A NOISE IMPACT ASSESSMENT FOR

Sun Trust Solar Project

Kane County, Illinois

JULY 30, 2025

PREPARED FOR:

SUNVEST SOLAR LLC®

PREPARED BY:

Westwood

Westwood

Noise Impact Assessment

Sun Trust Solar Project

Kane County, Illinois

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Executive Summary

Westwood Professional Services, Inc. (Westwood) was contracted by SunVest Solar, LLC (Client) to complete a noise assessment for the Sun Trust Solar Project (Project) located in Kane County, Illinois. The Project has a proposed nameplate capacity of 5 MW. This noise impact assessment was completed as required by the Kane County Code pursuant to the procedures set forth by the Illinois Pollution Control Board (IPCB).

An operational noise impact evaluation of the Project was conducted for the proposed Project layout. Project-generated noise levels were predicted at all noise sensitive receptors within ¼ mile of the proposed Project boundary. Noise level regulations include the Kane County Code which requires compliance with octave band noise limits and discrete tone limits set by the IPCB within the Illinois Administrative Code (IAC). Project levels do not exceed the limits set forth in the IAC.

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1.0 Project Background

1.1 Site Description

The proposed Project is located in Kane County, Illinois. Noise sensitive receptors in the Project vicinity include residences. Existing noise sources in the Project vicinity include IL-72 to the north, I-90 to the north and west, and local road traffic. The primary land uses in the Project vicinity are residential, agricultural and light industrial.

1.2 Project Description

The Project is proposed to include solar arrays, solar string inverters, and associated equipment/infrastructure (**Figure 1**).

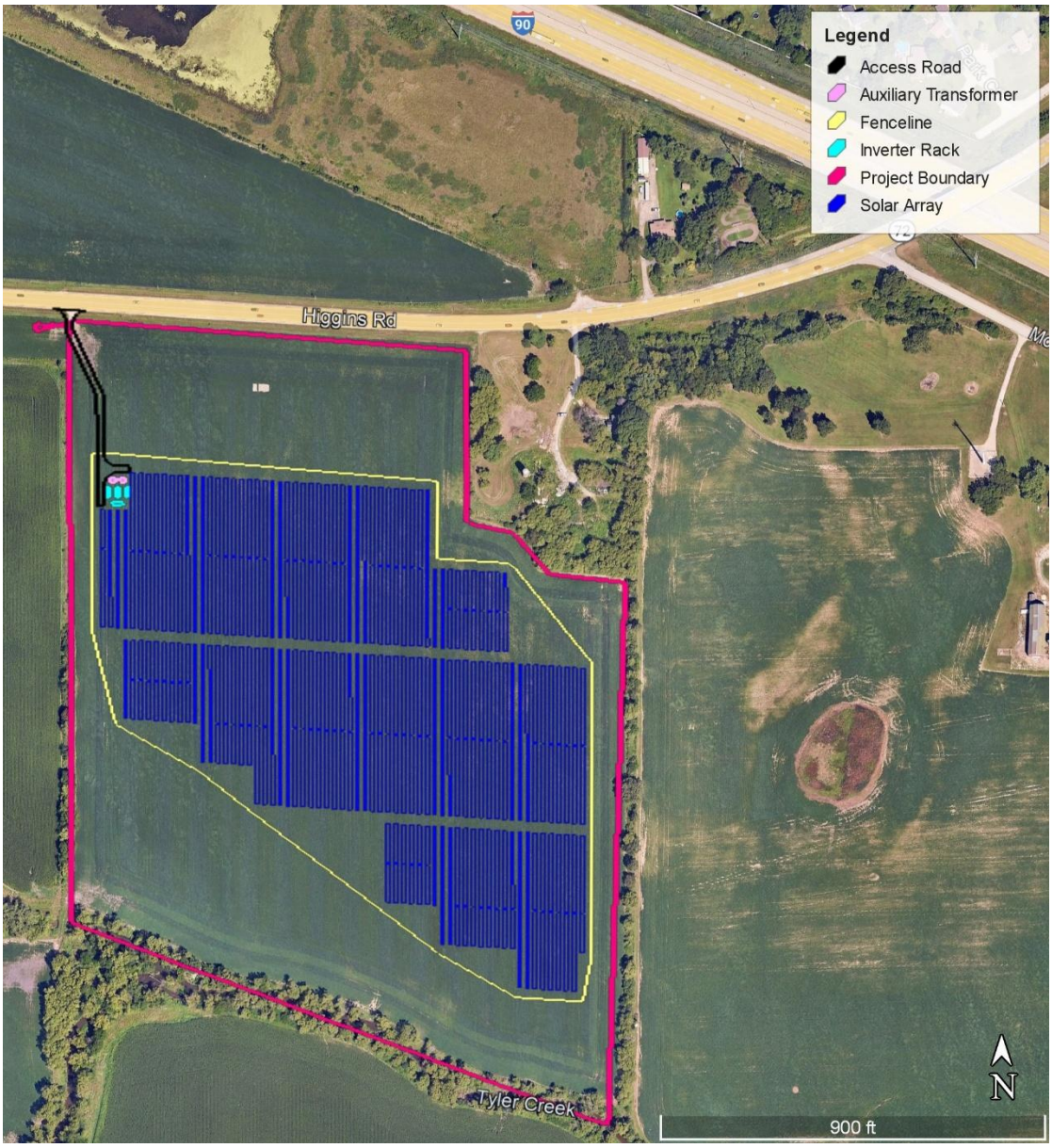

Figure 1: Project Overview

2.0 Regulatory Setting & Noise Level Requirements

Kane County Code §25-5-4-9 *Commercial Solar Energy Facilities* requires demonstration of compliance with the noise level limits set forth by the IPCB within the IAC. These limits are stated within IAC *Title 35, Subtitle H, Chapter I, Part 901 Sound Emissions Standards and Limitations for Property-Line Noise-Sources*. This regulation regulates noise levels according to the land use where the noise is produced and where the noise is received. Land uses are split into three classes: Class A refers to residences or equally sensitive areas, Class B land is of mixed use, and Class C refers to agricultural and industrial land uses. Class A noise sensitive receptors as defined by the IPCB include dwellings and occupied community buildings, even those on agricultural land. In the absence of field verification of receptor land classification, the most conservative limits were analyzed for this Project – those of noise produced on Class C land impacting Class A land. The daytime and nighttime octave band limits are listed in **Table 1**.

Table 1: Permissible Sound Levels, Class C to Class A (L_{eq})

Sound Level	31.5	63	125	250	500	1000	2000	4000	8000
Daytime (dB)	75	74	69	64	58	52	47	43	40
Nighttime (dB)	69	67	62	54	47	41	36	32	32

Additionally, the IAC prohibits the emission of prominent discrete tones from any property-line noise source located on Class C land to receiving Class A land, when measured at any point within the receiving land at least 25' away from the property-line noise source. A discrete tone is defined as a one-third octave band sound level that exceeds the arithmetic average of the sound pressure levels of the two adjacent one-third octave bands by the following levels: 5 dB if the center frequency is between 500 and 1000 Hz inclusive, by 8 dB if the center frequency is between 160 and 400 Hz inclusive, or by 15 dB if the center frequency is between 25 and 125 Hz inclusive. Discrete tones that have a one-third octave band sound pressure level 10 or more decibels below the allowable octave band sound pressure level specified in **Table 1** are not classified as prominent discrete tones.

3.0 Modeling Methodology & Parameters

A noise propagation model was developed and run for the Project using CADNA-A (a noise modeling software in compliance with ISO 9613-2). The proposed auxiliary inverters were modeled as omnidirectional point sources with noise source data from National Electrical Manufacturers Association (NEMA) standards. The proposed Project string inverters were modeled as omnidirectional point sources, using broadband and spectral noise source data from manufacturer cut sheets and manufacturer provided test report data. As the Project layout locates 10 Project inverters at each inverter bank location, the cumulative noise level representative of 10 inverters was used as a single point source at the center of each inverter bank location.

Model parameters were as follows:

- Ground absorption factor of G=0
- Receptor height of 1.5 m above ground level
- Assumed meteorological conditions of 10°C and 70% humidity
- No other model adjustments

Project equipment and layout configuration details are shown below in **Table 2**. Unweighted octave-band sound power levels for Project inverters are listed in **Table 3** along with overall A-weighted sound power level.

Table 2 Project Equipment & Layout Configuration

Noise Source	# of Units	Equipment Model/Reference	Est. Source Height Above Ground Level (AGL)	Broadband Sound Pressure Level @ 1 m (Single Unit)
Solar Inverter	40	Kaco Blueplanet 125 TL3	0.72 m	59 dBA
Transformer	2	Nema TR-1 Auxiliary Transformer	2.00 m	67 dBA

Table 3 Project Equipment Spectral & Overall Data

Noise Source	Unweighted Octave Band (Hz) Sound Power Levels (dB L_w)									Broadband Sound Power Level
	31.5	63	125	250	500	1000	2000	4000	8000	
Solar Inverter (Single Unit)	49.0	51.0	56.4	67.6	66.6	61.0	54.6	50.7	40.8	67 dBA
Solar Inverter Bank (10 Units)	59.0	61.0	66.4	77.6	76.6	71.0	64.6	60.7	50.8	77 dBA
Auxiliary Transformer	72.0	78.0	80.0	75.0	75.0	69.0	64.0	59.0	52.0	75 dBA

Cumulative Project noise was calculated at all noise-sensitive receptors within ¼ mile of proposed Project infrastructure (**Figure 2**). Note that receptor locations have not been field verified and are based upon aerial imagery only. Receptor location coordinates can be found in **Appendix A.**

Figure 2: Noise Sensitive Receptor Locations

4.0 Noise Level Estimates & Impact Assessment

Octave band L_{eq} sound pressure levels were calculated for each receptor from 31.5 Hz to 8 kHz. The octave band levels were then compared to the nighttime regulation levels from **Table 1** above, as the nighttime levels are most conservative, especially given solar inverter operations occur only when sunlight is present (daytime). As the daytime limits are less stringent, complying with the nighttime limits ensures daytime compliance as well.

All noise sensitive receptors within ¼ mile of the proposed Project boundary modeled at or below the octave band noise level limits set forth in IAC *Title 35, Subtitle H, Chapter I, Part 901 Sound Emissions Standards and Limitations for Property-Line Noise-Sources*. No discrete tones were determined to be present when analyzing the one-third octave band levels with regards to the IAC discrete tone criteria.

Octave band and third-octave band levels at each receptor can be found in **Appendix B** and **Appendix C,** respectively.

Appendix A Noise Sensitive Receptor Locations

Receptor ID	UTM NAD83 Zone 16		Elevation AMSL (m)
	Easting (m)	Northing (m)	
REC-01	384729	4661927.3	274.76
REC-02	385523.2	4661719.3	282.98
REC-03	385563.8	4661852.8	274.5
REC-04	385400.4	4662131.6	275.13
REC-05	385443.8	4662088.9	275.05
REC-06	385475.8	4662143.6	275.38
REC-07	385487	4662077.1	275.11
REC-08	385500.3	4662141.3	275.31
REC-09	385516	4662078.4	274.56
REC-10	385530	4662132.3	275.4
REC-11	385534.7	4662062.1	273.86
REC-12	385550.9	4662127.9	275.18
REC-13	385561.3	4662067.7	273.5
REC-14	385582.6	4662122	274.49
REC-15	385583	4662048.9	273.5
REC-16	385620.6	4662111.7	273.51
REC-17	385650.6	4662108.4	273.94
REC-18	385658.8	4662065.3	273.68
REC-19	385639.4	4662013	273.56
REC-20	385700.9	4662004.9	274.5
REC-21	385718.6	4662057.2	274.5
REC-22	385729.1	4662026	274.5
REC-23	385742.5	4661981.8	275.16
REC-24	385769.6	4661944.3	274.5
REC-25	385837.5	4661655.1	279.23
REC-26	385897	4661664.5	279.38

Appendix B Receptor Octave Band Levels

	31.5	63	125	250	500	1000	2000	4000	8000
Nighttime Regulation	*69*	*67*	*62*	*54*	*47*	*41*	*36*	*32*	*32*
REC-01	-23.7	-4.8	7.3	15.9	20.1	16.7	8.8	-5.3	-45.8
REC-02	-20.6	-1.7	10.5	19.3	23.6	20.5	13.5	2.1	-29.8
REC-03	-26.9	-8	4.2	12.8	17.1	13.8	6.5	-6.2	-41.9
REC-04	-28.3	-9.3	2.8	11.3	15.5	12.1	4.3	-9.6	-49.4
REC-05	-28	-9.1	3	11.5	15.5	11.9	3.8	-10.5	-50.3
REC-06	-29	-10.1	2	10.5	14.7	11.1	3	-11.7	-54.1
REC-07	-28.3	-9.4	2.7	11.2	15.2	11.6	3.4	-11.2	-51.9
REC-08	-29.2	-10.3	1.8	10.3	14.4	10.9	2.7	-12.2	-55.2
REC-09	-28.6	-9.7	2.4	10.8	14.8	11.1	2.7	-12.2	-54
REC-10	-29.3	-10.4	1.7	10.2	14.3	10.7	2.5	-12.5	-56.2
REC-11	-28.6	-9.7	2.3	10.7	14.6	10.6	1.9	-13.3	-55.6
REC-12	-29.5	-10.6	1.5	10	14.1	10.5	2.3	-12.9	-57.1
REC-13	-28.9	-10.1	2	10.4	14.4	10.5	1.9	-13.5	-56.7
REC-14	-29.7	-10.8	1.3	9.8	13.8	10.2	1.9	-13.6	-58.7
REC-15	-29	-10.1	2	10.3	14.3	10.4	1.7	-13.7	-57.2
REC-16	-30	-11.1	1	9.5	13.5	9.9	1.4	-14.4	-60.6
REC-17	-30.2	-11.4	0.8	9.2	13.3	9.6	1	-15	-62
REC-18	-30	-11.1	1	9.5	13.6	9.9	1.4	-14.4	-60.5
REC-19	-29.3	-10.4	1.7	10.1	14.2	10.5	2	-13.4	-57.4
REC-20	-30	-11.1	1	9.5	13.6	10	1.6	-14.1	-59.9
REC-21	-30.5	-11.6	0.5	8.9	13	9.3	0.6	-15.6	-63.7
REC-22	-30.4	-11.5	0.6	9	13.1	9.4	0.8	-15.3	-63
REC-23	-30.3	-11.4	0.7	9.2	13.2	9.6	1.1	-14.9	-62
REC-24	-30.4	-11.5	0.6	9.1	13.1	9.5	0.9	-15.2	-62.7
REC-25	-30.6	-11.7	0.4	8.9	12.9	9.2	0.6	-15.7	-64.1
REC-26	-31.3	-12.4	-0.4	8.1	12.1	8.3	-0.7	-18	-69.4

Appendix C Receptor 1/3 Octave Band Levels

	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000
REC-01	-33.8	-28.5	-23.7	-13.6	-9.6	-5.9	-0.4	2.6	5.2	9	11.1	13	13.9	15.3	16.4	11.5	11.9	11.9	5.3	4	1.8	-6.2	-12.2	-21.6	-44.8	-66.1	-82.6
REC-02	-30.7	-25.4	-20.6	-10.5	-6.5	-2.8	2.8	5.7	8.4	12.3	14.5	16.4	17.3	18.8	20	15.2	15.7	15.9	9.6	8.8	7.3	0.5	-3.6	-10.1	-28.9	-43.8	-65.2
REC-03	-37	-31.7	-26.9	-16.7	-12.8	-9.1	-3.5	-0.6	2	5.9	8.1	10	10.9	12.3	13.5	8.6	9.1	9.2	2.8	1.8	-0.1	-7.4	-12.4	-20.2	-41	-58.7	-80.5
REC-04	-38.3	-33	-28.2	-18.1	-14.1	-10.4	-4.9	-2	0.7	4.4	6.6	8.4	9.3	10.8	11.9	7	7.4	7.4	0.8	-0.4	-2.6	-10.6	-16.4	-25.6	-48.4	-69.1	-82.6
REC-05	-38.1	-32.8	-28	-17.9	-13.9	-10.2	-4.7	-1.7	0.9	4.6	6.7	8.5	9.4	10.8	11.8	6.9	7.2	7.1	0.4	-1	-3.3	-11.4	-17.4	-26.7	-49.4	-69.8	-82.6
REC-06	-39.1	-33.8	-29	-18.9	-14.9	-11.2	-5.7	-2.7	-0.1	3.6	5.8	7.6	8.5	9.9	11	6.1	6.4	6.3	-0.3	-1.7	-4.2	-12.5	-18.9	-29	-53.1	-74.9	-82.7
REC-07	-38.3	-33	-28.3	-18.1	-14.1	-10.5	-4.9	-2	0.6	4.3	6.4	8.3	9.1	10.5	11.5	6.6	6.9	6.7	0	-1.4	-3.8	-12.1	-18.2	-27.8	-50.9	-71.8	-82.7
REC-08	-39.2	-34	-29.2	-19	-15.1	-11.4	-5.8	-2.9	-0.3	3.4	5.6	7.4	8.3	9.7	10.8	5.8	6.2	6.1	-0.6	-2	-4.5	-12.9	-19.5	-29.8	-54.2	-76.1	-82.7
REC-09	-38.6	-33.4	-28.6	-18.4	-14.5	-10.8	-5.3	-2.4	0.2	3.9	6.1	7.9	8.7	10.1	11.1	6.1	6.4	6.2	-0.6	-2.1	-4.6	-13	-19.4	-29.4	-53	-74.3	-82.7
REC-10	-39.4	-34.1	-29.3	-19.2	-15.2	-11.5	-6	-3.1	-0.5	3.2	5.4	7.2	8.1	9.5	10.6	5.7	6	5.9	-0.8	-2.3	-4.8	-13.3	-20	-30.5	-55.2	-77	-82.7
REC-11	-38.7	-33.4	-28.6	-18.5	-14.5	-10.9	-5.3	-2.4	0.1	3.8	5.9	7.7	8.5	9.8	10.8	5.7	5.9	5.6	-1.3	-2.9	-5.6	-14.1	-20.7	-30.8	-54.6	-75.7	-82.7
REC-12	-39.5	-34.2	-29.5	-19.3	-15.4	-11.7	-6.1	-3.2	-0.6	3.1	5.3	7.1	7.9	9.4	10.4	5.5	5.8	5.7	-1	-2.5	-5.1	-13.7	-20.5	-31.1	-56.1	-77.8	-82.7
REC-13	-39	-33.7	-28.9	-18.8	-14.8	-11.2	-5.7	-2.7	-0.2	3.5	5.6	7.4	8.3	9.6	10.6	5.6	5.8	5.5	-1.3	-3	-5.6	-14.3	-21	-31.4	-55.8	-77	-82.7
REC-14	-39.8	-34.5	-29.7	-19.6	-15.6	-11.9	-6.4	-3.5	-0.9	2.8	5	6.8	7.7	9.1	10.1	5.2	5.5	5.4	-1.4	-3	-5.6	-14.3	-21.3	-32.3	-57.7	-78.9	-82.7
REC-15	-39.1	-33.8	-29	-18.9	-14.9	-11.2	-5.7	-2.8	-0.2	3.5	5.6	7.4	8.2	9.5	10.5	5.5	5.7	5.4	-1.5	-3.1	-5.8	-14.5	-21.3	-31.8	-56.2	-77.3	-82.7
REC-16	-40	-34.7	-30	-19.8	-15.9	-12.2	-6.7	-3.7	-1.1	2.6	4.7	6.5	7.4	8.8	9.8	4.9	5.2	5	-1.8	-3.5	-6.3	-15.1	-22.3	-33.6	-59.6	-79.9	-82.7
REC-17	-40.3	-35	-30.2	-20.1	-16.1	-12.5	-6.9	-4	-1.4	2.3	4.4	6.3	7.1	8.5	9.5	4.6	4.9	4.7	-2.1	-3.8	-6.6	-15.6	-23	-34.6	-61	-80.4	-82.7
REC-18	-40	-34.7	-29.9	-19.8	-15.8	-12.2	-6.6	-3.7	-1.1	2.6	4.7	6.6	7.4	8.8	9.8	4.9	5.2	5	-1.8	-3.5	-6.2	-15.1	-22.3	-33.6	-59.5	-79.8	-82.7
REC-19	-39.4	-34.1	-29.3	-19.2	-15.2	-11.5	-6	-3.1	-0.5	3.2	5.4	7.2	8	9.4	10.4	5.5	5.8	5.6	-1.2	-2.8	-5.5	-14.1	-20.9	-31.6	-56.4	-77.8	-82.7
REC-20	-40	-34.7	-29.9	-19.8	-15.8	-12.2	-6.6	-3.7	-1.1	2.6	4.8	6.6	7.5	8.8	9.9	5	5.3	5.1	-1.6	-3.2	-6	-14.7	-21.9	-33.1	-58.9	-79.6	-82.7
REC-21	-40.6	-35.3	-30.5	-20.4	-16.4	-12.7	-7.2	-4.3	-1.7	2	4.2	6	6.8	8.2	9.2	4.3	4.6	4.4	-2.5	-4.2	-7.1	-16.2	-23.8	-35.8	-62.7	-80.8	-82.7
REC-22	-40.5	-35.2	-30.4	-20.3	-16.3	-12.6	-7.1	-4.2	-1.6	2.1	4.3	6.1	6.9	8.3	9.4	4.4	4.7	4.5	-2.3	-4	-6.9	-15.9	-23.4	-35.2	-62	-80.6	-82.7
REC-23	-40.4	-35.1	-30.3	-20.1	-16.2	-12.5	-7	-4.1	-1.5	2.3	4.4	6.2	7.1	8.5	9.5	4.6	4.9	4.7	-2.1	-3.8	-6.6	-15.5	-22.9	-34.6	-61	-80.4	-82.7
REC-24	-40.5	-35.2	-30.4	-20.3	-16.3	-12.6	-7.1	-4.2	-1.6	2.2	4.3	6.1	7	8.4	9.4	4.5	4.7	4.6	-2.3	-4	-6.8	-15.8	-23.3	-35.1	-61.7	-80.6	-82.7
REC-25	-40.7	-35.4	-30.6	-20.5	-16.5	-12.8	-7.3	-4.4	-1.8	2	4.1	5.9	6.8	8.2	9.2	4.2	4.5	4.3	-2.6	-4.3	-7.2	-16.3	-24	-36	-63.1	-80.8	-82.7
REC-26	-41.4	-36.1	-31.3	-21.2	-17.2	-13.6	-8	-5.1	-2.5	1.2	3.3	5.1	5.9	7.3	8.3	3.3	3.5	3.3	-3.7	-5.7	-8.9	-18.4	-26.8	-39.9	-68.4	-81.2	-82.7