Acoustic Assessment Report for the Pine Grove Solar Project

Madison County, Kentucky

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ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition
%	percent
µPa	microPascal
BESS	Battery Energy Storage System
dB	decibel
dBA	A-weighted decibel
dBL	decibel (unweighted)
DOH	Department of Health
FHWA	Federal Highway Administration
ft	feet
hp	horsepower
Hz	Hertz
ISO	International Organization for Standardization
kV	kilovolt
L_{10}	the sound level exceeded 10% of the time
L_{90}	the sound level exceeded 90% of the time
L_{dn}	day-night sound level
L_{eq}	equivalent sound level
L_{max}	maximum sound level
L_{P}	sound pressure level
L_{W}	sound power level
m	meter
MW	megawatt
MWh	megawatt-hour
NSR	noise sensitive receptor
PCS	Power Conversion Station
Project	Pine Grove Solar Project
pW	picowatt
Tetra Tech	Tetra Tech, Inc.
USGS	United States Geological Survey
W	watt

1.0 INTRODUCTION

Pine Grove Solar, LLC [a subsidiary of AES Corporation (AES)] proposes to construct and operate the Pine Grove Solar Project (Project), a solar photovoltaic power generation facility which will consist of an up to 50-megawatt (MW) ground-mounted solar photovoltaic system, a substation and switchyard, and related interconnection and ancillary facilities located in Madison County, Kentucky. The proposed Project is located approximately 1.5 miles southeast of the unincorporated community of Bybee, Kentucky.

A series of solar photovoltaic panels will be mounted on a racking system arranged in evenly spaced rows throughout the Project area. Power Conversion Stations (PCS) will be distributed throughout the Project area, comprised of one distribution transformer and a variable number of power inverters. This equipment will connect via underground electrical wiring with a Project substation and switchyard. The substation and switchyard will be located near the center of the Project area abutting an existing 161 kilovolt (kV) Kentucky Utilities transmission line.

On behalf of Pine Grove Solar, LLC, Tetra Tech, Inc. (Tetra Tech) prepared an acoustic assessment for the Project, evaluating the sound contribution of the Project to the surrounding noise-sensitive receptors (NSR). An acoustic modeling analysis was conducted simulating sound produced during both construction and operation. Operational sound sources consisted primarily of the inverters, distribution transformers, and the main transformer at the onsite collector substation. The overall objectives of this assessment were to: 1) identify Project sound sources and estimate sound propagation characteristics; 2) computer-simulate sound levels using internationally accepted calculation standards; and 3) determine whether the Project will operate in compliance with the applicable noise regulations.

2.0 ACOUSTIC METRICS AND TERMINOLOGY

This section outlines some of the relevant concepts in acoustics to help non-specialist readers better understand the acoustic modeling assessment and results as presented in this report.

Sound is described as a rapid fluctuation or oscillation of air pressure above and below atmospheric pressure creating a sound wave. Sound energy is characterized by the properties of sound waves, which include frequency, wavelength, period, amplitude, and velocity. A sound source is defined by a sound power level (L_W), which is independent of any external factors. Sound power is the rate at which acoustical energy is radiated outward and is expressed in units of watts (W). Sound energy propagates through a medium where it is sensed and then interpreted by a receiver. A sound pressure level (L_P) is a measure of this fluctuation at a given receiver location and can be obtained using a microphone or calculated from information about the source L_W and the surrounding environment. Sound power, however, cannot be measured directly. It is calculated from measurements of sound intensity or sound pressure at a given distance from the source.

While the concept of sound is defined by the laws of physics, the term 'noise' has further qualities, such as being excessive or loud. The perception of sound as noise is influenced by several technical factors as intensity, sound quality, tonality, duration, and the existing background levels. Sound levels are presented on a logarithmic scale to account for the large range of acoustic pressures that the human ear is exposed to and is expressed in units of decibels (dB). A dB is defined as the ratio between a measured value and a reference value, usually corresponding to the lower threshold of human hearing defined as 20 microPascals (µPa). Conversely, sound power is referenced to 1 picowatt (pW).

Broadband sound includes sound energy summed across the frequency spectrum. In addition to broadband sound pressure, analysis of the various frequency components of the sound spectrum is completed to determine tonal characteristics. The unit of frequency is Hertz (Hz), measuring the cycles per second of the sound pressure waves; the frequency analysis typically examines 11 octave bands ranging from 16 Hz (low) to 16,000 Hz (high), encompassing the entire human audible frequency range. Since the human ear does not perceive every frequency with equal loudness, spectrally varying sounds are often adjusted with a weighting filter. The A-weighted filter is applied to compensate for the frequency response of the human auditory system and sound exposure in acoustic assessments is designated in A-weighted decibels (dBA). Unweighted sound levels are referred to as linear. Linear decibels (dBL) are used to determine a sound's tonality and to engineer solutions to reduce or control noise as techniques are different for low- and high-frequency noise.

Sound can be measured, modeled, and presented in various formats, with the most common metric being the equivalent sound level (L_{eq}). The equivalent sound level has been shown to provide both an effective and uniform method for comparing time-varying sound levels. The day-night sound level (L_{dn}) is used to describe sound levels over the course of a 24-hour period, with a 10-dB correction to reflect the increased noise-sensitivity of nighttime (10 PM to 7 AM). Sound levels can also be described using statistical levels (L_n). This descriptor identifies the sound level that is exceeded "n" percent of the time over a measurement period (e.g., L_{90} = sound level exceeded 90 percent of the time). The sound level exceeded for a small percent of the time, L_{10}, closely corresponds to short-term, higher-level, intrusive noises (such as vehicle pass-by noise near a roadway). The sound level exceeded for a large percent of the time, L_{90}, closely corresponds to continuous, lower-level background noise (such as continuous noise from a distant industrial facility). L_{50} is the level exceeded 50 percent of the time and is typically referred to the median sound level over a given period. Typical L_P associated with various activities and environments are presented in Table 1.

Table 1. Sound Pressure Levels of Typical Noise Sources and Acoustic Environments

Noise Source or Activity	Sound Level (dBA)	Subjective Impression
Jet aircraft takeoff from carrier (50 feet [ft])	140	Threshold of pain
50-horsepower (hp) siren (100 ft)	130	
Loud rock concert near stage Jet takeoff (200 ft)	120	Uncomfortably loud
Crop dusting plane takeoff (100 ft)	110	
Jet takeoff (2,000 ft)	100	Very loud
Heavy truck or motorcycle (25 ft)	90	
Garbage disposal Food blender (2 ft) Pneumatic drill (50 ft)	80	Loud
Vacuum cleaner (10 ft)	70	Moderate
Passenger car at 65 miles per hour (25 ft)	65	
Large store air-conditioning unit (20 ft)	60	
Large office household refrigerator	55	Quiet
Light auto traffic (100 ft)	50	
Quiet rural residential area with no activity	45	
Bedroom or quiet living room, bird calls	40	Faint
Typical wilderness area	35	
Quiet library, soft whisper (15 ft)	30	Very quiet
Wilderness with no wind or animal activity	25	Extremely quiet
High-quality recording studio	20	
Acoustic test chamber	10	Just audible
	0	Threshold of human hearing

3.0 NOISE REGULATIONS

A review was conducted of noise regulations applicable to the Project at the federal, state, county, and local levels. There are no federal, state, county, or local environmental noise requirements specific to this Project.

In 1974 the U.S. EPA published "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin on Safety". In this publication, the U.S. EPA evaluated the effects of environmental noise with respect to health and safety and determined an L_{dn} of 55 dBA to be the maximum sound level that will not adversely affect public health and welfare by interfering with speech or other activities in outdoor areas.

In the absence of relevant environmental noise requirements, received sound levels at nearby NSRs were calculated and assessed for compliance to the U.S. EPA limit of 55 dBA L_{dn}. Sound levels resulting from the Project at all identified NSRs located in the vicinity of the Project are absolute and independent of the existing acoustic environment; therefore, a baseline sound survey is not required.

4.0 PROJECT CONSTRUCTION

Construction of the Project is expected to be typical of other solar power generating facilities in terms of schedule, equipment, and activities.

4.1 NOISE CALCULATION METHODOLOGY

Acoustic emission levels for activities associated with Project construction were based upon typical ranges of energy equivalent noise levels at construction sites, as documented by the United States Environmental Protection Agency ("USEPA" 1971) and the USEPA's "Construction Noise Control Technology Initiatives" (USEPA 1980). The USEPA methodology distinguishes between type of construction and construction stage. Using those energy equivalent noise levels as input to a basic propagation model, construction noise levels were calculated at a series of set reference distances.

The basic model assumed spherical wave divergence from a point source located at the closest point of the Project site. Furthermore, the model conservatively assumed that all pieces of construction equipment associated with an activity will operate simultaneously for the duration of that activity. An additional level of conservatism was built into the construction noise model by excluding potential shielding effects due to intervening structures and buildings along the propagation path from the site to receiver locations.

4.2 PROJECTED NOISE LEVELS DURING CONSTRUCTION

Table 2 summarizes the projected noise levels due to Project construction, organized into the following work stages: (1) Site Preparation, (2) Excavation, (3) Utilities/Sub-grade, (4) Above-grade Equipment Construction, and (5) Paving. Periodically, sound levels may be higher or lower than those presented in Table 2; however, the overall sound levels should generally be lower due to excess attenuation and the trend toward quieter construction equipment in the intervening decades since the USEPA data were developed.

The construction of the Project may cause short-term, but unavoidable, noise impacts that could be loud enough at times to temporarily interfere with speech communication outdoors and indoors with windows open. Noise levels resulting from the construction activities will vary significantly depending on several factors such as the type and age of equipment, specific equipment manufacturer and model, the operations being performed, and the overall condition of the equipment and exhaust system mufflers.

Project construction will generally occur during the day, Monday through Sunday, with pile driving being restricted to Monday through Friday. Furthermore, all reasonable efforts will be made to minimize the impact of noise resulting from construction activities including implementation of standard noise reduction measures. Due to the infrequent nature of loud construction activities at the site, the limited hours of construction and the implementation of noise mitigation measures, the temporary increase in noise due to construction is considered to be a less than significant impact.

Table 2. Projected Construction Noise Levels by Phase (dBA Leq)

Phase No.	Construction Phase	Construction Equipment	Usage Factor %	Maximum (L_{max}) Equipment Noise Level at 50 ft	Composite L_{eq} Noise Level				
					100 ft	200 ft	500 ft	1,000 ft	2,000 ft
1	Site Preparation	(4) Backhoes (2) Plate Compactors (2) Crawler Tractors (5) Dump Trucks (2) Forklifts (4) Generator Sets (2) Graders (2) Scrapers (4) Skid Steer Loaders	40 20 40 40 20 50 40 40 40	97	87	81	73	67	61
2	Excavation	(4) Backhoes (2) Plate Compactors (2) Crawler Tractors (5) Dump Trucks (2) Forklifts (4) Generator Sets (2) Graders (2) Scrapers (2) Skid Steer Loaders	40 20 40 40 20 50 40 40 40	97	87	81	73	67	61
3	Utilities/Sub-grade	(4) Backhoes (2) Plate Compactors (2) Crawler Tractors (5) Dump Trucks (2) Forklifts (4) Generator Sets (2) Graders (2) Scrapers (2) Skid Steer Loaders	40 20 40 40 20 50 40 40 40	97	87	81	73	67	61
4	Above-grade Equipment Construction	(7) Backhoes (10) Bore/Drill Rigs (10) Cement Mixers (5) Forklifts (3) Concrete Saws (1) Plate Compactors (1) Cranes (5) Dump Truck (2) Excavators (4) Generator Sets (1) Pavers (1) Paving Equipment (2) Skid Steer Loaders (10) Trenchers (1) Rollers (2) Pile Drivers	40 20 40 20 20 20 16 40 40 50 50 40 40 50 20 20	106	94	88	80	74	68
5	Paving	(1) Rollers	20	85	72	66	58	52	46

4.3 CONSTRUCTION NOISE MITIGATION

Project construction consists of (1) Site Preparation, (2) Excavation, (3) Utilities/Sub-grade, (4) Above-grade Equipment Construction, and (5) Paving. Work associated with these phases may overlap. Equipment used for construction includes heavy equipment (e.g., bulldozers, loaders, dump trucks), which involve diesel engines that produce mechanical and exhaust noise with the latter typically the predominant sound source. Noise from construction equipment will vary depending on a variety of factors including the number and class of equipment operating at a location at a given time. Received sound levels will also fluctuate, depending on the construction activity, equipment type, and distance between noise source and noise-sensitive receptors. Construction will occur between the hours of 6:00 a.m. and 6:00 p.m. seven days per week (Monday through Sunday) at the request of local agencies and in compliance with local ordinances. Pile driving will occur between the hours of 7:00am and 5:00pm five days per week (Monday through Friday) at the request of local agencies.

Construction noise will be temporary in nature and, as such, no long term or significant noise impacts due to construction are anticipated. Regardless, reasonable efforts may be made to minimize the impact of noise resulting from construction activities. Following is a list of recommended best management practices and noise mitigation measures:

- Construction equipment should be well-maintained and vehicles using internal combustion engines equipped with mufflers will be routinely checked to ensure they are in good working order;
- A noise/dust fence should be constructed along all boundaries facing residential houses; and
- A noise complaint hotline and local representative will be made available to address any noise-related issues.

Implementing the listed measures will aid in reducing offsite construction noise impacts. Project construction noise may periodically exceed levels that currently characterize the area. Due to the temporary nature of construction noise, no long-term impacts are anticipated.

5.0 OPERATIONAL NOISE

This section describes the model and input assumptions used to calculate noise levels due to the Project's normal operation, and the results of the noise impact analysis.

5.1 OPERATIONAL NOISE PROPAGATION MODEL

The acoustic modeling for the Project operation was conducted with the Cadna-A® sound model from DataKustik GmbH (2021). The outdoor noise propagation model is based on Organization for International Standardization (ISO) 9613, Part 1: "Calculation of the absorption of sound by the atmosphere," (1993) and Part 2: "General method of calculation," (1996). It is used by acoustic engineers to accurately describe sound emission and propagation from complex facilities and in most cases yields conservative results of operational sound levels in the surrounding community. Model predictions are accurate to within 1 dB of calculations based on the ISO 9613 standard.

ISO 9613 was used to calculate propagation and attenuation of sound energy with distance, surface and building reflection, and shielding effects by equipment, buildings, and ground topography. Offsite topography was determined using Unites States Geological Survey (USGS) digital elevation data. The sound model propagation calculation parameters are summarized in Table 3.

Table 3. Acoustic Model Setup Parameters

Model Input	Parameter Value
Standards	ISO 9613-2, Acoustics – Attenuation of sound during propagation outdoors.[1]
Engineering Design	10% Project Layout Design dated 07/28/2022
Reflection Loss	2 dB – indicates reduction in acoustic energy due to reflection
Grid Spacing	10 m
Terrain Description	USGS topography
Ground Absorption	0.5 (semi-reflective)
Receiver Characteristics	1.52 m (5 ft) above ground level
Meteorological Factors	Omnidirectional downwind propagation / mild to moderate atmospheric temperature inversion
Temperature	70°F
Relative Humidity	70%
Search radius	1 mile

[1] Propagation calculations under the ISO 9613 standard incorporate the effects of downwind propagation from facility to receptor) with wind speeds of 1 to 5 m per second (3.6 to 18 kilometers per hour) measured at a height of 3 to 11 m above the ground.

The Project's general arrangement was directly imported into the acoustic model so that onsite equipment could be easily identified, structures could be added, and sound emissions ratings could be assigned to sources as appropriate. Cadna-A® allows for three basic types of sound sources to be introduced into the model: point, line, and area sources. Each noise-radiating element was modeled based on its noise emission pattern. Larger dimensional sources, such as the transformer walls, were modeled as area sources. Transformers were modeled as solid structures because diffracted paths around and over structures tend to reduce noise levels in certain directions. The interaction between sound sources and structures was also considered with reflection loss. The reflective characteristic of the structure is quantified by its reflection loss, which is typically defined as smooth façade from which the reflected sound energy is 2 dB less than the incident sound energy.

Ground absorption rates are described by a numerical coefficient. For pavement and water bodies, the absorption coefficient is defined as G = 0 to account for reduced sound attenuation and higher reflectivity. In contrast, ground covered in vegetation, including suburban lawns, are acoustically absorptive and aid in sound attenuation, i.e., G = 1.0. For the acoustic modeling analysis, a conservative semi-reflective value of G = 0.5 was used to represent the Project area. The portions of the Project area containing solar panels were represented with a reflective value of G = 0.0.

5.2 OPERATIONAL SOUND SOURCE INFORMATION

The Project site layout was directly imported into the acoustic model and includes 14 PCS and one 53 MVA substation transformer; eight PCS include three power inverters and one 4.2-MVA distribution transformer, and six PCS include two power inverters and one 2.8-MVA distribution transformer. The principal sources of noise are the cooling fans on the inverters and transformers, the electrical components of the inverters, the distribution transformer associated with each PCS, and the main power transformer at the substation. The distribution transformers and inverters are mounted on pads at grade level. Distribution transformers and power inverters like the ones proposed for the Project are considered a low-level source of sound.

Substations have switching, protection, and control equipment, as well as a main power transformer, which generate the sound generally described as a low humming. There are three chief noise sources associated with a transformer: core noise, load noise, and noise generated by the operation of the cooling equipment. The core is the principal noise source and does not vary significantly with electrical load. The load noise is primarily caused by the load current in the transformer's conducting coils (or windings) and consequently the main frequency of this sound is twice the supply frequency: 120 Hz for 60 Hz transformers. The cooling equipment (fans and pumps) may also be an important noise component, depending on fan design. During air forced cooling method, cooling fan noise is produced in addition to the core noise. The resulting audible sound is a combination of the humming and the broadband fan noise. Breaker noise is a sound event of very short duration, expected to occur only a few times throughout the year. Just as horsepower ratings designate the power capacity of an electric motor, a transformer's megavolt amperes rating indicates its maximum power output capacity.

Table 4 summarizes the equipment LW data used as inputs to the modeling analysis. Sound power level values of operational equipment were calculated based on typical equipment of similar type. It is assumed that installed equipment will have similar sound power profiles as those used in the acoustic modeling analysis; however, it is possible that the final manufacturer warranty values may vary.

Table 4. Modeled Octave-Band Sound Power Levels for Project Equipment

Operational Sound Sources	Octave Band Frequency Sound Power Levels (dBA)									L_w, dBA
	31.5	63	125	250	500	1000	2000	4000	8000	
PCS: 3-Inverters/4.2-MVA Transformer	40	61	77	86	90	90	87	79	70	95
PCS: 2-Inverters/2.8-MVA Transformer	41	62	79	88	92	92	88	81	72	97
Main Power Transformer at Substation	48	68	80	82	88	85	81	76	67	91

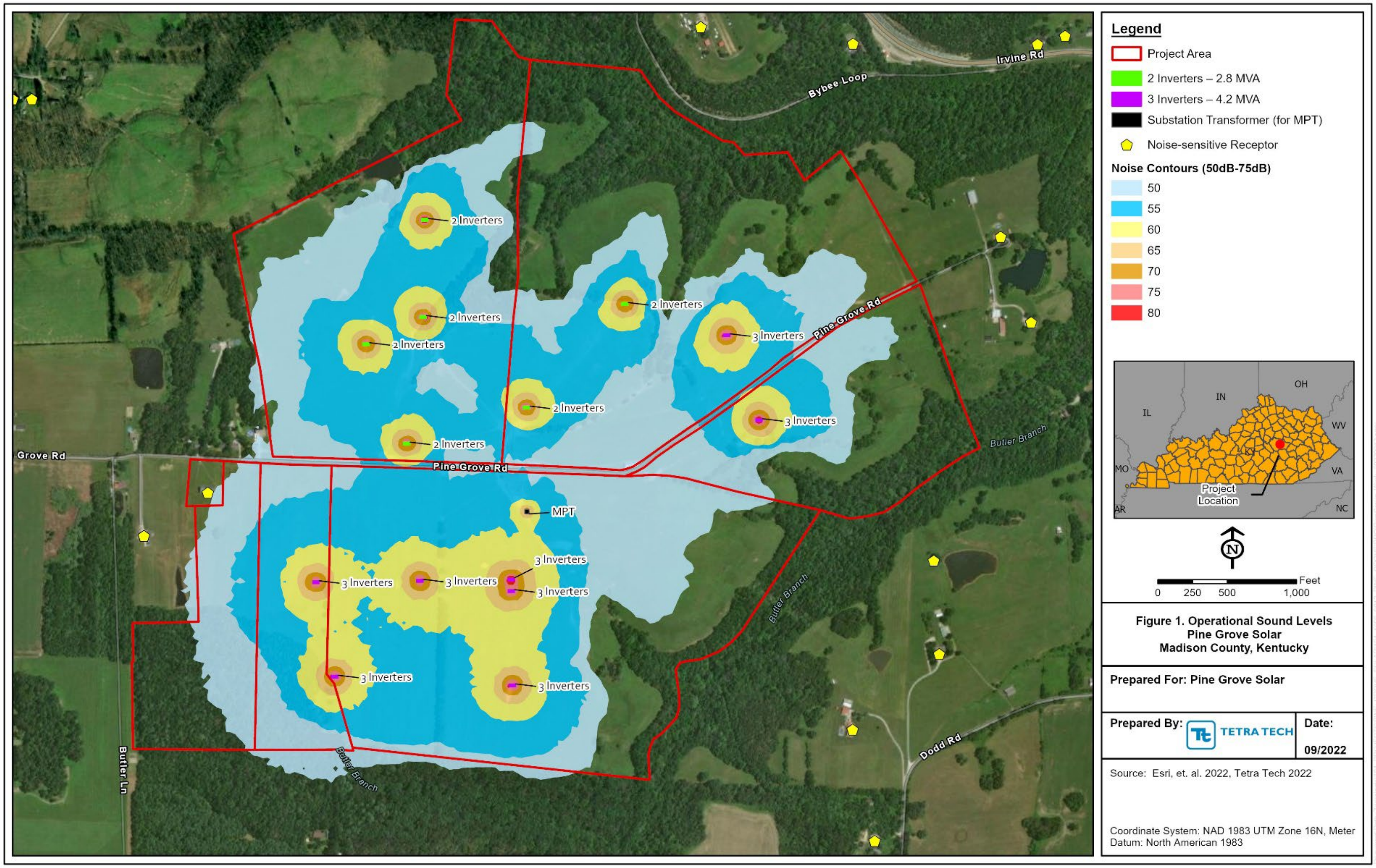
Transmission lines generate sound referred to as corona. The level of corona noise generated by a transmission line is highly dependent on weather conditions (i.e., foul weather), electrical gradient, altitude, and condition of the conductor wires. The corona effect is initiated where the conductor's electric field is concentrated by imperfections in the conductor surface such as nicks or scratches, or by substances on the lines such as water droplets, dirt or dust, and/or bird droppings. Corona activity increases with increasing altitude, and with increasing voltage in the line, but is generally not affected by system loading. As the Project gen-tie line is rated at 161-kV and does not pass over any NSRs, it is not included in this analysis.

5.3 PROJECTED SOUND LEVELS DURING OPERATION

Broadband (dBA) sound pressure levels were calculated for expected normal Project operation assuming that all components identified previously are operating continuously and concurrently at the representative manufacturer-rated sound levels. The sound energy was then summed and weighted to determine the Leq and Ldn at a point of reception. A sound contour plot displaying broadband (dBA) sound levels (Ldn) presented as color-coded isopleths is provided in Figure 1. The sound contours are graphical representations of the cumulative noise associated with full operation of the equipment and show how operational noise will be distributed over the surrounding area. Results from acoustic modeling are projected 5-dBA increments on scaled Project aerial. Results are independent of the existing acoustic environment, representative of Project-generated sound levels only. The sound contour isopleths are plotted at a height of 1.52 m above ground level, about the height of the ears of a standing person. The contour isopleths are analogous to elevation contours on a topographic map, i.e., the noise contours are continuous lines of equal noise level around some source, or sources, of noise.

Modeling results show that Project operations will successfully comply with the U.S. EPA threshold of 55 dBA Ldn. Tabulated modeling results are provided in Appendix A showing the received Leq and Ldn at each NSR.

Figure 1. Operational Sound Levels (L_{dn})



Not for Construction

6.0 CONCLUSIONS

Tetra Tech completed a detailed acoustic assessment of the proposed Pine Grove Solar Project, located in Madison County, Kentucky. The assessment included an evaluation of Project sound contribution to the surrounding area during construction and operation phases.

The construction noise assessment indicated that construction noise will be periodically audible at offsite locations; however, that noise will be temporary and minimized to the extent practicable through implementation of best management practices and noise mitigation measures as identified in section 4.3. Traffic noise generated during construction on and offsite will also add to overall sound levels but will be intermittent and short-term.

Operational sound levels were modeled and evaluated at NSRs in the Project area. Anticipated Project sound sources consist of the collector substation main power transformer and inverters and distribution transformers located at the power conversion stations.

Modeling results show that Project operations will successfully comply with the U.S. EPA threshold of 55 dBA Ldn. Overall, sound emissions associated with the Project are expected to remain at a low level, consistent with other solar energy facilities of similar size and design sited in the State of Kentucky.

7.0 REFERENCES

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Federal Highway Administration. FHWA Roadway Construction Noise Model User’s Guide, FHWA-HEP-05-054, January 2006.

ISO 1993. Standard ISO 9613-1 Acoustics – Attenuation of Sound during Propagation Outdoors. Part 1 General Calculation of the Absorption of Sound by the Atmosphere. Geneva, Switzerland.

ISO 1996. Standard ISO 9613-2 Acoustics – Attenuation of Sound during Propagation Outdoors. Part 2 General Method of Calculation. International Organization for Standardization. Geneva, Switzerland.

U.S. EPA Office of Noise Abatement and Control. Information On Levels of Environmental Noise Requisite To Protect Public Health and Welfare With An Adequate Margin Of Safety, March 1974

APPENDIX A. DETAILED ACOUSTIC MODELING RESULTS

Table A-1. Detailed Acoustic Modeling Results

NSR ID	UTM Coordinates (meters)		Received Leq (dBA)	Received Ldn (dBA)
	Easting	Northing		
1	752763	4177704	28	35
2	753441	4180094	20	27
3	753070	4179592	26	33
4	753476	4179615	27	34
5	753613	4179435	29	35
6	753618	4179565	28	34
7	753656	4179669	27	34
8	753706	4179639	28	34
9	753805	4179574	28	35
10	753819	4179550	28	35
11	753539	4179781	26	33
12	753464	4179976	25	32
13	753523	4179997	25	32
14	753571	4180009	25	32
15	753594	4180009	25	32
16	753996	4179961	26	33
17	754604	4179952	26	33
18	753657	4180062	25	32
19	753511	4180060	25	32
20	752849	4179435	26	33
21	752771	4179228	26	33
22	752831	4178706	26	32
23	752845	4178839	25	32
24	752834	4178584	26	33
25	753447	4178724	31	38
26	753420	4178824	28	35

NSR ID	UTM Coordinates (meters)		Received Leq (dBA)	Received Ldn (dBA)
	Easting	Northing		
27	753062	4178440	30	37
28	753124	4178422	31	38
29	754513	4178961	33	40
30	754343	4179073	33	39
31	754264	4179067	31	38
32	754162	4179126	31	38
33	754038	4179236	31	38
34	753980	4179274	31	37
35	753925	4179307	30	37
36	753851	4179354	29	36
37	753816	4179393	28	35
38	753792	4179407	26	33
39	753755	4179363	29	36
40	753777	4179343	29	36
41	753795	4179328	30	36
42	753837	4179292	30	37
43	753867	4179272	30	37
44	753894	4179251	31	37
45	753923	4179233	31	38
46	754565	4178875	34	41
47	754412	4178848	33	40
48	754672	4178600	37	43
49	755412	4178562	25	32
50	755472	4178581	26	33
51	755616	4178564	23	30
52	755614	4178485	16	23
53	755193	4179405	28	34
54	755016	4179837	27	33
55	755065	4179777	26	33

NSR ID	UTM Coordinates (meters)		Received Leq (dBA)	Received Ldn (dBA)
	Easting	Northing		
56	756046	4178760	24	30
57	754636	4180063	26	32
58	753700	4180066	25	32
59	753715	4180151	20	27
60	753742	4180143	22	28
61	753799	4180054	25	32
62	752502	4179195	22	29
63	752825	4178747	25	32
64	753160	4178442	33	39
65	753203	4178442	33	40
66	752949	4178155	29	36
67	753589	4177576	42	49
68	753449	4177481	40	46
69	752735	4177629	28	35
70	752801	4177641	29	35
71	752723	4177549	28	35
72	752686	4177439	28	34
73	752798	4177320	28	35
74	752362	4177377	25	32
75	752531	4176598	25	32
76	753086	4175983	25	32
77	753167	4175976	25	32
78	753141	4176048	25	32
79	753494	4175988	26	33
80	753530	4175965	26	33
81	753576	4176172	28	35
82	753837	4176453	35	42
83	754707	4176011	30	37
84	754849	4175443	26	33

NSR ID	UTM Coordinates (meters)		Received Leq (dBA)	Received Ldn (dBA)
	Easting	Northing		
85	755439	4175888	26	33
86	755453	4176110	24	31
87	755133	4176189	26	33
88	754920	4176242	30	37
89	754470	4176290	31	38
90	754408	4176390	31	38
91	755057	4176568	28	35
92	755166	4176565	28	35
93	755163	4176636	32	39
94	755006	4177055	37	44
95	755196	4177222	36	43
96	755054	4176811	34	41
97	755586	4177173	31	38
98	755791	4177051	30	37
99	755184	4177427	37	44
100	754726	4176180	31	38
101	753354	4179504	26	33
102	753938	4179486	25	32
103	753895	4179527	28	35
104	753853	4176741	38	45
105	755398	4177951	32	39
106	755331	4178139	36	42