3.6 Noise

3.6.1 Introduction

This section summarizes the noise analysis for the Project, based on the 2019 *Le Conte Battery Energy Storage Project Acoustical Site Assessment Report*, prepared by Burns & McDonnell (Appendix F). This analysis is the basis for the environmental setting and the environmental consequences analysis contained below.

3.6.2 Environmental Setting

Sound can be described as the energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air). Noise is defined as loud, unexpected, or annoying sound.

In the science of acoustics, the fundamental model consists of a sound (or noise) source, a receiver, and the propagation path between the two. The loudness of the noise source and obstructions or atmospheric factors affecting the propagation path to the receiver determines the sound level and characteristics of the noise perceived by the receiver. The field of acoustics deals primarily with the propagation and control of sound.

3.6.2.1 Amplitude and Frequency

Continuous sound can be described by frequency (pitch) and amplitude (loudness). Amplitude is the difference between ambient air pressure and the peak pressure of the sound wave. Amplitude is measured in decibels (dB) on a logarithmic scale. Amplitude is interpreted by the ear as corresponding to different degrees of loudness. Laboratory measurements correlate a 10 dB increase in amplitude with a perceived doubling of loudness and establish a 3dB change in amplitude as the minimum audible difference perceptible to the average person. A low-frequency sound is perceived as low in pitch. Frequency is expressed in terms of cycles per second, or hertz (Hz) (e.g., a frequency of 250 cycles per second is referred to as 250 Hz). High frequencies are sometimes more conveniently expressed in kilohertz (kHz), or thousands of Hertz. The audible frequency range for humans is generally between 20 and 20,000 Hz.

3.6.2.2 Community Noise Equivalent Level

All noise level or sound level values presented herein are expressed in terms of decibels (dB), with A-weighting (dBA) to approximate the hearing sensitivity of humans. Time-averaged noise levels are expressed by the symbol L_{eq}, with a specified duration. The Community Noise Equivalent Level (CNEL) is a 24-hour average, where noise levels during the evening hours of 7:00 p.m. to 10:00 p.m. have an added 5 dBA weighting, and sound levels during the nighttime hours of 10:00 p.m. to 7:00 a.m. have an

added 10 dBA weighting. This is similar to the Day-Night sound level (L_{DN}), which is a 24-hour average with an added 10 dBA weighting on the same nighttime hours but no added weighting on the evening hours. Sound levels expressed in CNEL are always based on dBA. These metrics are used to express noise levels for measurements and municipal regulations, as well as for land use guidelines and enforcement of noise ordinances.

3.6.2.3 Noise Descriptors

The selection of a proper noise descriptor for a specific source is dependent upon the spatial and temporal distribution, duration, and fluctuation of the noise. The noise descriptors most often encountered when dealing with traffic, community, and environmental noise are defined below.

- Maximum Noise Level (Lmax): The maximum instantaneous noise level during a specific period of time.
- Minimum Noise Level (Lmin): The minimum instantaneous noise level during a specific period of time.
- Energy Equivalent Noise Level (L_{eq}): The energy mean (average) noise level. The instantaneous noise levels during a specific period of time in dBA are converted to relative energy values. From the sum of the relative energy values, an average energy value (in dBA) is calculated.
- Day-Night Noise Level (L_{DN}): The 24-hour L_{eq} with a 10 dBA "penalty" for noise events that occur during the noise sensitive hours between 10:00 PM and 7:00 AM. In other words, 10 dBA is added to noise events that occur in the nighttime hours to account for increased human sensitivity to noise during these hours.
- Single Event Noise Level (SEL): The SEL describes a receiver's cumulative noise exposure from a single noise event, which is defined as an acoustical event of short duration and involves a change in sound pressure above a reference value.

3.6.2.4 Human Response to Noise

The human response to environmental noise is subjective and varies considerably from individual to individual. Noise in the community has often been cited as a health problem, not in terms of actual physiological damage, such as hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the community arise from interference with human activities, including sleep, speech, recreation and tasks that demand concentration or coordination. Hearing loss can occur at the highest noise intensity levels. When community noise interferes with human activities or contributes to stress, public annoyance with the noise

source increases. The acceptability of noise and the threat to public well-being are the basis for land use planning policies preventing exposure to excessive community noise levels.

3.6.2.5 Ambient Noise Survey

3.6.2.5.1 Project Site

The proposed stand-alone Project will be located within the boundary of the existing CSE facility site on land wholly owned by CSE. The BESS facility is proposed to be located immediately adjacent to the east side of the existing SDG&E Drew Switchyard within the western portion of the overall CSE project site just south of SR 98, west of the existing solar panels and east of the Drew Substation [Mandrapa Road]. The overall CSE site is bounded by Fisher Road to the north, Mandrapa Road and Westside Main Canal on the west, Rockwood Road to the east, and the Woodbine Lateral Four sits just south of the CSE southern limits. The CSE site and vicinity is characterized by agricultural fields that are currently in crop production or solar development.

3.6.2.5.2 Ambient Noise Environment

The proposed Project being analyzed is the located on the west side of the existing CSE facility nearest to the existing SDG&E Drew switchyard along SR 98. The ambient noise levels at the nearest residence are anticipated to be similar to those collected on CSE property. The existing noise levels in the Project area consisted primarily of existing agricultural operations near the Project site, on-site operations of the CSE facility, off-site solar facilities, and existing roadway noise.

The 2011 FEIR noted that no sensitive receptors would be significantly impacted by the CSE facility (Noise Assessment Centinela Solar Energy Project, LDN Consultants, 2011). An existing residential structure (405 Drew Road) is located approximately 1,000 feet northwest (between Drew Road and SR 98) of the proposed Project center, outside of CSE facility boundary and opposite SR 98. The residence (405 Drew Road) is located on land zoned agricultural. No new sensitive receptors have been developed in the area since the 2011 FEIR; however, additional solar development has occurred east of the CSE Facility site, opposite Brockman Road.

3.6.2.5.3 Existing Airport Noise

The nearest general airport is the Calexico International Airport, located more than six miles from the existing CSE facility site.

3.6.2.5.4 Noise Sensitive Land Uses

Noise-sensitive land uses (NSLUs) are land uses that may be subject to stress and/or interference from excessive noise, including residences, hospitals, schools, hotels, resorts, libraries, sensitive wildlife habitat, or similar facilities where quiet is an important attribute of the environment. Noise receptors are individual locations that may be affected by noise. As indicated in the 2011 FEIR, the proposed Project site is surrounded by agricultural lands on all sides as well as land under the jurisdiction of the BLM immediately to the west. The Westside Main Canal exists west of the proposed Project site, existing SDG&E Drew switchyard, and Mandrapa Road. The natural vegetation along the Westside Main Canal could attract wildlife species with the potential to sensitivities to noise.

Existing residential uses on the Project site were removed as part of the CSE facility, thereby eliminating potential exposure of residents on-site; however, there is one residence (405 Drew Road) located 1,000 feet northwest of the Project center. The residence is located on land zoned agricultural. The residence is located along a roadway segment, between Drew Rd and SR 98. Currently, existing CSE facility remains surrounded by agricultural activity. The Calexico I-A solar development is proposed on the east side of Brockman Road, directly adjacent to the exiting CSE facility. The existing noise levels in the Project area consisted primarily of low traffic volumes along State Route 98 and Brockman Road and background noise from existing agricultural operations in the distances both on and adjacent to the site. The existing noise levels, measured in 2011 by LDN Consultants, were found to be below County thresholds.

3.6.2.6 Regulatory Framework

3.6.2.6.1 Federal, Plans, Policies, Regulations and Laws

Federal Transit Administration – Vibration Standards

The County of Imperial does not currently have regulations regarding vibration impact criteria. The Federal Transit Administration (FTA) publication, Transit Noise and Vibration Noise Impact Assessment (2018), however, has established standards to limit annoyance to people and potential damage to building structures. The FTA criterion for vibration induced structural damage is 0.20 in/sec for the peak particle velocity (PPV). The FTA criterion for infrequent vibration induced annoyance is 80 Vibration Velocity (VdB) for residential uses.

1970 Occupational Safety and Health Act (29 U.S.C. §651 et seq.)

Congress passed the Occupational and Safety Health Act to ensure worker and workplace safety. Their goal was to make sure employers provide their workers a place of employment free from recognized hazards to safety and health, such as exposure to toxic chemicals, excessive noise levels, mechanical dangers, heat or cold stress, or unsanitary conditions (EPA, 2019).

1972 Noise Control Act (42 U.S.C. §4901 et seq.)

The Noise Control Act of 1972 established a national policy to promote an environment for all Americans free from noise that jeopardizes their health and welfare (EPA, 2019). The Act also serves to (1) establish a means for effective coordination of Federal research and activities in noise control; (2) authorize the establishment of Federal noise emission standards for products distributed in commerce; and (3) provide information to the public respecting the noise emission and noise reduction characteristics of such products (EPA, 2019). While primary responsibility for control of noise rests with State and local governments, Federal action is essential to deal with major noise sources in commerce, control of which require national uniformity of treatment. EPA is directed by Congress to coordinate the programs of all Federal agencies relating to noise research and noise control (EPA, 2019).

3.6.2.6.2 State Plans, Policies Regulations and Laws

California Noise Control Act

This section of the California HSC finds that excessive noise is a serious hazard to the public health and welfare and that exposure to certain levels of noise can result in physiological, psychological, and economic damage. It also finds there is a continuous and increasing bombardment of noise in the urban, suburban, and rural areas. The California Noise Control Act declares that the State has a responsibility to protect the health and welfare of its citizens by the control, prevention, and abatement of noise. It is the policy of the State to provide an environment for all Californians free from noise that jeopardizes their health or welfare.

3.6.2.6.3 Regional and Local Plans, Policies, Regulations and Laws

Imperial County General Plan

The County has established noise guidelines in the Noise Element of the General Plan (as revised October 6, 2015). As noted in the Imperial County General Plan, the Noise Element identifies existing and future noise sources, and defines noise sensitive land uses. The element establishes goals, objectives and procedures to protect the public from noise intrusion. Implementation of these guidelines and procedures

will promote the development of noise sensitive land uses outside of noise impact zones and discourage the development of noise generating activities near noise-sensitive land uses.

The following programs and policies are established in the Imperial County General Plan Noise Element:

1. ***Acoustical Analysis of Proposed Projects***

The County shall require the analysis of proposed discretionary projects which may generate excessive noise, or which may be impacted by existing excessive noise levels, including but not limited to the following:

- *An analysis shall be required for any project which would be located, all or in part, in a Noise Impact Zone as specified above.*
- *An analysis shall be required for any project which has the potential to generate noise in excess of the Property Line Noise Limits stated in Table 9.*
- *An analysis shall be required for any project which, although not located in a Noise Impact Zone, has the potential to result in a significant increase in noise levels to sensitive receptors in the community.*

An acoustical analysis and report shall be prepared by a person deemed qualified by the Director of Planning. The report shall describe the existing noise environment, the proposed project, the projected noise impact and, if required, the proposed mitigation to ensure conformance with applicable standards.

2. Noise/Land Use Compatibility

Where acoustical analysis of a proposed project is required, the County shall identify and evaluate potential noise/land use conflicts that could result from the implementation of the project. Projects which result in noise levels that exceed the "Normally Acceptable" criteria of the Noise/Land Use Compatibility Guidelines, Table 7, shall include mitigation measures to eliminate or reduce to an acceptable level the adverse noise impacts.

3. New Noise Generating Projects

The County shall identify and evaluate projects which have the potential to generate noise in excess of the Property Line Noise Limits specified in Table 9. An acoustical analysis must be submitted which demonstrates the project's compliance with the Property Line Noise Limits, and/or required mitigation measures to reduce noise to acceptable levels. Mitigation may include a greater property line setback than required by the Zoning Ordinance, use of solid building walls without openings, noise attenuation

walls and/or landscaped earth berms, alternative construction materials or design, alternative traffic patterns, or other noise reduction techniques.

6. Projects Which Generate Off-Site Traffic Noise

The acoustical analysis shall identify and evaluate projects which will generate traffic and increase noise levels on off-site roadways. If the project has the potential to cause a significant noise impact to sensitive receptors along those roadways, the acoustical analysis report shall consider noise reduction measures to reduce the impact to a level less than significant, including reduction of the intensity of the proposed project, construction of noise attenuation walls and/or landscaped earth berms, or other changes in project design or its proposed access. For non-residential projects, reduced hours of operation may also be required.

Per the above-identified programs and policies 1-3 and 6, a Noise Assessment was prepared for the proposed Project by Burns & McDonnell (2019). Short-term construction and long-term operational noise levels were found to be less than established thresholds.

Construction Noise Standards

As indicated in the Imperial County General Plan – Noise Element (as revised October 6, 2015), construction noise, from a single piece of equipment or a combination of equipment, shall not exceed 75 dB Leq, when averaged over an eight (8) hour period, and measured at the nearest sensitive receptor. This standard assumes a construction period, relative to an individual sensitive receptor of days or weeks. In cases of extended length construction times, the standard may be tightened so as not to exceed 75 dB Leq when averaged over a one (1) hour period. Construction equipment operation shall be limited to the hours of 7:00 a.m. to 7:00 p.m., Monday through Friday, and 9:00 a.m. to 5:00 p.m. on Saturday. No commercial construction operations are permitted on Sunday or holidays.

Operational Noise Standards

Noise-generating sources in Imperial County are regulated by the County of Imperial Codified Ordinances, Title 9, Division 7. Noise Abatement and Control Section 90702.00 Subsection A provides acceptable Sound level limits based on the property zoning. The sound level limits are depicted in Table 3.6-1. The sound level limits depend on the time of day and the receiving land use. The sound level limits indicated in Table 1-1 apply to noise generation from one property to an adjacent property. The sound level limit between two zoning districts (different land uses) is measured at the property line between the properties. In the absence of a sensitive receptor, an exception or variance to the standards may be appropriate. These standards do not apply to construction noise.

Noise guidelines in Imperial County have been established in the Noise Element of the General Plan (as revised October 6, 2015). These guidelines identify compatible exterior noise levels for various land use types.

The Property Line Noise Limits listed in Table 9 of the Noise Element apply to noise generation from one property to an adjacent property. The standards imply the existence of a sensitive receptor on the adjacent, or receiving, property. The Noise Element states that in the absence of a sensitive receptor, an exception or variance to the standards may be appropriate. These standards do not apply to construction noise. These standards are intended to be enforced through the County's code enforcement program on the basis of complaints received from persons impacted by excessive noise. A noise nuisance may occur even though an objective measurement with a sound level meter is not available. In such cases, the County may act to restrict disturbing, excessive, or offensive noise which causes discomfort or annoyance to reasonable persons of normal sensitivity residing in an area.

Table 3.6-1: Property Line Noise Limits

Zone	Time	Applicable Limit One-hour Average Sound Level
Residential Zones	7:00 a.m. to 10:00 p.m.	50 dB
	10:00 p.m. to 7:00 a.m.	45 dB
Mutli-residential Zones	7:00 a.m. to 10:00 p.m.	55 dB
	10:00 p.m. to 7:00 a.m.	50 dB
Commercial Zones	7:00 a.m. to 10:00 p.m.	60 dB
	10:00 p.m. to 7:00 a.m.	55 dB
Light Industrial/Industrial Park Zones	Anytime	70 dB
General Industrial Zones	Anytime	75 dB
Note: When the noise-generating property and the receiving property have different uses, the more restrictive standard shall apply. When the ambient noise level is equal to or exceeds the Property Line noise standard, the increase of the existing or proposed noise shall not exceed 3 dB Leq.		

Source: Imperial County General Plan – Noise Element (as revised October 6, 2015)

Noise Impact Zones

The Noise Element of the Imperial County General Plan identifies areas likely to be exposed to significant noise as a “Noise Impact Zone.” A Noise Impact Zone is defined as an area which may be exposed to noise greater than 60 dB CNEL or 75 dB L_{eq}. The purpose of the Noise Impact Zone is to

define areas and properties where an acoustical analysis of a proposed project is required to demonstrate project compliance with land use compatibility requirements and other applicable environmental noise standards. For purposes of the Noise Element, any property meeting one of the following criteria is defined as being in a Noise Impact Zone:

- Within the Noise Impact Zone distances to classified roadways.
- Within 750 feet of the centerline of any railroad.
- Within 1,000 feet of the boundary of any railroad switching yard.
- Within the existing or projected 60 dB CNEL contour of any airport or approved ALUCP.
- Within one-quarter mile of existing farmland that is in an agricultural zone.

Noise/Land Use Compatibility Standards

Land use compatibility refers to the acceptability of a land use in a specified noise environment. The standard includes acceptable and unacceptable community noise exposure limits for various land use categories as currently defined by the State of California. The acceptable noise exposure limits are shown in Imperial County General Plan, Noise Element, Table 7. The acceptable level for residential areas is 60 dB CNEL. When an acoustical analysis is performed, conformance of the Proposed Action with the Noise/Land Use Compatibility Guidelines is used to evaluate the potential noise impact and will provide criteria for environmental impact findings and conditions for project approval.

Per the Imperial County Noise Element (as revised in 2015), the increase of noise levels generally results in an adverse impact to the noise environment. The Noise/Land Use Compatibility Guidelines are not intended to allow the increase of ambient noise levels up to the maximum without consideration of feasible noise reduction measures. The following guidelines are established by the County of Imperial for the evaluation a of significant noise impact.

a. If the future noise level after the project is completed will be within the "normally acceptable" noise levels shown in the Noise/Land Use Compatibility Guidelines, but will result in an increase of 5 dB CNEL or greater, the project will have a potentially significant noise impact and mitigation measures must be considered.

b. If the future noise level after the project is completed will be greater than the "normally acceptable" noise levels shown in the Noise/Land Use Compatibility Guidelines, a noise increase of 3 dB CNEL or greater shall be considered a potentially significant noise impact and mitigation measures must be considered.

Imperial County Significance Determination

Imperial County Title 9, Division 7 Noise Abatement and Control Section 90702.00 Subsection A states:

> *It shall be unlawful for any person to cause noise by any means to the extent that the applicable one-hour average sound level set out in the following table is exceeded, at any location in the County of Imperial on or beyond the boundaries of the property on which the noise is produced.*

The applicable limits are provided above in Table 1-1. The Project and surrounding properties are zoned as A-2, General Agriculture; A-2-R - General Agriculture, Rural Zone; and A-3, Heavy Agriculture. The proposed Project was analyzed in accordance to the applicable sound limits for agricultural properties established in Section 90702.00 of the Noise Ordinance of 70 dBA L_{eq}.

3.6.3 Environmental Consequences

3.6.3.1 Thresholds of Significance

The thresholds of significance are provided for Noise in Appendix G of the CEQA Guidelines.

3.6.3.1.1 Noise: California Environmental Quality Act

Based on Appendix G of the CEQA Guidelines, implementation of the Project would result in a significant adverse impact if it were to:

- Cause a generation of 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.
- Cause a generation of excessive groundborne vibration or groundborne noise levels.

3.6.3.1.2 Analysis Methodology

Noise impacts are assessed based on a comparative analysis of the noise levels resulting from the Project and the noise levels under existing conditions. Analysis of temporary construction noise effects is based on typical construction phases, equipment noise levels and attenuation of those noise levels due to distances, and any barriers between the construction activity and the sensitive receptors near the sources of construction noise. Impacts for traffic noise are addressed based on the expected change in traffic volumes with the Project under construction.

Construction Noise Assumptions

Project construction noise was estimated based on sound levels from standard construction equipment. The analysis assumed no use of pile driving equipment. Typical equipment (Table 3.6-2) will be used for site preparation (including grading), digging foundations, excavating trenches, and for conduit installation. A cement truck will also be utilized during construction activities to pour concrete foundations. Construction of the proposed Project is anticipated to begin after receipt of all required approvals and will continue for approximately 12 months.

Table 3.6-2: Construction Equipment Assumptions

Equipment	Power	Anticipated Usage	Quantity
Bulldozer	247 Horsepower	6 hours per day	1
Grader	187 Horsepower	6 hours per day	1
Scrapers	367 Horsepower	6 hours per day	2
Water Truck	402 Horsepower	6 hours per day	1
Self-Propelled Compactor	80 Horsepower	6 hours per day	1
Dump Truck	402 Horsepower	6 hours per day	1
Tractor/Loader/Backhoe	97 Horsepower	6 hours per day	1
Bobcat	65 Horsepower	6 hours per day	1

Source: LS Power, 2019

Traffic Noise Assumptions

Off-site Project-related roadway noise levels were calculated using calculation methods published by the Federal Highway Administration (FHWA) and CadnaA modeling software. The model uses the traffic volume, vehicle mix, and speed to compute the equivalent noise level at distance. A calculation was used in the model which computes equivalent noise levels for each hourly time period used in the calculation of CNEL based on the average daily traffic counts and future traffic predictions. Weighting these equivalent noise levels and summing them gives the CNEL for traffic noise.

Based on the County's Guidelines, Project-related roadway noise levels would be considered significant if the future noise level with the Project will be within the "normally acceptable" noise levels shown in the Noise/Land Use Compatibility Guidelines but will result in an increase of 5 dBA CNEL or greater. A noise increase of 3 dBA CNEL or greater shall be considered a potentially significant noise impact and mitigation measures would be considered.

Operational Noise Assumptions

The BESS will receive, and store excess energy generated by the CSE and to return this electricity to the grid at a later time when needed. Though the batteries themselves do not generate a significant amount of

noise, the inverters, transformers, and heating ventilation and air conditioning (HVAC) equipment associated with the BESS will. The major sound emitting components included within the Project are expected to be the 2.5-megawatt (MW) inverters, 2.5-megavolt-ampere (MVA) transformers, rooftop HVAC units, substation HVAC units, and the substation step-up transformer. The major BESS and substation equipment sources of noise are listed below in Table 3.6-3, with their estimated sound levels.

Table 3.6-3: Major Equipment Sound Levels

Source	Number of Sources	Sound Pressure Level (dBA)	Notes
BESS Equipment			
2.5 MW Inverter	56	80	SPL at 3 feet
2.5 MVA Transformer	56	62	SPL at 5 feet
Rooftop HVAC Unit	40	85	SPL at 3 feet
Substation Equipment			
Step-up Transformer	1	87	SPL at 5 feet
Substation HVAC Unit	2	67	SPL at 10 feet

*dBA – A-weighted decibels, MW – megawatt, MVA – megavolt ampere, SPL – sound pressure level, HVAC – heating ventilation and air conditioning
Source: Le Conte Battery Energy Storage System Sound Study (Burns & McDonnell, 2019)

3.6.3.2 Project Impacts

Impact 3.6-1: Would the Project cause a generation of 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?

Construction and Decommissioning Impacts

Project construction is anticipated to last approximately 12 months; inclusive of Project site preparation, installation of structures, equipment and supporting utilities. The construction noise levels relied upon for this analysis are based off of the list of anticipated construction equipment found in Table 3.6-4 below. The construction equipment is anticipated to be spread out over the entire site. Activities during construction are anticipated to include fine grading of the site, trenching of utilities, foundation work, and establishment of the BESS structure. This would result in an acoustical center for the construction activities of approximately 1,000 feet from the nearest residential property. As indicated in Table 3.6-4, short-term construction at the nearest residence (405 Drew Road) is anticipated to fall below the established noise limits. This would be expected during decommissioning phase as well. Short-term construction and decommissioning

could increase noise levels for species within the adjacent Westside Main Canal, however implementation of the mitigation measures described in Section 3.2 would reduce this potential impact to less than significant.

Table 3.6-4: Construction Noise Levels

Construction Equipment	Quantity	Duty Cycle (hours/day)	Average Source Noise Level @ 50 feet (dBA L_{eq})[a]	Average Cumulative Noise Level @ 50 feet (dBA L_{eq}-8 hour)
Bulldozer (247 HP)	1	6	80	79
Grader (187 HP)	1	6	82	81
Scraper (367 HP)	2	6	86	88
Water Truck (402 HP)	1	6	90	89
Compactor (80 HP)	1	6	80	79
Dump Truck (402 HP)	1	6	90	89
Loader/Backhoe (97 HP)	1	6	87	86
Bobcat (65 HP)	1	6	89	88
			Cumulative Construction Noise Level at 50 ft:	95
			Distance to Nearest Residence (ft):	1,000
			Construction Noise Level at Nearest Residence (dBA):	**69**
			Residential Noise Level Limit (dBA):	**75**
			Impact at Nearest Residential Receiver?	**NO**

(a) Values taken from FHWA Highway Construction Noise and the HEARS database

Off-site Traffic Impacts

Project construction workforce will include an average 15 people on-site, with a peak of 50 people that will occur during the excavation phase. Work hours will be between the hours of 8:00 a.m. and 5:00 p.m. Monday through Saturday. The trips generated during the excavation phase of construction were provided by KOA and are estimated at 128 daily trips, inclusive of deliveries and construction truck trips. Truck trips were converted into passenger equivalent volumes (PCE) using a PCE factor of 2.0. The trips generated during the building and facilities construction phase are less than for the excavation phase. The traffic increase during the excavation phase would generate the largest increase in traffic noise.

To determine if roadway noise level increases during the construction activities, the noise levels for the existing conditions were compared with the noise level increase from the Project's peak related construction traffic. The worst-case construction-related noise increases would occur when comparing the existing conditions prior to construction to the excavation phase of

construction when the most workers will be present on a daily basis. To be conservative, the construction peak traffic volume was utilized. Utilizing the Project's traffic assessment (*Le Conte Battery Energy Storage Project Traffic Study* KOA, 2019), estimated sound levels at 100 feet from the road centerline were calculated for existing conditions and future conditions during construction.

Table 3.6.5 shows the estimated noise levels for the existing traffic counts scenario. The noise levels modeled in the table do not take into account any noise barriers or topography that may affect ambient noise levels thus representing a worst-case scenario.

Table 3.6-5: Existing Traffic Noise Levels

Roadway Segment	Existing ADT[a]	Vehicle Speeds (MPH)	Noise Level @ 100 feet (dBA CNEL)
Drew Rd - SR-098 to Fisher Rd	321	55	48.0
SR-98 - Drew Rd to Pulliam Rd	1953	65	59.2

(a) ADT (average daily traffic) numbers provided by *Le Conte Battery Energy Storage Project Traffic Study* KOA, 2019

Table 3.6.6 shows the estimated noise levels for the future traffic counts scenario based on the Project's traffic assessment (*Le Conte Battery Energy Storage Project Traffic Study* KOA, 2019). Construction traffic trips were added to the existing daily traffic counts to estimate future traffic noise levels.

Table 3.6-6: Future Traffic Noise Levels During Construction

Roadway Segment	Future ADT[a]	Vehicle Speeds (MPH)	Noise Level @ 100 feet (dBA CNEL)
Drew Rd - SR-098 to Fisher Rd	404	55	49.0
SR-98 - Drew Rd to Pulliam Rd	1998	65	59.3

(a) Future ADT (average daily traffic) numbers estimated by the existing ADT from *Le Conte Battery Energy Storage Project Traffic Study* KOA, 2019 with future construction traffic trips added.

Table 3.6.7 shows the estimated noise level increase due to the expected future traffic counts. As shown in the last column of Table 3.6.7, the Project does not create short-term noise increases during construction of more than 5 dBA CNEL on either roadway segment. The noise levels are below the 60 dBA CNEL at 100 feet from roadway and in the "normally acceptable" category. No sensitive receptors would be directly impacted by construction traffic noise due to the

proposed Project's construction traffic. Therefore, noise impacts associated with construction traffic are considered less than significant.

Table 3.6-7: Increase in Traffic Noise Levels

Roadway Segment	Existing Noise Level @ 100 feet (dBA CNEL)	Future Noise Level @ 100 feet (dBA CNEL)	Increase in Noise Level (dBA CNEL)	County Noise Increase Threshold (dBA CNEL)	Potential Impact?
Drew Rd – SR-098 to Fisher Rd	48.0	49.0	1.0	5	No
SR-98 – Drew Rd to Pulliam Rd	59.2	59.3	0.1	5	No

Source: Le Conte Battery Energy Storage System Sound Study (Burns & McDonnell, 2019)

Operational Impacts

Project operations would not require additional full-time employees to operate the BESS. During the operations and maintenance phase, visits to the BESS site would be infrequent and only involve specialized staff tasked with addressing specific issues, should they arise. No new or ongoing vehicles trips would result from operation of the proposed Project that would increase levels of roadway noise. The worst-case property line noise levels would occur at the property line nearest the operational noise sources. For the BESS, this location is approximately 450 feet to the west along Mandrapa Road. For the Substation, this location is approximately 400 feet to the north along Highway 98. Currently the adjacent properties are zoned for agricultural uses, which are limited to the Light Industrial sound level limit of 70 dBA. The results of the calculated noise levels are shown below in Table 3.6-5 and Table 3.6-6.

Table 3.6-8: Battery Energy Storage System Sound Levels

Source	Number of Sources	Single Source Noise Level	Cumulative Sources Noise Level	Distance to Property Line (ft)	Reduction due to Distance (dBA L_{eq})	Resultant Noise Level (dBA L_{eq} / dB CNEL)	Sound Level Standard (dBA L_{eq})	Impact? (Yes/No)
2.5 MW inverters	56	80 dBA @ 3.3 ft	97.5 dBA @ 3.3 ft	450	42.7	54.8	70	--
2.5 MVA transformers	56	62 dBA @ 5 ft	79.5 dBA @ 5 ft	450	39.1	40.4	70	--
Rooftop HVAC Units	40	85 dBA @ 3 ft	101.0 dBA @ 3 ft	450	43.5	57.5	70	--
Battery Energy Storage System Total L_{eq} Sound Level at Property Line (Mandrapa Rd):						**59.4**	**70**	**No**
Battery Energy Storage System Total CNEL Sound Level at Nearest Residence (1,000 ft)[a]:						**59.2**	**60**	**No**

(a) CNEL calculation assumes the Project is operating at its maximum sound level for a continuous 24-hour period.
Source: Le Conte Battery Energy Storage System Sound Study (Burns & McDonnell, 2019)

Table 3.6-9: Substation Sound Levels

Source	Number of Sources	Single Source Noise Level	Cumulative Sources Noise Level	Distance to Property Line (ft)	Reduction due to Distance (dBA L_{eq})	Resultant Noise Level at Property Line (dBA L_{eq})	Sound Level Standard (dBA L_{eq})	Impact? (Yes/No)
Step-up transformer	1	87 dBA @ 5 ft	87.0 dBA @ 5 ft	400	38.1	48.9	70	--
Substation HVAC	2	70 dBA @ 10 ft	73.0 dBA @ 10 ft	400	32.0	38.0	70	--
Substation Total L_{eq} Sound Level at Property Line (Highway 98):						**49.3**	**70**	**No**
Substation Total CNEL Sound Level at Nearest Residence (800 ft)[a]:						**49.9**	**60**	**No**

(a) CNEL calculation assumes the Project is operating at its maximum sound level for a continuous 24-hour period.
Source: Le Conte Battery Energy Storage System Sound Study (Burns & McDonnell, 2019)

To determine the cumulative noise levels at the property line, the noise levels from the transformers, inverters, and HVAC equipment were all combined and propagated out to the nearest property line without any shielding from the proposed buildings. The addition of the substation property line sound level (49.3 dBA) and the BESS (59.4 dBA) provide a cumulative noise levels for the Project of 59.8 dBA at the property line. The cumulative sound level at the nearest residence (405 Drew Road) is approximately 59.6 dB CNEL. Both are below their respective sound level limits.

Mitigation Measures

None required.

Significance After Mitigation

Not applicable.

Impact 3.6-2: Would the Project cause a generation of excessive groundborne vibration or groundborne noise levels?

Construction, Operation, and Decommissioning Impacts

In the absence of adopted vibration criteria in Imperial County, the FTA provides criteria for acceptable levels of groundborne vibration for various types of special buildings that are sensitive to vibration. For purposes of identifying potential project-related vibration impacts, the FTA criteria is used in this analysis.

The FTA has determined vibration levels that would cause annoyance to a substantial number of people and potential damage to building structures. The FTA criterion for vibration induced structural damage is 0.20 in/sec for the peak particle velocity (PPV). The FTA criterion for infrequent vibration induced annoyance is 80 Vibration Velocity (VdB) for residential uses.

Project construction (decommissioning impacts are anticipated to be similar) activities would have the greatest potential to produce groundborne vibration; however, these impacts would result in PPV levels below the FTA's criteria for vibration induced structural damage, and construction and decommissioning activities would generate levels of vibration that would not exceed the FTA criteria for nuisance for nearby residential uses. Project operations would not generate groundborne vibration or groundborne noise levels. Table 3.6-7 lists the average vibration levels that could be experienced at adjacent land uses from the temporary construction activities. The Project construction and decommissioning activities would not result in vibration induced structural damage or vibration induced annoyance to adjacent land uses. Therefore,

Project impacts associated with excessive groundborne vibration are considered less than significant.

Table 3.6-10: Groundborne Vibration from Construction Activities

Construction Equipment	Approximate Velocity Level at 25 feet (VdB)	Approximate Velocity Level at 25 feet (in/sec)	Approximate Velocity Level at 1,000 feet (VdB)	Approximate Velocity Level at 1,000 feet (in/sec)
Small Bulldozer	58	0.003	34.3	0.00005
Jackhammer	79	0.035	55.6	0.00061
Loaded Truck	86	0.076	62.4	0.00131
Large Bulldozer	87	0.089	63.7	0.00154
		FTA Criteria	80	0.2
		Significant Impact	**NO**	**NO**

Source: Transportation and Construction Vibration Guidance Manual, 2013

Mitigation Measures

None required.

Significance After Mitigation

Not applicable.