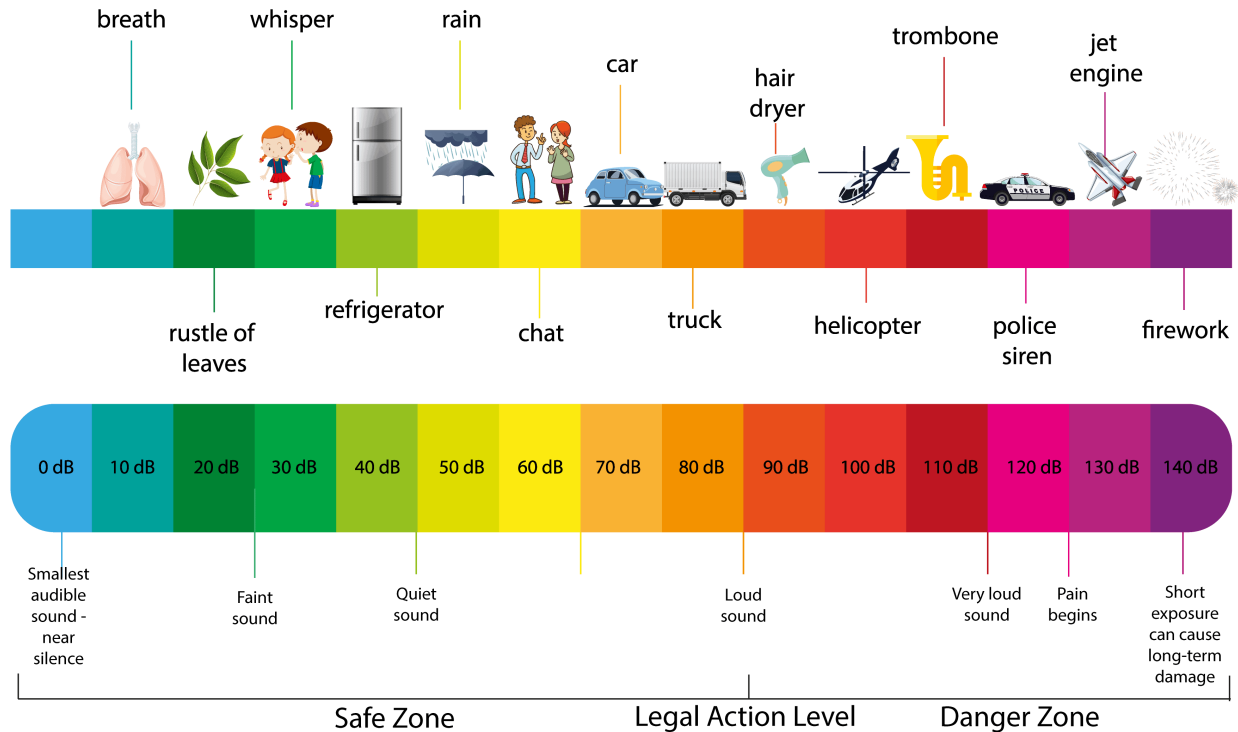
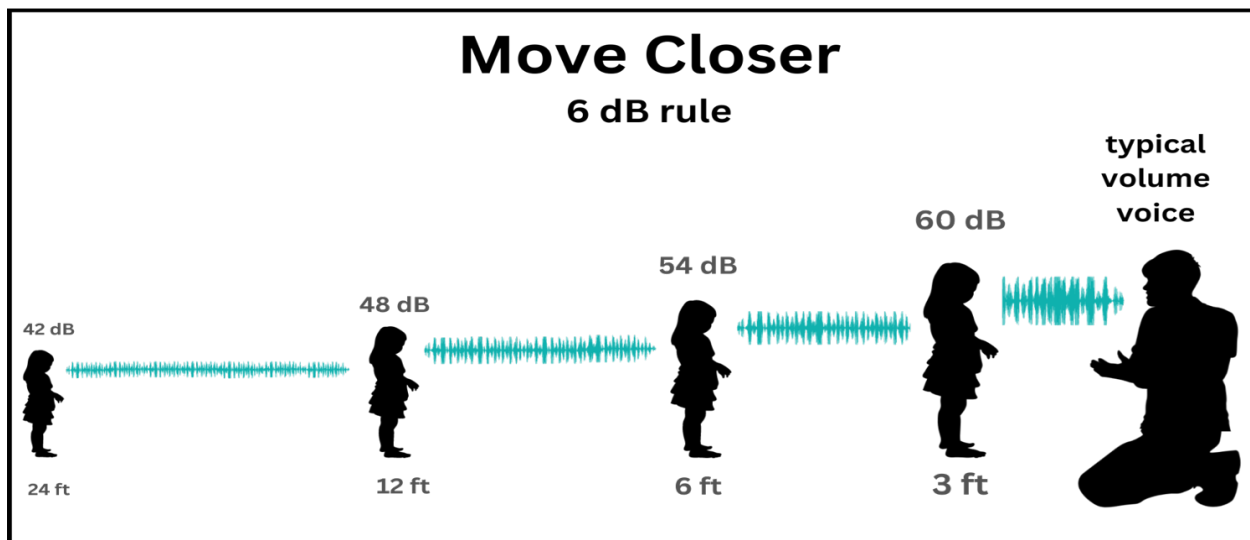


7. Noise Analysis – TNT Howard LLC – 8/12/26

Sound is measured in decibels (dBs). The chart shown below illustrates typical levels of sound produced by various sources. For instance, chatting with a friend registers sound at the 60 dB level, while whispering to the same friend registers at a 30 dB level. Cars and trucks on Randall Rd and Route 20 are at 70-80 dB, while jets overhead exceed this level.



The rule of thumb is that each doubling of distance from the noise source reduces dB level by 6 or 60x, as shown below. The dB unit has a logarithmic scale, which means each incremental decrease in dB represents a 10x the incremental decrease in sound intensity. For instance, a reduction of 6 dB from 60 to 54 signifies a 60x decrease in intensity.



Additionally, the existence of physical buffers such as trees and brush reduce the sound intensity. Wood, being a porous and fibrous material, naturally absorbs sound waves instead of reflecting them. When sound waves encounter a timber surface, they penetrate its porous layers, and the energy is dissipated within the wood fibers. Cook and Van Haverheke (1972) found reductions in noise level of 5-10 dB for belts of trees between 50-100 ft wide. There is 50 - 60 ft wide tree/brush area on the East border of the site plus the evergreen visual buffer accounting conservatively for a 5 dB reduction.

Per the Illinois Pollution Control Board (IPCB) noise standards Part 901, during the daytime allowable Octave Band Sound Pressure Levels (dB) of Sound Emitted to any Receiving Class A Land from Class C Land is as follows:

<u>31.5</u>	<u>63</u>	<u>125</u>	<u>250</u>	<u>500</u>	<u>1000</u>	<u>2000</u>	<u>4000</u>	<u>8000</u>
75	74	69	64	58	52	47	43	40

Since no energy is produced during the night, no sound is generated and analysis is not required.

The Solectria XGI 1500-250 inverter has the following noise profile at a 1M or 3.3ft distance. Evaluating for increasing distance and the physical tree buffer, we obtain the following noise profile from 1M (3.3ft) to 32M (105ft).

Distance	DC voltage	Power	Angle	Freq(Hz)	31.5	63	125	250	500	1000	2000	4000	8000
1M 3.3ft	1050V.	100%	front	dB	17	26.9	50.7	50	56.2	55.4	56.9	65.7	57.8
2M 6.6ft					11.	20.9.	44.7.	44.	50.2	49.4.	50.9	59.7	51.8
4M 13ft					5.	14.9	38.7.	38.	44.2.	43.4.	44.9.	53.7.	45.8
8M 26ft					--	8.9.	32.7.	32.	38.2.	37.4.	38.9.	47.7.	39.8
16M 52ft					--	2.9.	26.7.	26.	32.2.	31.4.	32.9.	41.7.	33.8
32M 105ft					--	--	20.7.	20.	26.2.	25.1.	26.9.	35.7.	27.8
Trees					--	--	15.7.	15.	21.2.	20.5.	21.9.	30.7.	22.8

Conclusion:

In summary, at 105 ft distance the noise intensity from the inverters at 20 dB would be 200x less than a home refrigerator at 40 dB. The inverters are over 150 ft from the East border and over 700 ft from the North border. Based on these distances and our review, this solar site is expected to operate in compliance with the IPCB.

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