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April 2, 2025

Julie Gilbert
ELMT Consulting, Inc.
2201 N Grand Ave, Ste #10098
Santa Ana, CA 92711

Subject: Powerflex Solar Project – Noise Review Letter – County of San Bernardino, CA

Dear Ms. Gilbert:

MD Acoustics, LLC (MD) is pleased to submit this letter as part of the noise assessment for the proposed Powerflex Solar Project located at 290 Crystal Creek Road in the Lucerne Valley Community in the County of San Bernardino, CA, as shown in Exhibit A. The Project proposes the construction and operation of a 5 MW AC – 6.5 MW DC accessory solar facility to power the existing facility on 15 acres of a 38.95-acre parcel. Land uses surrounding the site include Community Industrial to the north and east and Rural Living to the south and west. The nearest existing sensitive land use consists of residences south of Crescent Road, approximately 300 feet south of the proposed project. This assessment evaluates the construction noise impact and compares the results to the County's noise requirements. Operational noise will consist of transformer and inverter noise, which will have a reference sound level of approximately 65 dBA at 3 feet away. When extrapolating to 400 feet, the noise level will be less than 22 dBA, which is below the threshold of hearing and the impact would be less than significant.

Exhibit A provides the project location and site plan. A glossary of acoustical terms is located in Appendix A.

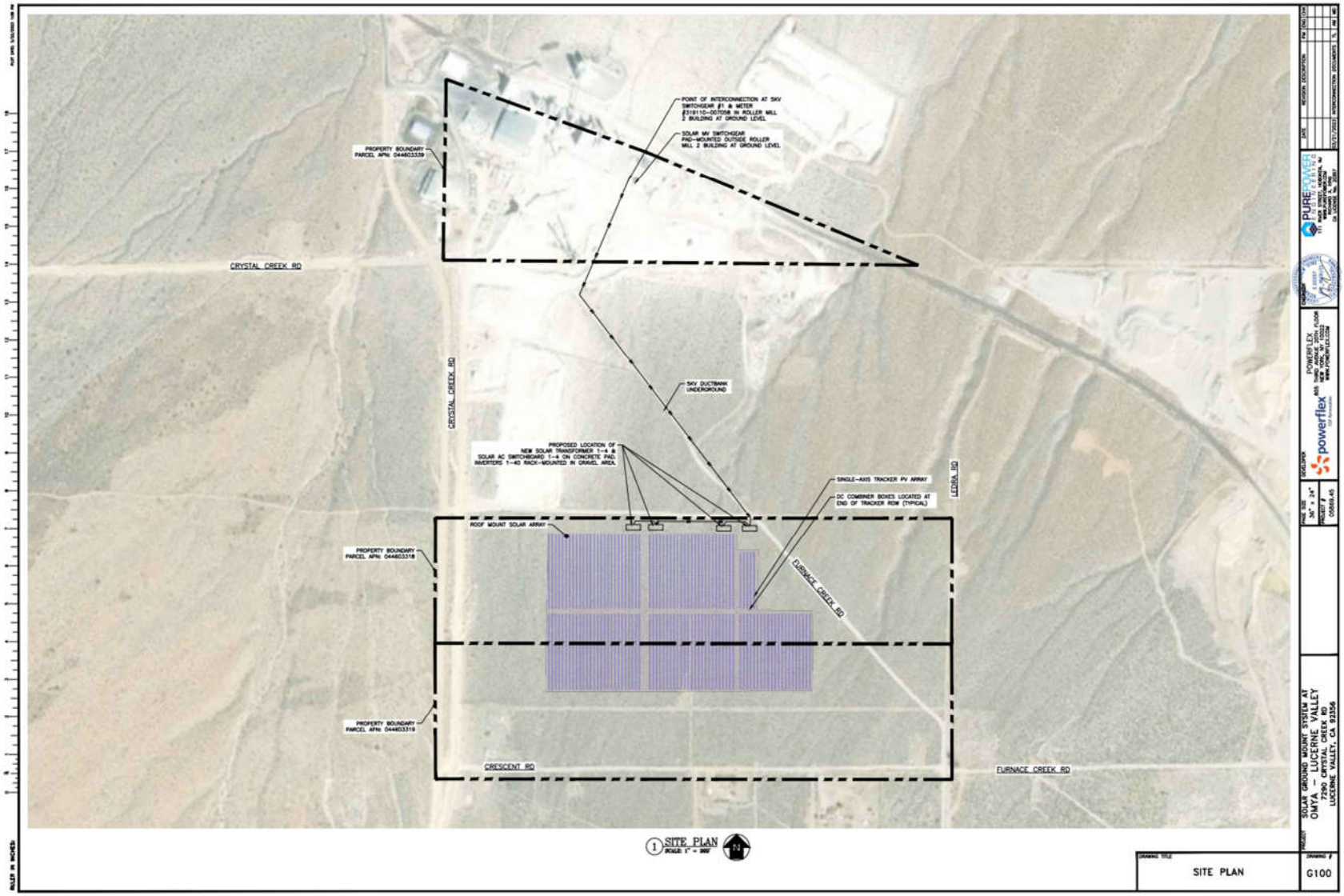
1.0 Local Acoustical Requirements

Construction noise was evaluated and compared to the County of San Bernardino's Municipal Code. Section 83.01.080(g)(3) states the following as it relates to construction.

> (g) Exempt Noise. The following sources of shall be exempt from the regulations of this Section:
>
> (3) Temporary construction, maintenance, repair, or demolition activities between 7:00 a.m. and 7:00 p.m., except Sundays and Federal holidays.

The County does not define specific noise level standards with regard to construction; however, the FTA Transit Noise and Vibration Impact Assessment Manual recommends that construction noise levels at residential uses do not exceed 80 dBA Leq. Thus, construction noise levels were compared to the 80 dBA Leq threshold.

Exhibit A
Site Plan



2.0 Evaluation Procedure

2.1 Ambient Noise Measurements

Three (3) 15-minute noise measurements were conducted at the Project site to determine the existing ambient noise levels. The sound level meter measured the Leq, Lmin, Lmax and other statistical data (e.g. L2, L8…). Noise data indicates that industrial noise is the primary source of noise impacting the site and the adjacent uses. This assessment utilizes the ambient noise data as a basis for comparison with Project operational noise.

The results of the short-term noise data are presented in Table 1.

Table 1: Short-Term Measurement Summary, dBA

Location	Start Time	Stop Time	Leq	Lmax	Lmin	L(2)	L(8)	L(25)	L(50)	L(90)
NM1	12:21 PM	12:36 PM	39.1	53.0	33.4	47.5	41.4	38.4	37.0	35.1
NM2	12:44 PM	12:59 PM	38.2	46.3	33.5	42.4	40.1	38.5	37.6	35.6
NM3	1:13 PM	1:28 PM	49.7	58.0	41.3	54.1	51.8	50.5	49.4	45.7

Notes:
1. Short-term noise monitoring locations are illustrated in Appendix B.

Noise data indicates that the ambient noise level is 38 to 50 dBA Leq near the project site and surrounding area. Additional field notes and photographs are provided in Appendix B.

For this evaluation, MD has compared the Project's projected noise levels to the existing ambient level.

2.2 Construction Noise Modeling

Construction noise associated with the proposed Project was calculated utilizing methodology presented in the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (2018), together with several key construction parameters, including distance to each sensitive receiver, equipment usage, percent usage factor, and baseline parameters for the project site.

CalEEMod methodology was utilized to determine the construction equipment. Construction noise levels were calculated for various construction phases based on CalEEMod Air Quality Model assumptions. All equipment was assumed to be situated at the center of the project site. Construction equipment typically moves back and forth across the site, and it is an industry standard to use the acoustical center of the site to model average construction noise levels. construction worksheets are provided in Appendix C.

3.0 Findings

3.1 Construction Noise

The Environmental Protection Agency (EPA) has compiled data regarding the noise generated characteristics of typical construction activities. The data is presented in Table 2.

Table 2: Typical Construction Noise Levels[1]

Equipment Powered by Internal Combustion Engines

Type	Noise Levels (dBA) at 50 Feet
Earth Moving	
Compactors (Rollers)	73 - 76
Front Loaders	73 - 84
Backhoes	73 - 92
Tractors	75 - 95
Scrapers, Graders	78 - 92
Pavers	85 - 87
Trucks	81 - 94
Materials Handling	
Concrete Mixers	72 - 87
Concrete Pumps	81 - 83
Cranes (Movable)	72 - 86
Cranes (Derrick)	85 - 87
Stationary	
Pumps	68 - 71
Generators	71 - 83
Compressors	75 - 86

Impact Equipment

Type	Noise Levels (dBA) at 50 Feet
Saws	71 - 82
Vibrators	68 - 82

Notes:
[1] Referenced Noise Levels from the Environmental Protection Agency (EPA)

Construction noise is considered a short-term impact and would be considered significant if construction activities are taken outside the allowable times as described in the County's Municipal Code (Section 83.01.080(g)(3)). Construction is anticipated to occur during the permissible hours according to the County's Municipal Code. Construction noise will temporarily or periodically increase in the ambient noise level above the existing noise level within the project vicinity. Construction noise level projections are provided below.

Typical operating cycles for these types of construction equipment may involve one or two minutes of full power operation followed by three to four minutes at lower power settings. The nearest sensitive receptor are residences south of Crescent Road. Noise levels at the nearest sensitive land uses to the south are in Table 3. The nearest proposed solar equipment to the southern residence will be located over 300 feet away from the residence. Thus, a likely worst-case construction noise scenario assumes equipment operating as close as 300 feet (edge of site to receptor) and an average of 700 feet (center

of site to receptor) from the nearest sensitive receptor. The Lmax levels represent maximum levels when construction occurs adjacent to the residential receptor. Leq levels represent the average construction noise level during each phase.

Table 3: Construction Noise Levels East Property Line

Phase	dBA Lmax	dBA Leq
Site Prep	63.3	57.2
Grading	64.3	57.9
Pile Driving	80.3	63.5
Build	63.3	55.7
Paving	69.3	56.4
Arch Coating	57.3	43.5
Notes: Const Equip from CalEEMod plus pile driving		

Construction noise will range from 44 to 64 dBA Leq at the nearest sensitive receptors and is well below the FTA's recommended maximum construction noise level of 80 dBA. Thus, the impact is considered less than significant.

3.2 Construction Vibration

Construction activities can produce vibration that may be felt by adjacent land uses. The primary vibration source during construction would be from a pile driver. A pile driver has a maximum vibration impact of 1.518 inches per second peak particle velocity (PPV) at 25 feet which is perceptible but below any risk to architectural damage.

The fundamental equation used to calculate vibration propagation through average soil conditions and distance is as follows:

$$PPV_{equipment} = PPV_{ref} (100/D_{rec})^{n}$$

Where: PPV_{ref} = reference PPV at 100ft.
D_{rec} = distance from equipment to receiver in ft.
n = 1.1 (the value related to the attenuation rate through ground)

Installation of the PV solar module foundations requires pile driving and has the potential to result in temporary vibration impacts to structures and humans. The Project would utilize an impact pile driver to install each PV tracker mount. For this analysis it is assumed that pile driving activities would not occur closer than 300 feet from the nearest sensitive land use, which are located on the south side of Crescent Road. The calculated PPV at the nearest residence (300 feet) would be 0.099 PPV, which would not damage buildings. Vibration from pile driving would be less than the County's 0.2 PPV standard (which, in any event, does not apply to construction from 7 am to 7 pm, except Sundays and federal holidays). Other construction

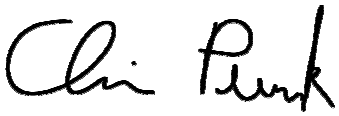
activities are less intensive than pile driving and would have lower PPV than pile driving (Appendix G). Therefore, vibration levels from pile driving are considered worst case for the solar facility construction.

Additionally, the Project is required to comply with the vibration standards of the County Development Code (§ 83.01.090). Once constructed, Project operations will not generate substantial groundborne vibration because of the passive nature of solar PV facility operations and the infrequent use of heavy equipment (if any) for unscheduled maintenance. Therefore, a less than significant impact is identified for this issue area. Therefore, vibration impacts associated with construction of the Project would be less than significant.

5.0 Conclusions

MD has evaluated the construction noise impact for the Powerflex Solar Project located in the Lucerne Valley Community in the County of San Bernardino, CA. The study shows that construction noise and vibration is less than significant. MD is pleased to provide this noise assessment. If you have any questions regarding this analysis, call us at (805) 426-4477.

Sincerely,
MD Acoustics, LLC



Rachel Edelman
Acoustical Consultant

Claire Pincock, INCE-USA
Sr. Acoustical Consultant

Appendix A

Glossary of Acoustical Terms

Glossary of Terms

A-Weighted Sound Level: The sound pressure level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighting filter de-emphasizes the very low and very high-frequency components of the sound in a manner similar to the response of the human ear. A numerical method of rating human judgment of loudness.

Ambient or Background Noise Level: The composite of noise from all sources, near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

Decibel (dB): A unit for measuring the amplitude of a sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micro-pascals.

dB(A): A-weighted sound level (see definition above).

Equivalent Sound Level (LEQ): The sound level corresponding to a steady noise level over a given sample period with the same amount of acoustic energy as the actual time-varying noise level. The energy average noise level during the sample period.

Field Sound Transmission Class (FSTC): The field sound transmission class (FSTC) rating is used for in situ wall and floor/ceiling sound isolation performance assessment. The standard requires the measurement of sound transmission loss and includes required procedure to show that the FSTC rating, as it has been determined by the test procedure, was not influenced by flanking of sound around the partition intended to be tested. Sound transmission class and FSTC ratings are intended by standard to be equivalent; however, practical experience indicates that FSTC ratings tend to be up to five ratings points less than laboratory-measured STC ratings.

Day-Night Level (LDN or DNL): LDN is the average noise level over a 24-hour period. The noise between the hours of 10PM to 7AM is artificially increased by 10 dB. This noise is weighted to take into account the decrease in community background noise of 10 dB during this period.

Noise: *A*ny unwanted sound or sound which is undesirable because it interferes with speech and hearing, or is intense enough to damage hearing, or is otherwise annoying. The State Noise Control Act defines noise as "...excessive undesirable sound...".

Sound Level (Noise Level): The weighted sound pressure level obtained by use of a sound level meter having a standard frequency filter for attenuating part of the sound spectrum.

Sound Level Meter: An instrument, including a microphone, an amplifier, an output meter, and frequency weighting networks for the measurement and determination of noise and sound levels.

Appendix B
Field Sheet

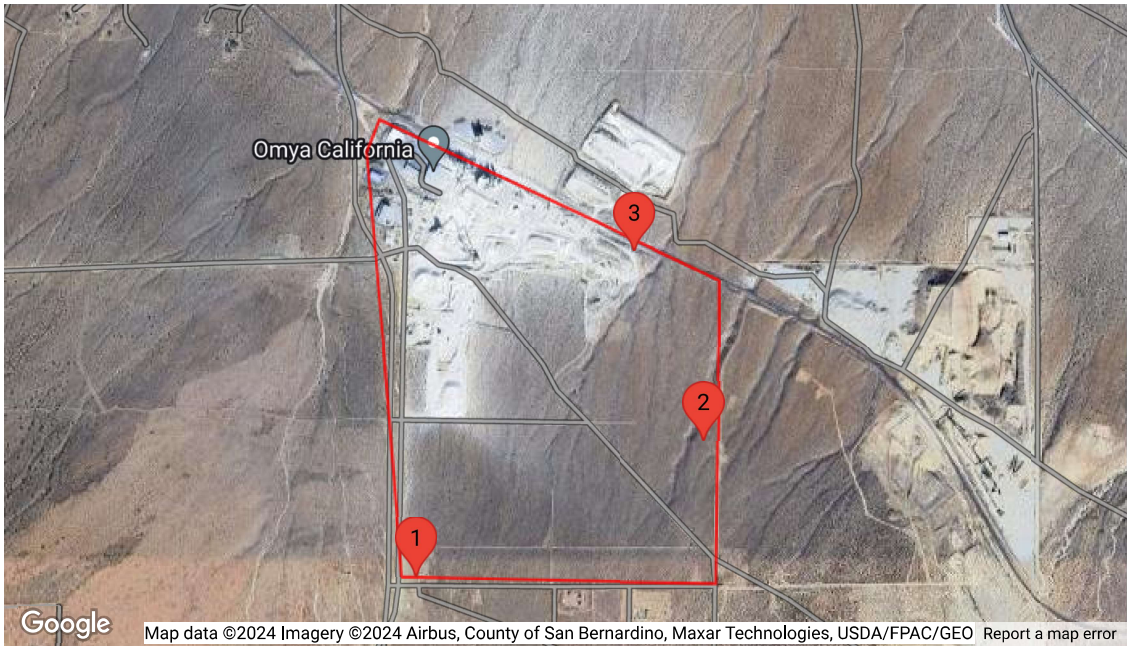
15-Minute Continuous Noise Measurement Datasheet

Project Name:	Powerflex Solar Noise
Project: #/Name:	0739-2023-021
Site Address/Location:	7290 Crystal Creek Road
Date:	03/31/2024
Field Tech/Engineer:	Jason Schuyler / Rachel Edelman

Site Observations:

45F winds 0-7 MPH. The primary noise source is a large rotating drum at the processing facility. A secondary source was another processing facility in the area. Additionally, backup warning sirens are almost constant and the area is so quiet that they echo throughout the valley.

Sound Meter:	XL2, NTI	**SN:**	A2A-08562-E0
Settings:	A-weighted, slow, 1-sec, 15-minute interval		
Site Id:	NM1, NM2, NM3		



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15-Minute Continuous Noise Measurement Datasheet - Cont.

Project Name: Powerflex Solar Noise

Site Address/Location: 7290 Crystal Creek Road

Site Id: NM1, NM2, NM3

Figure 1: NM1

Figure 2: NM2

Figure 3: NM3

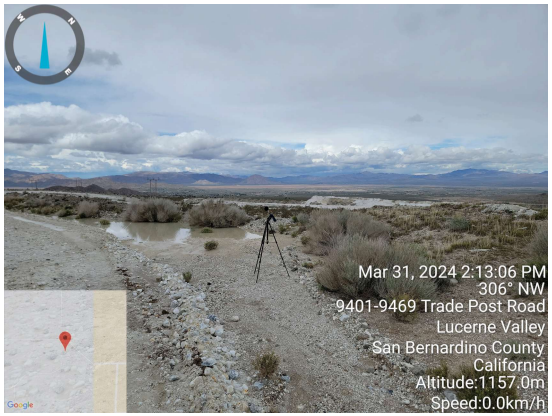
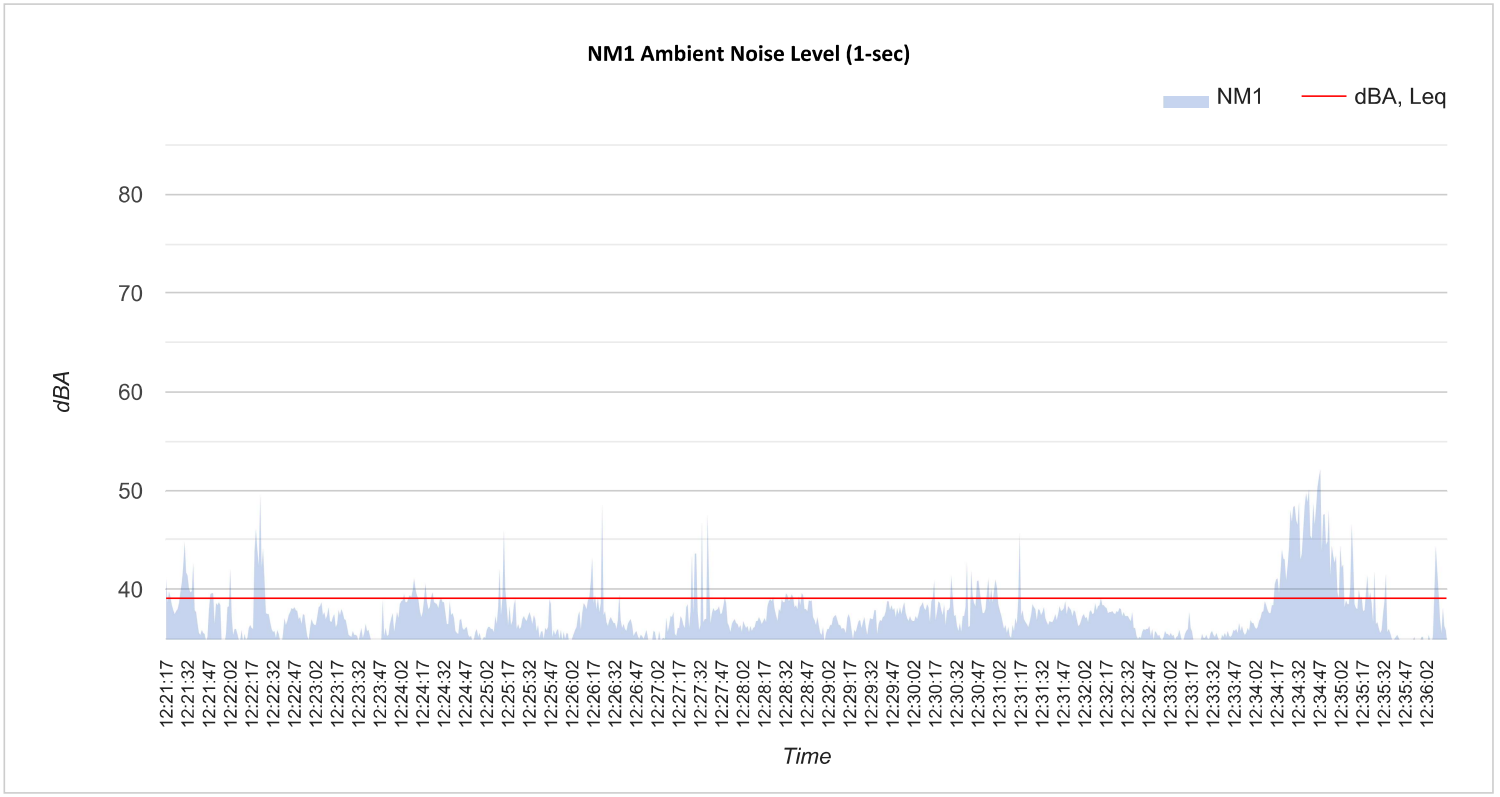


Table 1: Baseline Noise Measurement Summary

Location	Start	Stop	Leq	Lmax	Lmin	L2	L8	L25	L50	L90
NM1	12:21 PM	12:36 PM	39.1	53.0	33.4	47.5	41.4	38.4	37	35.1
NM2	12:44 PM	12:59 PM	38.2	46.3	33.5	42.4	40.1	38.5	37.6	35.6
NM3	1:13 PM	1:28 PM	49.7	58.0	41.3	54.1	51.8	50.5	49.4	45.7

15-Minute Continuous Noise Measurement Datasheet - Cont.

Project Name:	Powerflex Solar Noise	**Site Topo:**	Flat desert conditions small hou	**Noise Source(s) w/ Distance:**	
Site Address/Location:	7290 Crystal Creek Road	**Meteorological Cond.:**	45F Winds 0-7MPH	Processing Plant Noise	
Site Id:	NM1	**Ground Type:**	Sandy soil rock and lime		



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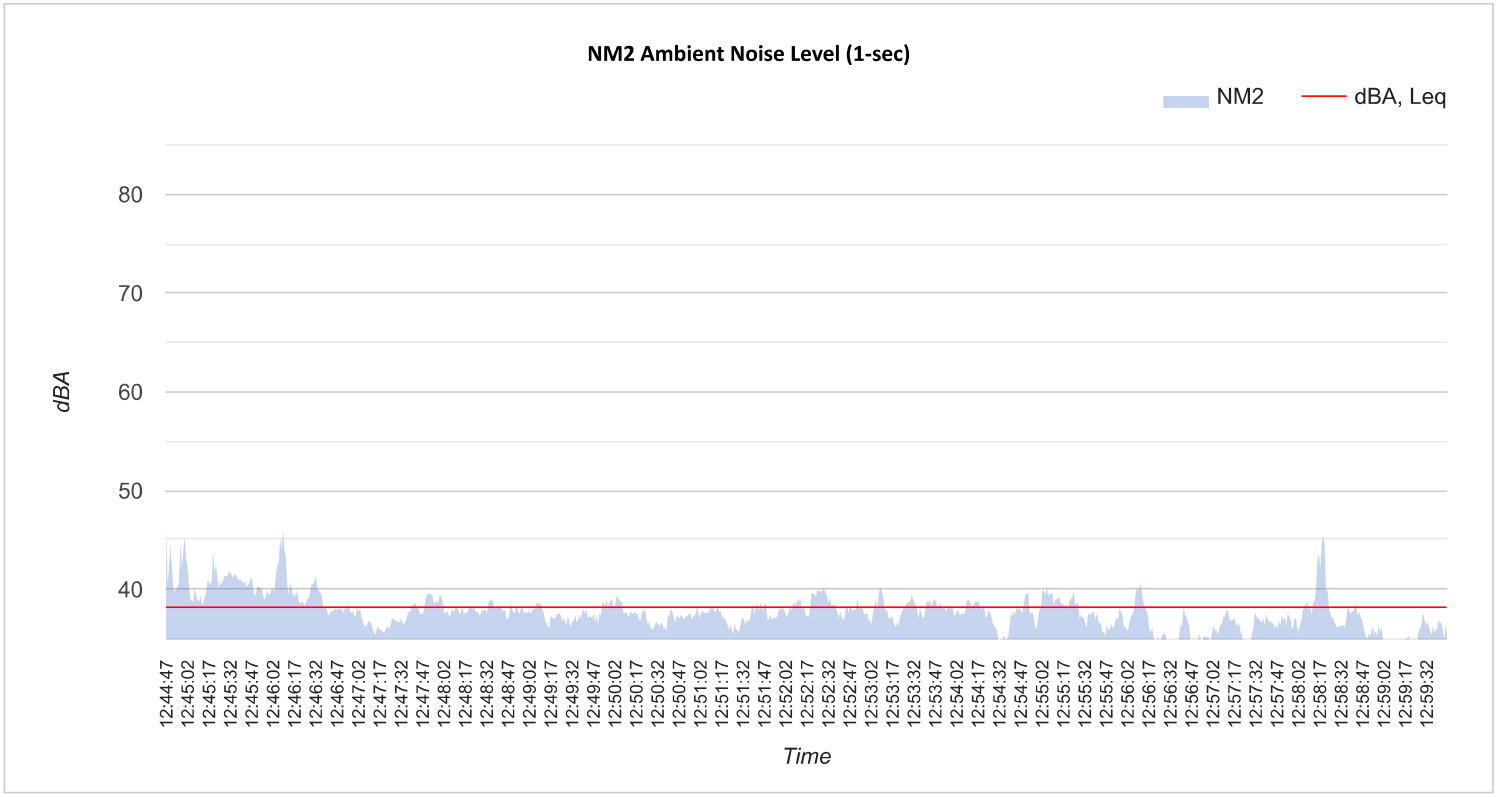
15-Minute Continuous Noise Measurement Datasheet - Cont.

Project Name:	Powerflex Solar Noise	**Site Topo:**	Desert conditions Part of the Lu	**Noise Source(s) w/ Distance:**	
Site Address/Location:	7290 Crystal Creek Road	**Meteorological Cond.:**	45F Winds 0-7MPH	Processing Plant Noise	
Site Id:	NM2	**Ground Type:**	Sand and Rock		



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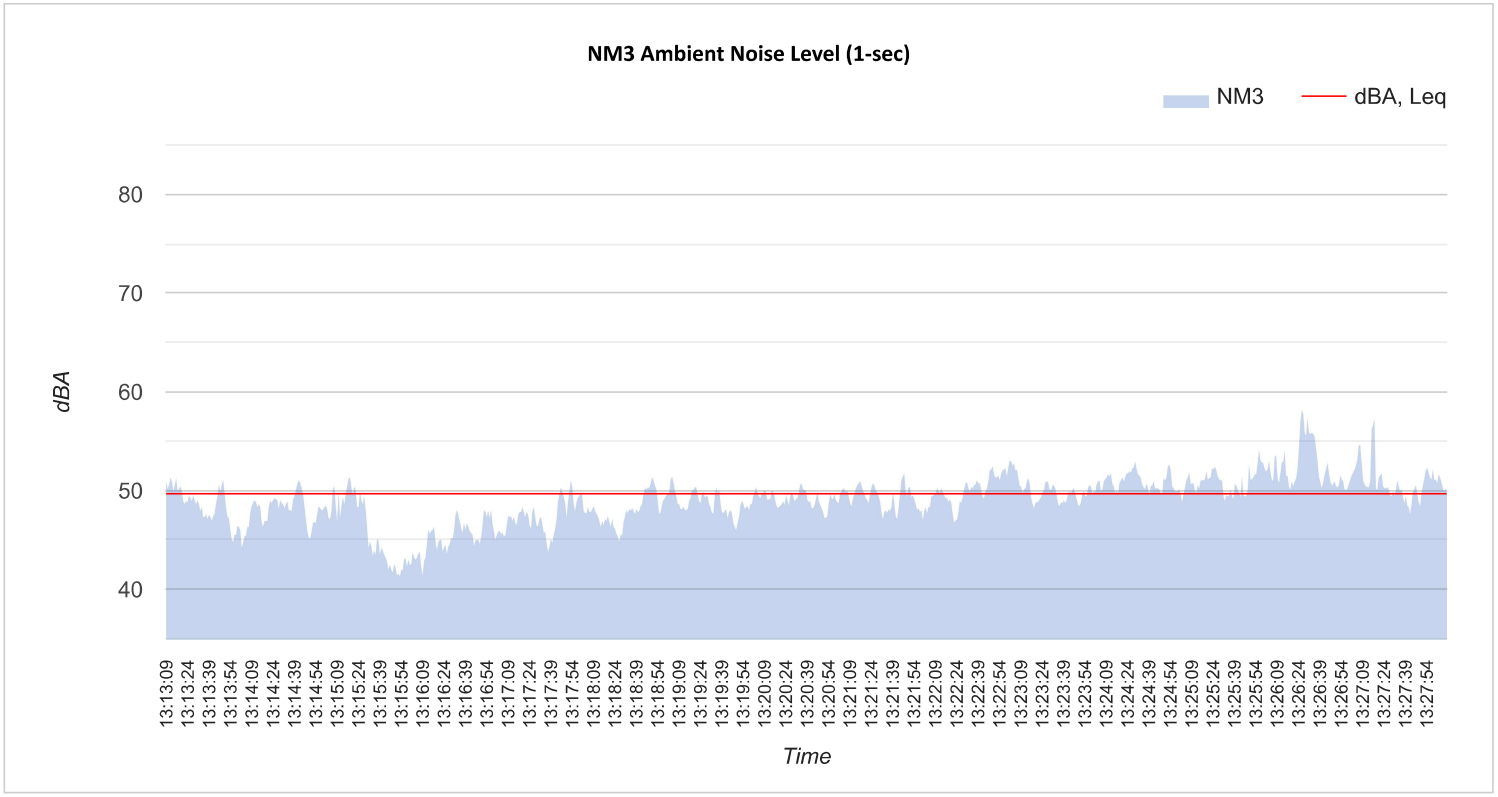
15-Minute Continuous Noise Measurement Datasheet - Cont.

Project Name:	Powerflex Solar Noise	**Site Topo:**	Desert conditions part of the Lu	**Noise Source(s) w/ Distance:**	
Site Address/Location:	7290 Crystal Creek Road	**Meteorological Cond.:**	45F Winds 0-7MPH	Processing Plant Noise	
Site Id:	NM3	**Ground Type:**	Cut rock and stone		



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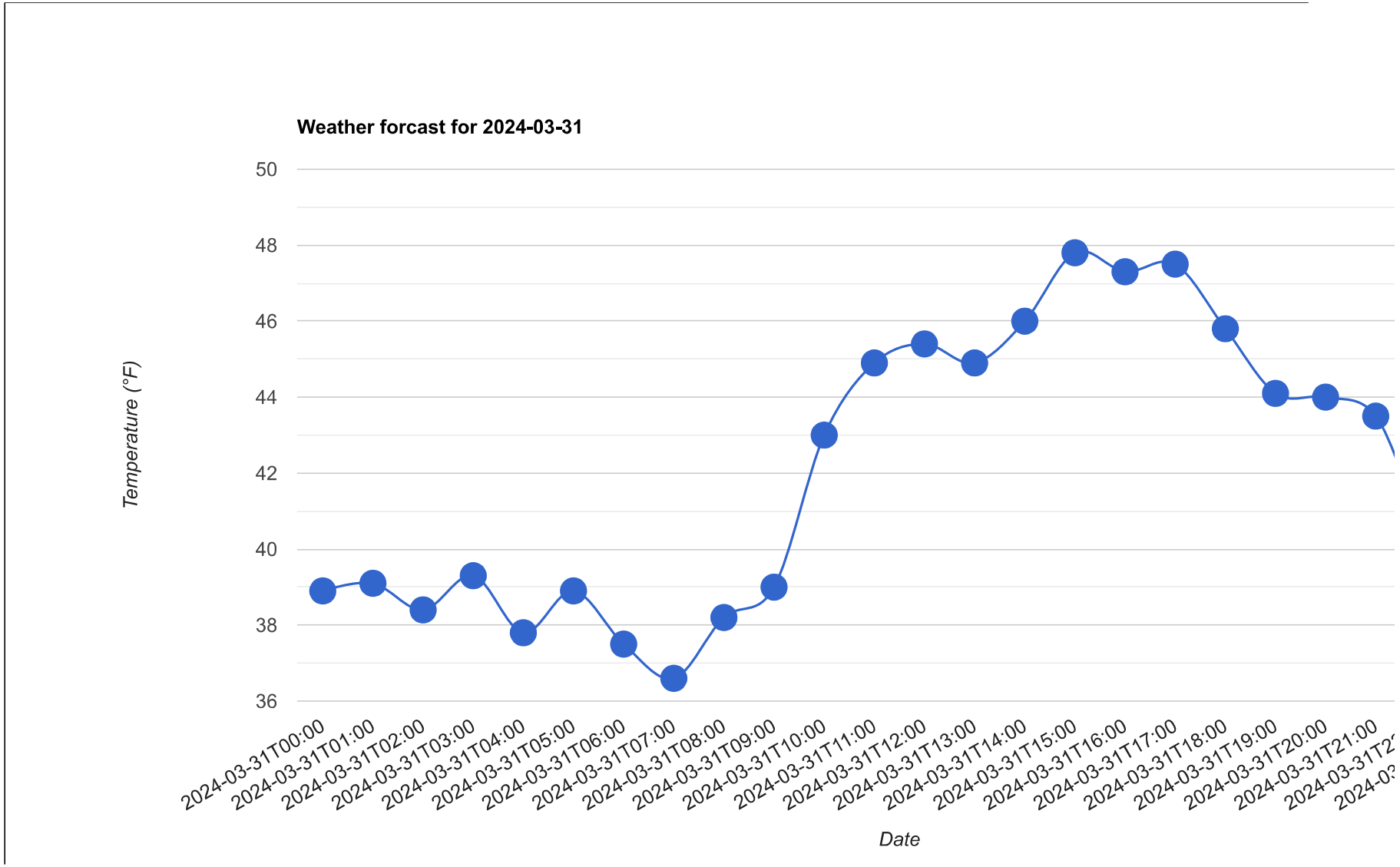
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Temperature (°F)
50
48
46
44
42
40
38
36
2024-03-31T00:00
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2024-03-31T02:00
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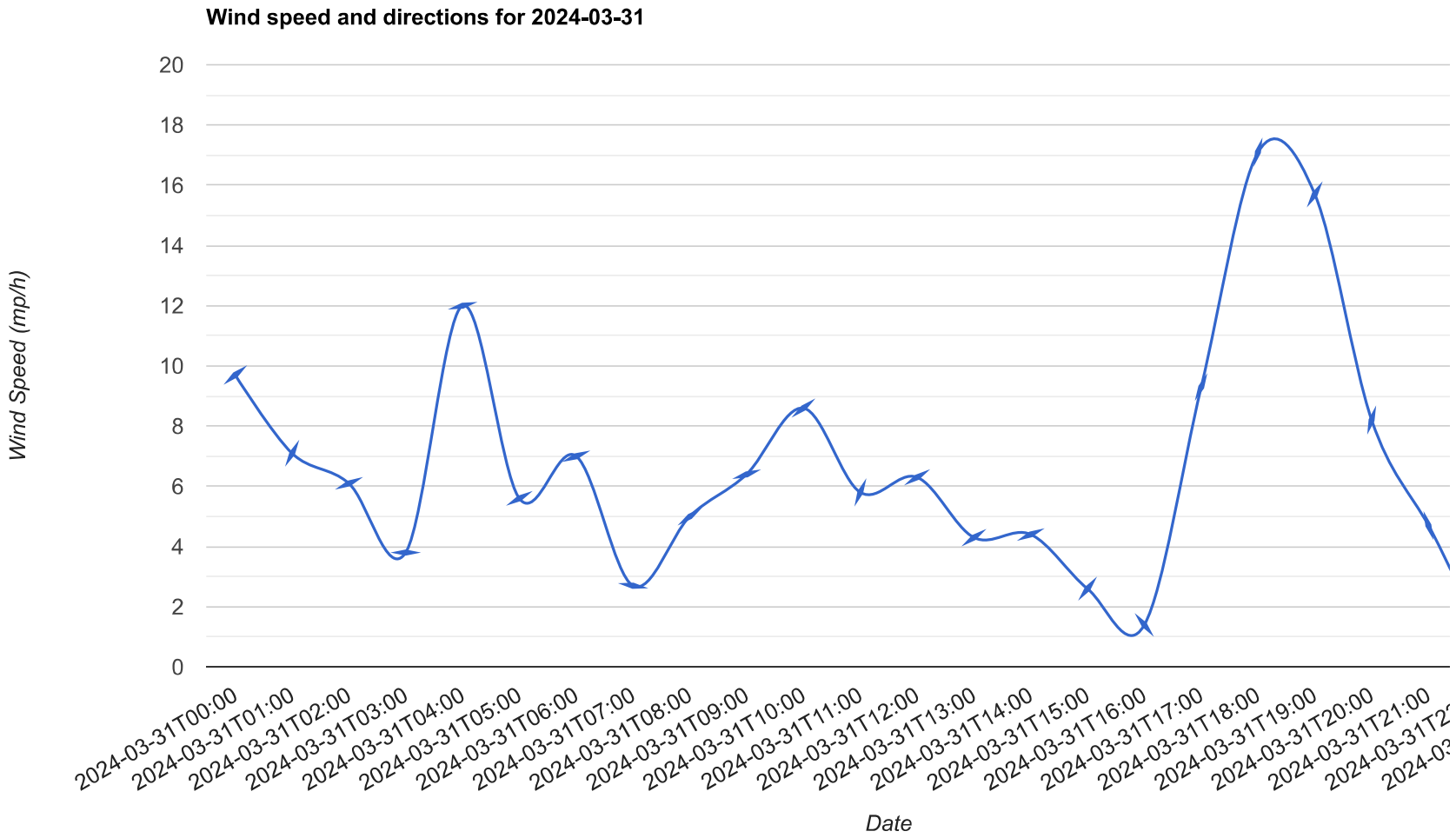
Date



Source: Global Forecast System (GFS) weather forcast model

Appendix C
Construction Noise Calculations

Receptor - Residences to the South

Construction Phase Equipment Item	# of Items	Item Lmax at 50 feet, dBA[1]	Edge of Site to Receptor, feet	Center of Site to Receptor, feet	Item Usage Percent[1]	Ground Factor[2]	Usage Factor	Receptor Item Lmax, dBA	Recptor. Item Leq, dBA
SITE PREP									
Tractor	4	84	300	700	40	0.66	0.40	63.3	49.5
Dozer	3	82	300	700	40	0.66	0.40	61.3	47.5
							Log Sum	63.3	57.2
GRADE									
Excavator	2	81	300	700	40	0.66	0.40	60.3	46.5
Grader	1	85	300	700	40	0.66	0.40	64.3	50.5
Dozer	1	82	300	700	40	0.66	0.40	61.3	47.5
Tractor	2	84	300	700	40	0.66	0.40	63.3	49.5
Scraper	2	84	300	700	40	0.66	0.40	63.3	49.5
								64.3	57.9
PILE DRIVING									
Impact Pile Driver	1	101	300	700	20	0.66	0.20	80.3	63.5
								80.3	63.5
BUILD									
Crane	1	81	300	700	16	0.66	0.16	60.3	42.6
Man lift	3	75	300	700	20	0.66	0.20	54.3	37.5
Generator	1	81	300	700	50	0.66	0.50	60.3	47.5
Tractor	3	84	300	700	40	0.66	0.40	63.3	49.5
Welder/Torch	1	74	300	700	40	0.66	0.40	53.3	39.5
								63.3	55.7
PAVE									
Paver	2	77	300	700	50	0.66	0.50	56.3	43.5
Pavement Scarifier	2	90	300	700	20	0.66	0.20	69.3	52.5
Roller	2	80	300	700	20	0.66	0.20	59.3	42.5
								69.3	56.4
ARCH COAT									
Compressor (air)	1	78	300	700	40	0.66	0.40	57.3	43.5
								57.3	43.5

[1]FHWA Construction Noise Handbook: Table 9.1 RCNM Default Noise Emission Reference Levels and Usage Factors

VIBRATION LEVEL IMPACT

Project:	Powerflex Solar Noise	Date: 4/2/25
Source:	Vibratory Roller	
Scenario:	Unmitigated	
Location:	Adjacent residences	
Address:	Lucerne Valley	

PPV = PPVref(25/D)^n (in/sec)

DATA INPUT

Equipment = Type	8	Pile Driver	INPUT SECTION IN BLUE
PPVref =	1.518	Reference PPV (in/sec) at 25 ft.	
D =	300.00	Distance from Equipment to Receiver (ft)	
n =	1.10	Vibration attenuation rate through the ground	

Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.

DATA OUT RESULTS

PPV =	**0.099**	IN/SEC	OUTPUT IN RED