelerated 18-month construction scenario would reach up to 29 dBA L_{eq} at 6.28 miles (33,158 feet) from the nearest sensitive receptor and a noise level of up to 45 dBA L_{eq} at 5,320 feet from the nearest commercial land use. The 18-month construction period would be below FTA's threshold of 80 dBA L_{eq} for residential uses and 85 dBA L_{eq} for commercial uses. Therefore, daytime construction noise impacts from the utility switchyard would be less than significant.

Overall Project

Less Than Significant Impact. Construction of the Project would involve the use of noise-generating equipment during various phases over 36-months or 18-months. As discussed above, noise generated during construction of each Project component would be less than significant. While construction phases would overlap temporally between various Project components throughout the construction period, construction of each Project component would be spatially distributed across the approximately 9,500-acre Project site. The large average distance between areas actively under construction during different construction phases would ensure that noise generated does not compound resulting in a significant impact at a sensitive receptor location. Therefore, noise impacts associated with construction of the overall Project would be less than significant.

Construction Traffic Noise

36-Month Construction Period

The Project would generate 2,400 daily worker trips and 280 daily haul trips during the 36-month construction scenario. Based on existing traffic volumes shown in Table 5.3-6, and the Project trip distribution from CEC Traffic Analysis, traffic noise levels would increase during construction shown in Table 5.3-17 for each roadway segment. Noise levels were estimated in terms of average daily traffic L_{dn} (See Appendix J for noise calculations). As shown in Table 5.3-17, construction traffic would not increase ambient noise levels above the Federal Aviation Administration recommended noise level change for each roadway segment. Therefore, the short-term increase in traffic noise from Project construction during the 36-month construction period would be less than significant for all Project components.

Table 5.3-17 36-Month Construction Period Vehicle Trips Noise Levels

Roadway Segment	Centerline Distance to Closest Sensitive Receptor (feet)	Existing Daily Vehicle Trips	Existing + Daily Construction Vehicle Trips (36-months)	Existing Traffic Noise (dBA L_{dn})	Allowable Noise Level Increase (dBA L_{dn})	Existing + Project Traffic Noise (dBA L_{dn})
West Mount Whitney Avenue –SR-33 to Colusa Avenue	30	1,800	2,040	67.0	1.5	67.5
West Mount Whitney – South Colusa Avenue to SR-145	300	2,200	4,090	52.9	5	55.6
South Colusa Avenue – SR-145 to West Mount Whitney	25	850	1,120	64.9	3	66.1
SR-145 – I-5 to South Colusa Avenue	150	3,300	3,570	59.2	5	59.5
SR- 145 – Colusa to West Mount Whitney Avenue	35	4,100	4,100	69.6	1.5	69.6
SR-145 – West Mount Whitney Avenue and SR-180 – 1 Lane	45	7,300	8,470	70.5	1.5	71.1
SR-145 – West Mount Whitney Avenue and SR-180 – 2 Lanes	30	12,000	13,170	75.3	1.5	75.7
SR-269 – SR-198 and West Mount Whitney Avenue	40	4,100	4,820	68.3	1.5	69.0

Note: Federal Aviation Administration recommended traffic noise level threshold includes: 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 to 64 dBA CNEL; and greater than 5 dBA CNEL increase for ambient noise environments of less than 60 dBA CNEL
Source: Appendix J

18-Month Construction Period

The Project would generate 3,010 daily worker trips and 345 daily haul trips during the 18-month construction scenario. Based on existing traffic volumes shown in Table 5.3-6, and the Project trip distribution from CEC Traffic Analysis, traffic noise levels would increase during construction shown in Table 5.3-18 for each roadway segment. Noise levels were estimated in terms of average daily traffic L_{dn} (See Appendix J for noise calculations). As shown in Table 5.3-18, construction traffic would not increase ambient noise levels above the Federal Aviation Administration recommended noise level change for each roadway segment. Therefore, the short-term increase in traffic noise from Project construction during the 18-month construction period would be less than significant for all Project components.

Table 5.3-18 18-Month Construction Vehicle Trips Noise Levels

Roadway Segment	Centerline Distance to Closest Sensitive Receptor (feet)	Existing Daily Vehicle Trips	Existing + Daily Construction Vehicle Trips (18-months)	Existing Traffic Noise (dBA L_{dn})	Allowable Noise Level Increase (dBA L_{dn})	Existing + Project Traffic Noise (dBA L_{dn})
West Mount Whitney Avenue –SR-33 to Colusa Avenue	30	1,800	2,100	67.0	1.5	67.7
West Mount Whitney – South Colusa Avenue to SR-145	300	2,200	4,570	52.9	5	56.1
South Colusa Avenue – SR-145 to West Mount Whitney	25	850	1,190	64.9	3	66.4
SR-145 – I-5 to South Colusa Avenue	150	3,300	3,640	59.2	5	59.6
SR- 145 – Colusa to West Mount Whitney Avenue	35	4,100	4,100	69.6	1.5	69.6
SR-145 – West Mount Whitney Avenue and SR-180 – 1 Lane	45	7,300	8,170	70.5	1.5	71.0
SR-145 – West Mount Whitney Avenue and SR-180 – 2 Lanes	30	12,000	13,470	75.3	1.5	75.8
SR-269 – SR-198 and West Mount Whitney Avenue	40	4,100	5,000	68.3	1.5	69.2

Note: Federal Aviation Administration recommended traffic noise level threshold includes: 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 to 64 dBA CNEL; and greater than 5 dBA CNEL increase for ambient noise environments of less than 60 dBA CNEL
Source: Appendix J

Construction Worker Exposure

Worker exposure levels during the construction of Project components would vary depending on the construction and the proximity of the workers to the noise-generating activities. The Occupational Health and Safety Administration (OSHA) requires a limit for worker exposure over 8-hours to 90 dBA. Based on RCNM provided reference noise levels, construction noise levels could be approximately 85 dBA at 50 feet from noise-generating equipment; however, if construction workers were to be located within 28 feet of the noise-generating equipment, such as adjacent to noise generating equipment workers would be exposed to a noise level above OSHA requirement, based on noise attenuation over distance. In compliance with OSHA requirements, the Project would develop a Hearing Protection Plan to ensure exposure levels remain below 90 dBA over 8-hours through engineering controls or PPE (29 CFR 1910.95 and 29 CFR 1926.101). This Hearing Protection Plan would be incorporated into the Project construction Health and Safety Plan; therefore, impacts to construction workers would be less than significant for all Project components.

Impact NOI-2

Threshold:	Would the project result in generation of a substantial 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?

On-Site Operational Noise

Operational noise sources from the Project include PV sub-arrays with associated electrical equipment (such as transformers and inverters), energy storage systems, substation equipment, gen-tie, green hydrogen facility, and the utility switchyard. Sensitive receptors near the Project site include the single-family residence along South Sonoma Avenue, South Napa Avenue, and across West Stroud Avenue and West Mount Whitney Avenue, as shown in Figure 5.3-1. Two locations (Option 1 and Option 2 sites) are proposed for the step-up substation and BESS. Noise levels from Project operation at the Options 1 and 2 sites (i.e., transformers, inverters, step-up substation, and BESS equipment) are shown in Table 5.3-19, and noise level contours and receptor locations are shown in Figure 5.3-3 and Figure 5.3-4.

Figure 5.3-3 Receptor Locations and Operational Noise Contours For Option 1

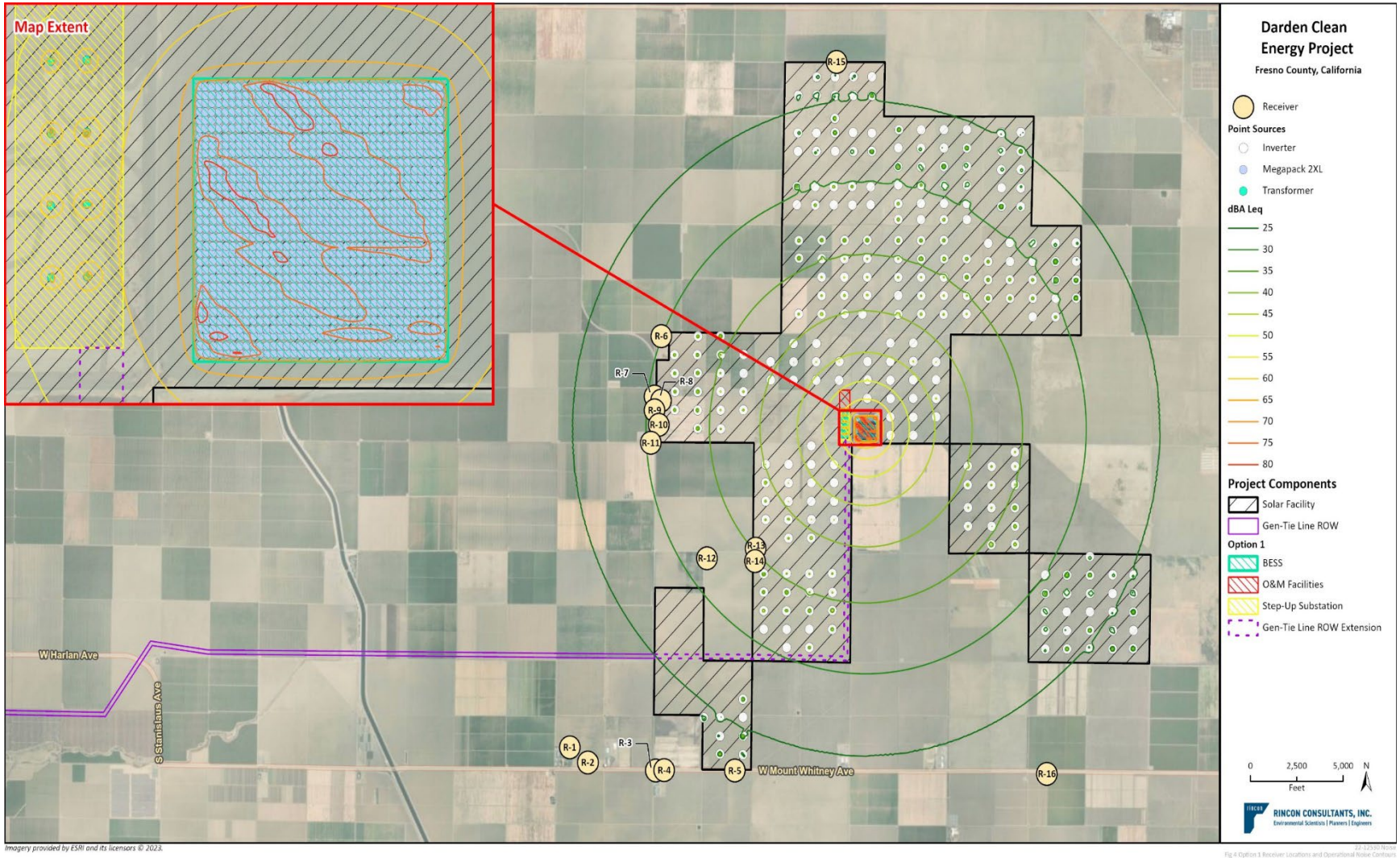


Figure 5.3-4 Receptor Locations and Operational Noise Contours For Option 2

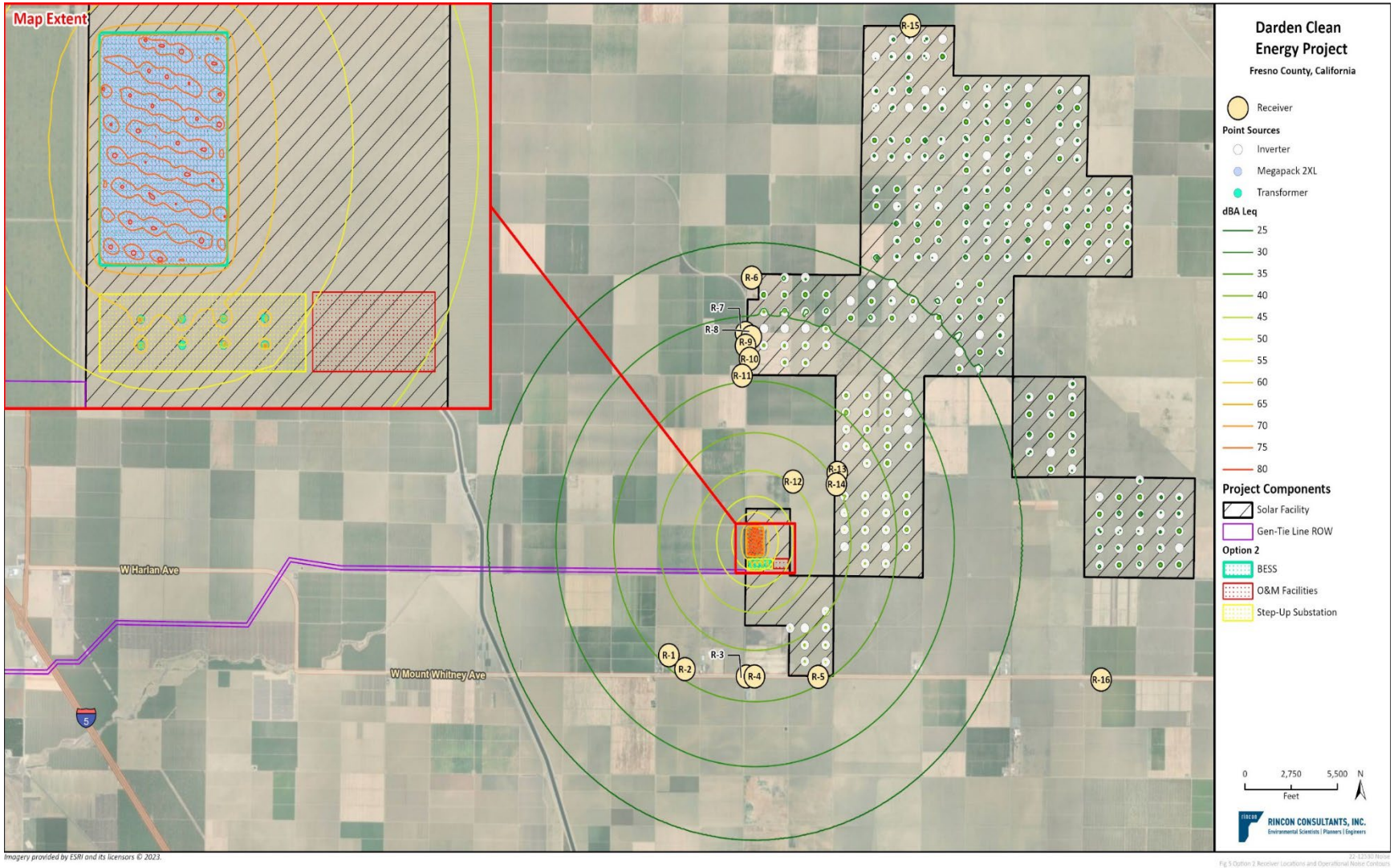


Table 5.3-19 Operational Noise Levels at Nearest Sensitive Receptors

Receptor	Receptor Description	Noise Level at Receptor[1]		Exceed Threshold (45 dBA L_{eq})?
		Option 1	Option 2	
R1	Residence southwest of the Project site and northwest of the West Mt Whitney Avenue and South Amador Avenue intersection	-9	36	No
R2	Residence southwest of the Project site and north of West Mt Whitney Avenue (east of R1).	-8	36	No
R3	Residence south of the Project site and southeast of the West Mt Whitney Avenue and South Sonoma Avenue intersection	-2	37	No
R4	Residence south of the Project site and southeast of the West Mt Whitney Avenue and South Sonoma Avenue intersection (east of R3)	-1	37	No
R5	Residence adjacent to the Project site on the southern portion of the PV solar arrays.	8	36	No
R6	Residence north and west of the Project site at the intersection of South Sonoma Avenue and West Elkhorn Avenue	30	27	No
R7	Residence west of the Project site and across South Sonoma Avenue	31	31	No
R8	Residence adjacent to the Project site along South Sonoma Avenue	31	32	No
R9	Residence west of the Project site and across South Sonoma Avenue (south of R7)	31	32	No
R10	Residence adjacent to the Project site along South Sonoma Avenue (south of R8)	31	33	No
R11	Residence west of the Project site and southwest of the South Sonoma Avenue and West Davis Avenue intersection	30	35	No
R12	Residence north, south, and west of the Project site along West Cerini Avenue.	32	45[2]	No
R13	Residence adjacent to the Project site and northeast of the West Cerini Avenue and South Napa Avenue intersection	35	39	No
R14	Residence adjacent to the Project site and southeast of the West Cerini Avenue and South Napa Avenue intersection	35	40	No
R15	Residence adjacent to the Project site at the northern portion of the PV solar arrays and along West Stroud Avenue	10	10	No
R16	Residence south of the Project site and northeast of the West Mt Whitney Avenue and South Lake Avenue intersection	-5	-5	No

[1]Negative values are an artifact of noise modeling and represent an inaudible level of noise.

[2]Noise level would be approximately 44.5 dBA L_{eq}.

Note: Appendix J for Calculations completed in SoundPLAN; see Figure 5.3-1 for receptor locations.

Solar Facility, Step-Up Substation, and Gen-Tie

Less Than Significant Impact.

Transformers, Inverters, and Step-Up Substation

As shown in Table 5.3-19, operational noise levels from the Project site would reach up to 45 dBA L_{eq} at one single-family residence along West Cerini Avenue, taking into account transformers, inverters, and step-up substation equipment, as well as BESS equipment (further discussed below).

The remaining noise sensitive receptors would be exposed to noise levels below the 45 dBA threshold. These noise levels would not exceed Fresno County's strictest exterior noise standard of 45 dBA L_{eq}. In addition, these noise levels would be much lower than the long-term measurements shown in Table 5.3-3 and Table 5.3-4. Therefore, operational noise impacts from this Project component would be less than significant.

Solar Sub-Array Tracking Monitors

PV panel noise would come from the tracking motors. These systems involve the panels being driven by motors to make brief, incremental adjustments to track the arc of the sun to maximize the solar effect. While these motors may generate noise of up to 44 dBA at 50 feet, these motors would operate briefly throughout an hour (e.g., several minutes per hour) as the sun moves west across the sky, and then would reset at night to face the eastern sky. By operating only several minutes per hour, the hourly noise level would be negligible at the nearest sensitive receptors. In addition, as observed during a site visit to existing solar farms in the area, noise levels from PV panel tracking motors were not detected over the existing ambient noise sources in the area (wind, vehicles, planes, and trains) just outside of the solar farm properties. Therefore, noise levels from the PV panels would be less than significant.

Gen-Tie

The gen-tie line would generate noise from the corona affect, which is a phenomenon associated with the electrical ionization of the air that occurs near the surface of the energized conductor and suspension hardware due to very high electric field strength. This is audible power line noise that is generated from electric corona discharge, which is usually experienced as a random crackling or hissing sound. The corona effect on the gen-tie line would generate a noise level of approximately 20 dBA at a distance of 50 feet. The Project would generate a noise level of 16 dBA, approximately 80 feet from the transmission lines to the edge of the gen-tie line corridor, based on gen-tie noise reference level. The distance to the nearest residence is more than 4,400 feet from the gen-tie line. As observed during a site visit to existing solar farms, noise levels from existing transmission lines were not detected over the existing ambient noise sources in the area (wind and vehicles) just outside of the solar farm properties. Therefore, per site observations and the general low noise of transmission lines, gen-tie noise would not exceed the County's standard of 45 dBA L_{eq} at the nearest residences, and impacts would be less than significant.

BESS

Less Than Significant Impact. As shown in Table 5.3-19, operational noise levels from the Project site would reach up to 45 dBA L_{eq} at one single-family residence along West Cerini Avenue, taking into account BESS equipment, as well as transformers, inverters, and step-up substation equipment (discussed above). The remaining noise sensitive receptors would be exposed to noise levels below the 45 dBA threshold. Noise levels are highest from the BESS; however, the facility is not located near sensitive receptors, and thus the noise is heavily attenuated by distance by the time it reaches a sensitive receptor. These noise levels would not exceed Fresno County's strictest exterior noise standard of 45 dBA L_{eq}. In addition, these noise levels would be much lower than the long-term ambient noise levels shown in Table 5.3-3 and Table 5.3-4. Therefore, operational noise impacts from this Project component would be less than significant.

Green Hydrogen Facility

Less Than Significant Impact with Mitigation. The primary components of the green hydrogen facility would include an electrolyzer and a water treatment plant. The electrolyzer would include various electrical equipment such as transformers and rectifiers for the electrolyzer cells stacks. In addition, a dry cooling system and chiller would be used to reject heat from the equipment. The noise generated by these types of mechanical equipment may be audible outside the facility. The alternate green hydrogen facility location is approximately 6.5 miles from Cantua Creek Childhood Education Center, the nearest sensitive receptor. Noise levels generated by equipment at the alternate green hydrogen facility would be negligible given the distance to Cantua Creek Childhood Education Center. Therefore, impacts from the alternate green hydrogen facility would be less than significant. For the Option 1 and Option 2 green hydrogen component sites, which are closer to sensitive receptors, specific noise levels and locations of potential green hydrogen-related equipment have not been confirmed in the current stage of engineering and design for the green hydrogen facility. Modeling noise levels from the green hydrogen facility at this time would be speculative. Therefore, noise generated from the Options 1 and 2 green hydrogen facility could increase operational noise above Fresno County's strictest exterior noise standards. Implementation of Mitigation Measure NOI-1 would require additional quantitative noise analysis once the final design of the green hydrogen facility is complete, which includes identifying the locations of the noise generating equipment. If noise levels are determined to exceed applicable County exterior noise standards, the mitigation measure would reduce stationary noise through measures such as the implementation of barriers, setbacks, shielding techniques, or other noise abatement methods. A qualified acoustician will prepare a report to demonstrate consistency with Fresno County's applicable exterior noise standards with the incorporation of mitigation measures. With implementation of Mitigation Measure NOI-1, noise generated by the green hydrogen facility would be reduced to acceptable levels and impacts would be less than significant.

Utility Switchyard

No Impact. Transformers are noise-generating equipment typically found at switchyards; however because the utility switchyard would interconnect the 500 kV gen-tie line to the Los Banos-Midway #2 500 kV transmission line, no transformers are anticipated therefore, substantial operational noise would not be generated at the utility switchyard and there would be no impact from operation of this Project component.

Overall Project

Less Than Significant Impact with Mitigation. As discussed above and shown in Table 5.3-19, operational noise levels from Project transformers, inverters, step-up substation equipment, and BESS equipment would not exceed Fresno County's strictest exterior noise standard of 45 dBA L_{eq}. Noise generated from the gen-tie would be minimal at approximately 16 dBA at the edge of the gen-tie line corridor, based on gen-tie noise reference level, and given the distance between gen-tie line components and other Project components, would not compound such that noise levels at a sensitive receptor would exceed the noise standard of 45 dBA L_{eq}. Moreover, noise associated with the utility switchyard and alternate green hydrogen facility would not exceed Fresno County's strictest exterior noise standard of 45 dBA L_{eq} and given these facilities would be located approximately 10 miles west of the solar facility, step-up substation, and BESS facility, noise generated from these Project components would not compound such that noise levels at a sensitive receptor would exceed the noise standard of 45 dBA L_{eq}. Noise generated from the Options 1 and 2

green hydrogen facility could increase operational noise above Fresno County's exterior noise standards and mitigation would be necessary to reduce impacts to a less than significant level; therefore, operational noise impacts from the overall Project would be less than significant with mitigation incorporated.

Operational Traffic Noise

Once the Project is complete, vehicle trips to the Project site would be associated with operations and maintenance of the Project components. The Project would generate approximately 80 daily worker trips. Based on existing traffic volumes shown in Table 5.3-7, and the Project trip distribution from CEC Traffic Analysis, traffic noise levels would increase during Project operation shown in Table 5.3-20 for each roadway segment. Noise levels were estimated in terms of average daily traffic L_{dn} (See Appendix J for noise calculations). As shown in Table 5.3-20, operational traffic would not increase ambient noise levels above the Federal Aviation Administration recommended noise level change for each roadway segment. Therefore, the long-term increase in traffic noise from Project operations would be less than significant.

Table 5.3-20 Operational Vehicle Trips

Roadway Segment	Centerline Distance to Closest Sensitive Receptor (feet)	Existing Daily Vehicle Trips	Existing + Daily Operational Vehicle Trips)	Existing Traffic Noise (dBA L_{dn})	Allowable Noise Level Increase (dBA L_{dn})	Existing + Project Traffic Noise (dBA L_{dn})
West Mount Whitney Avenue –SR-33 to Colusa Avenue	30	1,800	2,000	67.0	1.5	67.5
West Mount Whitney – South Colusa Avenue to SR-145	300	2,200	2,500	52.9	5	53.5
South Colusa Avenue – SR-145 to West Mount Whitney	25	850	950	64.9	3	65.4
SR-145 – I-5 to South Colusa Avenue	150	3,300	3,650	59.2	5	59.6
SR- 145 – Colusa to West Mount Whitney Avenue	35	4,100	4,400	69.6	1.5	69.9
SR-145 – West Mount Whitney Avenue and SR-180 – 1 Lane	45	7,300	8,100	70.5	1.5	71.0
SR-145 – West Mount Whitney Avenue and SR-180 – 2 Lanes	30	12,000	13,290	75.3	1.5	75.7
SR-269 – SR-198 and West Mount Whitney Avenue	40	4,100	4,550	68.3	1.5	68.5

Note: Federal Aviation Administration recommended traffic noise level threshold includes: 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 to 64 dBA CNEL; and greater than 5 dBA CNEL increase for ambient noise environments of less than 60 dBA CNEL.
Source: Appendix J

Operational Worker Noise

Operation and maintenance workers would be exposed to noise generating equipment, such as transformers, inverters, batteries, and solar tracking noise. Based on the reference noise levels for each piece of equipment, noise levels from the BESS would generate the highest noise levels to operational workers. The batteries would generate a noise level of 103 dBA at the source (immediately adjacent to the equipment). Based on the noise levels of outdoor components, worker exposure to elevated noise levels in the outdoor environment would be limited to periods of time while working directly on, or next to noise generating equipment. Additionally, because there are no permanent or semi-permanent workstations located near any piece of noisy outdoor equipment, no visiting worker's time-weighted average exposure to noise would routinely approach the maximum level allowable under OSHA standards (29 Code of Federal Regulations 1910.95). As required by OSHA, signs requiring the use of hearing protection devices would be posted in all areas where noise levels commonly exceed 85 dBA, such as inside the battery enclosures. Therefore, noise impacts to visiting workers during operation and maintenance activities for all Project components would be less than significant.

Mitigation Measure

NOI-1 Green Hydrogen Facility Noise Analysis and Design Requirements

During final engineering, when the precise locations and design details of the green hydrogen facility are finalized, a qualified acoustician shall conduct a quantitative analysis of the operational noise levels from such sources to determine if the noise generating equipment from the green hydrogen facility would result in an exceedance of Fresno County's applicable exterior noise level standards. If the green hydrogen facility would not exceed established thresholds, no noise reduction measures would be necessary. However, if it is determined that the green hydrogen facility could potentially result in exceedance of the County's exterior noise standards, the Applicant shall be required to implement additional feasible measures to minimize noise generated at the green hydrogen facility. Such additional measures to reduce noise generation equipment impacts may include, but are not limited to, setbacks, barriers, and other shielding techniques. The additional measures must reduce noise levels below Fresno County's applicable exterior nighttime noise standards. A qualified acoustician shall prepare a report to demonstrate the additional measures would be consistent with Fresno County's exterior noise standards for CEC review and approval. The CEC shall verify these additional measures are included on the final site plan prior to issuing construction permits/approvals for the green hydrogen facility.

Impact NOI-3

Threshold:	Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

Construction

Construction at the Project components may require post driving that has the potential to result in temporary vibration impacts to structures and sensitive receptors. It was conservatively assumed that an impact pile driver, as discussed in FTA's *Transit Noise and Vibration Impact Assessment Manual*, would be used for the Project. It should be noted that an impact pile driver as considered by FTA is larger than the type of equipment that would be used to drill in posts for the fence post,

PV panels, and BESS yard (e.g., an impact pile driver on the scale analyzed by FTA would typically be used for large bridge concrete footings). Other construction activities are less intensive than pile driving and would have lower PPV than pile driving. Therefore, vibration levels from pile driving are considered a conservative scenario for construction at the solar facility and BESS. The green hydrogen facility, gen-tie line, step-up substation, and utility switchyard would not require construction techniques with the potential to generate excessive groundborne vibration and therefore are not discussed herein.

Solar Facility

Less Than Significant Impact. Based on the potential site locations, post driving activities during site preparation and PV panel system construction could occur within 63 feet of the nearest off-site residential structure. Using the referenced vibration levels for the post driver, the in./sec. PPV at the nearest residential structure would be 0.16 in./sec. PPV at 63 feet, which would be below the FTA continuous/frequent intermittent sources threshold for damage potential to older residential structures of 0.2 in./sec. PPV (see Appendix J). In addition, use of a static roller would generate a vibration level of 82 VdB at 25 feet. The human annoyance threshold is compared against the average vibration over time; therefore, vibration levels would be approximately 64 VdB at 100 feet and below the threshold of 72 VdB at the residential building. Therefore, vibration impacts associated with construction of this Project component would be less than significant.

BESS

Less Than Significant Impact. The Option 1 BESS site is located approximately 7,145 feet from outdoor areas of sensitive receptors east of South Napa Avenue. Pile driving activity could potentially occur throughout the BESS facility location. The nearest sensitive receptor from pile driving activity is approximately 7,145 feet. Using the referenced vibration levels for the post driver, the in./sec. PPV at the nearest residential structure would be less than 0.001 in./sec. PPV at 7,145 feet, which would be below the FTA continuous/frequent intermittent sources threshold for damage potential to older residential structures of 0.2 in./sec. PPV. In addition, use of a static roller would generate a vibration level of 82 VdB at 25 feet. The human annoyance threshold is compared against the average vibration over time; therefore, vibration levels would be approximately 8 VdB at 7,145 feet and below the threshold of 72 VdB at the residential building. The Option 2 BESS site is located southeast of the intersection of South Sonoma Avenue and West Harlan Avenue. The nearest sensitive receptor from pile driving activity is approximately 2,290 feet. The vibration level at the nearest residential structure would be 0.001 in./sec. PPV at 2,290 feet, which would be below the FTA continuous/frequent intermittent sources threshold for damage potential to older residential structures of 0.2 in./sec. PPV (see Appendix J for vibration calculations). In addition, use of a static roller would generate a vibration level of 82 VdB at 25 feet. The human annoyance threshold is compared against the average vibration over time; therefore, vibration levels would be approximately 23 VdB at 2,290 feet and below the threshold of 72 VdB at the residential building. Therefore, vibration impacts associated with construction of this Project component would be less than significant.

Operation

No Impact. Once constructed, the Project would not have any components that would generate vibration levels. Thus, operation of the overall Project would not result in any vibration and no impact would occur.

Overall Project

Less Than Significant Impact. As discussed above, vibration impacts from construction of the solar facility, step-up substation, gen-tie and BESS components would be less than significant and all other Project components would not require construction techniques with the potential to generate excessive groundborne vibration. Given the distance between these Project components and the temporary nature of Project construction, vibration impacts from the overall Project would be less than significant.

Impact NOI-4

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

The airport nearest to the Project site, San Joaquin Airport, is located approximately 5.5 miles to the northeast. The San Joaquin Airport is a private and small general aviation facility. Smaller aviation facilities, such as San Joaquin Airport, operate throughout Fresno County but are much less important sources of noise because their traffic tends to be less frequent and made up of smaller, quieter aircrafts than larger aviation facilities. Given the distance to and private nature of the San Joaquin Airport, on-site construction workers or maintenance staff would not be exposed to airport noise, and no impact would occur.

5.3.4 Cumulative Impacts

Impacts of the Project would be cumulatively considerable if they would have the potential to combine with other past, present, or reasonably foreseeable projects to become significant. A list of closely related past, present, and reasonably foreseeable projects are provided in Table 5-1 of Chapter 5, *Environmental Analysis.*

Overall Project

Cumulative construction noise, operational noise, and vibration impacts would occur if cumulative projects could potentially impact the same sensitive receptors. The closest cumulative projects to the Project site are project FC-1 and FC-4, located approximately 3.6 miles southeast of the solar facility and 7.1 miles north of the utility switchyard, respectively. While the construction schedules of these cumulative projects may overlap with Project construction, the distance between the Project and other cumulative projects would preclude the Project from potentially impacting the same sensitive receptors as cumulative development. Operational noise sources from the Project (e.g., mechanical equipment noise, noise from employees) would be localized and rapidly attenuate due to the Project's distance to cumulative projects. As discussed in Impact NOI-2, the Project's addition to traffic would not result in a noticeable traffic noise increase; thus, the Project's traffic noise increase would not be cumulatively considerable. Therefore, the Project would not contribute considerably to cumulative construction noise, operational noise, or vibration impacts.

Utility Switchyard

Construction and operation of the utility switchyard is considered in the cumulative impact analysis of the overall Project discussed above; therefore, similar to the overall Project, the utility switchyard

would not contribute considerably to cumulative construction noise, operational noise, or vibration impacts.

5.3.5 Laws, Ordinances, Regulations, and Standards

The LORS that may apply to the Project related to noise are summarized in Table 5.3-21. The local LORS discussed in this section are the County of Fresno General Plan and County of Fresno Noise Ordinance.

Table 5.3-21 LORS Applicable to Noise

Jurisdiction	LORS	Applicability	Opt-In Application Reference	Project Conformity
Federal	40 CFR Part 205, Subpart B	Regulates noise limits for medium and heavy trucks.	Section 5.3.5.1	Trucks used for the Project would comply with these regulations
Federal	29 CFR 1910.95, 29 CFR 1926.52, and CFR 1926.101 (OSHA regulations)	Regulates on-site noise levels.	Impact NOI-1	The Project would not result in on-site noise levels in exceedance of OSHA regulations
State	Title 8, California Code of Regulations, General Industrial Safety Orders, Article 105, Control of Noise Exposure	Regulates on-site noise levels.	Impact NOI-1	The Project would not result in on-site noise levels in exceedance of Cal/OSHA regulations
Local	Fresno Conty General Plan: Policy HS-G.1 Policy HS-G.4 Policy HS-G.5 Policy HS-G.6 Policy HS-G.8	Ensure that residential and other noise-sensitive uses are protected from exposure to harmful or annoying noise levels.	Impact NOI-2	The Project would be consistent with Fresno County General Plan policies.
Local	Fresno County Code of Ordinances Chapter 8.40, *Noise Control*	Contains the noise measurement criteria, exterior noise thresholds, and noise source exemptions for Fresno County.	Impact NOI-2	The Project would be consistent with the noise thresholds stated within the Fresno County Code of Ordinances Chapter 8.40, *Noise Control*.

5.3.5.1 Federal LORS

40 CFR Part 205, Subpart B

40 Code of Federal Regulations (CFR), Part 205, Subpart B establishes federal noise limits for medium and heavy trucks (more than 4.5 tons, gross vehicle weight rating). The federal truck pass by noise standard is 80 dBA at 15 meters (approximately 50 feet) from the vehicle pathway centerline. These controls are implemented through regulatory controls on truck manufacturers.

OSHA Regulations

OSHA regulates on-site noise levels. The permissible exposure level to noise for workers is 90 dBA over an 8-hour time-weighted average work shift, to protect hearing (29 CFR 1910.95 and for

construction, 29 CFR 1926.52). If an employee is exposed to greater than 85 dBA as an 8-hour TWA, then a hearing conservation program is required to be implemented and to ensure exposure levels remain below 90 dBA 8-hour TWA through engineering controls or personal protective equipment (PPE) (29 CFR 1926.101 for construction-related PPE).

5.3.5.2 State LORS

Cal/OSHA

Cal/OSHA has the same regulations as the federal OSHA regulations discussed above. The regulations are contained in Title 8, California Code of Regulations, General Industrial Safety Orders, Article 105, Control of Noise Exposure.

5.3.5.3 Local LORS

Fresno County General Plan

The Fresno County General Plan Health and Safety Element (Section G, Noise) identifies normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable noise levels for a variety of land use and development types. Table 5.3-22 shows the County of Fresno acceptable community noise exposure levels. As shown, ambient noise levels up to 75 dBA L_{dn}/CNEL are normally acceptable for utility uses while ambient noise levels up to 80 dBA L_{dn}/CNEL are conditionally acceptable.

The Noise Element also includes policies designed to meet General Plan Goal HS-G, to "protect residential and other noise-sensitive uses from exposure to harmful or annoying noise levels." These policies address requirements for new noise-sensitive land uses, development in areas that may be exposed to high levels of noise, construction of new noise-generating uses, procedures for acoustical analysis and environmental review, and regulations for construction activity and the use of heavy construction equipment in accordance with the County's Noise Control Ordinance. The following policies are applicable to the Project:

- **Policy HS-G.1:** The County shall require that all proposed development incorporate design elements necessary to minimize adverse noise impacts on surrounding land uses.
- **Policy HS-G.4:** So that noise mitigation may be considered in the design of new projects, the County shall require an acoustical analysis as part of the environmental review process where:
    a. Noise sensitive land uses are proposed in areas exposed to existing or projected noise levels that are "generally unacceptable" or higher according to Chart HS-1 [as reproduced in Table 5.3-22 below], "Land Use Compatibility for Community Noise Environments."
    b. Proposed projects are likely to produce noise levels exceeding the levels shown in the County's Noise Control Ordinance at existing or planned noise-sensitive uses.

Table 5.3-22 Land Use Compatibility for Community Noise Environments

Land Use	Normally Acceptible[1]	Conditionally Acceptable[2]	Generally Unacceptable[3]	Clearly Unacceptable[4]
Residential – Low Density Single-family, Duplex, Mobile Homes	50-60	55-65	65-75	75-85
Residential – Multiple Family	50-60	55-65	65-75	75-85
Transient Lodging – Motels, Hotels	50-65	60-70	70-80	80-85
Schools, Libraries, Churches, Hospitals, Nursing Homes	50-60	55-65	65-75	75-85
Auditoriums, Concert Halls, Amphitheaters	–	50-70	–	65-85
Sports Arena, Outdoor Spectator Sports	–	50-75	–	70-85
Playgrounds, Neighborhood Parks	50-70	–	67.5-75	72.5-85
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50-75	70-77.5	–	80-85
Office Buildings, Business Commercial and Professional	50-70	67.5-77.5	75-85	–
Industrial, Manufacturing, Utilities, Agriculture	50-75	70-80	75-85	–

[1] Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements

[2] Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirement is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

[3] Generally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

[4] Clearly Unacceptable: New construction or development should generally not be undertaken.

Source: Appendix J

- **Policy HS-G.5:** Where noise mitigation measures are required to achieve acceptable levels according to land use compatibility or the Noise Control Ordinance, the County shall place emphasis of such measures upon site planning and projects design. These measures may include, but are not limited to, building orientation, setbacks, earthen berms, and building construction practices. The County shall consider the use of noise barriers, such as sound walls, as a means of achieving the noise standards after other design-related noise mitigation measures have been evaluated or integrated into the projects.
- **Policy HS-G.6:** The County shall regulate construction-related noise to reduce impacts on adjacent uses in accordance with the County's Noise Control Ordinance.
- **Policy HS-G.8:** The County shall evaluate the compatibility of proposed projects with existing and future noise levels through a comparison to Chart HS-1 [as reproduced in Table 5.3-22], "Land Use Compatibility for Community Noise Environments."

Fresno County Noise Ordinance

The County's Code of Ordinances (Chapter 8.40, *Noise Control*) contains the noise measurement criteria, exterior noise thresholds, and noise source exemptions for the County, referred to as the "County's Noise Control Ordinance" in the General Plan. Section 8.40.040 (Exterior Noise Standards) states that it is unlawful for any person to create noise on a property "which causes the exterior noise level when measured at any affected single- or multiple-family residence, school, hospital,

church or public library situation [sic] in either the incorporated or unincorporated area to exceed the noise level standards as set forth in the following table". Table 5.3-23 summarizes the five exterior noise level standards for the nearby sensitive receptors established in Section 8.40.040 of the County Code of Ordinances. Each standard limits the number of minutes within any given hour during which noise generated on a property may exceed a certain noise level at sensitive receptors. The standards apply within 50 feet of the structure of affected sensitive receptors (Section 8.40.030).

Table 5.3-23 Fresno County Exterior Noise Level Standards (dBA, L_{eq})

Category	Cumulative Number of Minutes in any 1-hour Time Period	Noise Level Standard (dBA)	
		Daytime 7:00 a.m.to 10:00 p.m.	Nighttime 10:00 p.m. to 7:00 a.m.
1	30	50	45
2	15	55	50
3	5	60	55
4	1	65	60
5	0	70	65

Notes: In the event the measured ambient noise level exceeds the applicable noise level standard in any category above, the applicable standard shall be adjusted so as to equal the ambient noise level. Each of the noise level standards specified above shall be reduced by 5 dBA for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. If the intruding noise source is continuous and cannot reasonably be discontinued or stopped for a time period whereby the ambient noise level can be measured, the noise level measured while the source is in operation shall be compared directly to the noise level standards.

Source: Appendix J

As indicated in Table 5.3-23, the Fresno County Noise Control Ordinance limits noise exceeding 50 dBA to 30 minutes in any daytime hour or 45 dBA in any nighttime hour within 50 feet of sensitive receptor structures. Exempted activities from the County's Noise Control Ordinance applicable to the Project include:

- Noise sources associated with construction, provided such activities do not take place before 6:00 a.m. or after 9:00 p.m. on weekdays, or before 7:00 a.m. or after 5:00 p.m. on Saturday or Sunday; or
- Noise sources associated with work performed by private or public utilities in the maintenance or modification of its facilities.

In addition to the exterior noise standards, Section 8.40.090 of the Fresno County Municipal Code identifies a noise level limit of 50 dBA for electrical substations when measured 50 feet from an affected residence.

5.3.6 Agencies and Agency Contact

Compliance with noise ordinance requirements would be enforced by the County of Fresno, if not for the exclusive authority of CEC through the Opt-in Application process. Table 5.3-24 provides contact information for agencies involved with noise.

Table 5.3-24 Agency Contacts for Noise

Issue	Agency	Contact
Noise exposure on sensitive receivers	County of Fresno Department of Public Works and Planning	Jeremy Shaw, Planner 2220 Tulare Street, 6th Floor Fresno, California 93721 (559) 600-4207

5.3.7 Permits and Permit Schedule

No permits outside the authority of the CEC are required for noise.

5.3.8 References

Rincon Consultants, Inc. 2023. Noise Study. September 2023.