SECTION 4.8

NOISE

This section defines technical terminology used in the analysis of noise; identifies federal, state and local regulations applicable to noise; and describes the environmental setting with regard to existing ambient noise levels. This sectional also analyzes potential noise impacts associated with construction and operation of the proposed project. The information in this section is based on the *Noise Assessment, Campo Verde Solar, County of Imperial* prepared by Ldn Consulting, Inc. (Ldn, 2012b). This document is provided on the attached CD of Technical Appendices as **Appendix F** of this EIR.

DEFINITIONS AND TERMINOLOGY

The following discussion includes a variety of acronyms used to describe noise. To facilitate understanding of this section, the following glossary of terms is provided as an introduction to the environmental setting for noise. While some of the terms are technical in nature, these acronyms and abbreviations are essential to describe and characterize noise.

Noise is defined as unwanted or annoying sound which interferes with or disrupts normal activities. Exposure to high noise levels has been demonstrated to cause hearing loss. The individual human response to environmental noise is based on the sensitivity of that individual, the type of noise that occurs and when the noise occurs.

Measurements

Decibel (dB). The decibel (dB) is the standard unit of measurement of noise. The decibel measurement is logarithmic which means that an increase of one decibel equates to a tenfold increase in the noise level. A noise level of zero (0) dB is barely audible and is considered the threshold of human hearing while noise levels in excess of 120 dB approach the pain threshold (e.g. jet engine noise). In between these extremes a quiet rural area with would have sound levels of approximately 20 dB and normal speech has a sound level of approximately 60 dB.

The smallest change in sound level detectable by the human ear is approximately 3 dB. The average person perceives a change in sound level of 10 dB as a doubling (or halving) of the level of loudness.

A-weighting/dBA. Because the human ear is unable to differentiate differences in sound levels at all frequencies, a special frequency-dependent rating scale, referred to as A-weighted sound pressure level, or dBA, has been developed to relate noise to human sensitivity. A-weighting compensates for the variability in perceived noise levels by weighing some sound frequencies are more than others. The A-weighted sound level adequately describes the instantaneous noise whereas community noise is measured using dBA.

Leq. The equivalent sound level, or L_{eq}, represents a steady sound level containing the same total acoustical energy as the actual fluctuating sound level over a given time interval. Leq refers to the true equivalent sound level averaged over a sample length of time.

Community Noise Equivalent Level (CNEL). The Community Noise Equivalent Level (CNEL) is the 24-hour A-weighted average for sound, with corrections for evening and nighttime hours. The corrections require an addition of 5 decibels to sound levels in the evening hours between 7 p.m. and 10 p.m. and an addition of 10 decibels to sound levels at nighttime hours between 10 p.m. and 7 a.m. These additions are made to account for the increased sensitivity during the evening and nighttime hours when sound appears louder.

For example, noise samples taken between the hours of 7 p.m. and 10 p.m. are boosted by 5 dB to reflect increased sensitivity to noise in evening hours. Similarly, noise samples taken during the overnight and early morning hours between 10 p.m. and 7 a.m. are weighted by 10 dB to reflect even

greater sensitivity to noise during the hours when most people would be sleeping. The CNEL scale is used by Imperial County for land use/noise compatibility assessment.

Localized Noise

Sound from a small localized source (a "point" source) radiates uniformly outward as it travels away from the source. The sound level attenuates or drops-off at a rate of 6 dBA for each doubling of distance.

Mobile Noise

Because mobile/traffic noise levels are calculated on a logarithmic scale, a doubling of the traffic noise or acoustical energy results in a noise level increase of 3 dBA. Therefore the doubling of the traffic volume, without changing the vehicle speeds or mix ratio, results in a noise increase of 3 dBA. Mobile noise levels radiate in an almost oblique fashion from the source and decrease at a rate of 3 dBA for each doubling of distance under hard site conditions and at a rate of 4.5 dBA for soft site conditions. In contrast, fixed or point sources radiate outward uniformly as it travels away from the source. Point source sound levels attenuate or decrease at a rate of 6 dBA for each doubling of distance.

Noise Attenuation

Noise attenuation refers to the decline in noise level that occurs in association with increased distance from the receptor. Sounds generated from a point source typically attenuate or decrease at a rate of 6 dBA for each doubling of distance. For example, a noise level of 87 dBA measured at 50 feet from the noise source would be reduced to 81 dBA at 100 feet from the source and be further reduced to 75 dBA at 200 feet from the source. When the noise source is a continuous line (e.g., vehicle traffic on a highway), the noise levels radiate in an almost oblique fashion from the source and drop off at a rate of 3 dBA for each doubling of distance under hard site conditions (e.g. concrete, asphalt and hard pack dirt) and at a rate of 4.5 dBA for soft site conditions (e.g. areas having slight grade changes, landscaped areas and vegetation). Barriers, obstructions, and weather conditions can all affect how noise travels.

Noise Reduction Methods

The most effective noise reduction methods consist of controlling the noise at the source, blocking the noise transmission with barriers or relocating the receiver. Any or all of these methods could be required to reduce noise levels to an acceptable level.

4.8.1 REGULATORY FRAMEWORK

A. FEDERAL

The Noise Control Act of 1972 (P.L. 92-574)

The Noise Control Act and several other federal laws require the federal government to set and enforce uniform noise standards for aircraft and airports, interstate motor carriers and railroads, workplace activities, medium and heavy-duty trucks. Most federal noise standards focus on preventing hearing loss by limiting exposure to sounds of 90 dBA and higher. However, some are stricter and focus on limiting exposure to quieter levels that are annoying to most individuals and can diminish one's quality of life.

Occupational Safety and Health Act of 1970

The Federal Occupational Safety and Health Administration (OSHA) regulates onsite noise levels and protects workers from occupational noise exposure. To protect hearing, worker noise exposure is limited to 90 decibels with A-weighting (dBA) over an 8-hour work shift (29 Code of Regulations [CFR] 1910.95). Employers are required to develop a hearing conservation program when employees are exposed to noise levels exceeding 85 dBA. These programs include provision of hearing protection devices testing employees for hearing loss on a periodic basis.

B. STATE

The California Occupational Safety and Health Administration (CalOSHA) has codified employee noise exposure limits as part of the State Occupational Noise Exposure Regulations (California Code of Regulations, Title 8, Section 5095–5099). The CalOSHA regulations are the same as the Federal OSHA standards in terms of dBA and duration.

The Governor's Office of Planning and Research published the *State of California General Plan Guidelines 2003* to provide direction on preparation of the various elements of a General Plan. With regard to noise, "Appendix C - Guidelines for the Preparation and Content of the Noise Element of the General Plan" provides guidance for the acceptability of projects within specific noise contours. The Guidelines identify various land use categories and Table 1 of the Guidelines includes adjustment factors that may be used to arrive at noise acceptability standards that reflect the noise control goals of a specific community. Imperial County used the adjustment factors to modify the state's Noise/Land Use Compatibility standards for the purpose of implementing the Noise Element of its General Plan.

C. LOCAL

County of Imperial General Plan

The Noise Element of the Imperial County General Plan identifies and defines existing and future environmental noise levels from sources of noise within or adjacent to the County; establishes goals and objectives to address these impacts, and provides Implementation Programs to implement these goals and objectives. **Table 4.8-1** summarizes the project's consistency with the applicable General Plan noise policies. While this EIR analyzes the project's consistency with the General Plan pursuant to State CEQA Guidelines Section 15125(d), the Imperial County Board of Supervisors ultimately determines consistency with the General Plan.

TABLE 4.8-1
IMPERIAL COUNTY GENERAL PLAN CONSISTENCY ANALYSIS

General Plan Policies	Consistent with General Plan?	Analysis
Noise Element		
Programs and Policies		
1) Acoustical Analysis of Proposed Projects The County shall require the analysis of proposed discretionary projects which may generate excessive noise or which may be impacted by existing excessive noise levels, including but not limited to the following:	Yes	A Noise Assessment was prepared for the project by Ldn Consulting, Inc., (Ldn, 2012b). Short-term construction and long-term operational noise levels were found to be less than established

TABLE 4.8-1
IMPERIAL COUNTY GENERAL PLAN CONSISTENCY ANALYSIS

General Plan Policies	Consistent with General Plan?	Analysis
• An analysis shall be required for any project which would be located, all or in part, in a Noise Impact Zone as specified above. • An analysis shall be required for any project which has the potential to generate noise in excess of the Property Line Noise Limits stated in Table 9. • An analysis shall be required for any project which, although not located in a Noise Impact Zone, has the potential to result in a significant increase in noise levels to sensitive receptors in the community. • An acoustical analysis and report shall be prepared by a person deemed qualified by the Director of Planning. The report shall describe the existing noise environment, the proposed project, the projected noise impact and, if required, the proposed mitigation to ensure conformance with applicable standards.		thresholds. The proposed project is consistent with this policy.
2) Noise/Land Use Compatibility. Where acoustical analysis of a proposed project is required, the County shall identify and evaluate potential noise/land use conflicts that could result from the implementation of the project. Projects which result in noise levels that exceed the "Normally Acceptable" criteria of the Noise/Land Use Compatibility Guidelines, Table 7, shall include mitigation measures to eliminate or reduce to an acceptable level the adverse noise impacts.	Yes	Refer to analysis of Policy 1.
5) New Noise Generating Projects. The County shall identify and evaluate projects which have the potential to generate noise in excess of the Property Line Noise Limits. An acoustical analysis must be submitted which demonstrates the project's compliance.	Yes	Refer to analysis of Policy 1.

TABLE 4.8-1
IMPERIAL COUNTY GENERAL PLAN CONSISTENCY ANALYSIS

General Plan Policies	Consistent with General Plan?	Analysis
6) Project Which Generate Off-site Traffic Noise. The acoustical analysis shall identify and evaluate projects which will generate traffic and increase noise levels on off-site roadways. If the project site has the potential to cause a significant noise impact to sensitive receptors along those roadways, the acoustical analysis report shall consider noise reduction measures to reduce the impact to a level less than significant.	Yes	Refer to analysis of Policy 1.

Operational Standards

The Property Line Noise Limits listed in Table 9 of the Imperial County General Plan Noise Element and the County's Ordinance, Title 9, Division 7 (Noise Abatement and Control) Section 90702.00 Subsection A provides acceptable Sound level limits based on the property zoning. **Table 4.8-2** identifies property line sound level limits that apply to noise generation from one property to an adjacent property.

TABLE 4.8-2
PROPERTY LINE NOISE LEVEL LIMITS

Zone	Time	Applicable Limit One-hour Average Sound Level
Residential Zones	7 a.m. to 10 p.m.	50 dB
	10 p.m. to 7 a.m.	45 dB
Multi-residential Zones	7 a.m. to 10 p.m.	55 dB
	10 p.m. to 7 a.m.	50 dB
Commercial Zones	7 a.m. to 10 p.m.	60 dB
	10 p.m. to 7 a.m.	55 dB
Light Industrial/Industrial Park Zones	Anytime	70 dB
General Industrial Zones	Anytime	75 dB
When the noise-generating property and the receiving property have different uses, the more restrictive standard shall apply. When the ambient noise level is equal to or exceeds the Property Line noise standard, the increase of the existing or proposed noise shall not exceed 3 dB Leq. The sound level limit between two zoning districts (different land uses) shall be measured at the property line between the properties. Fixed-location public utility distribution or transmission facilities located on or adjacent to a property line shall be subject to the noise level limits of subsection A of this section, measured at or beyond six feet from the boundary of the easement upon which the equipment is located. This section does not apply to noise generated by helicopters at heliports or helistops authorized by a conditional use permit. This section does not apply to noise generated by standard agricultural field operating practices such as planting and harvesting of crops. The County of Imperial has a Right to Farm Ordinance (1031) which serves as recognition to agricultural practices to new development. Agricultural/industrial operations shall comply with the noise levels prescribed under the general industrial zones.		

Source: Ldn, 2012b.

County Ordinance, Title 9, Division 7 states that it is unlawful for any person to make or cause any noise to the extent that the one-hour average sound level, at any point on or beyond the boundaries of their property, exceeds the applicable limits shown in **Table 4.8-2**. The standards imply the existence of a

sensitive receptor on the adjacent, or receiving, property. In the absence of a sensitive receptor, an exception or variance to the standards may be appropriate. These standards do not apply to construction noise and are intended to be enforced through the County's code enforcement program on the basis of complaints received from persons impacted by excessive noise. It is important to note that a noise nuisance may occur even though an objective measurement with a sound level meter is not available. In such cases, the County may act to restrict disturbing, excessive, or offensive noise which causes discomfort or annoyance to reasonable persons of normal sensitivity residing in an area.

Construction Noise Standards

The Noise Element of the Imperial County General Plan requires that construction noise from a single piece of equipment or a combination of equipment not exceed 75 dB Leq, when averaged over an 8-hour period, measured at the nearest sensitive receptor. This standard assumes a construction period, relative to an individual sensitive receptor for days or weeks. In cases of extended length construction times, the standard may be tightened so as not to exceed 75 dB Leq when averaged over a 1-hour period.

Construction equipment operation is required to be limited to the hours of 7 a.m. to 7 p.m., Monday through Friday, and 9 a.m. to 5 p.m. Saturday. No commercial construction operations are permitted on Sunday or holidays.

Noise/Land Use Compatibility Guidelines

Land use compatibility refers to the acceptability of a land use in a specified noise environment. **Figure 4.8-1** provides the Imperial County Noise/Land Use Compatibility Guidelines. The figure includes acceptable and unacceptable community noise exposure limits for various land use categories as currently defined by the State of California. When an acoustical analysis is performed, conformance of the proposed project with the Noise/Land Use Compatibility Guidelines is used to evaluate the potential noise impacts and provides criteria for environmental impact findings and conditions for project approval.

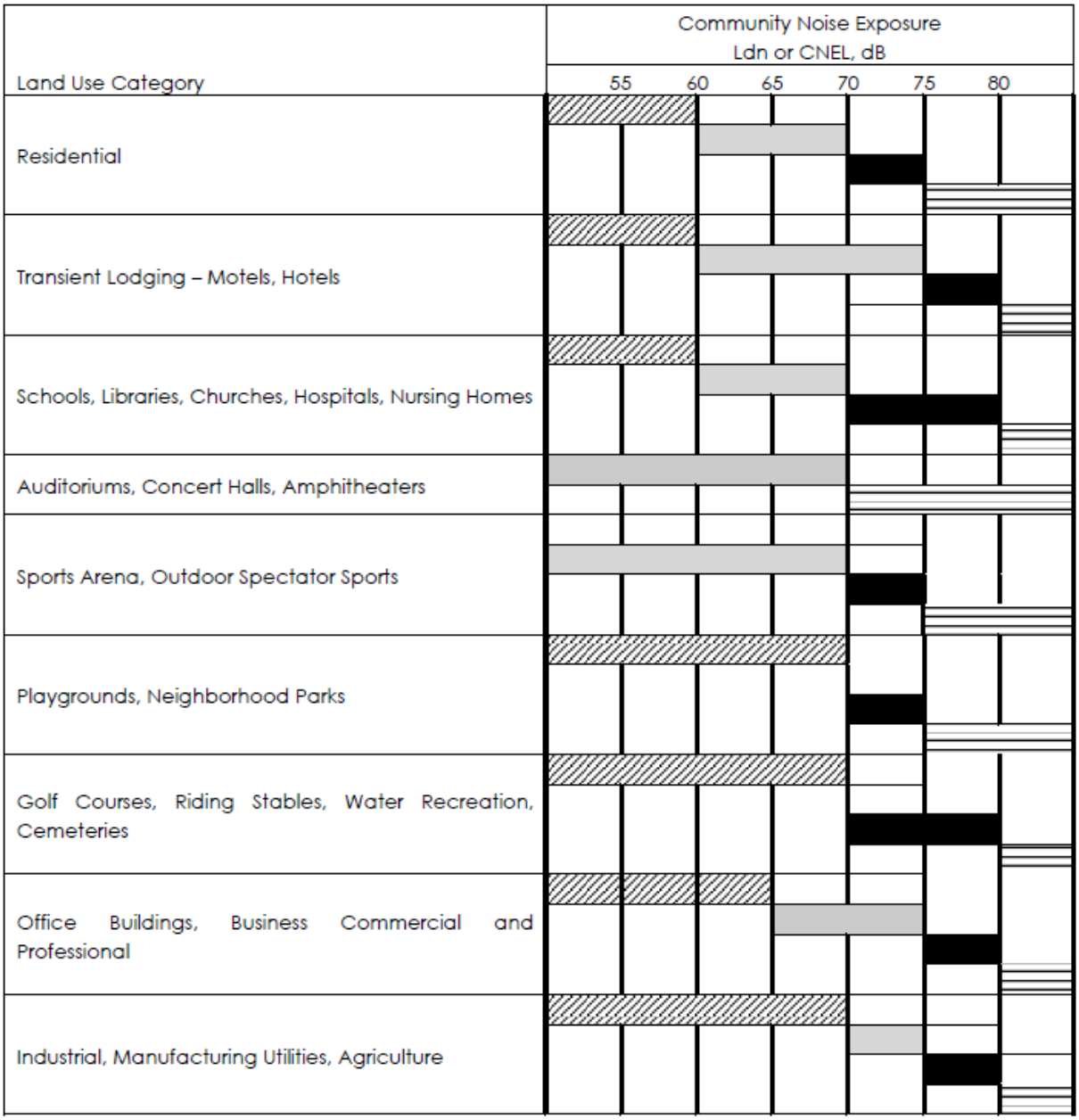
The increase of noise levels generally results in an adverse impact to the noise environment. The Noise/Land Use Compatibility Guidelines are not intended to allow the increase of ambient noise levels up to the maximum without consideration of feasible noise reduction measures. The following guidelines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

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

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

Guidelines for the Determination of Significance

The Project and surrounding properties are zoned as A-2 - General Agriculture, A-2-R - General Agriculture, Rural Zone, and A-3 - Heavy Agriculture. Solar energy electrical generators, electrical power generating plants, substations, and facilities for the transmission of electrical energy are allowed as



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

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

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

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

Source: Imperial County General Plan, Noise Element, Table 7.

FIGURE 4.8-1
NOISE/LAND USE COMPATIBILITY GUIDELINES

conditional uses in Agricultural zones. In keeping with the provisions of the zoning designation, the Applicant is seeking a Conditional Use Permit (CUP).

To be conservative, for the purposes of this analysis the most restrictive applicable sound limits identified in Section 90702.00 of the Noise Ordinance were applied to accommodate the planning of not just existing but potential future residential uses that could be adjacent to the proposed solar energy site. Section 90702.00 of the Noise Ordinance sets a residential sound level limit of 50 dBA Leq for daytime hours of 7 a.m. to 10 p.m. and 45 dBA Leq during the noise sensitive nighttime hours of 10 p.m. to 7 a.m. Most of the proposed project components will operate only during the daytime hours. However, a few components may operate during nighttime or early morning hours. Therefore the most restrictive and conservative approach is to apply the 45 dBA Leq nighttime standard at the property lines.

4.8.2 ENVIRONMENTAL SETTING

The noise analysis provided in this section is summarized from the Noise Assessment Campo Verde Solar Energy Project County of Imperial prepared by Ldn Consulting, Inc., (Ldn, 2012b). This document is provided on the attached CD of Technical Appendices as **Appendix F** of this EIR.

A. SOLAR GENERATION FACILITY

Existing Noise Levels

On-site Ambient Noise

To determine the existing noise environment and to assess potential noise impacts, noise measurements were taken at two locations on the project site to determine the worst case conditions at the nearest proposed noise sensitive land use (NSLU). The noise measurement locations were determined based on site access and noise impact potential. Both locations had a direct line of site to the adjacent roadways. Monitoring location 1 (M1) was located approximately 30-feet from Westside Road near the intersection of Vaughn Road. Monitoring location 2 (M2) was taken in the eastern portion of the site approximately 30-feet from Drew Road at the intersection of Diehl Road. **Figure 4.8-2** graphically depicts the noise monitoring locations.

The noise measurements were recorded on August 18, 2011 by Ldn Consulting between approximately 10:45 a.m. and 11:45 a.m. Noise measurements gathered at the project site were taken using a Larson-Davis Model LxT Type 1 precision sound level meter, programmed, in "slow" mode, to record noise levels in "A" weighted form. The sound level meter and microphone were mounted on a tripod, five feet above the ground and equipped with a windscreen during all measurements. The sound level meter was calibrated before and after the monitoring using a Larson-Davis calibrator, Model CAL 200.

The results of the noise measurements are presented in **Table 4.8-3**. The existing noise levels in the project area consisted primarily of low traffic volumes along Drew Road and Westside Road and background noise from distant agricultural operations on and adjacent to the site. The noise measurements were monitored for a period of 15 minutes each.

Source: Ldn, 2012b.

FIGURE 4.8-2
PROJECT SITE NOISE MEASUREMENT LOCATIONS

TABLE 4.8-3
PROJECT SITE AMBIENT NOISE LEVELS - MEASURED AUGUST 18, 2011

Location	Description	Time	Noise Levels (dBA)					
			L_{eq}	L_{min}	L_{max}	L10	L50	L90
M1	Along Westside Road	10:45 a.m. – 11:00 a.m.	50.4	34.3	70.5	51.1	38.7	36.3
M2	Along Drew Road	11:30 a.m. – 11:45 a.m.	54.8	35.8	74.1	52.8	41.6	38.2

Source: Ldn, 2012b.

The ambient Leq noise levels measured in the area of the project during the late morning and mid-day were found to be between 50 to 55 dBA Leq on the western portion of the site and 90 percent (L90) of the noise levels were in the 36 to 38 dBA range. The existing noise levels were found to be below County thresholds (identified in **Table 4.8-2**) for all sensitive land uses.

Corona Affect

The project site is located in a rural portion of Imperial County dominated by agriculture and desert. In addition to noise from agricultural operations and traffic along area roadways, the primary source of ambient noise in the area is audible power line noise generated from electric Corona discharge (i.e. the electrical ionization of the air that occurs near the surface of an energized conductor and suspension hardware due to very high electric field strength). This phenomenon is referred to as the "Corona Affect" and is usually experienced as a random crackling or hissing sound. The amount of Corona produced by a transmission line is a function of the voltage of the line, the diameter of the conductors, the locations of the conductors in relation to each other, the elevation of the line above sea level, the condition of the conductors and hardware, and the local weather conditions.

The electric field gradient is greatest at the surface of the conductor. Large-diameter conductors have lower electric field gradients at the conductor surface and, hence, lower Corona than smaller conductors. Irregularities, such as nicks and scrapes on the conductor surface, concentrate the electric field at these locations and increase the electric field gradient and thus the resulting Corona. Similarly, dust or insects on the conductor surface can cause irregularities and are a source for Corona along with moisture from fog or raindrops. Corona noise is primarily audible during wet weather conditions such as fog and rain. Heavy rain will typically generate a noise level from the falling rain drops hitting the ground that will exceed the noise generated by Corona and thereby mask the audible noise from the transmission line.

Corona increases at higher elevations where the density of the atmosphere is less than at sea level. Audible noise will vary with elevation with the relationship of X/300 where X is the elevation of the transmission line above sea level measured in meters (Ldn, 2012b). Audible noise at 600 meters (approximately 2,000 feet) in elevation will be twice the audible noise at 300 meters (approximately 1,000 feet), all other things being equal. The maximum Corona noise during wet weather conditions is usually less than 40 dBA at the edge of the right-of-way (ROW) (Ldn, 2012b). Corona typically becomes a design concern for transmission lines at 345-kV and above and is less noticeable from lines like the gen-tie for the project that are operated at lower voltages (i.e. 230-kV or lower).

B. GEN-TIE

The Noise Assessment focused on noise generated on the solar generation facility site, not on the portion of the gen-tie to be located on lands under the jurisdiction of the BLM. The portion of the project on BLM land would extend through undeveloped desert land within the existing Utility Corridor N. The noise setting would be dominated by noise from existing electrical facilities in Utility Corridor N. This portion of the gen-tie is undergoing separate environmental analysis under NEPA.

4.8.3 IMPACTS AND MITIGATION MEASURES

A. STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the following State CEQA Guidelines, as listed in Appendix G. The project would result in a significant impact to noise if it would result in any of the following:

a) 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?

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

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

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

B. Issues Scoped Out as Part of the Initial Study

Note that three CEQA significance criteria were scoped out as part of the Initial Study. Criterion "b" was eliminated from further analysis because operation of a solar generation facility would not create excessive groundborne vibration or noise levels. In addition, grading associated with project development is unlikely to generate groundborne vibration or noise levels through blasting or other construction related activity, as the project is characterized by flat topography. Therefore, no impact is identified for this issue area. Criteria "e" and "f" were also eliminated because the project site is not located within two miles of a public airport or a private airstrip. Thus, the project site would not be exposed to excessive aircraft noise. No impacts have been identified for these issue areas.

C. Methodology

Construction Noise

Grading

Calculations of the expected construction noise impacts were completed using a point-source noise prediction model. The essential model input data for these performance equations include the source levels of each type of equipment, relative source to receiver horizontal and vertical separations, the amount of time the equipment is operating in a given day, also referred to as the duty-cycle and any transmission loss from topography or barriers. To determine the worst-case noise levels for the grading operations no topographic attenuation or barrier reductions were used.

The noise levels used in this analysis for the mass grading and trenching operations (i.e. smoothing and compacting surface soils to prepare the site for installation of the PV panels) were based on the anticipated list of equipment proved by the Applicant (refer to **Table 4.8-4**).

PV Panel Installation

The noise levels used for the installation of the PV panels were based on the anticipated list of equipment provided by the Applicant (refer to **Table 4.8-5)**.

Off-site Traffic Noise

The off-site project related roadway segment noise levels projected in this report were calculated using the methods in the Highway Noise Model published by the Federal Highway Administration (FHWA Highway Traffic Noise Prediction Model, FHWA-RD-77-108, December, 1978). The FHWA Model uses the traffic volume, vehicle mix and speed to compute the equivalent noise level. A spreadsheet calculation was used which computes equivalent noise levels for each of the time periods used in the calculation of CNEL. Weighting these equivalent noise levels and summing them gives the CNEL for the traffic projections. The noise contours are then established by iterating the equivalent noise level until the distance to the desired noise contour(s) are found.

Because mobile/traffic noise levels are calculated on a logarithmic scale, a doubling of the traffic noise or acoustical energy results in a noise level increase of 3 dBA. Therefore the doubling of the traffic volume, without changing the vehicle speeds or mix ratio, results in a noise increase of 3 dBA. The future traffic noise model uses a typical, conservative vehicle mix of 95 percent autos, 3 percent medium trucks and 2 percent heavy trucks for all analyzed roadway segments. The vehicle mix provides the hourly distribution percentages of automobile, medium trucks and heavy trucks for input into the FHWA Model.

To determine if roadway noise level increases associated during the construction of the Project will create noise impacts, the noise levels for the existing conditions were compared with the noise level increase from the project' peak related construction traffic. The worst case construction related noise increases would occur when comparing the existing 2011 conditions prior to construction beginning in the year 2012. To be conservative, the construction phase's peak, one month, traffic volume was used. Noise contours were developed based on the Draft Traffic Impact Assessment (LOS, 2011) for the following traffic scenarios:

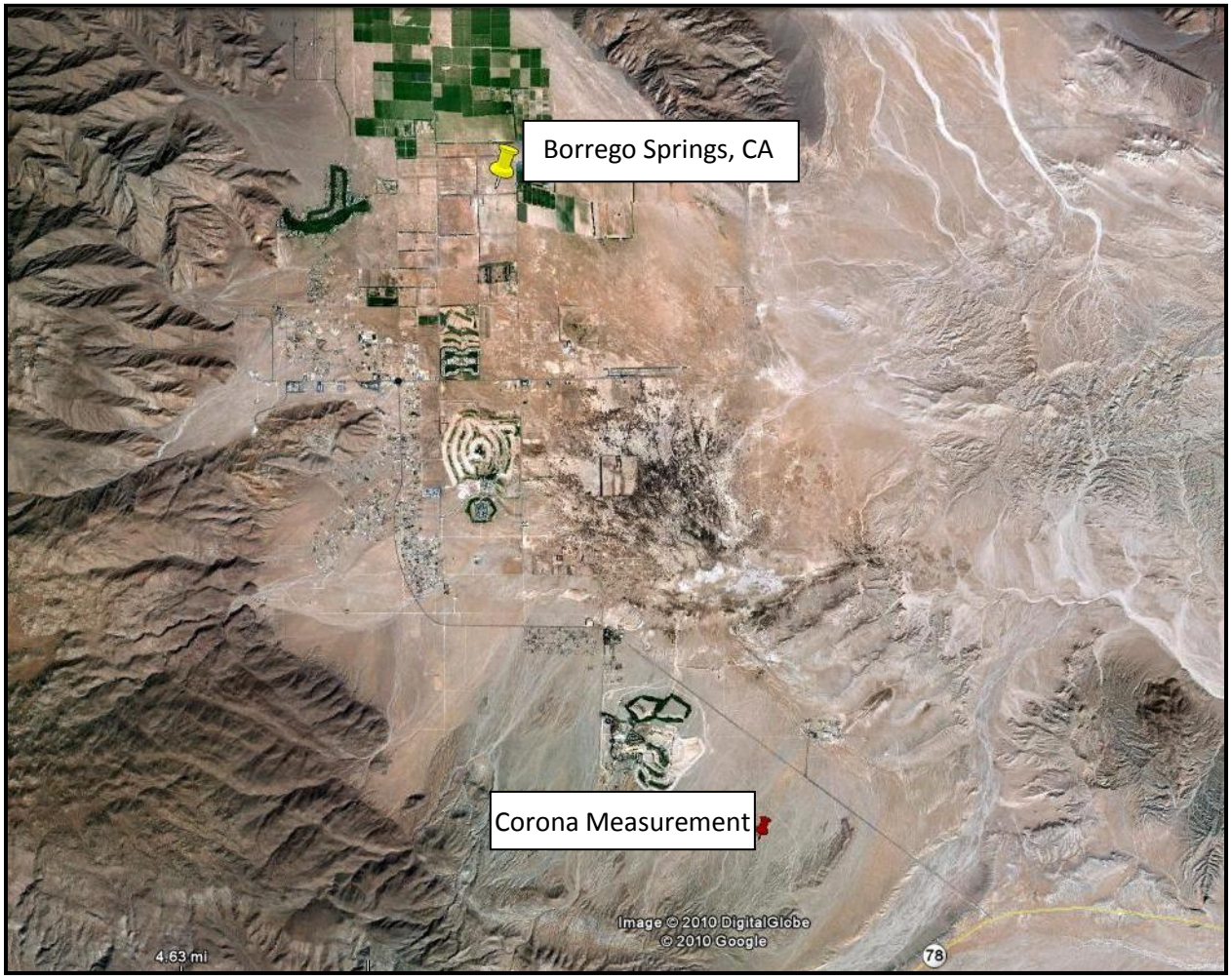
- Existing Year 2011: Current noise conditions without the construction of the project
- Existing Year 2011 Plus Project: Current noise conditions plus the peak construction related traffic
- Existing Year 2011 vs. Existing Year 2011 Plus Project: Comparison of the project construction traffic related noise level increases in the vicinity of the project site

Corona Affect Noise

To assess potential noise impacts from the Corona Affect, measurements were taken mid-span between two power poles along an existing San Diego Gas & Electric (SDG&E) transmission line located in the Borrego Springs area. The noise measurement location is provided graphically in **Figure 4.8-3**, denoted as Corona Measurement. The noise measurements were taken by Ldn Consulting in December 2009, between approximately 9:30 a.m. and 10:00 a.m. in dry, calm and clear conditions. The measurements were taken to determine the local conditions and to establish a baseline for the Corona Affect of the proposed gen-tie line. Sound levels for the proposed on-site equipment were obtained from the manufacture's specifications.

Noise measurements of the Corona Affect were taken using a Larson-Davis Model LxT Type 1 precision sound level meter, programmed, in "slow" mode, to record noise levels in A weighted form. The LxT was set to record in the low range of -10 to 110 dBA. The sound level meter and microphone were mounted on a tripod, five feet above the ground and equipped with a windscreen during all measurements. The sound level meter was calibrated before and after the monitoring using a Larson-

Davis calibrator, Model CAL 200. The noise measurement location was determined based on access and low ambient conditions to capture only the potential transmission line noise levels.



Source: Ldn, 2012b.

FIGURE 4.8-3
CORONA AFFECT NOISE MEASUREMENT LOCATION

Operational Noise

Calculations of the expected operational noise levels and potential impacts were completed using a point-source noise prediction model. The essential model input data for these performance equations include the source levels of each type of equipment, relative source to receiver horizontal and any vertical separations, the amount of time the equipment is operating in a given day, also referred to as the duty-cycle and any transmission loss from topography or barriers. To determine the worst-case noise levels for the operations no topographic attenuation, duty-cycle reductions or barrier reductions were used. A drop-off rate of 6 dBA per doubling of distance was used for all operational pieces of equipment.

D. PROJECT IMPACTS AND MITIGATION MEASURES

Noise Levels in Excess of Standards/Substantial Temporary Noise Increase

Impact 4.8.1 Heavy equipment and traffic generated during construction would generate short-term increases in noise on and in the vicinity of the project site. This impact is considered **less than significant.**

The project construction period is expected to last from 12 to 24 months and includes all site preparation, installation of the PV panels and all utilities including the gen-tie line. Grading and subsequent installation of the utilities and the PV panels are discussed separately below.

Construction noise represents a short-term impact on ambient noise levels. Noise generated by construction equipment (haul trucks, water trucks, graders, dozers, loaders and scrapers) can reach relatively high levels. Grading activities represent one of the highest potential sources for noise impacts.

The U.S. Environmental Protection Agency (U.S. EPA) has compiled data regarding the noise generating characteristics of specific types of construction equipment. Noise levels generated by heavy construction equipment at a distance of 50 feet can range from 60 dBA for a small tractor up to 100 dBA for rock breakers. However, these noise levels diminish rapidly with distance from the construction site at a rate of approximately 6 dBA per doubling of distance.

Most of the construction activities will consist of clearing and grubbing the site and the trenching of utilities for the preparation of the PV panels. The equipment is anticipated to be spread out over the entire site with some equipment potentially operating near the property line while the rest of the equipment may be located over 1,000 to 2,000 feet from the same property line. This would result in an acoustical center for the grading operation of more than 500 feet from the nearest property line.

As shown in **Table 4.8-4**, if all the equipment was operating in the same location, (which is not physically possible) at a distance as close as 140 feet from the nearest property line, the point source noise

TABLE 4.8-4
CONSTRUCTION GRADING NOISE LEVELS

Construction Equipment	Quantity	Duty Cycle (Hours/Day)	Source Level @ 50-Feet (dBA)	Combined Noise Level @ 50-Feet (dBA Leq-8h)
Graders	2	6.8	74	76.3
Rubber Tired Dozers	2	6.8	72	74.3
Water Trucks	4	6.8	70	75.3
Other Equipment	3	8	72	76.8
Rollers	2	6.8	75	77.3
Tractors/Loaders/Backhoes	2	6.8	73	75.3
Rough Terrain Forklifts	2	1.7	72	68.3
Combined Levels @ 50 Feet (dBA)				83.9
Distance To Property Line				140
Noise Reduction Due To Distance				-8.9
NEAREST PROPERTY LINE NOISE LEVEL				75.0
County of Imperial Threshold				75
IMPACT?				**NO**

Source: Ldn, 2012b.

attenuation from construction activities is -8.9 dBA. This would result in an anticipated worst case eight-hour average combined noise level of less than 75 dBA at the property line. Based on the attenuation and the spatial separation of the equipment, the noise levels would comply with the County of Imperial's 75 dBA standard at all project property lines. In addition, the project must comply with County standards regarding construction hours (i.e. construction limited to normal weekday working hours, 7 a.m. to 7 p.m., Monday through Friday). Therefore, grading noise impacts are considered less than significant.

PV Panel Installation

The installation of the PV panels would use a variety of equipment. **Table 4.8-5** summarizes the list of equipment provided by the Applicant which is anticipated to be used for PV panel installation. Based on normal installation procedures the equipment is anticipated to be spread out over the entire site similar to the mass grading operation. Some equipment will be operating near the property line while the rest of the equipment may be located over 1,000 to 2,000 feet from the same property line. This would result in an acoustical center for the PV installation operation of more than 500 feet from the nearest property line. The distance to the property lines would increase as the interior panels are installed and the noise levels would decrease due to distance.

As shown in **Table 4.8-5**, if all the equipment was operating in the same location (which is not physically possible), at a distance as close as 130 feet from the nearest property line, the point source noise attenuation from construction activities would be -8.3 dBA. This would result in an anticipated worst-case 8-hour average combined noise level of less than 75 dBA at the property line. Based on the attenuation and the spatial separation of the equipment, the noise levels would comply with the County of Imperial's 75 dBA standard at all project property lines. Therefore, construction noise impacts resulting from PV panel installation would be less than significant.

TABLE 4.8-5
PV PANEL INSTALLATION NOISE LEVELS

Construction Equipment	Quantity	Duty Cycle (Hours/Day)	Source Level @ 50-Feet(dBA)	Combined Noise Level @ 50-Feet (dBA Leq-8h)
Rough Terrain Forklifts	8	1.7	72	74.3
Cranes	4	1.8	75	74.5
Generator Sets	1	8	74	74.0
Tractors/Loaders/Backhoes	1	8	73	73.0
Air Compressors	2	4	76	76.0
Forklifts	2	7	72	74.4
Water Trucks	3	2	70	68.8
Aerial Lifts	1	8	70	70.0
Crawler Tractors	1	8	72	72.0
Combined Levels @ 50 Feet (dBA)				83.0
Distance To Property Line				130
Noise Reduction Due To Distance				-8.3
NEAREST PROPERTY LINE NOISE LEVEL				74.7
County of Imperial Threshold				75
IMPACT?				**NO**

Source: Ldn, 2012b.

Roadway Noise

Table 4.8-6 provides the noise levels and the distances to the 60 dBA CNEL contours for the roadways in the vicinity of the project site for the Existing Year 2011 Scenario without project construction traffic. As shown the noise level at 50-feet would range from 51.3 to 68.8 dBA CNEL.

TABLE 4.8-6
EXISTING TRAFFIC NOISE LEVELS (WITHOUT PROJECT)

Roadway Segment	ADT[1]	Vehicle Speeds (MPH)[1]	Noise Level @ 50-Feet (dBA CNEL)	60 dBA CNEL Contour Distance (Feet)
Diehl Road				
Derrick Road to Drew Road	199	40	51.3	13
Drew Road				
Evan Hewes Highway to I-8	2,443	55	65.3	112
I-8 to Diehl Road	1,033	55	61.5	63
Diehl Road to SR-98	512	55	58.5	40
Evan Hewes Highway				
Derrick Road to Drew Road	2,954	40	63.0	79
Drew Road to Forrester Road	2,843	40	62.8	77
Forrester Road				
Evan Hewes Highway to I-8	5,551	55	68.8	194

Source, Ldn, 2012b. [1] Campo Verde Solar Draft Traffic Impact Analysis prepared by LOS Engineering, Inc., 2012.

In contrast to **Table 4.8-6, Table 4.8-7** shows the Existing Year 2011 Plus Project construction traffic. Note that the values given do not take into account any noise barriers or topography that may affect ambient noise levels. As shown the noise level at 50-feet would range from 58.8 to 69.3 dBA CNEL.

TABLE 4.8-7
EXISTING PLUS PROJECT TRAFFIC NOISE LEVELS

Roadway Segment	ADT[1]	Vehicle Speeds (MPH)[1]	Noise Level @ 50-Feet (dBA CNEL)	60 dBA CNEL Contour Distance (Feet)
Diehl Road				
Derrick Road to Drew Road	1,128	40	58.8	42
Drew Road				
Evan Hewes Highway to I-8	2,589	55	65.5	117
I-8 to Diehl Road	1,912	55	64.2	95
Diehl Road to SR-98	639	55	59.5	46
Evan Hewes Highway				
Derrick Road to Drew Road	3,142	40	63.3	83
Drew Road to Forrester Road	3,031	40	63.1	81
Forrester Road				
Evan Hewes Highway to I-8	6,145	55	69.3	208

Source: Ldn, 2012b. [1] Source: Campo Verde Solar Draft Traffic Impact Analysis prepared by LOS Engineering, Inc., 2012.

Table 4.8-8 presents the comparison of the Existing Year 2011 with and without Project related noise levels. The overall roadway segment noise levels will increase from 0.3 dBA CNEL to 12.9 dBA CNEL during the construction of the project based on the anticipated project related construction traffic.

TABLE 4.8-8
EXISTING VS. EXISTING PLUS PROJECT TRAFFIC NOISE LEVELS

Roadway Segment	Existing Noise Level @ 50-Feet (dBA CNEL)	Existing Plus Project Noise Level @ 50-Feet (dBA CNEL)	Project Related Noise Level Increase (dBA CNEL)	County Noise Increase Threshold	Potential Impact?
Diehl Road					
Derrick Road to Drew Road	51.3	58.8	**7.5**	5	**Yes**
Drew Road					
Evan Hewes Highway to I-8	65.3	65.5	0.3	3	No
I-8 to Diehl Road	61.5	64.2	2.7	3	No
Diehl Road to SR-98	58.5	59.5	1.0	5	No
Evan Hewes Highway					
Derrick Road to Drew Road	63.0	63.3	0.3	3	No
Drew Road to Forrester Road	62.8	63.1	0.3	3	No
Forrester Road					
Evan Hewes Highway to I-8	68.8	69.3	0.4	3	No

Source: Ldn, 2012b.
Sound Levels provided are worst-case and do not take into account topography or shielding from barriers.

As shown in **bold** in the last column of **Table 4.8-8**, project construction traffic creates a short-term noise increases during the peak construction of more than 5 dBA CNEL on the segment of Diehl Road from Derrick Road to Drew Road. However, the noise level is below the 60 dBA CNEL threshold and in the "normally acceptable" category. Additionally, no sensitive receptors exist along this roadway segment. Therefore, construction roadway noise impacts are considered less than significant.

Mitigation Measures

None required.

Significance After Mitigation

Not applicable.

Noise Levels in Excess of Standards/Substantial Permanent Noise Increase

Impact 4.8.2 The proposed project would generate noise associated with operation of on-site equipment. This impact is considered **less than significant.**

Stationary noise sources associated with operation of the proposed project include noise from the transformers, inverters, substation and the gen-tie. The project proposes the installation of up to 170 small-scale, above ground enclosures and shelters that would be located within the PV module fields to shade inverter/distributor transformers and switching gear. These structures would have a footprint approximately 9-feet by 30-feet in size and be approximately 10 feet in height at the roof apex. The enclosures will be constructed of either metal or concrete and designed for outdoor use. The shelters would be open on the sides and constructed of wood and steel and would be neutral in color. Each of these locations may house a Satcon PowerGate Plus 1 MW Commercial Solar PV Inverters, or equivalent, and one of the smaller transformers necessary to increase the voltage.

The transformer and inverter locations would be spread out over the site with one transformer and one inverter grouped next to each other (called a Power Conversion Station (PCS)). The project also

proposes an on-site substation, switchyard and O&M Building in the southern portion of the site west of Liebert Road north of the Westside Main Canal. **Figure 4.3-4** depicts the proposed substation, a typical inverter / transformer, and PV array. The electric power produced by the project would be conveyed to the existing system with the incorporation of a new 230-kV gen-tie transmission line extending from the site to the Imperial Valley Substation (refer to **Figure 2.0-4,** in Chapter 2.0). The proposed transmission lines may increase a phenomenon referred to as the "Corona Affect" along the new gen-tie route. The operational noise levels from the proposed on site small-scale inverter/transformer structures along with the substation equipment and the offsite Corona Affect are analyzed separately below.

Transformer/Inverter and Array Tracker Noise Levels

The project may use two different small-scaled transformers as part of the proposed inverter/transformer sites along with array tracker motors. The two smaller transformers consist of a 1 megavolt-amp (MVA) from 200 volt (V) to 12-kV and a 1-MVA from 12-V to 34.5–. A larger transformer is proposed as part of the project's onsite substation. As identified in the *National Electric Manufactures Association (NEMA) Publication No. TR 1-1993, t*he unshielded noise levels for these two small-scaled transformers and the larger transformer, respectively, are:

1 MVA from 200V to 12-kV - 58 dBA @ 5 feet
1 MVA from 12V to 34.5-kV - 58 dBA @ 5 feet
20 MVA from 34.5 to 69-kV - 71 dBA @ 5 feet

According to the *Satcon PowerGate Specifications* (2009)*, t*he proposed Satcon PowerGate Plus 1 MW Commercial Solar PV Inverter, or equivalent, has an unshielded noise rating of less than 65 dBA at 5 feet and the array tracker motor has a noise rating of 61 dBA at 5 feet (*Source: Satcon PowerGate Specifications, 2009*). (The NEMA test results for transformers and the proposed Satcon inverters, manufacturer's specifications are provided **as Attachment A of the** Noise Assessment. This document is provided on the attached CD of Technical Appendices as **Appendix F** of this EIR).

The worst case property line noise levels would occur where a transformer/inverter and array tracker motor are located approximately 269-feet from the property (refer to **Figure 4.8-4**) along Liebert Road. Currently the adjacent properties are zoned for agricultural uses. To be conservative, the most restrictive residential nighttime property line standard of 45 dBA was used so that if a future residence or residential development are constructed the proposed Project will still be in compliance with the County standards. The noise levels of 58 dBA for the transformer, 65 dBA for the inverter and 61 dBA for the array tracker motor were combined and propagated out to the property line without any shielding. The results of the propagated noise levels are shown in **Table 4.8-9.**

TABLE 4.8-9
TRANSFORMER/INVERTER AND TRACKER NOISE – NEAREST PROPERTY LINE

Source	Noise Level @ 5-Feet (dBA)[1]	Distance to Nearest Property Line (Feet)	Noise Reduction due to distance (dBA)	Resultant Noise Level @ Property Line (dBA Leq)	Property Line Standard (dBA Leq)	Impact?
Transformer	58.0	75	-34.6	23.4	45	**No**
Inverter	65.0	75	-34.6	30.4	45	**No**
Array Tracker	61.0	75	-34.6	26.4	45	**No**
Cumulative Noise Level @ Property Line (dBA)				32.4	45	**No**

Source: Ldn, 2012b.
[1] Noise data provided as an attachment to this report.

The location and relationships of the on-site substation, transformer/inverter and the nearest property line for the project configuration are shown in **Figure 4.8-4**. To determine the noise levels at the property line, the noise levels of 58 dBA from the transformer, 65 dBA for the inverter, 61 dBA from the array tracker motor and 71 dBA for the larger transformer at the substation were all combined and propagated out to the nearest property line without any shielding from the proposed buildings. The results of the combined operational noise levels for are provided in **Table 4.8-10**.

TABLE 4.8-10
COMBINED OPERATIONAL PROPERTY LINE NOISE LEVELS

Source	Measurement Distance from Source (Feet)	Measured Noise Level (dBA)	Distance to Nearest Property Line (Feet)	Noise Reduction due to distance (dBA)	Resultant Noise Level @ Property Line (dBA Leq)	Property Line Standard (dBA Leq)	Impact?
Transformer	5	58.0	75	-34.6	23.4	45	**No**
Inverter	5	65.0	75	-34.6	30.4	45	**No**
Array Tracker	5	61.0	75	-34.6	26.4	45	**No**
Substation	5	71.0	300+	-35.6	**35.4**	45	**No**
Combined Noise Level @ Property Line (dBA)					37.2	45	**No**

Source: Ldn, 2012b.
[1] Noise data provided in Appendix F of this EIR.

As shown, the combined noise levels at the nearest property line were projected to be 37.2 dBA Leq and no noise impacts are anticipated from the on-site substation in the southern portion of the project site. The substation in combination with the pad mounted transformer/inverters and array tracker motors would comply with the County's most restrictive property line standard of 45 dBA Leq. No additional analysis is needed and no impacts are anticipated. Therefore, combined operational noise impacts resulting from on-site equipment would be less than significant.

Corona Noise

To determine the Corona Affect of the proposed gen-tie transmission line, noise measurements were previously taken along an existing SDG&E transmission line in the Borrego Springs area (refer to **Figure 4.8-2**). The measurements were taken for a different solar power project that is similar to the proposed project and can therefore be used to estimated Corona noise from the proposed project. The short-term measurements were conducted by Ldn Consulting December 4, 2009.

Due to ambient noise (airplanes, automobiles and birds) only one-minute measurements could be taken without the results being affected by factors other than the existing transmission lines. During the noise measurements, the crackling or hissing of the transmission lines was slightly audible and the weather conditions were dry and calm. The results of the measurements are provided in **Table 4.8-11**.

As can be seen in **Table 4.8-11**, during dry conditions, the noise levels from the Corona were very low (below 20 dBA). During moist or wet conditions the Corona noise can double. This would result in a noise level of 35 to 37 dBA which is consistent with previous studies and modeling efforts undertaken by the Electric Power Research Institute (EPRI) and CH_2M Hill for the Cross Valley Transmission Line project conducted for Southern California Edison 2008. The Corona is not limited to only project-related power transmission. Rather it is based on the transmission lines at full capacity and therefore represents Corna associated with the cumulative transmission of power through the line.

TABLE 4.8-11
MEASURED CORONA NOISE LEVELS - MEASURED DECEMBER 4, 2009

Location	Time	One Hour Noise Levels (dBA)						Property Line Standard (dBA L_{eq})	Impact ?
		L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}		
Transmission Lines Borrego Springs	9:35–9:36 a.m.	17.6	16.7	22.7	18.7	17.0	16.8	45	**No**
Transmission Lines Borrego Springs	9:37–9:38 a.m.	18.3	17.4	27.2	19.3	18.1	17.7	45	**No**

Source: Ldn, 2012b.

Proposed Project Substation Noise Levels

The onsite substation is proposed in the southern portion of the site west of Liebert Road north of the Westside Main Canal (please refer to **Figure 4.8-4**). The substation is 300 feet or more from the nearest property line to the south. The transformer at the substation would have noise level of 71 dBA at a distance of 5 feet. The reduction in the noise level at a distance of 300 feet is -35.6 dBA resulting in a noise level below 36 dBA at the nearest property line from the substation. Thus, the proposed substation would comply with the County's most restrictive property line standard of 45 dBA Leq and no additional analysis is needed for the substation. Noise generated by the project substation would result in a less than significant impact.

Operational Traffic Noise Impacts

During operations and maintenance, the project will primarily operate during daylight hours and will require (on average) less than 10 full-time personnel for operations and maintenance. Operations personnel include employees running the facility, security, and any other work associated with the operations. Maintenance personnel include employees addressing maintenance on a daily basis. On average, the operations and maintenance trip generation is estimated at about 20 ADT with approximately 10 AM and 10 PM peak hour trips. Although panel washing is not anticipated to be necessary, for purposes of this analysis it is assumed that during a typical year, the project may require up to 10 daily water trucks for panel washing over approximately 15 business days, with the frequency of washing estimated from one to four times a year. During the washing period, the total project daily traffic may increase to 40 or 50 ADT over a 15 business day period.

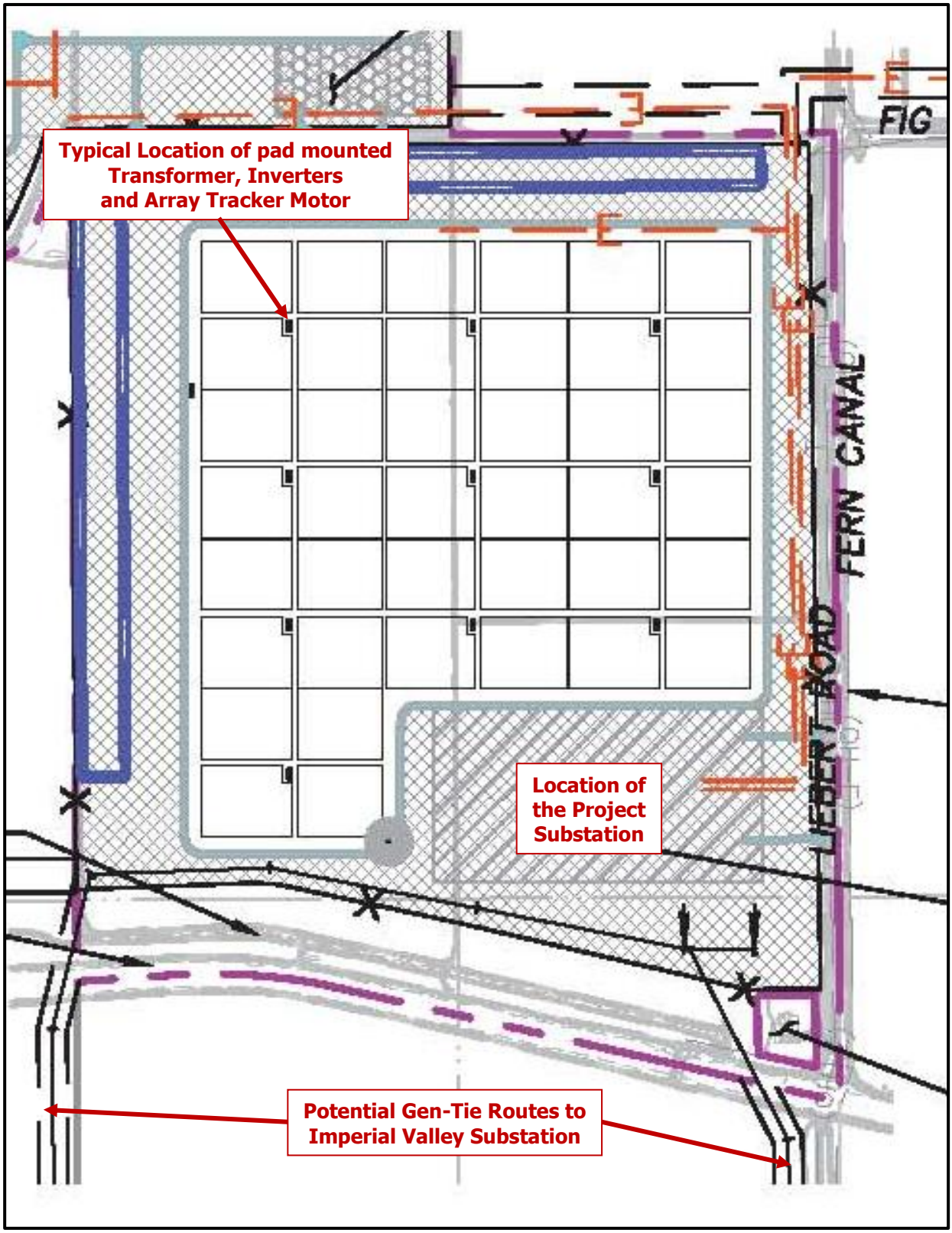
Operations and maintenance traffic generation is minimal compared to the existing traffic volumes. Therefore, the project's operational traffic would result in a less than significant noise impact at existing or future noise sensitive land.

Mitigation Measures

None required.

Significance After Mitigation

Not applicable.



Source: Ldn, 2012b.

FIGURE 4.8-4
PROPOSED EQUIPMENT LOCATIONS

4.8.4 CUMULATIVE SETTING, IMPACTS AND MITIGATION MEASURES

A. CUMULATIVE SETTING

The geographic scope for cumulative noise impacts is based on the traffic analysis which examined a total of 11 intersections, 7 roadway segments and 2 freeway segments in the study area. The selected intersections, roadway segments and freeway segments were confirmed by County staff and are listed in Table 4.3-5, Table 4.3-6 and Table 4.3-7 in Section 4.3, Transportation and Circulation. The cumulative projects are identified Table 3.0-1 in Chapter 3.0, Introduction to the Environmental Analysis and Assumptions Used. Noise levels within the vicinity of the project site primarily consist of traffic along area roadways.

A. CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Noise Increases

Impact 4.8.3 Construction and operation of the proposed project could incrementally contribute to the existing noise environment. This impact is considered **less than cumulatively considerable**.

Cumulative Construction Noise

To determine if cumulative off-site noise level increases associated with the peak construction of the proposed project and other planned or permitted projects in the vicinity would create noise impacts, the noise levels for the peak construction period of the project and other planned and permitted projects were compared with the existing opening year conditions. To be conservative, one month peak construction traffic volume was used. Noise contours were developed based on the Traffic Impact Assessment (LOS, 2012) for the following traffic scenarios:

- Existing Year 2011 Plus Project Plus Cumulative Projects: Current day noise conditions plus the peak construction period of the project and other permitted or planned projects.
- Existing Year 2011 vs. Existing Year 2011 Plus Project Plus Cumulative: Comparison of the existing noise levels and the related noise level increases from the combination of the proposed project peak construction traffic and all other planned or permitted projects in the vicinity of the site.

Noise levels for the Existing Year 2011 Scenario and the distances to the 60 dBA CNEL contours for the roadways in the vicinity of the project site were previously shown in **Table 4.8-6**. The cumulative noise conditions are provided in **Table 4.8-12**. No noise barriers or topography that could affect noise levels were incorporated in the calculations.

As shown in **Table 4.8-12,** the noise level at 50-feet would range from 58.8 to 69.8 dBA CNEL.

TABLE 4.8-12
EXISTING PLUS PROJECT PLUS CUMULATIVE TRAFFIC NOISE LEVELS

Roadway Segment	ADT[1]	Vehicle Speeds (MPH)[1]	Noise Level @ 50-Feet (dBA CNEL)	60 dBA CNEL Contour Distance (Feet)
Diehl Road				
Derrick Road to Drew Road	1,128	40	58.8	42
Drew Road				
Evan Hewes Highway to I-8	2,915	55	66.0	126
I-8 to Diehl Road	3,339	55	66.6	138
Diehl Road to SR-98	2,066	55	64.6	101
Evan Hewes Highway				
Derrick Road to Drew Road	3,529	40	63.8	89
Drew Road to Forrester Road	3,449	40	63.7	88
Forrester Road				
Evan Hewes Highway to I-8	6,996	55	69.8	227

SOURCE: LDN, 2012B.
[1] *Source: Campo Verde Solar Draft Traffic Impact Analysis prepared by LOS Engineering, Inc., 2012.*

Table 4.8-13 presents the comparison of the Existing Year 2011 and the Existing Year 2011 plus Project and Cumulative noise levels. As shown the noise level would increase from 0.8 to 7.5 dBA CNEL. Traffic related short-term noise increases during the peak construction of the Project and Cumulative Projects has the potential to increase noise levels more than the acceptable limit on three roadway segments as can be seen in **bold** in the last column of **Table 4.8-13**.

TABLE 4.8-13
EXISTING VS. EXISTING PLUS PROJECT PLUS CUMULATIVE TRAFFIC NOISE LEVELS

Roadway Segment	Existing Noise Level @ 50-Feet (dBA CNEL)	Existing Plus Project Plus Cumulative Noise Level @ 50-Feet (dBA CNEL)	Cumulative Related Noise Level Increase (dBA CNEL)	County Noise Increase Threshold	Potential Impact?
Diehl Road					
Derrick Road to Drew Road	51.3	58.8	**7.5**	5	**Yes**
Drew Road					
Evan Hewes Highway to I-8	65.3	66.0	0.8	3	No
I-8 to Diehl Road	61.5	66.6	5.1	3	**Yes**
Diehl Road to SR-98	58.5	64.6	6.1	5	**Yes**
Evan Hewes Highway					
Derrick Road to Drew Road	63.0	63.8	0.8	3	No
Drew Road to Forrester Road	62.8	63.7	0.8	3	No
Forrester Road					
Evan Hewes Highway to I-8	68.8	69.8	1.0	3	No

SOURCE: LDN, 2012B.
Sound Levels provided are worst-case and do not take into account topography or shielding from barriers.

However, the project would not be expected to incrementally add to the roadway traffic noise levels of any "reasonably foreseeable" projects as they are either: 1) not anticipated to coincide with the peak traffic period (first quarter of 2013 and only for a one month period) of the proposed project; or 2) the prescribed worst-case construction noise levels would be separated by enough distance and not cumulatively add to one another. Therefore, the project's traffic noise contribution to cumulative traffic noise during construction is considered less than cumulatively considerable.

Cumulative Operational Traffic Noise

During operations and maintenance, the project would primarily operate during daylight hours and would require (on average) less than 10 full-time personnel for operations and maintenance. Operations personnel include employees running the facility, security, and any other work associated with the operations. Maintenance personnel include employees addressing maintenance on a daily basis. On average, the operations and maintenance trip generation is estimated at about 20 average daily trips (ADT) with approximately 10 a.m. and 10 p.m. peak hour trips. Although panel washing is not anticipated to be necessary, for purposes of this analysis it is assumed that during a typical year, the project may require up to 10 daily water trucks for panel washing over approximately 15 business days, with the frequency of washing estimated from one to four times a year. During the washing period, the total project daily traffic may increase to 40 or 50 ADT over a 15 business day period. Compared to the existing traffic volumes, operations and maintenance traffic generation is minimal. Furthermore, existing or future noise sensitive land uses would not be adversely affected by the increase in noise because the project's operational traffic would result in a less than cumulatively considerable contribution to cumulative traffic noise. Therefore, cumulative operational noise would result in a **less than cumulatively considerable impact**.

Mitigation Measures

None required.

Significance After Mitigation

Not applicable.

Decommissioning Noise Impacts

It is reasonable to assume that noise impacts from decommissioning activity will be similar to construction of the project. Accordingly, the noise contribution of the project during decommissioning is expected to be **less than cumulatively considerable**.