Appendix I
Noise

ORD MOUNTAIN SOLAR AND ENERGY STORAGE PROJECT
ENVIRONMENTAL IMPACT REPORT

DRAFT

Acoustical Assessment Report for the Ord Mountain Solar and Energy Storage and Calcite Substation Project San Bernardino County, California

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Acoustical Assessment Report
for the Ord Mountain Solar and Energy Storage and Calcite Substation Project

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ACRONYMS AND ABBREVIATIONS

Acronym	Definition
dB	decibel
dBA	A-weighted decibel
CEQA	California Environmental Quality Act
CNEL	community noise equivalent level
FHWA	Federal Highway Administration
L_{eq}	equivalent sound level
PPV	peak particle velocity
VdB	velocity decibel

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Acoustical Assessment Report for the Ord Mountain Solar and Energy Storage and Calcite Substation Project

1 INTRODUCTION

1.1 Purpose

Ord Mountain Solar, LLC proposes to construct and operate a 60 Megawatt (MW) photovoltaic (PV) solar energy and 60 MW energy storage facility and Southern California Edison proposed the Calcite Substation (collectively the proposed project). The Ord Mountain Solar and Energy Storage site is approximately 484-acres located east of State Route 247 (SR-247); north of Haynes Road; and west of Meridian Road, approximately eight miles north of Lucerne Valley, in unincorporated San Bernardino County (County). The Solar and Energy Storage Project includes the PV solar panels, energy storage structure, on-site substation, and a 220-kilovolt (kV) overhead generation tie transmission line, which would extend 0.6 mile southwest, crossing the SR-247, to Southern California Edison's (SCE) proposed Calcite Substation. SCE proposes to construct and operate the Calcite Substation project on approximately 13 acres generally west of SR-247, to facilitate the connections of renewable energy generation to the SCE electrical grid. The Calcite Substation project would also include loop-in transmission lines from the existing nearby Lugo-Pisgah No.1 220 kV transmission lines. The Calcite Substation project also includes two new fiber-optic cables to provide telecommunications and 12 kV distribution lines to provide power for lighting at the substation along an approximately one-mile route. The Proposed Project area is situated roughly in the southern portion of Section 36, Township 6 North, Range 1 West, the northern portion of Section 1, Township 5 North, Range 1 West, and the southern portion of Section 2, Township 5 North, Ranch 1 West, S.B.B. & M. of the White Horse Mountain, CA USGS 7.5- minute topographic quadrangle at approximately Lat/Long 34°33'36.74"N/116°56'0.97"W (See Figure 1, Regional Location Map, and Figure 2, Vicinity Map).

The purpose of this report is to estimate and evaluate the potential noise impacts associated with implementation of the proposed project relative to relevant local, state, and federal regulatory thresholds.

1.2 Project Location

The project site is situated within the western Mojave Desert and is essentially flat. Minor grading shall occur to allow the installation of foundations for components such as substations, energy storage structure, roads and inverters on the site. The site generally slopes from north-west to south-east with elevations of approximately 2,980 to 2,900 feet above mean sea level. Locally, the proposed project would be accessed via an internal road system and will be accessible from the regional transportation network via new access roads fromSR-247.

The Solar and Energy Storage Project would include the construction of an above ground 220-kV overhead generation tie (gen-tie) line from the project's on-site substation to the proposed SCE transmission system and SCE's proposed Calcite Substation west of SR 247. The width of a typical transmission line construction right-of-way is approximately 150 feet. After construction, the right-of-way is expected to consist of a width of 30 to 50 feet for the maintenance road and gen-tie line. Less width may be required for portions of the right-of-way where access to the transmission line is facilitated by existing roads, such as those associated with the existing SCE transmission lines. The proposed Calcite Substation project would be located on an approximately 75-acre parcel of land that extends on the west and east sides of SR-247, directly north of Haynes Road, in the County of San Bernardino.

The existing Lugo-Pisgah No.1 220 kV transmission line would be looped into the proposed Calcite Substation by extending two 220 kV transmission line segments by approximately 2,500 feet from the south to Calcite Substation. These line segments would cross under SCE's Eldorado-Lugo and Lugo-Mohave 500 kV lines, and enter Calcite Substation from the south. The existing 12 kV distribution circuit would be extended to provide temporary power and permanent Calcite Substation light and power westward overhead on Haynes Road, for approximately 2,000 feet. The circuit would then continue underground for approximately 1,700 feet heading westward under the existing transmission right-of-way (ROW) along Haynes Road and then north along the new Calcite Substation access road into the light and power rack within Calcite Substation.

The telecommunication fiber-optic cables would connect the proposed Calcite Substation to SCE's Barstow Repeater Communication Site (CS) and to a splice box on tower M29-T3 on SCE's Lugo Mohave 500 kV transmission line.

The Solar and Energy Storage Project site is comprised of fallow agricultural fields with some early succession saltbush scrub vegetation in isolated patches, which for the most part, has been degraded due to the agricultural use and livestock grazing on site. The gen-tie line would traverse undeveloped Mojave creosote bush scrub and desert saltbush scrub. The Calcite Substation would be constructed on undeveloped Mojave creosote bush scrub and desert saltbush scrub.

Existing land uses and Land Use Zoning Districts on and adjacent to the proposed project site are listed in Table 1.

Table 1
Existing Land Use and Land Use Zoning Districts

Location	Existing Land Use	Land Use Zoning District
Proposed Solar and Energy Storage Site	Agriculture (fallow)	LV/AG (Lucerne Valley/Agriculture); LV/AG-40
Gen-tie	Agriculture (fallow) /SCE transmission	LV/AG; LV/AG-40
On-Site Substation	Vacant	LV/AG-40
North	Agriculture (fallow)	LV/AG-20/-40
South	Agriculture (fallow)	LV/AG-20/-40
East	Agriculture (fallow)	LV/RL/RC (Rural Living/Resource Conservation)
West	Agriculture (fallow)	LV/AG-20/-40; LV/RC
Calcite Substation	Vacant	LV/AG

1.3 Project Description

Solar and Energy Storage Project

Solar System

The Solar and Energy Storage Project (as shown in Figure 3, Site Plan) would be a 60 MWac solar power generating installation. The 484-acre site would house all structures including solar panels, tracking/support structures, inverters, energy storage structure, supervisory control and data acquisition (SCADA), and interconnection facilities (on-site substation) all of which would be enclosed by a perimeter security fence approximately 7-feet high. The proposed facility would be unmanned and no operation and maintenance building would be constructed. The operations would be monitored remotely via the SCADA system and periodic inspections and maintenance activities would occur. During project operations, solar panel washing is expected to occur one to four times per year and general labor (up to 10 individuals) may assist in the panel cleaning. Panel washing for a project of this size will require 15 days to complete per wash cycle. Water consumption is expected to be around 0.28 gallons per square yard of panel, based on other similar operations. Given a 60MWac plant, with 4 cycles per year, the annual water usage is expected to consume up to approximately 6.0 AF of water. While the Applicant only expects to actually wash the PV panels once per year, the panels may need to be washed more frequently (up to four times per year) based on site conditions. Conditions that may necessitate increased wash requirements include unusual weather occurrences, forest fires, local air pollutants, and other similar conditions. Therefore, the Solar and Energy Storage Project is requesting the use of up to 6.0 AF per year for the explicit use of washing panels. This amount is in addition to the amount of water necessary for the operations, fire suppression, and site maintenance which is a small amount of groundwater (i.e., approximately 0.6 AF) to be used for this purpose. In the event that electrical power distribution cannot be delivered to the groundwater pump, a generator would be located adjacent to well pump #19 to provide backup power.

Solar energy would be captured by an array of approximately 250,000 photovoltaic (PV) panels mounted to a single-axis tracking system. The tracking system will be supported, when practical, by driven piers (piles) directly embedded into the ground and will be parallel to the ground. The system will rotate slowly throughout the day in order to stay perpendicular to the incoming solar rays so that production can be optimized.

Each tracker would hold approximately 80-90 panels (depending on final configuration) and at its highest rotated edge would have a maximum height of approximately twelve feet above grade. The panels capture and convert the incoming sunlight to direct current (DC) electrical energy. The panels are arranged in series to efficiently increase the output voltage to 1,500 volts. An above- or below-ground DC collection system will deliver the electricity to an inverter station, where the electricity is converted into AC at an intermediate voltage, typically 34.5kV. Inverters would be up to 12 feet in height. From the inverter stations an above- or below-ground AC collection system will deliver the electricity to the on-site substation, where the voltage will be stepped-up to the interconnection voltage.

On-Site Substation

The on-site substation is the termination point of the collection system of 34.5-kV AC electricity. The output of the entire field is passed through a final interconnection step-up transformer to convert it to the grid tie voltage at 220-kV. Additionally, the on-site substation would host the grid intertie safety equipment and switches required to interconnect to the high voltage transmission system. The open air substation would likely be constructed on the southern border of the solar array. The footprint of the on-site substation will be approximately 150-feet x 230-feet. The on-site substation would consist of components up to 55 feet in height and feeders would be overhead lines constructed with 45 foot and 60-foot-tall poles for the single and double circuits respectively.

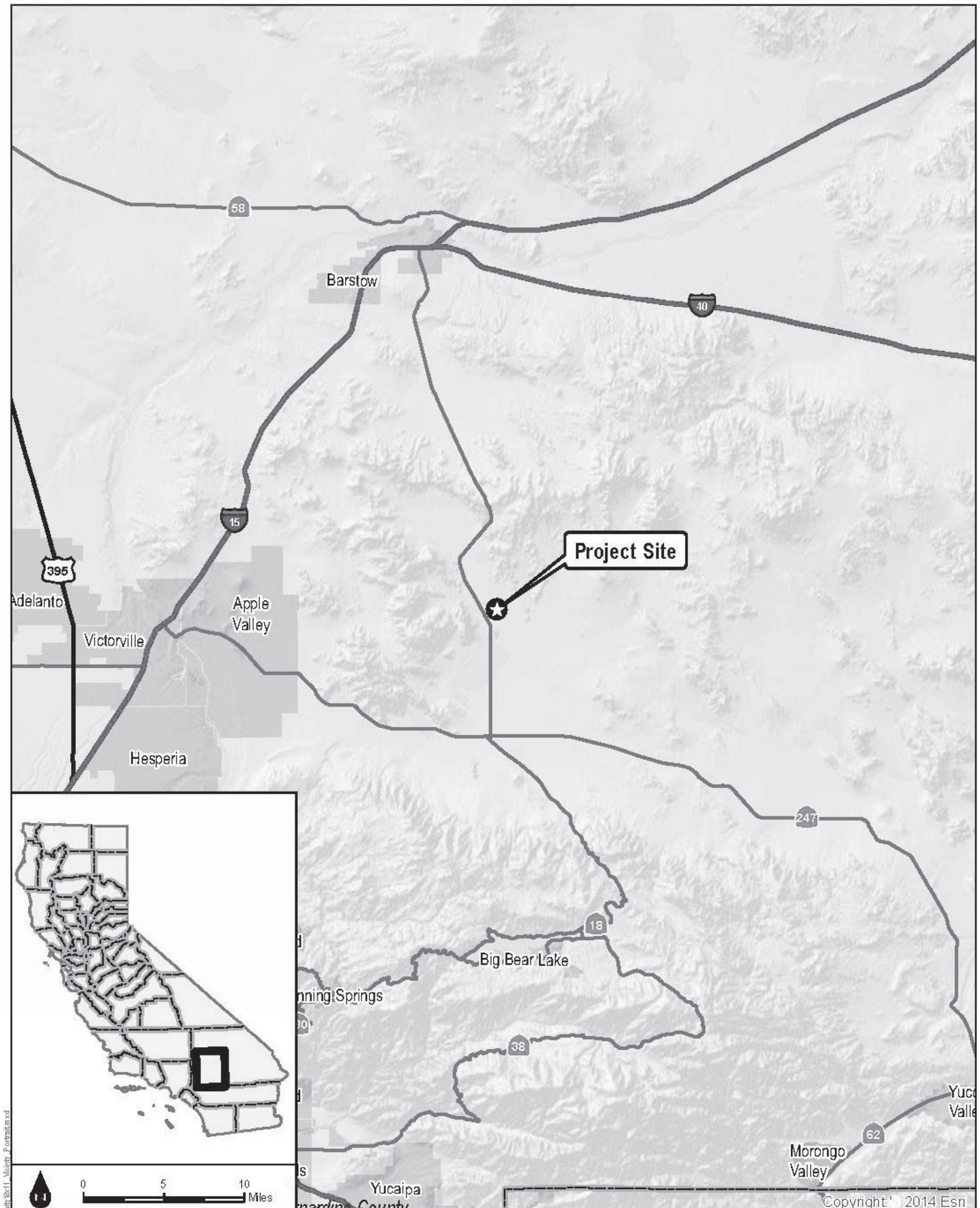

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FIGURE 1
Regional Map

Ord Mountain Solar and Energy Storage Project

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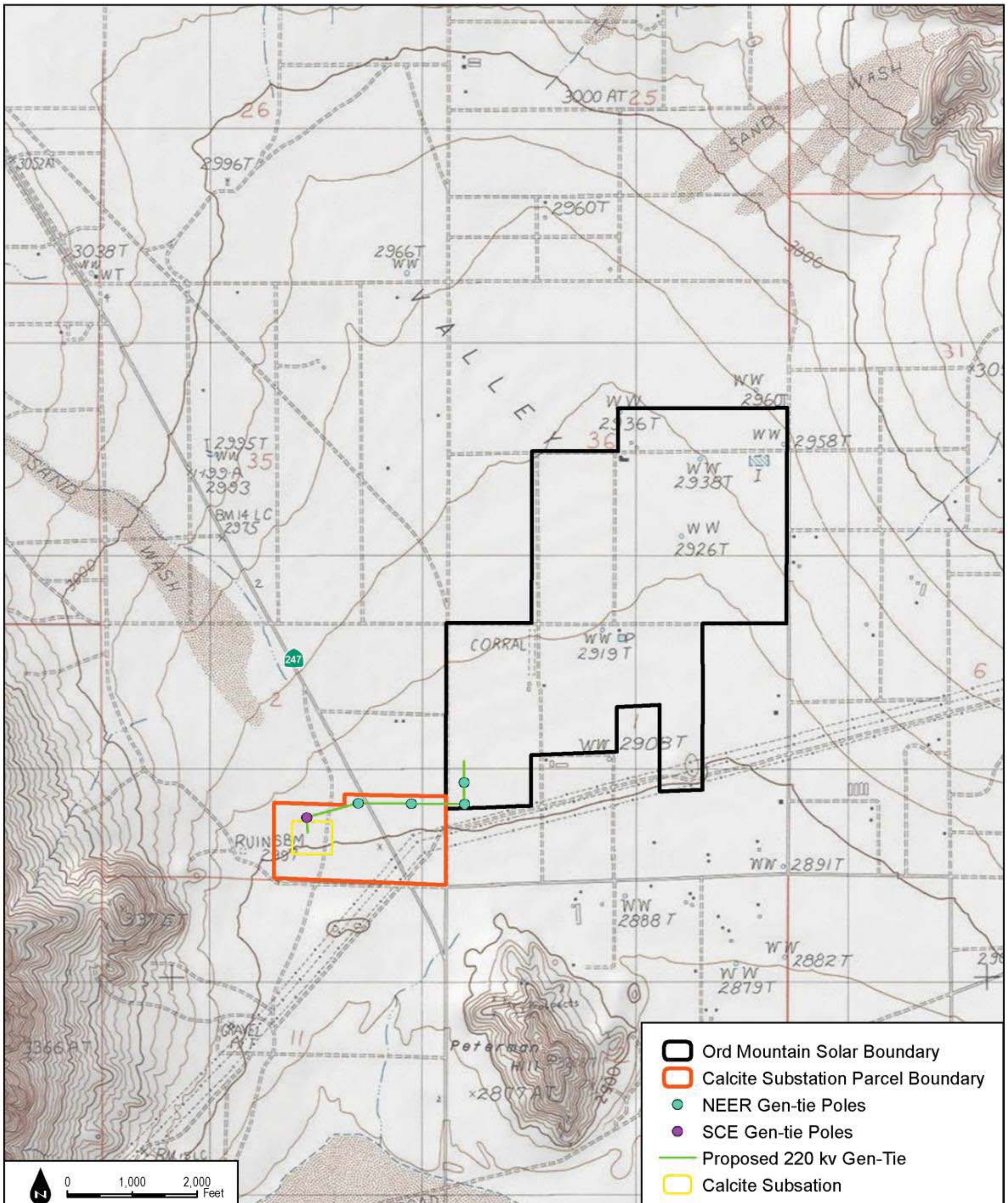

SOURCE: USGS 7.5-Minute Series White Horse Mountain Quadrangle

FIGURE 2
Vicinity Map

Ord Mountain Solar and Energy Storage Project

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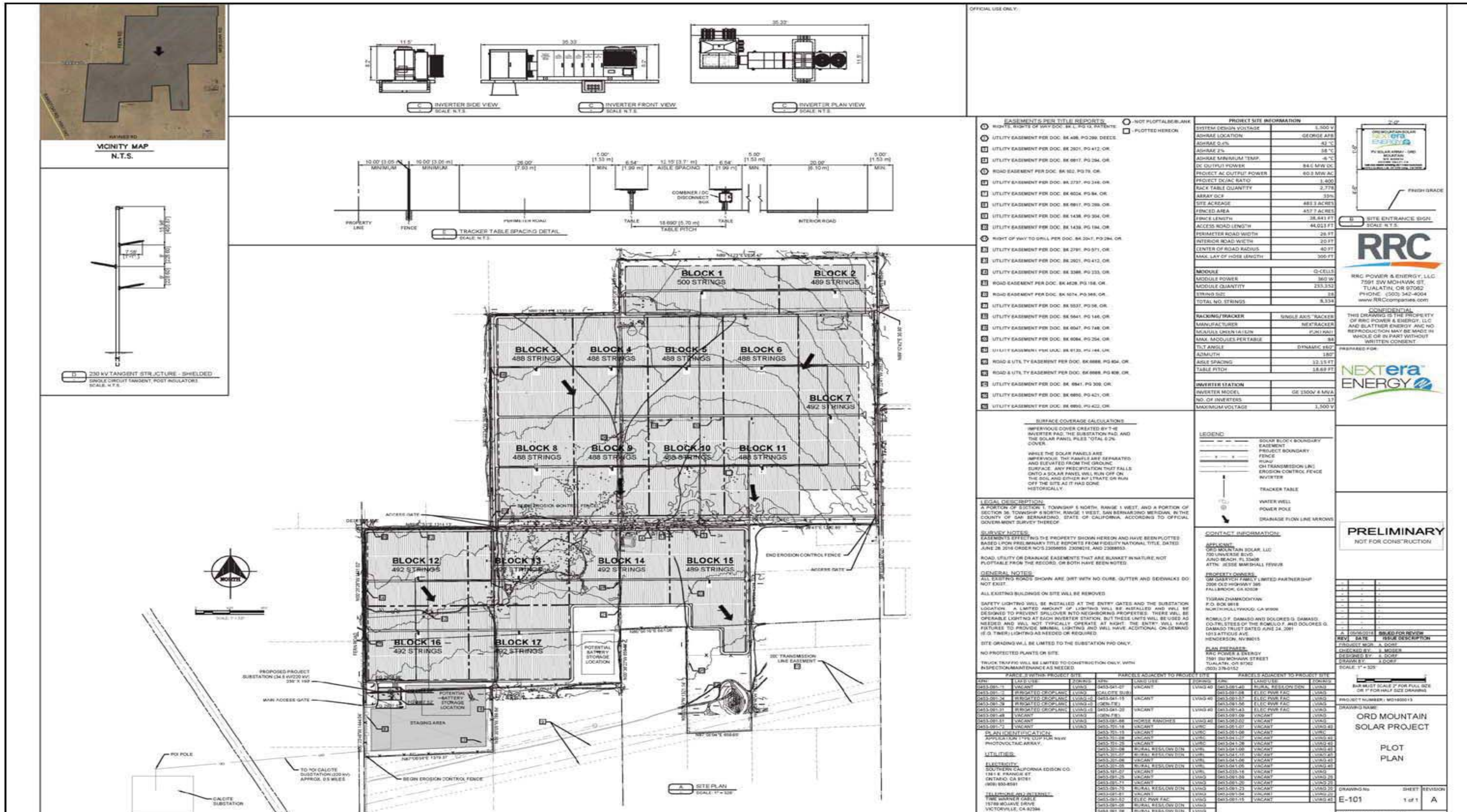

SOURCE: RRC Power & Energy 2016

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FIGURE 3
Site Plan

Ord Mountain Solar and Energy Storage Project

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Energy Storage System

An energy storage system is proposed to provide a maximum capacity of 60 MW over a 4-hour period (240MWH). The energy storage system would be located just east of the on-site project substation. The energy storage batteries would be housed in a structure of approximately 35,000 square feet. The structure height (including any screening for HVAC) would be approximately 20 feet. The batteries are housed in open air style racking (similar to computer racking) 7-9 feet high. The associated inverters, transformers, and switchgear would be located immediately adjacent to the structure on concrete pads.

Generation Tie Line

The energy is transported from the on-site substation to SCE's proposed Calcite Substation via a gen-tie transmission line. The gen-tie line would extend approximately 0.6 mile to the southwest, from the facility's on-site substation to SCE's proposed Calcite Substation. The 220-kV gen-tie line would consist of approximately six single circuit, up to 150 foot tall concrete or steel poles, spaced on an average of every 500 feet. The poles would carry 336 ACSR conductors, and would allow the line to maintain a minimum 30-foot vertical clearance to ground.

There would be two double-circuit lattice or TSP dead-end structures with heights ranging from approximately 130 feet to approximately 180 feet on the Calcite Substation Property for the connection of Ord Mountain's gen-tie line to a 220 kV position inside Calcite Substation. While the Ord Mountain 220 kV gen-tie line would carry 60 MW, the TSP or LST would be designed for additional future load, utilizing 2B-1590 kcmil "Lapwing" Aluminum Conductor Steel Reinforced ("ACSR") conductor. The first two structures outside the proposed Calcite Substation would be constructed by SCE and would be dead-end structures. NEER would be responsible for construction of all structures beyond that second dead-end structure. SCE would construct, own, operate, and maintain the circuit to the tower connection at the first Ord Mountain structure. SCE would work with NEER to integrate final design. The right-of-way is expected to consist of a width of up to 50 feet for the maintenance road and gen-tie line. Less width may be required for portions of the right-of-way where access to the gen-tie line is facilitated by existing roads, such as those associated with the existing SCE transmission lines.

Calcite Substation Project

Substation

The Calcite Substation would be a new regional 220 kV collector station initially needed to support the solar and energy storage project, measuring approximately 620 feet by 480 feet. The

Calcite Substation would be an unattended collector station (no power transformation) surrounded by a prefabricated concrete wall with a visible loop of razor wire along the top and with two gates. The proposed Calcite Substation project would be designed to accommodate a total of eight 220 kV positions, with four positions initially constructed. Two positions would be used in the initial design: one position shared between the solar and energy storage project gen-tie and the Pisgah 220 kV transmission line, and one position for the Lugo 220 kV transmission line. The remaining two positions would be available for future network or generation tie-lines.

Calcite Substation would be initially equipped with the following:

- Two overhead 220 kV buses
- Five circuit breakers
- Ten group-operated disconnect switches
- One Mechanical Electrical Equipment Room (MEER)
- Light and power transformers and associated equipment
- Substation area lighting
- Permanent wall

The proposed Calcite Substation design includes terminating the solar and energy storage project 220 kV gen-tie line into the switchrack. There would be two double-circuit lattice or Tubular Steel Poles (TSPs) dead-end structures with heights ranging from approximately 130 feet to approximately 180 feet on the Calcite Substation property for the connection of the solar and energy storage project gen-tie line to a 220 kV position inside Calcite Substation.

Loop-In Transmission Line

The proposed Calcite Substation would connect to the Lugo-Pisgah No. 1 220 kV Transmission Line transmission source line via a loop-in that would modify the Lugo-Pisgah No. 1 220 kV Transmission Line. That modification would create two new line segments: the Calcite-Lugo 220 kV transmission line and the Calcite-Pisgah 220 kV transmission line. Each new transmission line segment entering into the Calcite Substation would be approximately 2,500 feet long.

The proposed routes for these new transmission lines would require crossing under SCE’s Eldorado-Lugo and Lugo-Mohave 500 kV lines. Crossing under the 500 kV lines may require the addition of one 500 kV interset tower for each of the Eldorado-Lugo and Lugo-Mohave 500 kV lines to comply with the safe clearance requirements.

The new 220 kV transmission lines would require approximately seven single/double circuit transmission structures, Four structures with heights ranging from approximately 50 feet to approximately 100 feet would be used to cross underneath the Eldorado-Lugo 500 kV and Lugo-Mohave 500 kV transmission lines. The path would then continue north to two structures with approximate heights between 110 feet and 160 feet. From there, the alignment turns northeast to one 220 kV double-circuit structure with a height ranging from approximately 130 feet to approximately 180 feet. The 220 kV TSP or LST would be located just outside of the substation wall (but still within the proposed Calcite Substation Property boundaries) (Figure X). The conductor utilized would be 2B-1590 kcmil “Lapwing” Aluminum Conductor Steel Reinforced (“ACSR”) conductor or similar. In addition, a minimum of one existing 220 kV lattice steel tower in the existing ROW would be removed since it would not be in use in the proposed configuration. The seven new structures would require a new ROW ranging between approximately 250 and 400 feet wide (depending on structure types and line crossings) from SCE’s existing ROW to the Calcite Substation Property.

At the point of the proposed 220 kV line undercrossing, the existing Lugo-Mohave and Eldorado-Lugo 500 kV transmission lines may require the addition of one 500 kV interset tower per line to comply with applicable engineering standards and specifications (including GO 95). The preferred approach at this time would be to determine the appropriate crossing structures and position the interset towers within the 500 kV ROW. The current structures are slightly less than 150 feet tall. It should be assumed that the interset tower would be approximately 15-30 feet taller to facilitate the proposed undercrossing.

Loop-In Transmission Line Access and Spur Roads

Existing public roads as well as existing transmission line roads would be used as much as possible during construction. However, the Calcite Substation Project would require new transmission line roads to access the new 220 kV transmission line segments and structure locations between the Calcite Substation and existing SCE ROW. The graded road would have a minimum drivable width of between 14 feet and 22 feet with 2 feet of shoulder on each side as required by the existing land terrain, but may be wider depending on final engineering requirements and field conditions. The minimum center line turning radius required along a curve is 50 feet (the minimum turning radius required to meet construction and maintenance vehicle requirements) and berm and swale drainage improvements may be required for erosion control along the road.

Distribution System for Station Light and Power

An extension of an existing 12 kV distribution circuit would be required to provide the temporary power for construction and permanent station light and power for Calcite Substation. The Calcite Substation Project calls for extending the existing 12 kV distribution circuit overhead westward on Haynes Road for approximately 2,000 feet by installing approximately 12 wood poles. [See Figure SCE-6 Proposed Pole Configuration, and Figure SCE-7 Pole and Crossarm Configuration with Raptor Guard]

The 12 kV distribution circuit would then extend underground heading west along Haynes Road under the existing California Highway 247 and transmission ROW and then turn north along the Calcite Substation driveway and into Calcite Substation. The total underground circuit extension length would be approximately 1,700 ft. of which 1,400 hundred feet is forecasted to have surface disturbance - See Figure SCE-1 Proposed And Alternative Calcite Substation, Distribution and Telecommunication Lines. These new facilities would also be utilized for installation of the required telecommunication fiber optic cables into Calcite Substation (described below Telecommunication Facilities).

A pad-mount transformer would be installed on the Calcite Substation Property outside the Calcite Substation for temporary construction power. Additionally, new station light and power transformers would be installed within the Calcite Substation wall.

Telecommunication Facilities

A telecommunication system would be required in order to provide monitoring and remote operation capabilities of the electrical equipment at Calcite Substation, transmission line protection, and Remedial Action Scheme (or “RAS”).

The SCE telecommunication facilities expected to be constructed as part of the Calcite Substation Project would include two approximately 1-mile long fiber optic cables to the nearest splice points on an OPGW that is expected to already be in place on the 500 kV Lugo-Mohave T/L by the time any work associated with the Calcite Substation Project commences.[1] See Figure SCE-1 Proposed And Alternative Calcite Substation, Distribution And Telecommunication Lines.

1 That OPGW is expected to be in place as a result of the anticipated completion of SCE’s anticipated Eldorado Lugo Mohave (“ELM”) Series Capacitors project. The ELM Series Capacitors project is a distinct and independent project being separately undertaken by SCE that has independent utility from the Calcite Substation Project. Completion and operation of the ELM Series Capacitors project would include OPGW

The first proposed fiber optic cable would start from Calcite Substation and would be installed along the new 12 kV distribution path previously described. The proposed line would turn north along an un-named dirt road for approximately 1,100 feet attaching to existing wood poles and arriving at the Barstow Repeater Communication Site (CS). Approximately ten of these wood poles are proposed to be replaced. The line would drop down in a new riser and continue underground for approximately 150 feet into an existing communication room within the CS.

The second proposed fiber optic cable would start from Calcite Substation and exit the substation to the south for approximately 400 feet in new underground conduit and then turn east onto Haynes Road for approximately 1,200 feet. The conduit would turn southwest on an existing access road for approximately 4,000 feet and then turn northwest to get to tower M29-T3 on the Lugo-Mohave transmission line where the existing splice box is located. This underground conduit route would be built exclusively for telecommunications use.

Construction

Schedule

The proposed project is anticipated to be built over an approximately 10-month timeframe from the onset of perimeter fence installation through testing and commissioning of the facility. It is anticipated that the work would be completed in eight or ten hour shifts, with a total of five shifts per week (Monday – Friday). Overtime and weekend work will be used only as necessary to meet scheduled milestones or accelerate schedule and will comply with all contractual and CA law. Primary construction activities and durations are presented in Table 2 below. The activities shown in tables 2 and 3 will be overlapping in certain phases, and all are expected to occur within the estimated 10-month construction duration.

which would be tapped in order to connect to the proposed Calcite Substation. Similarly, SCE also has another distinct and independent project with telecommunications equipment that, if constructed, would obviate the need to construct any other telecommunication facilities to support the Calcite Substation, namely, the Lugo-Victorville 500 kV Transmission Line Special Protection Scheme ("SPS") Project. In fact, SCE has already submitted a Standard Form 299 application to the U.S. Bureau of Land Management for authorization to complete the Lugo-Victorville 500 kV Transmission Line SPS Project, which also has independent utility from the Calcite Substation Project. In light of the fact that both the ELM Series Capacitors Project and the Lugo-Victorville 500 kV Transmission Line SPS Project, currently planned by SCE, would be constructed and placed into operation prior to the operation of Calcite Substation, SCE would not need to construct any further telecommunication facilities to support the Calcite Substation (other than the two 1-mile taps described above).

Table 2
Proposed Solar and Energy Storage Project Construction Duration, Equipment and Workers by Activity

Activity	Duration	Equipment	Pieces	Workers per day
Perimeter Fence Installation	2 Months	Skid Loader with Auger Attachment	1	Maximum = 250 Average = 150
		Pick-up truck	1	
		Flatbed truck	1	
Site Preparation and Clearing/Grading	1.5 Months	Water Truck-3 axles	3	
		Grader	2	
		Bulldozer	1	
		Scraper	1	
		10-Ton Roller	1	
		Sheepsfoot Roller	1	
		Tractor (with Mower Attachment)	1	
	2 Weeks	Backhoe	1	
		Bulldozer	1	
		5 Cubic Yard Dump Truck	4	
		Front End Loader	1	
Demolition of existing structures Underground Work (Trenching)	3 Months	Excavator	2	
		Sheepsfoot Roller	1	
		Water Truck-3 Axles	1	
		5kW Generator	1	
		Aussie Padder (Screening Machine)	1	
		4x4 Forklift	1	
System Installation	4 Months	4x4 Forklift	8	
		Small Crane (80 Ton)	1	
		ATV Vehicle	20	
		Pile Driver	4	
		Pick-up Truck	4	
		5kW Generator	2	
	1 Month	Line Truck (with Spool Trailer)	1	
		Boom Truck (with Bucket)	1	
	3 Months	Pick-up Truck	4	
Gentie Installation	1 Month	Grader	1	
		Skid Loader	1	

Table 3
Proposed Calcite Substation Project Construction Duration, Equipment and Workers by Activity

Activity	Duration	Equipment	Pieces	Workers
Survey and Grading	2 months	Pick-up Truck	8	Total = 257 Daily Average = 90
		Dozer	1	
		Loader	2	
		Scraper	2	
		Grader	1	
		Dump Truck	2	
		Backhoe	3	
		Tamper	1	
		Tool Truck	1	
		Utility Cart	2	
		Water Truck	7	
		Forklift	1	
		Ranger	1	
		Generator	1	
		Tracked Dozer	1	
		Motor Grader	1	
		Drum Compactor	1	
		Excavator	1	
		Lowboy Truck/Trailer	1	
Fencing	1 month	Pick-up Truck	1	
		Bobcat	1	
		Flatbed ruck	1	
		Utility Cart	1	
		Water Truck	1	
Civil	3 months	Pick-up Truck	1	
		Excavator	1	
		Lo-Drill/Auger	1	
		Backhoe	2	
		Bobcat	1	
		Dump Truck	2	
		Skip Loader	1	
		Forklift	1	
		Concrete Truck	2	

Table 3
Proposed Calcite Substation Project Construction Duration, Equipment and Workers by Activity

Activity	Duration	Equipment	Pieces	Workers
		Generator	1	
		Tool Truck	1	
		Utility Cart	2	
		Water Truck	2	
Installation	1 month	Pick-up Truck	4	
		Bucket Truck	6	
		Stake Truck	1	
		Crane	2	
		Forklift	1	
		Tool Truck	1	
		Compressor Trailer	1	
		Boom/Crane Truck	1	
		Auger Truck	1	
		Flatbed Truck	3	
Electrical	3 months	Pick-up truck	2	
		Scissor Lift	1	
		Bucket Truck	2	
		Reach Manlift	1	
		Crane	1	
		Forklift	1	
		Generator	1	
		Utility Cart	2	
		Tool Truck	1	
Wiring and Towers	3 months	Pick-up Truck	47	
		Bucket Truck	14	
		Utility Cart	1	
		Double Bucket Truck	3	
		Boom/Crane Truck	10	
		Puller	1	
		Static Truck/ Tensioner	2	
		Dump/Stake Bed Truck	6	
		Compressor Trailer	7	
		R/T Crane (L)	5	

Table 3
Proposed Calcite Substation Project Construction Duration, Equipment and Workers by Activity

Activity	Duration	Equipment	Pieces	Workers
		R/T Crane (M)	3	
		Flatbed Truck	6	
		Backhoe/Front Loader	7	
		Excavator	1	
		Drill Rig	2	
		Concrete Truck	7	
		R/T Forklift	3	
		Crane	2	
		Sag Cat w/ Winches	4	
		Lowboy Truck/trailer	4	
		Wire Truck/Trailer	2	
		Sock Line puller	1	
		Bullwheel Puller	1	
		Spacing Cart	3	
		Hydraulic Rewind Puller	1	
		Excavation and Boring Equipment	1	
		Water Truck	4	
Maintenance and Testing	4 months	Pick-up Truck	1	
		Test Truck	2	
Paving	1.5 months	Pick-up Truck	2	
		Stake Truck	1	
		Dump Truck	1	
		Asphalt Paver	1	
		Tractor	1	
		Paving Roller	2	
		Asphalt Curb Machine	1	
		Utility Cart	1	
Telecommunications	2 months	Pick-up Truck	10	
		Flatbed Truck	4	
		Bucket Truck	7	
		Splicing Lab	4	

Table 3
Proposed Calcite Substation Project Construction Duration, Equipment and Workers by Activity

Activity	Duration	Equipment	Pieces	Workers
		Backhoe/Front Loader	2	
		Water Truck	4	
		Concrete Truck	2	
Site Clean-Up & Restoration	.5 month	Pick-up Truck	2	
		Backhoe/Front Loader	1	
		Motor Grader	1	
		Water Truck	1	
		Drum Compactor	1	
		Lowboy Truck/Trailer	1	

Traffic

Peak daily construction employees would be approximately 340 with an average of 250 workers daily. In addition to the 340 maximum daily workers traveling to the site there would be up to 38 truck trips per day at peak construction activity (trenching and system installation phases overlap). A total of up to 378 round trips per day is anticipated during peak construction activities of the proposed solar and energy storage project, assuming a worst-case whereby no car-pooling occurs though it is likely that car-pooling would occur, and up to 19 truck trips per day. The majority of the truck deliveries would be for the PV system installation, as well as any aggregate material that may be required for road base. It is estimated that a total of up to 2,500 truck trips are required to complete the Solar and Energy Storage Project, with the aggregate trucks accounting for approximately 30% of this number. It is estimated that there would be an average of 268 truck deliveries per month (about 13 per work day) with a peak number of truck deliveries of 383 deliveries per month (about 18 per work day) plus one other miscellaneous delivery equates to a peak truck trip of 19 per work day. These truck trips would be intentionally spread out throughout the construction day to optimize construction efficiency as is practical by scheduling deliveries at predetermined times.

SCE anticipates a total of approximately 257 workers, with up to 90 construction personnel working on any given day. In addition to the daily workers traveling to the site there would be up to 19 truck trips per day at peak construction.

Delivery of material and supplies would reach the site via on-road truck delivery via SR-247.

For example, installation of electrical equipment (such as the MEER, wiring, and circuit breaker) installation may occur while the transmission line construction proceeds.

Operation

Solar and Energy Storage Operations

The proposed solar and energy project component would be unmanned and no operation and maintenance building would be constructed. The operations would be monitored remotely via the Supervisory Control and Data Acquisition (SCADA) system and periodic inspections and maintenance activities would occur. During operations, solar panel washing is expected to occur one to four times per year and general labor (up to 10 individuals) may assist in the panel cleaning. Panel washing for a project of this size would require 15 days to complete per wash cycle. Water consumption is expected to be around 0.28 gallons per square yard of panel based on other similar operations. Given a 60 MW AC plant, with four cycles per year, the annual water usage is expected to consume up to approximately 6 AF of water. While the Applicant only expects to actually wash the PV panels once per year, the panels may need to be washed more frequently (up to four times per year) based on site conditions. Conditions that may necessitate increased wash requirements include unusual weather occurrences, forest fires, local air pollutants, and other similar conditions. Therefore, the proposed solar and energy storage project is requesting the use of up to 6 AF per year for the explicit use of washing panels. This amount is in addition to the amount of water necessary for the operations, fire suppression, and site landscape maintenance, which is a small amount of groundwater (i.e., approximately 0.6 AF) to be used for this purpose. In the event that electrical power distribution cannot be delivered to the groundwater pump, a generator would be located adjacent to the well pump to provide power. If groundwater proves unsuitable for washing, water trucks would be used to deliver water from a local purveyor.

Calcite Substation Operations

The proposed Calcite Substation would be unstaffed, and electrical equipment within the substation would be remotely monitored and controlled by an automated system from SCE's Lugo Substation Switching Center. Operations and Maintenance (O&M) activities are necessary to ensure reliable service, as well as the safety of the utility worker and the general public, as mandated by the CPUC. SCE facilities are subject to Federal Energy Regulatory Commission jurisdiction. SCE transmission facilities are under operational control of the California

Independent System Operator (CAISO). SCE personnel would typically visit for electrical switching and routine maintenance purposes. Operations inspections would typically occur quarterly, and routine maintenance would occur annually. Following the completion of project construction, operation of the new telecommunication facilities would commence. Inspection and maintenance activities would occur at least once per year. The frequency of inspection and maintenance activities would be on an as-needed basis.

2 FUNDAMENTALS OF NOISE AND VIBRATION

The following is a brief discussion of fundamental noise concepts and basic terminology.

2.1 Sound, Noise, and Acoustics

Sound is actually a process that consists of three components: the sound source, the sound path, and the sound receiver. All three components must be present for sound to exist. Without a source to produce sound, there is no sound. Similarly, without a medium to transmit sound pressure waves, there is no sound. Finally, sound must be received; a hearing organ, sensor, or object must be present to perceive, register, or be affected by sound or noise. In most situations, there are many different sound sources, paths, and receptors rather than just one of each. Acoustics is the field of science that deals with the production, propagation, reception, effects, and control of sound. Noise is defined as sound that is loud, unpleasant, unexpected, or undesired.

2.2 Sound Pressure Levels and Decibels

The amplitude of a sound determines its loudness. Loudness of sound increases with increasing amplitude. Sound pressure amplitude is measured in units of micronewton per square meter, also called micropascal. One micropascal is approximately one-hundred billionth (0.00000000001) of normal atmospheric pressure. The pressure of a very loud sound may be 200 million micropascals, or 10 million times the pressure of the weakest audible sound. Because expressing sound levels in terms of micropascal would be very cumbersome, sound pressure level in logarithmic units is used instead to describe the ratio of actual sound pressure to a reference pressure squared. These units are called Bels. To provide a finer resolution, a Bel is subdivided into 10 decibels (dB).

2.3 A-Weighted Sound Level

Sound pressure level alone is not a reliable indicator of loudness. The frequency, or pitch, of a sound also has a substantial effect on how humans will respond. Although the intensity (energy per unit area) of the sound is a purely physical quantity, the loudness, or human response, is determined by the characteristics of the human ear.

Human hearing is limited not only in the range of audible frequencies, but also in the way it perceives the sound in that range. In general, the healthy human ear is most sensitive to sounds between 1,000 and 5,000 hertz, and it perceives a sound within that range as more intense than a sound of higher or lower frequency with the same magnitude. To approximate the frequency response of the human ear, a series of sound level adjustments is usually applied to the sound measured by a sound level meter. The adjustments (referred to as a weighting network) are frequency-dependent.

The A-scale weighting network approximates the frequency response of the average young ear when listening to ordinary sounds. When people make judgments about the relative loudness or annoyance of a sound, their judgments correlate well with the A-scale sound levels of those sounds. Other weighting networks have been devised to address high noise levels or other special situations (e.g., B-scale, C-scale, D-scale), but these scales are rarely used in conjunction with most environmental noise. Noise levels are typically reported in terms of A-weighted sound levels. All sound levels discussed in this report are A-weighted decibels (dBA). Examples of typical noise levels for common indoor and outdoor activities are depicted in Table 4.

Table 4
Typical Sound Levels in the Environment and Industry

Common Outdoor Activities	Noise Level (dB)	Common Indoor Activities
	110	Rock band
Jet fly over at 300 meters (1,000 feet)	100	
Gas lawn mower at 1 meter (3 feet)	90	
Diesel truck at 15 meters (50 feet), at 80 kilometers per hour (50 miles per hour)	80	Food blender at 1 meter (3 feet); garbage disposal at 1 meter (3 feet)
Noisy urban area, daytime; gas lawn mower at 30 meters (100 feet)	70	Vacuum cleaner at 3 meters (10 feet)
Commercial area; heavy traffic at 90 meters (300 feet)	60	Normal speech at 1 meter (3 feet)
Quite urban, daytime	50	Large business office; dishwasher next room
Quite urban, nighttime	40	Theater; large conference room (background)
Quite suburban, nighttime	30	Library
Quite rural, nighttime	20	Bedroom at night; concert hall (background)
	10	Broadcast/Recording studio
Lowest threshold of human hearing	0	Lowest threshold of human hearing

Source: Caltrans 2011

2.4 Human Response to Changes in Noise Levels

Under controlled conditions in an acoustics laboratory, the trained, healthy human ear is able to discern changes in sound levels of 1 dBA when exposed to steady, single-frequency signals in the mid-frequency range. Outside such controlled conditions, the trained ear can detect changes of 2 dBA in normal environmental noise. It is widely accepted that the average healthy ear, however, can barely perceive noise level changes of 3 dBA. A change of 5 dBA is readily perceptible, and a change of 10 dBA is perceived as twice or half as loud. A doubling of sound energy results in a 3 dBA increase in sound, which means that a doubling of sound energy (e.g., doubling the volume of traffic on a road) would result in a barely perceptible change in sound level).

2.5 Noise Descriptors

Additional units of measure have been developed to evaluate the long-term characteristics of sound. The equivalent sound level (L_{eq}) is also referred to as the time-average sound level. It is the equivalent steady-state sound level that in a stated period of time would contain the same acoustical energy as the time-varying sound level during the same time period. The 1-hour A-weighted equivalent sound level, L_{eq}(h), is the energy average of the A-weighted sound levels occurring during a 1-hour period, and is the basis for the County of San Bernardino's noise ordinance criteria for stationary sources.

People are generally more sensitive and annoyed by noise occurring during the evening and nighttime hours. Thus, another noise descriptor used in community noise assessments—the community noise equivalent level (CNEL)—was introduced. The CNEL scale represents a time-weighted, 24-hour average noise level based on the A-weighted sound level. The CNEL accounts for the increased noise sensitivity during the evening hours (7 p.m. to 10 p.m.) and nighttime hours (10 p.m. to 7 a.m.) by adding 5 dBA and 10 dBA, respectively, to the average sound levels occurring during the evening and nighttime hours. The CNEL noise metric (or a similar noise metric the Day Night Level (L_{dn}[2]) is the basis for the County's standards for mobile source noise such as traffic or rail noise.

2.6 Sound Propagation

Sound propagation (i.e., the passage of sound from a noise source to a receiver) is influenced by geometric spreading, ground absorption, atmospheric effects, and shielding by natural and/or built features.

Sound levels attenuate (or diminish) at a rate of approximately 6 dBA per doubling of distance from an outdoor point source due to the geometric spreading of the sound waves. Atmospheric conditions such as humidity, temperature, and wind gradients can also temporarily either increase or decrease sound levels. In general, the greater the distance the receiver is from the source, the greater the potential for variation in sound levels due to atmospheric effects.

[2] Ldn (also known as DNL) is comparable to CNEL, except that there is no evening component: the period from 7 a.m. to 10 p.m. is classified as daytime, and no adjustment to the noise levels is made during these hours; the period from 10 p.m. to 7 a.m. is classified as nighttime and 10 decibels is added to the hourly Leqs occurring during these hours.

Additional sound attenuation can result from built features such as intervening walls and buildings, and by natural features such as hills and dense woods.

2.7 Groundborne Vibration Fundamentals

Groundborne vibration is a small, rapidly fluctuating motion transmitted through the ground. The strength of groundborne vibration attenuates fairly rapidly over distance. Some soil types transmit vibration quite efficiently; other types (primarily sandy soils) do not. Several basic measurement units are commonly used to describe the intensity of ground vibration. The descriptors used by the Federal Transit Administration are peak particle velocity (PPV), in units of inches per second, and velocity decibel (VdB). The calculation to determine PPV at a given distance is as follows:

$$PPV_{distance} = PPV_{ref}*(25/D)^\wedge 1.5$$

Where:

PPV_{equip} = the peak particle velocity in inches per second of the equipment adjusted for distance

PPV_{ref} = the reference vibration level in inches per second at 25 feet

D = the distance from the equipment to the receiver

The velocity parameter (instead of acceleration or displacement) best correlates with human perception of vibration. Thus, the response of humans, buildings, and sensitive equipment to vibration is described in this section in terms of the root-mean square velocity level in VdB units relative to 1 micro-inch per second. As a point of reference, the average person can just barely perceive vibration velocity levels below 70 VdB (typically in the vertical direction). The calculation to determine the root-mean square at a given distance is as follows:

$$L_v(D) = L_v(25 \text{ feet}) - 30*\log(D/25)$$

Where:

$L_v(D)$ = the vibration level at the receiver

$L_v(25 \text{ feet})$ = the reference source vibration level

D = the distance from the vibration activity to the receiver

Typical background vibration levels are between 50 and 60 VdB, and the level for minor cosmetic damage to fragile buildings or blasting generally begins at 100 VdB.

3 REGULATORY SETTING

Federal

Federal Transit Administration Standards and Federal Railroad Administration Standards

Although the Federal Transit Administration (FTA) standards are intended for federally funded mass transit projects, the impact assessment procedures and criteria included in the FTA Transit Noise and Vibration Impact Assessment Manual (May 2006) are routinely used for projects proposed by local jurisdictions which do not have vibration impact standards. The FTA and Federal Railroad Administration (FRA) have published guidelines for assessing the impacts of groundborne vibration associated with rail projects, which have been applied by other jurisdictions to other types of projects. The FTA measure of the threshold of architectural damage for conventional sensitive structures from groundborne vibration is 0.2 inches/second PPV.

State

California Noise Control Act of 1973

Sections 46000 through 46080 of the California Health and Safety Code, known as the California Noise Control Act of 1973, 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 that 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 of California 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.

In addition, the California Environmental Quality Act (CEQA) requires that all known environmental effects of a project be analyzed, including environmental noise impacts. Under CEQA, a project has a potentially significant impact if the project exposes people to noise levels in excess of noise impact thresholds, which can include standards established in the local general plan or noise ordinance.

3.1 Local

County of San Bernardino Development Code

Noise. The County's Development Code, Section 83.01.080, Noise (San Bernardino County 2007), establishes standards concerning acceptable noise levels for both noise-sensitive land uses and for noise-generating land uses. The following are applicable to non-transportation noise sources (i.e., stationary sources such as the on-site operational equipment associated with the proposed Solar and Energy Storage Project).

Table 5
Noise Standards for Stationary Noise Sources

Affected Land Use	7 am – 10 pm L_{eq}	10 pm – 7 am L_{eq}
Residential	55 dB(A)	45 dB(A)
Professional Services	55 dB(A)	55 dB(A)
Other Commercial	60 dB(A)	60 dB(A)
Industrial	70 dB(A)	70 dB(A)

Source: Table 83-2, San Bernardino County Development Code

Exemptions. Pursuant to Section 83.01.080(g), noise associated with temporary construction, repair, or demolition activities between 7 am and 7 pm are exempt from the County's noise standards, except on Sundays and Federal holidays.

Vibration. Section 83.01.090 of the County's Development Code, establishes that "No ground vibration shall be allowed that can be felt without the aid of instruments at or beyond the lot line, nor shall any vibration be allowed which produces a particle velocity greater than or equal to two-tenths (0.2) inches per second measured at or beyond the lot line."

4 EXISTING CONDITIONS

Ambient noise in the proposed Solar and Energy Storage Project area is primarily generated by distant traffic along State Route 247 (SR-247) and local roadways in the Solar and Energy Storage Project vicinity. Other ambient noise sources include distant barking dogs.

4.1 Ambient Noise Monitoring

Noise measurements were made using a Rion NL-32 integrating sound-level meter equipped with a 0.5-inch pre-polarized condenser microphone with pre-amplifier. The sound-level meter meets the current American National Standards Institute standard for a Type 1 (Precision) sound-level meter. The sound-level meter was calibrated before and after the measurements, and the measurements were conducted with the microphone positioned 5 feet above the ground and covered with a windscreen.

Short-term noise measurements were conducted at six locations in the project vicinity between 8:31 a.m. and 1:33 p.m. on June 14, 2016 as depicted in Figure 4, Noise Measurement and Modeling Locations. The sites are described as follows:

- Site ST1- located at the eastern project boundary, near two adjacent residences;
- Site ST2 - located at the north-eastern project boundary, near an adjacent residence;
- Site ST3 - located at the western project boundary, near several adjacent residences;
- Site ST4 - located at the south-eastern project boundary;
- Site ST5 - located at the south-western project boundary;
- Site ST6 – located at the mid-southeastern project boundary, near two residences.

The noise measurement data is summarized in Table 6 and provided in detail in Appendix A. As shown in Table 4 the measured average noise levels ranged from approximately 36 dBA L_{eq} at Sites ST1 and ST4 to 60 dBA L_{eq} at Site ST6. Measurements ST 5 and ST6 were influenced by wind-noise (noise from the wind passing over the diaphragm of the measurement microphone), despite the use of a foam windscreen.

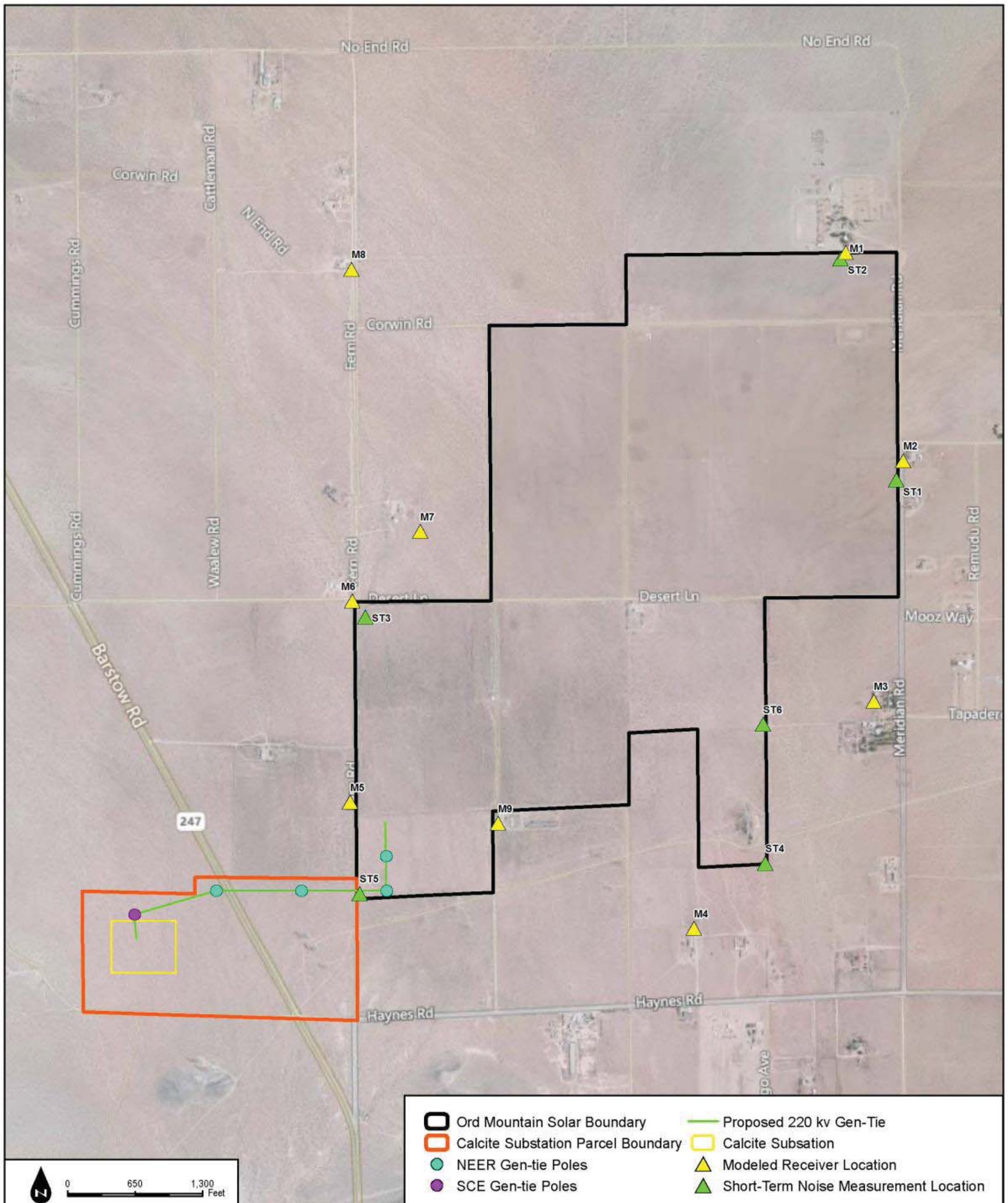
Table 6
Measured Noise Levels (dBA)

Site	Description	Start Time	Duration (minutes)	L_{eq}[a]	L_{max}[b]	L_{min}[c]
ST1	Eastern project boundary	6/14/2016 9:38	20	36	59	21
ST2	North-eastern project boundary	6/14/2016 9:10	20	37	53	21
ST3	Western project boundary	6/14/2016 8:31	20	38	58	22
ST4	South-eastern project boundary	6/14/2016 10:10	20	36	49	23
ST5	South-western project boundary	6/14/2016 10:57	20	53	77	32
ST6	Eastern project boundary	6/14/2016 11:33	20	60	90	27

[a] Equivalent continuous sound level (time-average sound level)
[b] Maximum noise level
[c] Minimum noise level

Nearest Noise Sensitive Land Uses

Generally, noise sensitive land uses (NSLUs) include residential, schools, hospitals, hotels, daycare facilities, and passive recreational parks. The proposed project would consist of a solar energy generation, storage facility and substation with neither dedicated office space nor any related residential components; therefore, the proposed project would not create an NSLU. The nearest NSLUs to the proposed project site are residences to the north, east, south and west of the proposed project. No other NSLU types exist within several thousand feet of the proposed project.



SOURCE: Bing Maps 2016

DUDEK

FIGURE 4

Measured and Modeled Receiver Locations

Ord Mountain Solar and Energy Storage Project

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5 PROJECT IMPACT ANALYSIS

5.1 Thresholds of Significance

According to Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.), a significant impact related to noise would occur if the project would result in:

- Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies (see Impact NOI-1).
- Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels (see Impact NOI-2).
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project (see Impact NOI-3).
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project (see Impact NOI-4).
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels (see Impact NOI-5).
- For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels (see Impact NOI-6).

Supplemental Thresholds

California Department of Transportation

Substantial Noise Definition. CEQA does not define what constitutes a substantial increase in noise levels (Impact NOI-3). However, the California Department of Transportation defines a substantial noise increase as being 12 dB above existing noise levels (Caltrans 2011).

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6 IMPACTS ANALYSIS

6.1 Noise

6.1.1 Construction Noise

The proposed project construction would consist of several phases, including site grading where necessary, development of a staging area and site access roads, solar PV system assembly and installation, energy storage structure, 220-kV overhead transmission line, on-site substation, SCE 220-kV Calcite Substation, loop-in transmission lines, and telecommunications. Construction activities would occur during the County's allowable hours of construction activities. The noise levels generated by construction equipment would vary greatly, depending on factors such as the type and specific model of the equipment, the operation being performed, and the condition of the equipment. The average sound level of the construction activity also depends on the amount of time that the equipment operates and the intensity of the construction during period of activity.

Construction equipment would include standard equipment such as graders, scrapers, backhoes, loaders, cranes, dozers, water trucks, portable generators and air compressors, and miscellaneous trucks. The maximum noise level ranges for various pieces of construction equipment at a distance of 50 feet are depicted in Table 7. The maximum noise levels at 50 feet for typical equipment would be up to 90 dBA for the type of equipment normally used for this type of project. However, because equipment will be used throughout the site and at different intervals during the construction day, and due to the typical operating cycles for construction equipment involving one or two minutes of full power operation followed by three or four minutes at lower power settings, the hourly average noise levels would vary and would likely be lower than those maximum noise levels shown in Table 6. Construction noise in a well-defined area typically attenuates at approximately 6 dB per doubling of distance.

Table 7
Construction Equipment Noise Emission Levels

Equipment Type	Typical Equipment dBA at 50 feet
Air compressor	81
Backhoe	85
Concrete pump	82
Concrete vibrator	76
Crane	88
Dozer	87

Table 7
Construction Equipment Noise Emission Levels

Equipment Type	Typical Equipment dBA at 50 feet
Generator	78
Loader	84
Paver	88
Pneumatic tools	85
Water pump	76
Vibratory Pile Driver (RTG Model RG21T)	85-90
Power hand saw	78
Shovel	82
Trucks	88

Source: FTA 2006; RTG 2014.
dBA = A-weighted decibel (adjusted for human frequencies)

The property boundaries of the closest residences are located approximately 50 feet to the north and to the east of the Solar and Energy Storage project site. The construction equipment would be spread out over the entire site, with some equipment operating along the perimeter of the site while the rest of the equipment may be located from several hundred to over 5,500 feet from the same property perimeter. It is anticipated that a RTG Model RG21T vibratory pile driver or similar smaller vibratory pile driver would be used to place the masts for the solar panels, similar to that used to install freeway guardrails. This size and type of pile driving equipment is anticipated to generate a maximum noise level of approximately 85 to 90 dBA at a reference distance of 50 feet. At a typical distance of approximately 500 feet or more, the maximum noise level from pile driving would be approximately 65 to 70 dBA.

Assuming that pile driving occurs for approximately 20% of an hour at each tracker site, the average hourly noise level would be approximately 78 to 83 dBA at 50 feet from the pile driver, or approximately 67 to 71 dBA at 170 feet (the nearest distance between likely pile-driving activities and the residential property boundary to the north). Noise from construction could result in annoyance at times to nearby NSLUs (residences). However, the duration at any one location would be relatively brief, and project construction would comply with County construction noise ordinance standards (i.e., construction activities would take place only between the hours of 7 a.m. and 7 p.m. on weekdays, and not on Sundays or Federal holidays). The nearest NSLU is located approximately 1,800 or more feet away from the Calcite Substation and approximately 1,300 feet or more from the 220-kV overhead transmission line. Conventional construction methods (i.e., no pile driving or blasting) would be used and levels would be similar to those shown in Table 7 at a distance of 50 feet. At a distance of 1,300 feet, the resultant noise levels would be approximately 30 decibels or more below those shown in Table 7. Additionally, Applicant Proposed Measures NOI-1 and NOI-2 are proposed, which will further reduce noise from construction at noise-sensitive land uses. Therefore, noise from construction would be a less than significant impact.

Construction Worker Exposure

The federal Occupational Safety and Health Administration (OSHA) has adopted noise exposure thresholds, which establish the highest permissible exposure limit based on periods of exposure. The permissible noise exposure limit increases with shorter periods of exposure. OSHA allows a noise exposure level of 90 dBA over an eight-hour exposure period. The permissible noise exposure limit increases to 92 dB A for a six-hour exposure period, 95 dBA for four hours of exposure, 97 dBA for a three-hour period, and 105 dBA for one hour of exposure. The highest permissible noise exposure level for periods of 15 minutes or less is 115 dBA. Exposure to impulsive or impact noise cannot exceed 140 dB peak sound pressure level. When employees are subjected to sound exceeding these limits, feasible administrative or engineering controls shall be utilized. If such controls fail to reduce sound levels within these levels, personal protective equipment must be provided and used to reduce sound levels to within the levels. These noise exposure limits apply to employees in the workplace and are useful in understanding noise exposure levels with regard to potential hearing loss and physiological damage.

As shown in Table 7 and discussed further above, the maximum noise levels at 50 feet for typical construction equipment would be up to 90 dBA for the type of equipment normally used for this type of project. However, because equipment would be used throughout the site and at different intervals during the construction day, and due to the typical operating cycles for construction equipment involving one or two minutes of full power operation followed by three or four minutes at lower power settings, the hourly average noise levels would vary and would likely be lower than those maximum noise levels shown in Table 6. Additionally, it is anticipated that a RTG Model RG21T vibratory pile driver or similar smaller vibratory pile driver would be used to place the masts for the solar panels. This size and type of pile driving equipment is anticipated to generate a maximum noise level of approximately 85 to 90 dBA at a reference distance of 50 feet. At a typical distance of 500 feet, the maximum noise level from pile driving would be approximately 65 to 70 dBA.

The typical workday for construction workers would be eight hours. As discussed above, the applicable noise exposure threshold for an eight-hour exposure period is 90 dBA. Thus, based on the OSHA noise exposure threshold of 90 dBA for an eight-hour exposure period, construction workers would be exposed to the upper limits of permissible OSHA noise level standards. It is important to note that construction equipment would be spread out over the entire site, with some equipment operating along the perimeter of the site while the rest of the equipment may be located from several hundred to over 5,500 feet from the same property perimeter. Again, equipment usage would likely be more limited than what is assumed in this report. Therefore, it is improbable that construction workers would be exposed to continuous noise levels of 90 dBA. Furthermore, in addition to the exposure limits and remediating actions (if limits are exceeded) discussed previously, OSHA requires that the employer (construction contractor in this case) administer a continuing, effective hearing conservation program when worker noise exposures equal or exceed an 8-hour time-weighted average sound level (TWA) of 85 decibels measured on the A scale (slow response) or, equivalently, a dose of 50%.

6.1.2 Decommissioning Noise

Decommissioning would first involve removing the PV panels for sale into a secondary solar PV panel market or recycling. The Calcite Substation Project would not be decommissioned. The majority of the components of the solar installation are made of materials that can be easily recycled. If the panels can no longer be used in a solar array, the aluminum can be resold, and the glass can be recycled. Other components of the solar installation, such as the solar array structure and mechanical assemblies, can be recycled since they are made from galvanized steel. Equipment such as inverters and switchgear can be reused or their components can be recycled. The equipment pads are made from concrete that can be crushed and recycled. Conduit and wire would be removed by uncovering trenches and backfilling when done. The electrical wiring is made from copper and/or aluminum and could be reused or recycled as well.

Dismantling the Solar and Energy Storage Project would entail disassembly of the solar facilities and substantive restoration of the site. Closure and decommissioning of the project site would involve the following:

1. The aboveground (detachable) equipment and structures would be disassembled and removed from the project site. Detachable elements include all solar arrays, inverters, and associated controllers. Most of these materials can be recycled or reclaimed. Remaining materials would be limited, contained, and disposed of at an appropriate off-site facility.
2. Removal of solar array posts would entail vibration extraction in the case of vibration or conventional pile-driven installation. For solar arrays supported by concrete encasements, if any, the concrete would be fully removed. Recycling of solar arrays is anticipated; concrete would be disposed of or recycled off site.
3. Collector components would be removed.

4. If a new use was not proposed, the decommissioning would include removal of all ground-level components and preparation of the project site with a soil stabilization agent, such as a nontoxic permeable soil binding agent.

Noise levels from decommissioning would be similar to the construction process: a vibratory pile driver could be used to extract the solar panel masts; this would result in similar noise levels as those produced during the installation process. Similarly, the same types of heavy equipment and vehicles would be used to decommission the site as were used to construct it. Decommissioning activities would comply with County construction noise ordinance standards as detailed previously. Additionally, Applicant Proposed Measures NOI-1 and NOI-2 are proposed, which will further reduce noise from decommissioning activities at noise-sensitive land uses. Therefore, noise from decommissioning would be a less than significant impact.

6.2 Operational Noise

On-site noise sources associated with the proposed project would include pad-mounted inverters, a substation with a step-up transformer located at the southwestern project boundary, the energy storage system, the backup diesel generator for groundwater wells and panel-washing, and the Calcite Substation located west of SR 247. Each of these noise sources are discussed in the following text. Noise from the tracker motors which would make brief, incremental adjustments to the angle of the PV panels throughout the day is not included in the analysis, because their noise levels are very low (approximately 40 dBA at a distance of 10 feet), and they operate for only a fraction of a second at a time, every few minutes. The noise level from the tracker motors is therefore negligible.

Although the Solar and Energy Storage Project is a solar facility which would be active and operational primarily during daytime hours, the PV module inverters and stepup transformer may operate during the early morning hours[3], and the energy storage structure would operate outside of daylight hours. Therefore, to provide the most conservation assessment of potential noise impacts and to account for a “worst-case” scenario, the County’s nighttime noise standard for stationary source noise (45 dBA at adjacent residential land uses) is used for the operational analysis.

3 The sun rises before 7 a.m, which is when the daytime noise standard becomes applicable. During the late spring/early summer months, it rises as early as approximately 5:30 a.m., during which the nighttime noise standard is applicable.

Building Block Inverters

The PV panels would be electrically connected to adjacent panels to efficiently increase the output voltage to 1,500 volts. An above- or below-ground DC collection system will deliver the electricity to an inverter station, where the electricity is converted into AC at an intermediate voltage, typically 34.5kV. From the inverter stations an above- or below-ground AC collection system will deliver the electricity to the on-site substation, where the voltage will be stepped-up to the interconnection voltage.

The inverters and other electrical equipment are proposed to be housed in up to 17 enclosures throughout the project site. The proposed GE 1500V 4MVA inverters have a noise level rating of 61.5 dBA at 3 feet, 49.5 dBA at 12 feet, and 37.4 at 50 feet (GE 2015).

Stepup Transformer (at Substation)

The output from the solar field would be passed through a final interconnection step-up transformer to convert it to the grid tie voltage at 220-kV. Based upon sound level emission data provided by the project applicant, the specification for the stepup transformer is a sound pressure level (SPL) of 75 dBA at a distance of 3 feet from the device in the horizontal plane.

Energy Storage System

Noise from the Energy Storage System would be created by the associated heating, ventilation and air conditioning (HVAC) units, power inverters, and transformers associated with this type of facility. Detailed plans are not yet available for the energy storage component, but using conservative estimates, it was assumed that 10 HVAC units, 30 stepup transformers and 15 power inverters would be utilized.

Information from the vendor for a similar energy storage project (Rugged LLC 2014) indicates the HVAC unit that is supplied as standard equipment for these types of projects produces 68 dBA at a distance of 50 feet during full operation (NACO Model 30RB120). The anticipated stepup transformer has a sound rating of 60 dB at 5 feet based on National Electric Manufactures Association ratings for the size of transformer anticipated to be used with storage battery systems (NEMA 2000). The anticipated power inverter is a Xantrex model, or equivalent, which has a noise level rating of 77 dB at 6 feet (Schneider Electric 2011).

Backup Diesel Generator

In the event that electrical power distribution cannot be delivered to the groundwater pump during periodic panel washing, a power generator would be located adjacent to well pump to provide backup power, which would produce a noise level of 95 dBA at a distance of 3.28 feet (Broadcrown, 2013).

Equipment Noise Levels at Property Lines and NSLUs

The inverter pads would be distributed throughout the site among the PV modules, the backup diesel generator would be located in the northerly area of the site, and the stepup transformer/substation and energy storage areas would be located in the southwest corner of the project site, as shown on Figure 3. As shown on Figure 4, noise modeling receiver locations were selected to estimate the worst-case on-site boundary and nearby NSLU property boundary noise levels, resulting from the inverters and the transformer. The noise levels from all the noted equipment were combined and calculated for the modeled receivers M1 – M9. The analysis takes into account the attenuation from geometric spreading (i.e., drop-off with distance from a point source, equivalent to 6 decibels per doubling of distance), but conservatively neglects additional attenuation from atmospheric absorption or ground attenuation. Additionally, no structural or barrier shielding is assumed.

The results of the cumulative on-site noise levels are summarized in Table 8 with all equipment operating, including the backup diesel generator; the detailed noise calculation tables which provide both the noise levels from each individual project component as well as the combined noise levels are included as Appendix B. The unmitigated 1-hour average sound levels with all equipment operating would range from approximately 39 dBA L_{eq} at receiver M8, a residential land use located to the west/northwest of the project site, to 56 dBA L_{eq} at receiver M9, along the Solar and Energy Storage Project's southerly boundary. It should be noted that the backup diesel generator is anticipated to only be operated for periodic testing (up to once per month) or in the event that electrical power distribution cannot be delivered to the groundwater pump during panel-washing. Table 9 summarizes the noise levels with the backup generator off but all other equipment operating. Under these conditions, the unmitigated 1-hour average sound levels with all equipment operating would range from approximately 36 dBA L_{eq} at receivers M1, a residential land use to the north of the Solar and Energy Storage Project site, to 56 dBA L_{eq} at receiver M9, along the Solar and Energy Storage Project's southerly boundary.

At the nearest NSLUs (M1 and M2, located to the north and east, respectively), the estimated noise level would be 45 and 42 dBA L_{eq} respectively with the backup generator in operation and

36 and 38 dBA L_{eq} respectively without the backup generator in operation. Either with or without the backup generator operating, the noise levels would exceed either the County's daytime (7 a.m. to 10 p.m.) or the nighttime (10 p.m. to 7 a.m.) noise ordinance standard at one or more project boundaries or NSLUs nearest the Solar and Energy Storage Project, and thus would result in a significant noise impact without mitigation. The primary causes of the exceedances would be the HVAC and power inverters associated with the energy storage system. Mitigation measures are provided below (MM-NOI-1) which would reduce the noise levels from operation of the Solar and Energy Storage Project to a less than significant level.

Table 8
Unmitigated Operational Noise Summary (dBA L_{eq})

Receiver	Unmitigated Noise Level	Daytime	Nighttime	Noise Standard Exceeded?
Receiver M1	45	55	45	No
Receiver M2	42	55	45	No
Receiver M3	41	55	45	No
Receiver M4	45	55	45	No
Receiver M5	50	55	45	Yes
Receiver M6	46	55	45	Yes
Receiver M7	44	55	45	No
Receiver M8	39	55	45	No
Receiver M9	56	55	45	Yes

Table 9
Unmitigated Operational Noise Summary without Backup Diesel Generator (dBA Leq)

Receiver	Unmitigated Noise Level	Daytime	Nighttime	Noise Standard Exceeded?
Receiver M1	36	55	45	No
Receiver M2	38	55	45	No
Receiver M3	40	55	45	No
Receiver M4	45	55	45	No
Receiver M5	50	55	45	Yes
Receiver M6	46	55	45	Yes
Receiver M7	37	55	45	No
Receiver M8	38	55	45	No
Receiver M9	56	55	45	Yes

Operation and Maintenance Personnel Exposure

The Solar and Energy Storage Project would be designed as an unmanned facility and would not include any structures intended for human occupancy, within the meaning of applicable regulations. Security and equipment monitoring needs would be accomplished primarily through a SCADA system and remote security services with as-needed visits by security personnel. Maintenance personnel would be required as-needed to carry out maintenance activities (e.g., panel washing) and equipment inspections and/or repairs.

As discussed above, OSHA has adopted noise exposure thresholds, which establish the highest permissible exposure limit based on periods of exposure. The permissible noise exposure limit increases with shorter periods of exposure. OSHA allows a noise exposure level of 90 dBA over an eight-hour exposure period. For a typical workday, operations and maintenance personnel would on the Solar and Energy Storage Project site for eight hours or less. As described above, the proposed backup generator would be the loudest piece of equipment on the project site, with a noise level of 95 dBA at 1 meter. However, this piece of equipment would be primarily unattended except during testing or startup and shutdown, which would be of short duration. The next noisiest piece of equipment would be the power inverters associated with the energy storage system, with a noise level rating of 82 dB at 1 meter. Therefore, based on the OSHA noise exposure threshold of 90 dBA for an eight-hour exposure period, operations and maintenance personnel would not be exposed to noise levels in excess of OSHA noise level standards.

Calcite Substation and Overhead Transmission Line

Noise from the Calcite Substation and the associated overhead transmission line would be minimal in operation, because no pumps, motors or other equipment generating mechanical noise would be located on-site. Noise would be limited to occasional corona discharge noise. Corona discharge is a phenomenon associated with all energized transmission lines under certain conditions, and occurs when the localized electrical field near an energized conductor produces a tiny electric discharge that ionizes air surrounding the conductors. Corona discharge is most prevalent during moist or wet conditions, which is not a typical condition in the project area. This audible noise from the substation equipment and transmission lines is generally barely audible in fair weather conditions on higher voltage lines. During wet weather conditions, water drops collect on the conductor and increase corona activity so that a crackling or humming sound may be heard near the line. Noise levels from corona discharge at large distances (i.e., 1,300 feet or more away) would be largely inaudible and thus would be less than significant.

6.3 Groundborne Vibration

Groundborne vibration is a small, rapidly fluctuating motion transmitted through the ground that diminishes (attenuates) fairly rapidly over distance. The Solar and Energy Storage Project would not create substantial levels of groundborne vibration during operation. Anticipated groundborne vibration from heavy equipment operations during construction of the proposed Solar and Energy Storage Project was evaluated and compared to relevant vibration impact criteria using the Federal Transit Administration's Transit Noise and Vibration Impact Assessment, which provides vibration impact criteria and recommended methodologies and guidance for assessment of vibration effects (FTA 2006).

At a distance of approximately 50 feet, the vibration level from heavy construction machinery (such as a loaded truck or a drilling rig) would be between approximately 0.027 peak particle velocity in inches per second (PPV IPS) and 0.031 PPV IPS. At a distance of 170 feet (the distance from the nearest residential property to likely pile driving activity), vibration levels would be approximately 0.041 PPV IPS. Vibration levels of this magnitude would likely be imperceptible at the lot line and would be well below the County's and the FTA's threshold of 0.20 PPV IPS. Therefore, short-term construction-related vibration impacts would be less than significant.

7 APPLICANT PROPOSED MEASURES AND MITIGATION MEASURES

Construction and Decommissioning Noise: Although the County's noise ordinance exempts constriction noise between the hours of 7:00 a.m. and 7:00 p.m. Monday through Saturday, construction noise may pose an annoyance to surrounding Noise-Sensitive Land Uses. Construction activities would also be perceptible based on the low baseline ambient noise levels. As such, the following Applicant Proposed Measures (APMs) shall be implemented as a best practice during both construction and decommissioning of the proposed project:

APM NOI-1 Implement noise-reducing features and practices for construction noise. Prior to work commencing, the Applicant shall employ and clearly specify in its contractors' specification the following noise-suppression techniques to minimize the impact of temporary noise associated with construction activities:

· Trucks and other engine-powered equipment shall be equipped with noise reduction features, such as mufflers and engine shrouds, which are no less effective than those originally installed by the manufacturer.

· Trucks and other engine-powered equipment shall be operated in accordance with posted speed limits and limited engine idling requirements.

· Truck engine exhaust brake use shall be limited to emergencies.

· Back-up beepers for all construction equipment and vehicles shall be adjusted to the lowest noise levels possible, provided that Occupational Safety and Health Administration (OSHA) and Cal OSHA's safety requirements are not violated. These settings shall be retained for the duration of construction activities.

· Vehicle horns shall be used only when absolutely necessary, as specified in the contractor's specifications.

· Radios and other "personal equipment" shall be kept at low volume.

APM NOI-2 Provide advance notice of construction. The Applicant shall provide advance notice of construction grading start and solar array and substation construction (post-driving) between two and four weeks prior to owners and occupants of residences located within 1 mile of the project boundary, as well as posting signs that denote site contacts and agency contact information at the project site in areas accessible to the public. The announcement shall provide a point of contact for any noise complaints. The Applicant shall provide to the County of San Bernardino Land Use Services Department within 48 hours of any complaints received a report that documents the complaints and the strategy for resolution of any noise complaints, which may include limiting the hours of construction in the particular location of concern, putting up temporary noise barriers, or otherwise implementing means to reduce and resolve to the extent feasible the issue brought forth. The County's Environmental Monitor shall verify implementation of the agreed-upon strategy.

Operational Noise: The following mitigation measures would reduce noise impacts from operation of the proposed Solar and Energy Storage Project to a level of less than significant.

MM-NOI-1 Significant noise impacts could result from the HVAC and power inverters associated with the energy storage system. In order to meet the County's minimum noise levels of 45dBA (night) and 55dBA (day) at the nearest noise-sensitive land uses, the Project applicant may find it necessary to locate the HVAC Units and/or, step-up transformers and power inverters associated with the energy storage system behind a sound wall/parapet or inside of an enclosure in order to provide an acoustic shield for the equipment.Tables 10 and 11 summarize the noise levels with mitigation applied (e.g., quieter HVAC units and relocating HVAC, step-up transformers and power inverters such that the energy storage building provides acoustical shielding to the residences east of the Solar and Energy Storage Project). The detailed noise calculation tables which provide both the mitigated noise levels from each individual project component as well as the combined noise levels are included in Appendix B. As shown, the resultant noise levels would range from 35 to 44 dBA L_{eq} with all equipment operating including the backup generator, and 29 to 43 dBA L_{eq} with all equipment running except the backup generator; thus, the mitigation measures listed above would result in noise levels below the County's 45 dBA L_{eq} noise ordinance.

Table 10
Unmitigated and Mitigated Operational Noise Summary
(dBA Leq)

Receiver	Unmitigated Noise Level	Daytime	Nighttime	Noise Standard Exceeded?	Mitigated Noise Level	Noise Standard Exceeded?
Receiver M1	45	55	45	No	44	No
Receiver M2	42	55	45	No	40	No
Receiver M3	41	55	45	No	37	No
Receiver M4	45	55	45	No	39	No
Receiver M5	50	55	45	Yes	43	No
Receiver M6	46	55	45	Yes	40	No
Receiver M7	44	55	45	No	39	No
Receiver M8	39	55	45	No	35	No

Table 10
Unmitigated and Mitigated Operational Noise Summary
(dBA Leq)

Receiver	Unmitigated Noise Level	Daytime	Nighttime	Noise Standard Exceeded?	Mitigated Noise Level	Noise Standard Exceeded?
Receiver M9	56	55	45	Yes	42	No

Table 11
Unmitigated and Mitigated Operational Noise Summary
without Backup Diesel Generator (dBA L_{eq})

Receiver	Unmitigated Noise Level	Daytime	Nighttime	Noise Standard Exceeded?	Mitigated Noise Level	Noise Standard Exceeded?
Receiver M1	33	55	45	No	29	No
Receiver M2	31	55	45	No	31	No
Receiver M3	33	55	45	No	33	No
Receiver M4	38	55	45	No	38	No
Receiver M5	43	55	45	No	43	No
Receiver M6	39	55	45	No	39	No
Receiver M7	37	55	45	No	37	No
Receiver M8	31	55	45	No	31	No
Receiver M9	56	55	45	Yes	41	No

If new information is provided to prove and certify that the equipment being used is different than what is proposed currently (because of updates in solar technology and the associated equipment choices), then a new analysis which addresses these proposed changes may be prepared and reviewed to the satisfaction of the County of San Bernardino Land Use Services Department. Any proposed alternative methods, and/or the addition, modification, reduction of the noise measures may be approved if the activities will not result in noise levels greater than 45 dB L_{eq} at the nearest noise-sensitive land uses. A new analysis would only be required if the modified equipment could result in a higher sound level. If the modifications or different equipment levels are all lower than what had been previously analyzed, a new analysis would not be necessary.

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8 SUMMARY AND CONCLUSIONS

The noise impact analysis evaluates the potential for significant adverse impacts due to construction and operation of the proposed project. With the implementation of the project as proposed and analyzed, short-term noise and vibration levels would not result in the exceedance of County noise standards. Operational noise levels of the Solar and Energy Storage project would exceed applicable County noise standards unless mitigated; however, through implementation of mitigation as described in Section 7 (Applicant Proposed Measures and Mitigation Measures), resultant noise levels would comply with County noise standards. Operational noise levels of the Calcite Substation project would not exceed applicable County noise standards. Therefore, noise and vibration levels associated with construction, operation, and decommissioning of the Solar and Energy Storage Project would be **less than significant**.

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9 REFERENCES

Caltrans. May 2011. Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction and Retrofit Projects. Division of Environmental Analysis. Sacramento, California.

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General Electric (GE). 2015. 1500V 4MVA Solar Inverter: Audible Noise Level study. Prepared by Saadat, Fahim. January 22.

NEMA (National Electrical Manufacturers Association). 2000. *NEMA Standards Publication No. TR 1-1993 (R2000) – Transformers, Regulators and Reactors*. Rosslyn, Virginia: NEMA.

RTG (Rammtechnik GMBH). 2014. RG 21 T # 0224 I V01 en 07.2013 (technical data sheet).

Schneider Electric. 2011. Test Report Xantrex GTS Inverter XC500/XC630. January 28, 2011.

U.S. Department of Transportation, Federal Transit Administration, Office of Planning and Environment. May, 2006. FTA-VA-90-1003-06. Transit Noise and Vibration Impact Assessment. (Prepared under contract by Harris, Miller, Miller and Hanson). Burlington, Massachusetts.

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APPENDIX A

Field Noise Measurement Data

DUDEK
CREATOR OF KERATA TECHNOLOGY

FIELD DATA REPORT

Field Noise Measurement Data

Record: 164	
Project Name	*Ord Mountain*
Project #	*9191*
Observer(s)	*Connor Burke*
Date	*2016-06-08*
Comments	*Used Rion NL- 52. Not listed in instrument pull down.*
autoemail	*cburke@dudek.com*

Meteorological Conditions	
Temp (F)	*70.2*
Humidity % (R.H.)	*49.5*
Wind	*Calm*
Wind Speed (MPH)	*3*
Wind Direction	*West*
Sky	*Clear*

Instrument and Calibrator Information	
Instrument Name List	
Instrument Name	*Rion NL- 52*
Instrument Name Lookup Key	*Rion NL- 52*
Instrument Type	*SLM*
Manufacturer	*Rion*
Model	*NL-52*
Serial Number	*553896*
Calibration Date	
Calibrator Name	
Calibrator Name	*LD CAL150*
Calibrator Name Lookup Key	*LD CAL150*
Calibrator Manufacturer	*Larson Davis*
Calibrator Model	*LD CAL150*
Calibrator Serial #	*5152*
Pre-Test (dBA SPL)	*94*
Post-Test (dBA SPL)	*94*
Windscreen	*Yes*
Weighting?	*A-WTD*
Slow/Fast?	*Slow*
ANSI?	*Yes*

Recordings	
Record #	*23*
Site ID	*ST3*
Site Location	*Latitude:34.556494, Longitude:-116.944687, Altitude:884.061527, Speed:0.000000, Horizontal Accuracy:5.000000, Vertical Accuracy:3.000000, Time:8:31:10 AM PDT*
Begin (Time)	*08:31:00*
End (Time)	*08:51:00*
Leq	*37.6*
Lmax	*57.7*
Lmin	*22.4*
Other (Specify Metric)	
Primary Noise Source	*Traffic*

FIELD DATA REPORT

Other Noise Sources (Background)	*Birds, Distant Traffic*
Other Noise Sources Additional Description	*Dudek truck drove by twice.*
Is the same instrument and calibrator being used as previously notated?	*Yes*
Are the meteorological conditions the same as previously notated?	*Yes*

Source Info and Traffic Counts

Distance to Roadway (feet)	*2000*
Roadway Type	*Highway*
Estimated Vehicle Speed (MPH)	*80*
Speeds Estimated by:	*Driving the Pace*
Posted Speed Limit Sign (MPH)	*70*

Description / Photos

Upload Google Maps Data

Terrain	*Mixed*

Site Photos

Photo	
Comments / Description	*ST3*

Site Photos

Photo	
Comments / Description	*ST3*

DUDEK
CREATOR OF KERATA TECHNOLOGY

FIELD DATA REPORT

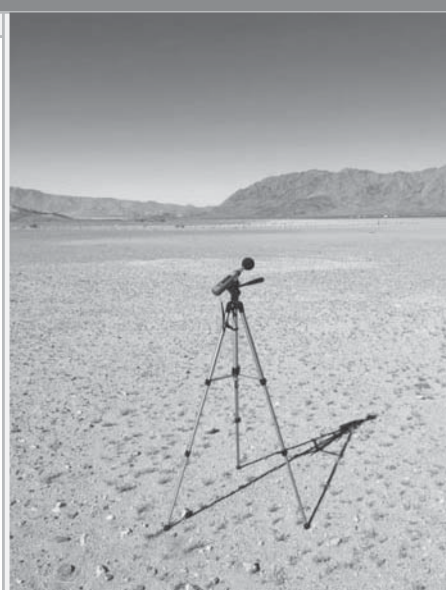
Recordings	
Record #	*24*
Site ID	*ST2*
Site Location	*Latitude:34.565537, Longitude:-116.927642, Altitude:904.968719, Speed:0.970000, Horizontal Accuracy:5.000000, Vertical Accuracy:6.000000, Time:9:09:50 AM PDT*
Begin (Time)	*09:10:00*
End (Time)	*09:30:00*
Leq	*36.7*
Lmax	*53.2*
Lmin	*21.4*
Other (Specify Metric)	
Primary Noise Source	*Traffic*
Other Noise Sources (Background)	*Birds, Distant Conversations / Yelling, Distant Dog Barking, Distant Traffic*
Other Noise Sources Additional Description	*Roosters, conversation with man 20 yards from meter. Said he was about to start his well which would be loud.*
Is the same instrument and calibrator being used as previously notated?	*Yes*
Are the meteorological conditions the same as previously notated?	*Yes*

Description / Photos	
Upload Google Maps Data	
Terrain	*Hard*

DUDEK
CREATOR OF KERATA TECHNOLOGY

FIELD DATA REPORT

Site Photos	
Photo	
Comments / Description	*ST2. No power coming through lines*

Site Photos	
Photo	

DUDEK
CREATOR OF KERATA TECHNOLOGY

FIELD DATA REPORT

Recordings	
Record #	25
Site ID	ST1
Site Location	Latitude:34.560208, Longitude:-116.927795, Altitude:897.483978, Speed:0.000000, Horizontal Accuracy:5.000000, Vertical Accuracy:4.000000, Time:9:38:43 AM PDT
Begin (Time)	09:38:00
End (Time)	09:58:00
Leq	35.9
Lmax	58.5
Lmin	21
Other (Specify Metric)	
Primary Noise Source	Traffic
Other Noise Sources (Background)	Birds, Distant Conversations / Yelling, Distant Dog Barking, Distant Traffic
Other Noise Sources Additional Description	Woman brought her dog inside after barking at meter setup. Spoke to man about data collection.
Is the same instrument and calibrator being used as previously notated?	Yes
Are the meteorological conditions the same as previously notated?	Yes

Source Info and Traffic Counts	
Distance to Roadway (feet)	30
Roadway Type	Dirt
Estimated Vehicle Speed (MPH)	20
Count Duration (Min)	0
Speeds Estimated by:	Driving the Pace

Traffic Counts	
Counting Both Directions?	Yes
Vehicle Count Tally	2
Medium Trucks	1
Number of Vehicles - Medium Trucks	2

Description / Photos	
Terrain	Mixed

Site Photos

Photo	
	

Site Photos

Photo	
	

Site Photos

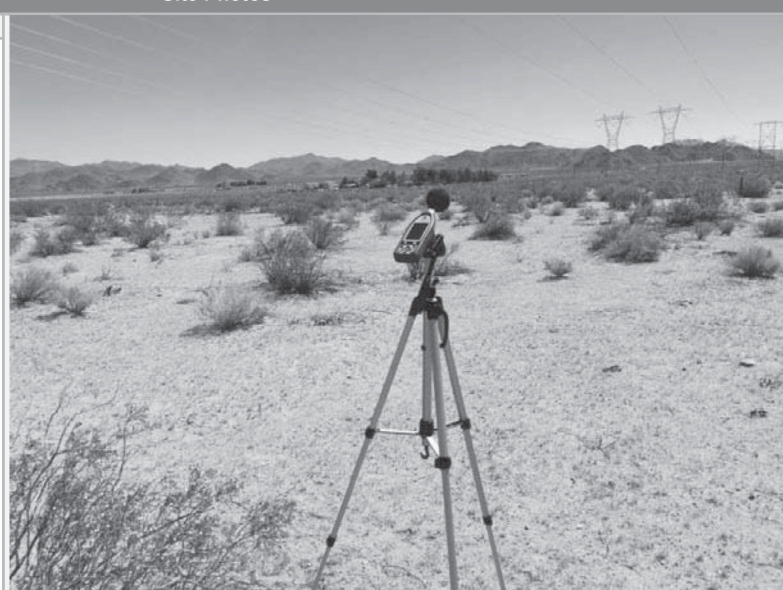
Photo

Recordings

Record #	*26*
Site ID	*ST4*
Site Location	*Latitude:34.549954, Longitude:-116.932735, Altitude:881.845062, Speed:0.000000, Horizontal Accuracy:5.000000, Vertical Accuracy:3.000000, Time:10:11:33 AM PDT*
Begin (Time)	*10:10:00*
End (Time)	*10:30:00*
Leq	*35.6*
Lmax	*48.9*
Lmin	*22.8*
Other (Specify Metric)	
Primary Noise Source	*Industrial*
Other Noise Sources (Background)	*Birds, Distant Dog Barking, Distant Industrial, Distant Traffic*
Other Noise Sources Additional Description	*Power Lines nearby.*
Is the same instrument and calibrator being used as previously notated?	*Yes*
Are the meteorological conditions the same as previously notated?	*Yes*

Description / Photos	
Terrain	*Hard*

Site Photos	
Photo	

Site Photos	
Photo	

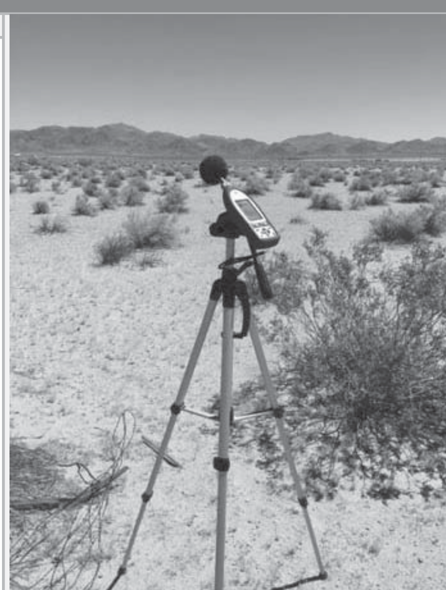
DUDEK
CREATOR OF KERATA TECHNOLOGY

FIELD DATA REPORT

Recordings	
Record #	*27*
Site ID	*ST5*
Site Location	*Latitude:34.548820, Longitude:-116.945044, Altitude:886.246709, Speed:0.000000, Horizontal Accuracy:5.000000, Vertical Accuracy:3.000000, Time:10:57:50 AM PDT*
Begin (Time)	*10:57:00*
End (Time)	*11:18:00*
Leq	*53.2*
Lmax	*76.9*
Lmin	*31.5*
Other (Specify Metric)	
Primary Noise Source	*Traffic*
Other Noise Sources (Background)	*Birds, Distant Traffic*
Other Noise Sources Additional Description	*Wind noise increased. Tripod tipped over at around 19 min*
Is the same instrument and calibrator being used as previously notated?	*Yes*
Are the meteorological conditions the same as previously notated?	*No*

Source Info and Traffic Counts	
Distance to Roadway (feet)	*20*
Roadway Type	*Dirt*
Estimated Vehicle Speed (MPH)	*15*

Description / Photos	
Terrain	*Hard*

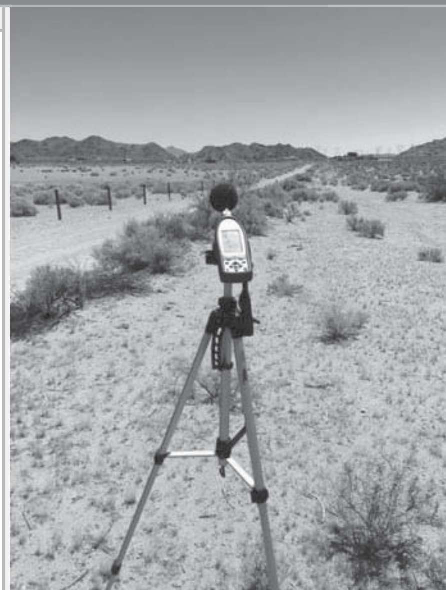
Site Photos	
Photo	

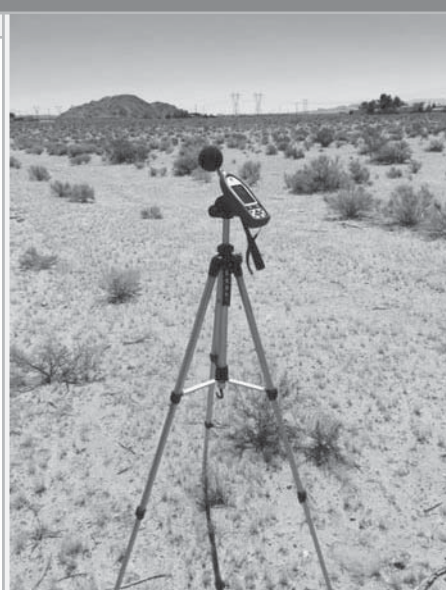
Site Photos	
Photo	

Meteorological Conditions	
Wind	*Gusty*
Wind Speed (MPH)	*8*
Wind Direction	*North West*
Sky	*Clear*

Recordings	
Record #	*28*
Site ID	*ST6*
Site Location	*Latitude:34.556557, Longitude:-116.930947, Altitude:890.439087, Speed:1.070000, Horizontal Accuracy:5.000000, Vertical Accuracy:3.000000, Time:11:34:51 AM PDT*
Begin (Time)	*11:33:00*
Other (Specify Metric)	
Primary Noise Source	*Traffic*
Other Noise Sources (Background)	*Birds, Distant Traffic*
Other Noise Sources Additional Description	*Wind noise. Tripod tipped over around 7 min*
Is the same instrument and calibrator being used as previously notated?	*Yes*
Are the meteorological conditions the same as previously notated?	*No*

Description / Photos	
Terrain	*Mixed*

Site Photos	
Photo	

Site Photos	
Photo	

Meteorological Conditions	
Wind	*Gusty*
Wind Speed (MPH)	*9*
Wind Direction	*North*
Sky	*Clear*

Description / Photos	
Upload Google Maps Data	
Terrain	*Hard*

Site Photos	
Photo	
Comments / Description	*Test.*

Site Photos	
Photo	
Comments / Description	*Measurement locations.*

APPENDIX B

Operational Noise Input / Output

Table B-1

Unmitigated Noise Level at M1: Residential Land Use Type near the Northeastern Corner of the Project Site

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	5921	59.9	0.0	-4.4
Inverter	55.5	6	1	6417	60.6	0.0	-5.1
Inverter	55.5	6	1	3306	54.8	0.0	0.7
Inverter	55.5	6	1	4022	56.5	0.0	-1.0
Inverter	55.5	6	1	5109	58.6	0.0	-3.1
Inverter	55.5	6	1	5671	59.5	0.0	-4.0
Inverter	55.5	6	1	2641	52.9	0.0	2.6
Inverter	55.5	6	1	3496	55.3	0.0	0.2
Inverter	55.5	6	1	4569	57.6	0.0	-2.1
Inverter	55.5	6	1	1389	47.3	0.0	8.2
Inverter	55.5	6	1	2054	50.7	0.0	4.8
Inverter	55.5	6	1	3077	54.2	0.0	1.3
Inverter	55.5	6	1	4284	57.1	0.0	-1.6
Inverter	55.5	6	1	562	39.4	0.0	16.1
Inverter	55.5	6	1	1619	48.6	0.0	6.9
Inverter	55.5	6	1	2090	50.8	0.0	4.7
Inverter	55.5	6	1	2805	53.4	0.0	2.1
Stepup Transformer	75	3	1	7082	67.5	0.0	7.5
Battery Storage HVAC Module	68	50	10	6791	42.7	0.0	35.3
Stepup Transformer	60	5	30	6791	62.7	0.0	12.1
Power Inverter	77	6	15	6791	61.1	0.0	27.7
Emergency Generator	95	3.28	1	1186	51.2	0.0	43.8
						Combined Noise Level (dBA L_{eq})	**45**

Table B-2
Unmitigated Noise Level at M2: Residential Land Use Type near the Eastern Side of the Project Site

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	5127	58.6	0.0	-3.1
Inverter	55.5	6	1	5394	59.1	0.0	-3.6
Inverter	55.5	6	1	3588	55.5	0.0	0.0
Inverter	55.5	6	1	3494	55.3	0.0	0.2
Inverter	55.5	6	1	4003	56.5	0.0	-1.0
Inverter	55.5	6	1	4337	57.2	0.0	-1.7
Inverter	55.5	6	1	2849	53.5	0.0	2.0
Inverter	55.5	6	1	2729	53.2	0.0	2.3
Inverter	55.5	6	1	3123	54.3	0.0	1.2
Inverter	55.5	6	1	2550	52.6	0.0	2.9
Inverter	55.5	6	1	2136	51.0	0.0	4.5
Inverter	55.5	6	1	1973	50.3	0.0	5.2
Inverter	55.5	6	1	2450	52.2	0.0	3.3
Inverter	55.5	6	1	1893	50.0	0.0	5.5
Inverter	55.5	6	1	1467	47.8	0.0	7.7
Inverter	55.5	6	1	612	40.2	0.0	15.3
Inverter	55.5	6	1	1219	46.2	0.0	9.3
Stepup Transformer	75	3	1	5881	65.8	0.0	9.2
Battery Storage HVAC Module	68	50	10	5483	40.8	0.0	37.2
Stepup Transformer	60	5	30	5483	60.8	0.0	14.0
Power Inverter	77	6	15	5483	59.2	0.0	29.5
Emergency Generator	95	3.28	1	1985	55.6	0.0	39.4
						Combined Noise Level (dBA L_{eq})	**42**

Table B-3
Unmitigated Noise Level at M3: Residential Land Use Type Southeast of the Project Site

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	4672	57.8	0.0	-2.3
Inverter	55.5	6	1	4681	57.8	0.0	-2.3
Inverter	55.5	6	1	4353	57.2	0.0	-1.7
Inverter	55.5	6	1	3661	55.7	0.0	-0.2
Inverter	55.5	6	1	3463	55.2	0.0	0.3
Inverter	55.5	6	1	3475	55.3	0.0	0.2
Inverter	55.5	6	1	3804	56.0	0.0	-0.5
Inverter	55.5	6	1	2988	53.9	0.0	1.6
Inverter	55.5	6	1	2467	52.3	0.0	3.2
Inverter	55.5	6	1	4100	56.7	0.0	-1.2
Inverter	55.5	6	1	3347	54.9	0.0	0.6
Inverter	55.5	6	1	2378	52.0	0.0	3.5
Inverter	55.5	6	1	1562	48.3	0.0	7.2
Inverter	55.5	6	1	3789	56.0	0.0	-0.5
Inverter	55.5	6	1	3013	54.0	0.0	1.5
Inverter	55.5	6	1	2272	51.6	0.0	3.9
Inverter	55.5	6	1	1880	49.9	0.0	5.6
Stepup Transformer	75	3	1	4938	64.3	0.0	10.7
Battery Storage HVAC Module	68	50	10	4476	39.0	0.0	39.0
Stepup Transformer	60	5	30	4476	59.0	0.0	15.7
Power Inverter	77	6	15	4476	57.5	0.0	31.3
Emergency Generator	95	3.28	1	3628	60.9	0.0	34.1
						Combined Noise Level (dBA L_{eq})	**41**

Table B-4
Unmitigated Noise Level at M4: Residential Land Use Type South of the Project Site

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	3615	55.6	0.0	-0.1
Inverter	55.5	6	1	3145	54.4	0.0	1.1
Inverter	55.5	6	1	5303	58.9	0.0	-3.4
Inverter	55.5	6	1	4094	56.7	0.0	-1.2
Inverter	55.5	6	1	2912	53.7	0.0	1.8
Inverter	55.5	6	1	2311	51.7	0.0	3.8
Inverter	55.5	6	1	5197	58.8	0.0	-3.3
Inverter	55.5	6	1	3956	56.4	0.0	-0.9
Inverter	55.5	6	1	2635	52.9	0.0	2.6
Inverter	55.5	6	1	6136	60.2	0.0	-4.7
Inverter	55.5	6	1	5203	58.8	0.0	-3.3
Inverter	55.5	6	1	3964	56.4	0.0	-0.9
Inverter	55.5	6	1	2639	52.9	0.0	2.6
Inverter	55.5	6	1	6376	60.5	0.0	-5.0
Inverter	55.5	6	1	5323	59.0	0.0	-3.5
Inverter	55.5	6	1	4931	58.3	0.0	-2.8
Inverter	55.5	6	1	4120	56.7	0.0	-1.2
Stepup Transformer	75	3	1	2867	59.6	0.0	15.4
Battery Storage HVAC Module	68	50	10	2439	33.8	0.0	44.2
Stepup Transformer	60	5	30	2439	53.8	0.0	21.0
Power Inverter	77	6	15	2439	52.2	0.0	36.6
Emergency Generator	95	3.28	1	5881	65.1	0.0	29.9
						Combined Noise Level (dBA L_{eq})	45

Table B-5
Unmitigated Noise Level at M5: Residential Land Use Type West of the Project Site

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	1368	47.2	0.0	8.3
Inverter	55.5	6	1	998	44.4	0.0	11.1
Inverter	55.5	6	1	4234	57.0	0.0	-1.5
Inverter	55.5	6	1	3267	54.7	0.0	0.8
Inverter	55.5	6	1	2377	52.0	0.0	3.5
Inverter	55.5	6	1	2188	51.2	0.0	4.3
Inverter	55.5	6	1	4702	57.9	0.0	-2.4
Inverter	55.5	6	1	3854	56.2	0.0	-0.7
Inverter	55.5	6	1	3315	54.8	0.0	0.7
Inverter	55.5	6	1	5999	60.0	0.0	-4.5
Inverter	55.5	6	1	5238	58.8	0.0	-3.3
Inverter	55.5	6	1	4492	57.5	0.0	-2.0
Inverter	55.5	6	1	4175	56.9	0.0	-1.4
Inverter	55.5	6	1	6899	61.2	0.0	-5.7
Inverter	55.5	6	1	5833	59.8	0.0	-4.3
Inverter	55.5	6	1	6025	60.0	0.0	-4.5
Inverter	55.5	6	1	5174	58.7	0.0	-3.2
Stepup Transformer	75	3	1	953	50.0	0.0	25.0
Battery Storage HVAC Module	68	50	10	1386	28.9	0.0	49.1
Stepup Transformer	60	5	30	1386	48.9	0.0	25.9
Power Inverter	77	6	15	1386	47.3	0.0	41.5
Emergency Generator	95	3.28	1	6108	65.4	0.0	29.6
						Combined Noise Level (dBA L_{eq})	**50**

Table B-6
Unmitigated Noise Level at M6: Residential Land Use Type West of the Project Site

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	758	42.0	0.0	13.5
Inverter	55.5	6	1	1380	47.2	0.0	8.3
Inverter	55.5	6	1	2674	53.0	0.0	2.5
Inverter	55.5	6	1	1960	50.3	0.0	5.2
Inverter	55.5	6	1	1777	49.4	0.0	6.1
Inverter	55.5	6	1	2117	50.9	0.0	4.6
Inverter	55.5	6	1	3250	54.7	0.0	0.8
Inverter	55.5	6	1	2692	53.0	0.0	2.5
Inverter	55.5	6	1	2738	53.2	0.0	2.3
Inverter	55.5	6	1	4539	57.6	0.0	-2.1
Inverter	55.5	6	1	3888	56.2	0.0	-0.7
Inverter	55.5	6	1	3437	55.2	0.0	0.3
Inverter	55.5	6	1	3636	55.6	0.0	-0.1
Inverter	55.5	6	1	5563	59.3	0.0	-3.8
Inverter	55.5	6	1	4575	57.6	0.0	-2.1
Inverter	55.5	6	1	4950	58.3	0.0	-2.8
Inverter	55.5	6	1	4198	56.9	0.0	-1.4
Stepup Transformer	75	3	1	2088	56.9	0.0	18.1
Battery Storage HVAC Module	68	50	10	2212	32.9	0.0	45.1
Stepup Transformer	60	5	30	2212	52.9	0.0	21.9
Power Inverter	77	6	15	2212	51.3	0.0	37.4
Emergency Generator	95	3.28	1	4739	63.2	0.0	31.8
						Combined Noise Level (dBA L_{eq})	**46**

Table B-7

Unmitigated Noise Level at M7: Residential Land Use Type West of the Project Site

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	1297	46.7	0.0	8.8
Inverter	55.5	6	1	1989	50.4	0.0	5.1
Inverter	55.5	6	1	1738	49.2	0.0	6.3
Inverter	55.5	6	1	1181	45.9	0.0	9.6
Inverter	55.5	6	1	1645	48.8	0.0	6.7
Inverter	55.5	6	1	2228	51.4	0.0	4.1
Inverter	55.5	6	1	2331	51.8	0.0	3.7
Inverter	55.5	6	1	1951	50.2	0.0	5.3
Inverter	55.5	6	1	2398	52.0	0.0	3.5
Inverter	55.5	6	1	3611	55.6	0.0	-0.1
Inverter	55.5	6	1	3000	54.0	0.0	1.5
Inverter	55.5	6	1	2716	53.1	0.0	2.4
Inverter	55.5	6	1	3222	54.6	0.0	0.9
Inverter	55.5	6	1	4666	57.8	0.0	-2.3
Inverter	55.5	6	1	3717	55.8	0.0	-0.3
Inverter	55.5	6	1	4170	56.8	0.0	-1.3
Inverter	55.5	6	1	3491	55.3	0.0	0.2
Stepup Transformer	75	3	1	2759	59.3	0.0	15.7
Battery Storage HVAC Module	68	50	10	2744	34.8	0.0	43.2
Stepup Transformer	60	5	30	2744	54.8	0.0	20.0
Power Inverter	77	6	15	2744	53.2	0.0	35.6
Emergency Generator	95	3.28	1	3836	61.4	0.0	33.6
						Combined Noise Level (dBA L_{eq})	**44**

Table B-8
Unmitigated Noise Level at M8: Residential Land Use Type Northwest of the Project Site

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	3795	56.0	0.0	-0.5
Inverter	55.5	6	1	4485	57.5	0.0	-2.0
Inverter	55.5	6	1	2282	51.6	0.0	3.9
Inverter	55.5	6	1	3119	54.3	0.0	1.2
Inverter	55.5	6	1	4160	56.8	0.0	-1.3
Inverter	55.5	6	1	4793	58.0	0.0	-2.5
Inverter	55.5	6	1	2966	53.9	0.0	1.6
Inverter	55.5	6	1	3649	55.7	0.0	-0.2
Inverter	55.5	6	1	4677	57.8	0.0	-2.3
Inverter	55.5	6	1	3639	55.7	0.0	-0.2
Inverter	55.5	6	1	3679	55.8	0.0	-0.3
Inverter	55.5	6	1	4249	57.0	0.0	-1.5
Inverter	55.5	6	1	5310	58.9	0.0	-3.4
Inverter	55.5	6	1	4887	58.2	0.0	-2.7
Inverter	55.5	6	1	4419	57.3	0.0	-1.8
Inverter	55.5	6	1	5201	58.8	0.0	-3.3
Inverter	55.5	6	1	4904	58.2	0.0	-2.7
Stepup Transformer	75	3	1	5226	64.8	0.0	10.2
Battery Storage HVAC Module	68	50	10	5288	40.5	0.0	37.5
Stepup Transformer	60	5	30	5288	60.5	0.0	14.3
Power Inverter	77	6	15	5288	58.9	0.0	29.9
Emergency Generator	95	3.28	1	4153	62.0	0.0	33.0
						Combined Noise Level (dBA L_{eq})	**39**

Table B-9
Unmitigated Noise Level at M9: Residential Land Use Type South of the Project Site

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	1784	49.5	0.0	6.0
Inverter	55.5	6	1	1268	46.5	0.0	9.0
Inverter	55.5	6	1	4052	56.6	0.0	-1.1
Inverter	55.5	6	1	2815	53.4	0.0	2.1
Inverter	55.5	6	1	1485	47.9	0.0	7.6
Inverter	55.5	6	1	808	42.6	0.0	12.9
Inverter	55.5	6	1	4193	56.9	0.0	-1.4
Inverter	55.5	6	1	3015	54.0	0.0	1.5
Inverter	55.5	6	1	1905	50.0	0.0	5.5
Inverter	55.5	6	1	5367	59.0	0.0	-3.5
Inverter	55.5	6	1	4463	57.4	0.0	-1.9
Inverter	55.5	6	1	3379	55.0	0.0	0.5
Inverter	55.5	6	1	2544	52.5	0.0	3.0
Inverter	55.5	6	1	5960	59.9	0.0	-4.4
Inverter	55.5	6	1	4845	58.1	0.0	-2.6
Inverter	55.5	6	1	4765	58.0	0.0	-2.5
Inverter	55.5	6	1	3870	56.2	0.0	-0.7
Stepup Transformer	75	3	1	1135	51.6	0.0	23.4
Battery Storage HVAC Module	68	50	10	658	22.4	0.0	55.6
Stepup Transformer	60	5	30	658	42.4	0.0	32.4
Power Inverter	77	6	15	658	40.8	0.0	48.0
Emergency Generator	95	3.28	1	5284	64.1	0.0	30.9
						Combined Noise Level (dBA L_{eq})	**56**

Table B-10

Unmitigated Noise Level at M1: Residential Land Use Type near the Northeastern Corner of the Project Site - Generator Off

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	5921	59.9	0.0	-4.4
Inverter	55.5	6	1	6417	60.6	0.0	-5.1
Inverter	55.5	6	1	3306	54.8	0.0	0.7
Inverter	55.5	6	1	4022	56.5	0.0	-1.0
Inverter	55.5	6	1	5109	58.6	0.0	-3.1
Inverter	55.5	6	1	5671	59.5	0.0	-4.0
Inverter	55.5	6	1	2641	52.9	0.0	2.6
Inverter	55.5	6	1	3496	55.3	0.0	0.2
Inverter	55.5	6	1	4569	57.6	0.0	-2.1
Inverter	55.5	6	1	1389	47.3	0.0	8.2
Inverter	55.5	6	1	2054	50.7	0.0	4.8
Inverter	55.5	6	1	3077	54.2	0.0	1.3
Inverter	55.5	6	1	4284	57.1	0.0	-1.6
Inverter	55.5	6	1	562	39.4	0.0	16.1
Inverter	55.5	6	1	1619	48.6	0.0	6.9
Inverter	55.5	6	1	2090	50.8	0.0	4.7
Inverter	55.5	6	1	2805	53.4	0.0	2.1
Stepup Transformer	75	3	1	7082	67.5	0.0	7.5
Battery Storage HVAC Module	68	50	10	6791	42.7	0.0	35.3
Stepup Transformer	60	5	30	6791	62.7	0.0	12.1
Power Inverter	77	6	15	6791	61.1	0.0	27.7
						Combined Noise Level (dBA L_{eq})	36

Table B-11
Umitigated Noise Level at M2: Residential Land Use Type near the Eastern Side of the Project Site - Generator Off

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	5127	58.6	0.0	-3.1
Inverter	55.5	6	1	5394	59.1	0.0	-3.6
Inverter	55.5	6	1	3588	55.5	0.0	0.0
Inverter	55.5	6	1	3494	55.3	0.0	0.2
Inverter	55.5	6	1	4003	56.5	0.0	-1.0
Inverter	55.5	6	1	4337	57.2	0.0	-1.7
Inverter	55.5	6	1	2849	53.5	0.0	2.0
Inverter	55.5	6	1	2729	53.2	0.0	2.3
Inverter	55.5	6	1	3123	54.3	0.0	1.2
Inverter	55.5	6	1	2550	52.6	0.0	2.9
Inverter	55.5	6	1	2136	51.0	0.0	4.5
Inverter	55.5	6	1	1973	50.3	0.0	5.2
Inverter	55.5	6	1	2450	52.2	0.0	3.3
Inverter	55.5	6	1	1893	50.0	0.0	5.5
Inverter	55.5	6	1	1467	47.8	0.0	7.7
Inverter	55.5	6	1	612	40.2	0.0	15.3
Inverter	55.5	6	1	1219	46.2	0.0	9.3
Stepup Transformer	75	3	1	5881	65.8	0.0	9.2
Battery Storage HVAC Module	68	50	10	5483	40.8	0.0	37.2
Stepup Transformer	60	5	30	5483	60.8	0.0	14.0
Power Inverter	77	6	15	5483	59.2	0.0	29.5
						Combined Noise Level (dBA L_{eq})	**38**

Table B-12
Unmitigated Noise Level at M3: Residential Land Use Type Southeast of the Project Site - Generator Off

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	4672	57.8	0.0	-2.3
Inverter	55.5	6	1	4681	57.8	0.0	-2.3
Inverter	55.5	6	1	4353	57.2	0.0	-1.7
Inverter	55.5	6	1	3661	55.7	0.0	-0.2
Inverter	55.5	6	1	3463	55.2	0.0	0.3
Inverter	55.5	6	1	3475	55.3	0.0	0.2
Inverter	55.5	6	1	3804	56.0	0.0	-0.5
Inverter	55.5	6	1	2988	53.9	0.0	1.6
Inverter	55.5	6	1	2467	52.3	0.0	3.2
Inverter	55.5	6	1	4100	56.7	0.0	-1.2
Inverter	55.5	6	1	3347	54.9	0.0	0.6
Inverter	55.5	6	1	2378	52.0	0.0	3.5
Inverter	55.5	6	1	1562	48.3	0.0	7.2
Inverter	55.5	6	1	3789	56.0	0.0	-0.5
Inverter	55.5	6	1	3013	54.0	0.0	1.5
Inverter	55.5	6	1	2272	51.6	0.0	3.9
Inverter	55.5	6	1	1880	49.9	0.0	5.6
Stepup Transformer	75	3	1	4938	64.3	0.0	10.7
Battery Storage HVAC Module	68	50	10	4476	39.0	0.0	39.0
Stepup Transformer	60	5	30	4476	59.0	0.0	15.7
Power Inverter	77	6	15	4476	57.5	0.0	31.3
						Combined Noise Level (dBA L_{eq})	**40**

Table B-13
Unmitigated Noise Level at M4: Residential Land Use Type South of the Project Site - Generator Off

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	3615	55.6	0.0	-0.1
Inverter	55.5	6	1	3145	54.4	0.0	1.1
Inverter	55.5	6	1	5303	58.9	0.0	-3.4
Inverter	55.5	6	1	4094	56.7	0.0	-1.2
Inverter	55.5	6	1	2912	53.7	0.0	1.8
Inverter	55.5	6	1	2311	51.7	0.0	3.8
Inverter	55.5	6	1	5197	58.8	0.0	-3.3
Inverter	55.5	6	1	3956	56.4	0.0	-0.9
Inverter	55.5	6	1	2635	52.9	0.0	2.6
Inverter	55.5	6	1	6136	60.2	0.0	-4.7
Inverter	55.5	6	1	5203	58.8	0.0	-3.3
Inverter	55.5	6	1	3964	56.4	0.0	-0.9
Inverter	55.5	6	1	2639	52.9	0.0	2.6
Inverter	55.5	6	1	6376	60.5	0.0	-5.0
Inverter	55.5	6	1	5323	59.0	0.0	-3.5
Inverter	55.5	6	1	4931	58.3	0.0	-2.8
Inverter	55.5	6	1	4120	56.7	0.0	-1.2
Stepup Transformer	75	3	1	2867	59.6	0.0	15.4
Battery Storage HVAC Module	68	50	10	2439	33.8	0.0	44.2
Stepup Transformer	60	5	30	2439	53.8	0.0	21.0
Power Inverter	77	6	15	2439	52.2	0.0	36.6
						Combined Noise Level (dBA L_{eq})	**45**

Table B-14
Unmitigated Noise Level at M5: Residential Land Use Type West of the Project Site - Generator Off

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	1368	47.2	0.0	8.3
Inverter	55.5	6	1	998	44.4	0.0	11.1
Inverter	55.5	6	1	4234	57.0	0.0	-1.5
Inverter	55.5	6	1	3267	54.7	0.0	0.8
Inverter	55.5	6	1	2377	52.0	0.0	3.5
Inverter	55.5	6	1	2188	51.2	0.0	4.3
Inverter	55.5	6	1	4702	57.9	0.0	-2.4
Inverter	55.5	6	1	3854	56.2	0.0	-0.7
Inverter	55.5	6	1	3315	54.8	0.0	0.7
Inverter	55.5	6	1	5999	60.0	0.0	-4.5
Inverter	55.5	6	1	5238	58.8	0.0	-3.3
Inverter	55.5	6	1	4492	57.5	0.0	-2.0
Inverter	55.5	6	1	4175	56.9	0.0	-1.4
Inverter	55.5	6	1	6899	61.2	0.0	-5.7
Inverter	55.5	6	1	5833	59.8	0.0	-4.3
Inverter	55.5	6	1	6025	60.0	0.0	-4.5
Inverter	55.5	6	1	5174	58.7	0.0	-3.2
Stepup Transformer	75	3	1	953	50.0	0.0	25.0
Battery Storage HVAC Module	68	50	10	1386	28.9	0.0	49.1
Stepup Transformer	60	5	30	1386	48.9	0.0	25.9
Power Inverter	77	6	15	1386	47.3	0.0	41.5
						Combined Noise Level (dBA L_{eq})	**50**

Table B-15
Unmitigated Noise Level at M6: Residential Land Use Type West of the Project Site - Generator Off

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	758	42.0	0.0	13.5
Inverter	55.5	6	1	1380	47.2	0.0	8.3
Inverter	55.5	6	1	2674	53.0	0.0	2.5
Inverter	55.5	6	1	1960	50.3	0.0	5.2
Inverter	55.5	6	1	1777	49.4	0.0	6.1
Inverter	55.5	6	1	2117	50.9	0.0	4.6
Inverter	55.5	6	1	3250	54.7	0.0	0.8
Inverter	55.5	6	1	2692	53.0	0.0	2.5
Inverter	55.5	6	1	2738	53.2	0.0	2.3
Inverter	55.5	6	1	4539	57.6	0.0	-2.1
Inverter	55.5	6	1	3888	56.2	0.0	-0.7
Inverter	55.5	6	1	3437	55.2	0.0	0.3
Inverter	55.5	6	1	3636	55.6	0.0	-0.1
Inverter	55.5	6	1	5563	59.3	0.0	-3.8
Inverter	55.5	6	1	4575	57.6	0.0	-2.1
Inverter	55.5	6	1	4950	58.3	0.0	-2.8
Inverter	55.5	6	1	4198	56.9	0.0	-1.4
Stepup Transformer	75	3	1	2088	56.9	0.0	18.1
Battery Storage HVAC Module	68	50	10	2212	32.9	0.0	45.1
Stepup Transformer	60	5	30	2212	52.9	0.0	21.9
Power Inverter	77	6	15	2212	51.3	0.0	37.4
						Combined Noise Level (dBA L_{eq})	**46**

Table B-16
Unmitigated Noise Level at M7: Residential Land Use Type West of the Project Site - Generator Off

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	1297	46.7	0.0	8.8
Inverter	55.5	6	1	1989	50.4	0.0	5.1
Inverter	55.5	6	1	1738	49.2	0.0	6.3
Inverter	55.5	6	1	1181	45.9	0.0	9.6
Inverter	55.5	6	1	1645	48.8	0.0	6.7
Inverter	55.5	6	1	2228	51.4	0.0	4.1
Inverter	55.5	6	1	2331	51.8	0.0	3.7
Inverter	55.5	6	1	1951	50.2	0.0	5.3
Inverter	55.5	6	1	2398	52.0	0.0	3.5
Inverter	55.5	6	1	3611	55.6	0.0	-0.1
Inverter	55.5	6	1	3000	54.0	0.0	1.5
Inverter	55.5	6	1	2716	53.1	0.0	2.4
Inverter	55.5	6	1	3222	54.6	0.0	0.9
Inverter	55.5	6	1	4666	57.8	0.0	-2.3
Inverter	55.5	6	1	3717	55.8	0.0	-0.3
Inverter	55.5	6	1	4170	56.8	0.0	-1.3
Inverter	55.5	6	1	3491	55.3	0.0	0.2
Stepup Transformer	75	3	1	2759	59.3	0.0	15.7
Battery Storage HVAC Module	60	30	10	2744	39.2	0.0	30.8
Stepup Transformer	60	5	30	2744	54.8	0.0	20.0
Power Inverter	77	6	15	2744	53.2	0.0	35.6
						Combined Noise Level (dBA L_{eq})	**37**

Table B-17
Unmitigated Noise Level at M8: Residential Land Use Type Northwest of the Project Site - Generator Off

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	3795	56.0	0.0	-0.5
Inverter	55.5	6	1	4485	57.5	0.0	-2.0
Inverter	55.5	6	1	2282	51.6	0.0	3.9
Inverter	55.5	6	1	3119	54.3	0.0	1.2
Inverter	55.5	6	1	4160	56.8	0.0	-1.3
Inverter	55.5	6	1	4793	58.0	0.0	-2.5
Inverter	55.5	6	1	2966	53.9	0.0	1.6
Inverter	55.5	6	1	3649	55.7	0.0	-0.2
Inverter	55.5	6	1	4677	57.8	0.0	-2.3
Inverter	55.5	6	1	3639	55.7	0.0	-0.2
Inverter	55.5	6	1	3679	55.8	0.0	-0.3
Inverter	55.5	6	1	4249	57.0	0.0	-1.5
Inverter	55.5	6	1	5310	58.9	0.0	-3.4
Inverter	55.5	6	1	4887	58.2	0.0	-2.7
Inverter	55.5	6	1	4419	57.3	0.0	-1.8
Inverter	55.5	6	1	5201	58.8	0.0	-3.3
Inverter	55.5	6	1	4904	58.2	0.0	-2.7
Stepup Transformer	75	3	1	5226	64.8	0.0	10.2
Battery Storage HVAC Module	68	50	10	5288	40.5	0.0	37.5
Stepup Transformer	60	5	30	5288	60.5	0.0	14.3
Power Inverter	77	6	15	5288	58.9	0.0	29.9
						Combined Noise Level (dBA L_{eq})	**38**

Table B-18
Unmitigated Noise Level at M9: Residential Land Use Type South of the Project Site - Generator Off

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	1784	49.5	0.0	6.0
Inverter	55.5	6	1	1268	46.5	0.0	9.0
Inverter	55.5	6	1	4052	56.6	0.0	-1.1
Inverter	55.5	6	1	2815	53.4	0.0	2.1
Inverter	55.5	6	1	1485	47.9	0.0	7.6
Inverter	55.5	6	1	808	42.6	0.0	12.9
Inverter	55.5	6	1	4193	56.9	0.0	-1.4
Inverter	55.5	6	1	3015	54.0	0.0	1.5
Inverter	55.5	6	1	1905	50.0	0.0	5.5
Inverter	55.5	6	1	5367	59.0	0.0	-3.5
Inverter	55.5	6	1	4463	57.4	0.0	-1.9
Inverter	55.5	6	1	3379	55.0	0.0	0.5
Inverter	55.5	6	1	2544	52.5	0.0	3.0
Inverter	55.5	6	1	5960	59.9	0.0	-4.4
Inverter	55.5	6	1	4845	58.1	0.0	-2.6
Inverter	55.5	6	1	4765	58.0	0.0	-2.5
Inverter	55.5	6	1	3870	56.2	0.0	-0.7
Stepup Transformer	75	3	1	1135	51.6	0.0	23.4
Battery Storage HVAC Module	68	50	10	658	22.4	0.0	55.6
Stepup Transformer	60	5	30	658	42.4	0.0	32.4
Power Inverter	77	6	15	658	40.8	0.0	48.0
Emergency Generator	95	3.28	1	5284	64.1	0.0	30.9
						Combined Noise Level (dBA L_{eq})	**56**

Table B-19

Mitigated Noise Level at M1: Residential Land Use Type near the Northeastern Corner of the Project Site

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	5921	59.9	0.0	-4.4
Inverter	55.5	6	1	6417	60.6	0.0	-5.1
Inverter	55.5	6	1	3306	54.8	0.0	0.7
Inverter	55.5	6	1	4022	56.5	0.0	-1.0
Inverter	55.5	6	1	5109	58.6	0.0	-3.1
Inverter	55.5	6	1	5671	59.5	0.0	-4.0
Inverter	55.5	6	1	2641	52.9	0.0	2.6
Inverter	55.5	6	1	3496	55.3	0.0	0.2
Inverter	55.5	6	1	4569	57.6	0.0	-2.1
Inverter	55.5	6	1	1389	47.3	0.0	8.2
Inverter	55.5	6	1	2054	50.7	0.0	4.8
Inverter	55.5	6	1	3077	54.2	0.0	1.3
Inverter	55.5	6	1	4284	57.1	0.0	-1.6
Inverter	55.5	6	1	562	39.4	0.0	16.1
Inverter	55.5	6	1	1619	48.6	0.0	6.9
Inverter	55.5	6	1	2090	50.8	0.0	4.7
Inverter	55.5	6	1	2805	53.4	0.0	2.1
Stepup Transformer	75	3	1	7082	67.5	0.0	7.5
Battery Storage HVAC Module	60	30	10	6791	47.1	0.0	22.9
Stepup Transformer	60	5	30	6791	62.7	0.0	12.1
Power Inverter	77	6	15	6791	61.1	0.0	27.7
Emergency Generator	95	3.28	1	1186	51.2	0.0	43.8
						Combined Noise Level (dBA L_{eq})	**44**

Table B-20

Mitigated Noise Level at M2: Residential Land Use Type near the Eastern Side of the Project Site

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	5127	58.6	0.0	-3.1
Inverter	55.5	6	1	5394	59.1	0.0	-3.6
Inverter	55.5	6	1	3588	55.5	0.0	0.0
Inverter	55.5	6	1	3494	55.3	0.0	0.2
Inverter	55.5	6	1	4003	56.5	0.0	-1.0
Inverter	55.5	6	1	4337	57.2	0.0	-1.7
Inverter	55.5	6	1	2849	53.5	0.0	2.0
Inverter	55.5	6	1	2729	53.2	0.0	2.3
Inverter	55.5	6	1	3123	54.3	0.0	1.2
Inverter	55.5	6	1	2550	52.6	0.0	2.9
Inverter	55.5	6	1	2136	51.0	0.0	4.5
Inverter	55.5	6	1	1973	50.3	0.0	5.2
Inverter	55.5	6	1	2450	52.2	0.0	3.3
Inverter	55.5	6	1	1893	50.0	0.0	5.5
Inverter	55.5	6	1	1467	47.8	0.0	7.7
Inverter	55.5	6	1	612	40.2	0.0	15.3
Inverter	55.5	6	1	1219	46.2	0.0	9.3
Stepup Transformer	75	3	1	5881	65.8	0.0	9.2
Battery Storage HVAC Module	60	30	10	5483	45.2	0.0	24.8
Stepup Transformer	60	5	30	5483	60.8	0.0	14.0
Power Inverter	77	6	15	5483	59.2	0.0	29.5
Emergency Generator	95	3.28	1	1985	55.6	0.0	39.4
						Combined Noise Level (dBA L_{eq})	**40**

Table B-21
Mitigated Noise Level at M3: Residential Land Use Type Southeast of the Project Site

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	4672	57.8	0.0	-2.3
Inverter	55.5	6	1	4681	57.8	0.0	-2.3
Inverter	55.5	6	1	4353	57.2	0.0	-1.7
Inverter	55.5	6	1	3661	55.7	0.0	-0.2
Inverter	55.5	6	1	3463	55.2	0.0	0.3
Inverter	55.5	6	1	3475	55.3	0.0	0.2
Inverter	55.5	6	1	3804	56.0	0.0	-0.5
Inverter	55.5	6	1	2988	53.9	0.0	1.6
Inverter	55.5	6	1	2467	52.3	0.0	3.2
Inverter	55.5	6	1	4100	56.7	0.0	-1.2
Inverter	55.5	6	1	3347	54.9	0.0	0.6
Inverter	55.5	6	1	2378	52.0	0.0	3.5
Inverter	55.5	6	1	1562	48.3	0.0	7.2
Inverter	55.5	6	1	3789	56.0	0.0	-0.5
Inverter	55.5	6	1	3013	54.0	0.0	1.5
Inverter	55.5	6	1	2272	51.6	0.0	3.9
Inverter	55.5	6	1	1880	49.9	0.0	5.6
Stepup Transformer	75	3	1	4938	64.3	0.0	10.7
Battery Storage HVAC Module	60	30	10	4476	43.5	0.0	26.5
Stepup Transformer	60	5	30	4476	59.0	0.0	15.7
Power Inverter	77	6	15	4476	57.5	0.0	31.3
Emergency Generator	95	3.28	1	3628	60.9	0.0	34.1
						Combined Noise Level (dBA L_{eq})	**37**

Table B-22
Mitigated Noise Level at M4: Residential Land Use Type South of the Project Site

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	3615	55.6	0.0	-0.1
Inverter	55.5	6	1	3145	54.4	0.0	1.1
Inverter	55.5	6	1	5303	58.9	0.0	-3.4
Inverter	55.5	6	1	4094	56.7	0.0	-1.2
Inverter	55.5	6	1	2912	53.7	0.0	1.8
Inverter	55.5	6	1	2311	51.7	0.0	3.8
Inverter	55.5	6	1	5197	58.8	0.0	-3.3
Inverter	55.5	6	1	3956	56.4	0.0	-0.9
Inverter	55.5	6	1	2635	52.9	0.0	2.6
Inverter	55.5	6	1	6136	60.2	0.0	-4.7
Inverter	55.5	6	1	5203	58.8	0.0	-3.3
Inverter	55.5	6	1	3964	56.4	0.0	-0.9
Inverter	55.5	6	1	2639	52.9	0.0	2.6
Inverter	55.5	6	1	6376	60.5	0.0	-5.0
Inverter	55.5	6	1	5323	59.0	0.0	-3.5
Inverter	55.5	6	1	4931	58.3	0.0	-2.8
Inverter	55.5	6	1	4120	56.7	0.0	-1.2
Stepup Transformer	75	3	1	2867	59.6	0.0	15.4
Battery Storage HVAC Module	60	30	10	2439	38.2	0.0	31.8
Stepup Transformer	60	5	30	2439	53.8	0.0	21.0
Power Inverter	77	6	15	2439	52.2	0.0	36.6
Emergency Generator	95	3.28	1	5881	65.1	0.0	29.9
						Combined Noise Level (dBA L_{eq})	**39**

Table B-23
Mitigated Noise Level at M5: Residential Land Use Type West of the Project Site

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	1368	47.2	0.0	8.3
Inverter	55.5	6	1	998	44.4	0.0	11.1
Inverter	55.5	6	1	4234	57.0	0.0	-1.5
Inverter	55.5	6	1	3267	54.7	0.0	0.8
Inverter	55.5	6	1	2377	52.0	0.0	3.5
Inverter	55.5	6	1	2188	51.2	0.0	4.3
Inverter	55.5	6	1	4702	57.9	0.0	-2.4
Inverter	55.5	6	1	3854	56.2	0.0	-0.7
Inverter	55.5	6	1	3315	54.8	0.0	0.7
Inverter	55.5	6	1	5999	60.0	0.0	-4.5
Inverter	55.5	6	1	5238	58.8	0.0	-3.3
Inverter	55.5	6	1	4492	57.5	0.0	-2.0
Inverter	55.5	6	1	4175	56.9	0.0	-1.4
Inverter	55.5	6	1	6899	61.2	0.0	-5.7
Inverter	55.5	6	1	5833	59.8	0.0	-4.3
Inverter	55.5	6	1	6025	60.0	0.0	-4.5
Inverter	55.5	6	1	5174	58.7	0.0	-3.2
Stepup Transformer	75	3	1	953	50.0	0.0	25.0
Battery Storage HVAC Module	60	30	10	1386	33.3	0.0	36.7
Stepup Transformer	60	5	30	1386	48.9	0.0	25.9
Power Inverter	77	6	15	1386	47.3	0.0	41.5
Emergency Generator	95	3.28	1	6108	65.4	0.0	29.6
Combined Noise Level (dBA L_{eq})							**43**

Table B-24

Mitigated Noise Level at M6: Residential Land Use Type West of the Project Site

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	758	42.0	0.0	13.5
Inverter	55.5	6	1	1380	47.2	0.0	8.3
Inverter	55.5	6	1	2674	53.0	0.0	2.5
Inverter	55.5	6	1	1960	50.3	0.0	5.2
Inverter	55.5	6	1	1777	49.4	0.0	6.1
Inverter	55.5	6	1	2117	50.9	0.0	4.6
Inverter	55.5	6	1	3250	54.7	0.0	0.8
Inverter	55.5	6	1	2692	53.0	0.0	2.5
Inverter	55.5	6	1	2738	53.2	0.0	2.3
Inverter	55.5	6	1	4539	57.6	0.0	-2.1
Inverter	55.5	6	1	3888	56.2	0.0	-0.7
Inverter	55.5	6	1	3437	55.2	0.0	0.3
Inverter	55.5	6	1	3636	55.6	0.0	-0.1
Inverter	55.5	6	1	5563	59.3	0.0	-3.8
Inverter	55.5	6	1	4575	57.6	0.0	-2.1
Inverter	55.5	6	1	4950	58.3	0.0	-2.8
Inverter	55.5	6	1	4198	56.9	0.0	-1.4
Stepup Transformer	75	3	1	2088	56.9	0.0	18.1
Battery Storage HVAC Module	60	30	10	2212	37.4	0.0	32.6
Stepup Transformer	60	5	30	2212	52.9	0.0	21.9
Power Inverter	77	6	15	2212	51.3	0.0	37.4
Emergency Generator	95	3.28	1	4739	63.2	0.0	31.8
						Combined Noise Level (dBA L_{eq})	**40**

Table B-25

Mitigated Noise Level at M7: Residential Land Use Type West of the Project Site

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	1297	46.7	0.0	8.8
Inverter	55.5	6	1	1989	50.4	0.0	5.1
Inverter	55.5	6	1	1738	49.2	0.0	6.3
Inverter	55.5	6	1	1181	45.9	0.0	9.6
Inverter	55.5	6	1	1645	48.8	0.0	6.7
Inverter	55.5	6	1	2228	51.4	0.0	4.1
Inverter	55.5	6	1	2331	51.8	0.0	3.7
Inverter	55.5	6	1	1951	50.2	0.0	5.3
Inverter	55.5	6	1	2398	52.0	0.0	3.5
Inverter	55.5	6	1	3611	55.6	0.0	-0.1
Inverter	55.5	6	1	3000	54.0	0.0	1.5
Inverter	55.5	6	1	2716	53.1	0.0	2.4
Inverter	55.5	6	1	3222	54.6	0.0	0.9
Inverter	55.5	6	1	4666	57.8	0.0	-2.3
Inverter	55.5	6	1	3717	55.8	0.0	-0.3
Inverter	55.5	6	1	4170	56.8	0.0	-1.3
Inverter	55.5	6	1	3491	55.3	0.0	0.2
Stepup Transformer	75	3	1	2759	59.3	0.0	15.7
Battery Storage HVAC Module	60	30	10	2744	39.2	0.0	30.8
Stepup Transformer	60	5	30	2744	54.8	0.0	20.0
Power Inverter	77	6	15	2744	53.2	0.0	35.6
Emergency Generator	95	3.28	1	3836	61.4	0.0	33.6
						Combined Noise Level (dBA L_{eq})	**39**

Table B-26

Mitigated Noise Level at M8: Residential Land Use Type Northwest of the Project Site

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	3795	56.0	0.0	-0.5
Inverter	55.5	6	1	4485	57.5	0.0	-2.0
Inverter	55.5	6	1	2282	51.6	0.0	3.9
Inverter	55.5	6	1	3119	54.3	0.0	1.2
Inverter	55.5	6	1	4160	56.8	0.0	-1.3
Inverter	55.5	6	1	4793	58.0	0.0	-2.5
Inverter	55.5	6	1	2966	53.9	0.0	1.6
Inverter	55.5	6	1	3649	55.7	0.0	-0.2
Inverter	55.5	6	1	4677	57.8	0.0	-2.3
Inverter	55.5	6	1	3639	55.7	0.0	-0.2
Inverter	55.5	6	1	3679	55.8	0.0	-0.3
Inverter	55.5	6	1	4249	57.0	0.0	-1.5
Inverter	55.5	6	1	5310	58.9	0.0	-3.4
Inverter	55.5	6	1	4887	58.2	0.0	-2.7
Inverter	55.5	6	1	4419	57.3	0.0	-1.8
Inverter	55.5	6	1	5201	58.8	0.0	-3.3
Inverter	55.5	6	1	4904	58.2	0.0	-2.7
Stepup Transformer	75	3	1	5226	64.8	0.0	10.2
Battery Storage HVAC Module	60	30	10	5288	44.9	0.0	25.1
Stepup Transformer	60	5	30	5288	60.5	0.0	14.3
Power Inverter	77	6	15	5288	58.9	0.0	29.9
Emergency Generator	95	3.28	1	4153	62.0	0.0	33.0
						Combined Noise Level (dBA L_{eq})	**35**

Table B-27
Mitigated Noise Level at M9: Residential Land Use Type South of the Project Site

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	1784	49.5	0.0	6.0
Inverter	55.5	6	1	1268	46.5	0.0	9.0
Inverter	55.5	6	1	4052	56.6	0.0	-1.1
Inverter	55.5	6	1	2815	53.4	0.0	2.1
Inverter	55.5	6	1	1485	47.9	0.0	7.6
Inverter	55.5	6	1	808	42.6	0.0	12.9
Inverter	55.5	6	1	4193	56.9	0.0	-1.4
Inverter	55.5	6	1	3015	54.0	0.0	1.5
Inverter	55.5	6	1	1905	50.0	0.0	5.5
Inverter	55.5	6	1	5367	59.0	0.0	-3.5
Inverter	55.5	6	1	4463	57.4	0.0	-1.9
Inverter	55.5	6	1	3379	55.0	0.0	0.5
Inverter	55.5	6	1	2544	52.5	0.0	3.0
Inverter	55.5	6	1	5960	59.9	0.0	-4.4
Inverter	55.5	6	1	4845	58.1	0.0	-2.6
Inverter	55.5	6	1	4765	58.0	0.0	-2.5
Inverter	55.5	6	1	3870	56.2	0.0	-0.7
Stepup Transformer	75	3	1	1135	51.6	5.0	18.4
Battery Storage HVAC Module	60	30	10	658	26.8	8.0	35.2
Stepup Transformer	60	5	30	658	42.4	8.0	24.4
Power Inverter	77	6	15	658	40.8	8.0	40.0
Emergency Generator	95	3.28	1	5284	64.1	0.0	30.9
						Combined Noise Level (dBA L_{eq})	**42**

Table B-28

Mitigated Noise Level at M1: Residential Land Use Type near the Northeastern Corner of the Project Site - Generator Off

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	5921	59.9	0.0	-4.4
Inverter	55.5	6	1	6417	60.6	0.0	-5.1
Inverter	55.5	6	1	3306	54.8	0.0	0.7
Inverter	55.5	6	1	4022	56.5	0.0	-1.0
Inverter	55.5	6	1	5109	58.6	0.0	-3.1
Inverter	55.5	6	1	5671	59.5	0.0	-4.0
Inverter	55.5	6	1	2641	52.9	0.0	2.6
Inverter	55.5	6	1	3496	55.3	0.0	0.2
Inverter	55.5	6	1	4569	57.6	0.0	-2.1
Inverter	55.5	6	1	1389	47.3	0.0	8.2
Inverter	55.5	6	1	2054	50.7	0.0	4.8
Inverter	55.5	6	1	3077	54.2	0.0	1.3
Inverter	55.5	6	1	4284	57.1	0.0	-1.6
Inverter	55.5	6	1	562	39.4	0.0	16.1
Inverter	55.5	6	1	1619	48.6	0.0	6.9
Inverter	55.5	6	1	2090	50.8	0.0	4.7
Inverter	55.5	6	1	2805	53.4	0.0	2.1
Stepup Transformer	75	3	1	7082	67.5	0.0	7.5
Battery Storage HVAC Module	60	30	10	6791	47.1	0.0	22.9
Stepup Transformer	60	5	30	6791	62.7	0.0	12.1
Power Inverter	77	6	15	6791	61.1	0.0	27.7
						Combined Noise Level (dBA L_{eq})	**29**

Table B-29

Mitigated Noise Level at M2: Residential Land Use Type near the Eastern Side of the Project Site - Generator Off

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	5127	58.6	0.0	-3.1
Inverter	55.5	6	1	5394	59.1	0.0	-3.6
Inverter	55.5	6	1	3588	55.5	0.0	0.0
Inverter	55.5	6	1	3494	55.3	0.0	0.2
Inverter	55.5	6	1	4003	56.5	0.0	-1.0
Inverter	55.5	6	1	4337	57.2	0.0	-1.7
Inverter	55.5	6	1	2849	53.5	0.0	2.0
Inverter	55.5	6	1	2729	53.2	0.0	2.3
Inverter	55.5	6	1	3123	54.3	0.0	1.2
Inverter	55.5	6	1	2550	52.6	0.0	2.9
Inverter	55.5	6	1	2136	51.0	0.0	4.5
Inverter	55.5	6	1	1973	50.3	0.0	5.2
Inverter	55.5	6	1	2450	52.2	0.0	3.3
Inverter	55.5	6	1	1893	50.0	0.0	5.5
Inverter	55.5	6	1	1467	47.8	0.0	7.7
Inverter	55.5	6	1	612	40.2	0.0	15.3
Inverter	55.5	6	1	1219	46.2	0.0	9.3
Stepup Transformer	75	3	1	5881	65.8	0.0	9.2
Battery Storage HVAC Module	60	30	10	5483	45.2	0.0	24.8
Stepup Transformer	60	5	30	5483	60.8	0.0	14.0
Power Inverter	77	6	15	5483	59.2	0.0	29.5
						Combined Noise Level (dBA L_{eq})	**31**

Table B-30
Mitigated Noise Level at M3: Residential Land Use Type Southeast of the Project Site - Generator Off

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	4672	57.8	0.0	-2.3
Inverter	55.5	6	1	4681	57.8	0.0	-2.3
Inverter	55.5	6	1	4353	57.2	0.0	-1.7
Inverter	55.5	6	1	3661	55.7	0.0	-0.2
Inverter	55.5	6	1	3463	55.2	0.0	0.3
Inverter	55.5	6	1	3475	55.3	0.0	0.2
Inverter	55.5	6	1	3804	56.0	0.0	-0.5
Inverter	55.5	6	1	2988	53.9	0.0	1.6
Inverter	55.5	6	1	2467	52.3	0.0	3.2
Inverter	55.5	6	1	4100	56.7	0.0	-1.2
Inverter	55.5	6	1	3347	54.9	0.0	0.6
Inverter	55.5	6	1	2378	52.0	0.0	3.5
Inverter	55.5	6	1	1562	48.3	0.0	7.2
Inverter	55.5	6	1	3789	56.0	0.0	-0.5
Inverter	55.5	6	1	3013	54.0	0.0	1.5
Inverter	55.5	6	1	2272	51.6	0.0	3.9
Inverter	55.5	6	1	1880	49.9	0.0	5.6
Stepup Transformer	75	3	1	4938	64.3	0.0	10.7
Battery Storage HVAC Module	60	30	10	4476	43.5	0.0	26.5
Stepup Transformer	60	5	30	4476	59.0	0.0	15.7
Power Inverter	77	6	15	4476	57.5	0.0	31.3
						Combined Noise Level (dBA L_{eq})	**33**

Table B-31
Mitigated Noise Level at M4: Residential Land Use Type South of the Project Site - Generator Off

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	3615	55.6	0.0	-0.1
Inverter	55.5	6	1	3145	54.4	0.0	1.1
Inverter	55.5	6	1	5303	58.9	0.0	-3.4
Inverter	55.5	6	1	4094	56.7	0.0	-1.2
Inverter	55.5	6	1	2912	53.7	0.0	1.8
Inverter	55.5	6	1	2311	51.7	0.0	3.8
Inverter	55.5	6	1	5197	58.8	0.0	-3.3
Inverter	55.5	6	1	3956	56.4	0.0	-0.9
Inverter	55.5	6	1	2635	52.9	0.0	2.6
Inverter	55.5	6	1	6136	60.2	0.0	-4.7
Inverter	55.5	6	1	5203	58.8	0.0	-3.3
Inverter	55.5	6	1	3964	56.4	0.0	-0.9
Inverter	55.5	6	1	2639	52.9	0.0	2.6
Inverter	55.5	6	1	6376	60.5	0.0	-5.0
Inverter	55.5	6	1	5323	59.0	0.0	-3.5
Inverter	55.5	6	1	4931	58.3	0.0	-2.8
Inverter	55.5	6	1	4120	56.7	0.0	-1.2
Stepup Transformer	75	3	1	2867	59.6	0.0	15.4
Battery Storage HVAC Module	60	30	10	2439	38.2	0.0	31.8
Stepup Transformer	60	5	30	2439	53.8	0.0	21.0
Power Inverter	77	6	15	2439	52.2	0.0	36.6
						Combined Noise Level (dBA L_{eq})	**38**

Table B-32
Mitigated Noise Level at M5: Residential Land Use Type West of the Project Site - Generator Off

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	1368	47.2	0.0	8.3
Inverter	55.5	6	1	998	44.4	0.0	11.1
Inverter	55.5	6	1	4234	57.0	0.0	-1.5
Inverter	55.5	6	1	3267	54.7	0.0	0.8
Inverter	55.5	6	1	2377	52.0	0.0	3.5
Inverter	55.5	6	1	2188	51.2	0.0	4.3
Inverter	55.5	6	1	4702	57.9	0.0	-2.4
Inverter	55.5	6	1	3854	56.2	0.0	-0.7
Inverter	55.5	6	1	3315	54.8	0.0	0.7
Inverter	55.5	6	1	5999	60.0	0.0	-4.5
Inverter	55.5	6	1	5238	58.8	0.0	-3.3
Inverter	55.5	6	1	4492	57.5	0.0	-2.0
Inverter	55.5	6	1	4175	56.9	0.0	-1.4
Inverter	55.5	6	1	6899	61.2	0.0	-5.7
Inverter	55.5	6	1	5833	59.8	0.0	-4.3
Inverter	55.5	6	1	6025	60.0	0.0	-4.5
Inverter	55.5	6	1	5174	58.7	0.0	-3.2
Stepup Transformer	75	3	1	953	50.0	0.0	25.0
Battery Storage HVAC Module	60	30	10	1386	33.3	0.0	36.7
Stepup Transformer	60	5	30	1386	48.9	0.0	25.9
Power Inverter	77	6	15	1386	47.3	0.0	41.5
						Combined Noise Level (dBA L_{eq})	**43**

Table B-33
Mitigated Noise Level at M6: Residential Land Use Type West of the Project Site - Generator Off

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	758	42.0	0.0	13.5
Inverter	55.5	6	1	1380	47.2	0.0	8.3
Inverter	55.5	6	1	2674	53.0	0.0	2.5
Inverter	55.5	6	1	1960	50.3	0.0	5.2
Inverter	55.5	6	1	1777	49.4	0.0	6.1
Inverter	55.5	6	1	2117	50.9	0.0	4.6
Inverter	55.5	6	1	3250	54.7	0.0	0.8
Inverter	55.5	6	1	2692	53.0	0.0	2.5
Inverter	55.5	6	1	2738	53.2	0.0	2.3
Inverter	55.5	6	1	4539	57.6	0.0	-2.1
Inverter	55.5	6	1	3888	56.2	0.0	-0.7
Inverter	55.5	6	1	3437	55.2	0.0	0.3
Inverter	55.5	6	1	3636	55.6	0.0	-0.1
Inverter	55.5	6	1	5563	59.3	0.0	-3.8
Inverter	55.5	6	1	4575	57.6	0.0	-2.1
Inverter	55.5	6	1	4950	58.3	0.0	-2.8
Inverter	55.5	6	1	4198	56.9	0.0	-1.4
Stepup Transformer	75	3	1	2088	56.9	0.0	18.1
Battery Storage HVAC Module	60	30	10	2212	37.4	0.0	32.6
Stepup Transformer	60	5	30	2212	52.9	0.0	21.9
Power Inverter	77	6	15	2212	51.3	0.0	37.4
						Combined Noise Level (dBA L_{eq})	**39**

Table B-34

Mitigated Noise Level at M7: Residential Land Use Type West of the Project Site - Generator Off

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	1297	46.7	0.0	8.8
Inverter	55.5	6	1	1989	50.4	0.0	5.1
Inverter	55.5	6	1	1738	49.2	0.0	6.3
Inverter	55.5	6	1	1181	45.9	0.0	9.6
Inverter	55.5	6	1	1645	48.8	0.0	6.7
Inverter	55.5	6	1	2228	51.4	0.0	4.1
Inverter	55.5	6	1	2331	51.8	0.0	3.7
Inverter	55.5	6	1	1951	50.2	0.0	5.3
Inverter	55.5	6	1	2398	52.0	0.0	3.5
Inverter	55.5	6	1	3611	55.6	0.0	-0.1
Inverter	55.5	6	1	3000	54.0	0.0	1.5
Inverter	55.5	6	1	2716	53.1	0.0	2.4
Inverter	55.5	6	1	3222	54.6	0.0	0.9
Inverter	55.5	6	1	4666	57.8	0.0	-2.3
Inverter	55.5	6	1	3717	55.8	0.0	-0.3
Inverter	55.5	6	1	4170	56.8	0.0	-1.3
Inverter	55.5	6	1	3491	55.3	0.0	0.2
Stepup Transformer	75	3	1	2759	59.3	0.0	15.7
Battery Storage HVAC Module	60	30	10	2744	39.2	0.0	30.8
Stepup Transformer	60	5	30	2744	54.8	0.0	20.0
Power Inverter	77	6	15	2744	53.2	0.0	35.6
						Combined Noise Level (dBA L_{eq})	**37**

Table B-35

Mitigated Noise Level at M8: Residential Land Use Type Northwest of the Project Site - Generator Off

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	3795	56.0	0.0	-0.5
Inverter	55.5	6	1	4485	57.5	0.0	-2.0
Inverter	55.5	6	1	2282	51.6	0.0	3.9
Inverter	55.5	6	1	3119	54.3	0.0	1.2
Inverter	55.5	6	1	4160	56.8	0.0	-1.3
Inverter	55.5	6	1	4793	58.0	0.0	-2.5
Inverter	55.5	6	1	2966	53.9	0.0	1.6
Inverter	55.5	6	1	3649	55.7	0.0	-0.2
Inverter	55.5	6	1	4677	57.8	0.0	-2.3
Inverter	55.5	6	1	3639	55.7	0.0	-0.2
Inverter	55.5	6	1	3679	55.8	0.0	-0.3
Inverter	55.5	6	1	4249	57.0	0.0	-1.5
Inverter	55.5	6	1	5310	58.9	0.0	-3.4
Inverter	55.5	6	1	4887	58.2	0.0	-2.7
Inverter	55.5	6	1	4419	57.3	0.0	-1.8
Inverter	55.5	6	1	5201	58.8	0.0	-3.3
Inverter	55.5	6	1	4904	58.2	0.0	-2.7
Stepup Transformer	75	3	1	5226	64.8	0.0	10.2
Battery Storage HVAC Module	60	30	10	5288	44.9	0.0	25.1
Stepup Transformer	60	5	30	5288	60.5	0.0	14.3
Power Inverter	77	6	15	5288	58.9	0.0	29.9
						Combined Noise Level (dBA L_{eq})	**31**

Table B-36
Mitigated Noise Level at M9: Residential Land Use Type South of the Project Site - Generator Off

Source	Source Noise Level (dB)	Source Reference Distance (ft.)	Number of Units	Distance to Nearest Property Line (ft.)	Distance Attenuation (dB)	Shielding Attenuation (dB)	One-Hour Average Noise Level at
Inverter	55.5	6	1	1784	49.5	0.0	6.0
Inverter	55.5	6	1	1268	46.5	0.0	9.0
Inverter	55.5	6	1	4052	56.6	0.0	-1.1
Inverter	55.5	6	1	2815	53.4	0.0	2.1
Inverter	55.5	6	1	1485	47.9	0.0	7.6
Inverter	55.5	6	1	808	42.6	0.0	12.9
Inverter	55.5	6	1	4193	56.9	0.0	-1.4
Inverter	55.5	6	1	3015	54.0	0.0	1.5
Inverter	55.5	6	1	1905	50.0	0.0	5.5
Inverter	55.5	6	1	5367	59.0	0.0	-3.5
Inverter	55.5	6	1	4463	57.4	0.0	-1.9
Inverter	55.5	6	1	3379	55.0	0.0	0.5
Inverter	55.5	6	1	2544	52.5	0.0	3.0
Inverter	55.5	6	1	5960	59.9	0.0	-4.4
Inverter	55.5	6	1	4845	58.1	0.0	-2.6
Inverter	55.5	6	1	4765	58.0	0.0	-2.5
Inverter	55.5	6	1	3870	56.2	0.0	-0.7
Stepup Transformer	75	3	1	1135	51.6	5.0	18.4
Battery Storage HVAC Module	60	30	10	658	26.8	8.0	35.2
Stepup Transformer	60	5	30	658	42.4	8.0	24.4
Power Inverter	77	6	15	658	40.8	8.0	40.0
						Combined Noise Level (dBA L_{eq})	**41**