INVERTER AND TRANSFORMER NOISE ANALYSIS
Norwich Turnpike Solar
Norwich, Vermont

15 RAILROAD ROW, SUITE 101
WHITE RIVER JUNCTION, VT 05001

The table shows the noise level of each component at a 3, 200, and 600-foot distance:

Component	Capacity	Noise Level (dBA) @ 3.3FT	dBA @ 200FT	dBA @ 600FT
Inverter 001	50 kW	60	24.3	14.8
Inverter 002	50 kW	60	24.3	14.8
Inverter 003	50 kW	60	24.3	14.8
Transformer 001	150 kVa	55	19.3	9.8

Component	Dist to Residence (FT)	dBA @ Dist
Inverter 001	220	23.5
Inverter 002	235	22.9
Inverter 003	275	21.5
Transformer 001	105	24.9
	Combined Impact (dBA)	**29.4**

Commercial	Industrial	Residential	dB Level
Threshold For Hearing			0
Good Recording Studio		Breathing	10
		Rustling Leaves	15
		Whisper, Mosquito	20
Library		Living / Dining Room	30
Refrigerator Hum		Kitchen / Bathroom	40
Quiet Office	Power Lawn Mower	Home Office	50
		Birds at 10'	55
Conversational Speech			60
Piano Practice		Electric Shaver	60
Business Office		Piano Practice	65
Noisy Restaurant	Inplant Office	Street Traffic	70
Chamber Music		Barking Dog	75
Classroom		Alarm Clock	75
		Television / Dishwasher	75

Relevant equations:

FT-M conversion: 1 foot = 0.3048 meter

Sound level of individual components:

R2 = R1-20*LOG(D)

Where:

R2 = sound level at user-specified distance

R1 = sound level at one meter distance

D = user-specified distance, in meters

Combined sound level:

RN = 10*LOG(Σ(10^[R2/10])

Where:

RN = sound level of combined components

R2 = sound level at user-specified distance

[1] Noise level CPS 50kW inverter online datasheet https://www.chintpowersystems.com/pdf/CPS%20SCA50-60KTL-DO-US-480%20Datasheet%20Jan-31-2020.pdf

[2] Transformer noise level from National Electrical Manufacturers Association (NEMA) Standard ST-20 for sound level based on transformer kVA (151-300 kVa <> 55 dBA)

[3] Decibel chart from NetWell Noise Control and Soundproofing *http://www.controlnoise.com/decibel-chart*

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