Sub Substation Transformer

Inv# Inverter Unit

Noise Receptor

Representative Noise Receptor

From 40 to 45 dBA

From 45 to 50 dBA

From 50 to 55 dBA

From 55 to 60 dBA

Over 60 dBA

Project Site

Parcel

PR## Parcel ID

Axio Power Canada Inc./SunEdison Canada

Kingston Gardiner Hwy 2 South – Solar Energy Project – Noise Map at 4.5m

0 120 240 360 480 600 m

SCALE 1:7,500

Figure C.1

HATCH™

Rev 3

Sub Substation Transformer

Inv# Inverter Unit

Noise Receptor

Representative Noise Receptor

30m Radius Circle around Noise Receptor

From 40 to 45 dBA

From 45 to 50 dBA

From 50 to 55 dBA

From 55 to 60 dBA

Over 60 dBA

Project Site

Parcel

PR# # Parcel ID

Axio Power Canada Inc./SunEdison Canada

Kingston Gardiner Hwy 2 South – Solar Energy Project – Noise Map at 1.5m

0 120 240 360 480 600 m

SCALE 1:7,500

Figure C.2

HATCH™

Rev

Appendix D

CADNA-A Sample Calculations

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (m)	2000.00
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (m)	1000.00
Min. Length of Section (m)	1.00
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	0.00
Night-time Penalty (dB)	0.00
DTM	
Standard Height (m)	3.50
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	1
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Excl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (°C)	10
rel. Humidity (%)	70
Ground Absorption G	0.70
Wind Speed for Dir. (m/s)	3.0
Roads (RLS-90)	
Strictly acc. to RLS-90	
Railways (Schall 03)	
Strictly acc. to Schall 03 / Schall-Transrapid	
Aircraft (???)	
Strictly acc. to AzB	

Receiver
Name: Existing
ID: 1.0
X: 366773.21
Y: 4903320.07
Z: 134.50

Point Source, ISO 9613, Name: "Sub", ID: "Sub"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	366634.21	4903391.76	133.00	0	32	48.0	48.0	0.0	0.0	54.9	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-3.9	-3.9
2	366634.21	4903391.76	133.00	0	63	67.2	67.2	0.0	0.0	54.9	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	15.3	15.3
3	366634.21	4903391.76	133.00	0	125	79.3	79.3	0.0	0.0	54.9	0.1	2.4	0.0	0.0	0.0	0.0	-0.0	21.9	21.9
4	366634.21	4903391.76	133.00	0	250	81.8	81.8	0.0	0.0	54.9	0.2	2.6	0.0	0.0	0.0	0.0	-0.0	24.2	24.2
5	366634.21	4903391.76	133.00	0	500	87.2	87.2	0.0	0.0	54.9	0.3	-0.8	0.0	0.0	0.0	0.0	-0.0	32.8	32.8
6	366634.21	4903391.76	133.00	0	1000	84.4	84.4	0.0	0.0	54.9	0.6	-0.9	0.0	0.0	0.0	0.0	-0.0	29.8	29.8
7	366634.21	4903391.76	133.00	0	2000	80.6	80.6	0.0	0.0	54.9	1.5	-0.9	0.0	0.0	0.0	0.0	-0.0	25.1	25.1
8	366634.21	4903391.76	133.00	0	4000	75.4	75.4	0.0	0.0	54.9	5.1	-0.9	0.0	0.0	0.0	0.0	-0.0	16.3	16.3
9	366634.21	4903391.76	133.00	0	8000	66.3	66.3	0.0	0.0	54.9	18.3	-0.9	0.0	0.0	0.0	0.0	-0.0	-6.0	-6.0

Point Source, ISO 9613, Name: "Inv1", ID: "Inv1"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	366526.42	4903225.77	132.80	0	63	59.8	59.8	0.0	0.0	59.4	0.0	-3.3	0.0	0.0	0.0	0.0	-0.0	3.6	3.6
2	366526.42	4903225.77	132.80	0	125	73.9	73.9	0.0	0.0	59.4	0.1	3.0	0.0	0.0	0.0	0.0	-0.0	11.4	11.4
3	366526.42	4903225.77	132.80	0	250	86.0	86.0	0.0	0.0	59.4	0.3	2.0	0.0	0.0	0.0	0.0	-0.0	24.3	24.3
4	366526.42	4903225.77	132.80	0	500	80.6	80.6	0.0	0.0	59.4	0.5	-1.0	0.0	0.0	0.0	0.0	-0.0	21.6	21.6
5	366526.42	4903225.77	132.80	0	1000	72.1	72.1	0.0	0.0	59.4	1.0	-1.0	0.0	0.0	0.0	0.0	-0.0	12.7	12.7
6	366526.42	4903225.77	132.80	0	2000	74.6	74.6	0.0	0.0	59.4	2.5	-1.0	0.0	0.0	0.0	0.0	-0.0	13.6	13.6
7	366526.42	4903225.77	132.80	0	4000	84.9	84.9	0.0	0.0	59.4	8.7	-1.0	0.0	0.0	0.0	0.0	-0.0	17.8	17.8
8	366526.42	4903225.77	132.80	0	8000	70.4	70.4	0.0	0.0	59.4	30.9	-1.0	0.0	0.0	0.0	0.0	-0.0	-18.9	-18.9

Point Source, ISO 9613, Name: "Inv2", ID: "Inv2"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	366676.93	4903239.06	133.38	0	63	59.8	59.8	0.0	0.0	53.0	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	9.8	9.8
2	366676.93	4903239.06	133.38	0	125	73.9	73.9	0.0	0.0	53.0	0.1	2.5	0.0	0.0	0.0	0.0	-0.0	18.3	18.3
3	366676.93	4903239.06	133.38	0	250	86.0	86.0	0.0	0.0	53.0	0.1	1.8	0.0	0.0	0.0	0.0	-0.0	31.0	31.0
4	366676.93	4903239.06	133.38	0	500	80.6	80.6	0.0	0.0	53.0	0.2	-0.9	0.0	0.0	0.0	0.0	-0.0	28.2	28.2
5	366676.93	4903239.06	133.38	0	1000	72.1	72.1	0.0	0.0	53.0	0.5	-0.9	0.0	0.0	0.0	0.0	-0.0	19.5	19.5
6	366676.93	4903239.06	133.38	0	2000	74.6	74.6	0.0	0.0	53.0	1.2	-0.9	0.0	0.0	0.0	0.0	-0.0	21.3	21.3
7	366676.93	4903239.06	133.38	0	4000	84.9	84.9	0.0	0.0	53.0	4.1	-0.9	0.0	0.0	0.0	0.0	-0.0	28.7	28.7
8	366676.93	4903239.06	133.38	0	8000	70.4	70.4	0.0	0.0	53.0	14.7	-0.9	0.0	0.0	0.0	0.0	-0.0	3.6	3.6

Point Source, ISO 9613, Name: "Inv3", ID: "Inv3"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	366583.72	4903091.36	131.93	0	63	59.8	59.8	0.0	0.0	60.5	0.0	-3.6	0.0	0.0	0.0	0.0	-0.0	2.9	2.9
2	366583.72	4903091.36	131.93	0	125	73.9	73.9	0.0	0.0	60.5	0.1	3.0	0.0	0.0	0.0	0.0	-0.0	10.3	10.3
3	366583.72	4903091.36	131.93	0	250	86.0	86.0	0.0	0.0	60.5	0.3	1.9	0.0	0.0	0.0	0.0	-0.0	23.3	23.3
4	366583.72	4903091.36	131.93	0	500	80.6	80.6	0.0	0.0	60.5	0.6	-1.0	0.0	0.0	0.0	0.0	-0.0	20.6	20.6
5	366583.72	4903091.36	131.93	0	1000	72.1	72.1	0.0	0.0	60.5	1.1	-1.1	0.0	0.0	0.0	0.0	-0.0	11.6	11.6
6	366583.72	4903091.36	131.93	0	2000	74.6	74.6	0.0	0.0	60.5	2.9	-1.1	0.0	0.0	0.0	0.0	-0.0	12.4	12.4
7	366583.72	4903091.36	131.93	0	4000	84.9	84.9	0.0	0.0	60.5	9.7	-1.1	0.0	0.0	0.0	0.0	-0.0	15.8	15.8
8	366583.72	4903091.36	131.93	0	8000	70.4	70.4	0.0	0.0	60.5	34.7	-1.1	0.0	0.0	0.0	0.0	-0.0	-23.7	-23.7

Point Source, ISO 9613, Name: "Inv4", ID: "Inv4"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	366732.84	4903104.97	132.26	0	63	59.8	59.8	0.0	0.0	57.8	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	5.0	5.0
2	366732.84	4903104.97	132.26	0	125	73.9	73.9	0.0	0.0	57.8	0.1	2.9	0.0	0.0	0.0	0.0	-0.0	13.1	13.1
3	366732.84	4903104.97	132.26	0	250	86.0	86.0	0.0	0.0	57.8	0.2	2.0	0.0	0.0	0.0	0.0	-0.0	25.9	25.9
4	366732.84	4903104.97	132.26	0	500	80.6	80.6	0.0	0.0	57.8	0.4	-0.9	0.0	0.0	0.0	0.0	-0.0	23.2	23.2

Point Source, ISO 9613, Name: "Inv4", ID: "Inv4"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
5	366732.84	4903104.97	132.26	0	1000	72.1	72.1	0.0	0.0	57.8	0.8	-0.9	0.0	0.0	0.0	0.0	-0.0	14.4	14.4
6	366732.84	4903104.97	132.26	0	2000	74.6	74.6	0.0	0.0	57.8	2.1	-0.9	0.0	0.0	0.0	0.0	-0.0	15.6	15.6
7	366732.84	4903104.97	132.26	0	4000	84.9	84.9	0.0	0.0	57.8	7.2	-0.9	0.0	0.0	0.0	0.0	-0.0	20.8	20.8
8	366732.84	4903104.97	132.26	0	8000	70.4	70.4	0.0	0.0	57.8	25.6	-0.9	0.0	0.0	0.0	0.0	-0.0	-12.1	-12.1

Point Source, ISO 9613, Name: "Inv5", ID: "Inv5"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	366638.51	4902958.14	131.05	0	63	59.8	59.8	0.0	0.0	62.7	0.1	-4.1	0.0	0.0	0.0	0.0	-0.0	1.2	1.2
2	366638.51	4902958.14	131.05	0	125	73.9	73.9	0.0	0.0	62.7	0.2	3.1	0.0	0.0	0.0	0.0	-0.0	7.9	7.9
3	366638.51	4902958.14	131.05	0	250	86.0	86.0	0.0	0.0	62.7	0.4	1.7	0.0	0.0	0.0	0.0	-0.0	21.1	21.1
4	366638.51	4902958.14	131.05	0	500	80.6	80.6	0.0	0.0	62.7	0.7	-1.2	0.0	0.0	0.0	0.0	-0.0	18.3	18.3
5	366638.51	4902958.14	131.05	0	1000	72.1	72.1	0.0	0.0	62.7	1.4	-1.2	0.0	0.0	0.0	0.0	-0.0	9.2	9.2
6	366638.51	4902958.14	131.05	0	2000	74.6	74.6	0.0	0.0	62.7	3.7	-1.2	0.0	0.0	0.0	0.0	-0.0	9.4	9.4
7	366638.51	4902958.14	131.05	0	4000	84.9	84.9	0.0	0.0	62.7	12.7	-1.2	0.0	0.0	0.0	0.0	-0.0	10.8	10.8
8	366638.51	4902958.14	131.05	0	8000	70.4	70.4	0.0	0.0	62.7	45.1	-1.2	0.0	0.0	0.0	0.0	-0.0	-36.2	-36.2

Point Source, ISO 9613, Name: "Inv6", ID: "Inv6"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	366788.51	4902971.99	131.06	0	63	59.8	59.8	0.0	0.0	61.8	0.0	-3.9	0.0	0.0	0.0	0.0	-0.0	1.9	1.9
2	366788.51	4902971.99	131.06	0	125	73.9	73.9	0.0	0.0	61.8	0.1	3.0	0.0	0.0	0.0	0.0	-0.0	8.9	8.9
3	366788.51	4902971.99	131.06	0	250	86.0	86.0	0.0	0.0	61.8	0.4	1.8	0.0	0.0	0.0	0.0	-0.0	22.0	22.0
4	366788.51	4902971.99	131.06	0	500	80.6	80.6	0.0	0.0	61.8	0.7	-1.1	0.0	0.0	0.0	0.0	-0.0	19.2	19.2
5	366788.51	4902971.99	131.06	0	1000	72.1	72.1	0.0	0.0	61.8	1.3	-1.2	0.0	0.0	0.0	0.0	-0.0	10.2	10.2
6	366788.51	4902971.99	131.06	0	2000	74.6	74.6	0.0	0.0	61.8	3.4	-1.2	0.0	0.0	0.0	0.0	-0.0	10.6	10.6
7	366788.51	4902971.99	131.06	0	4000	84.9	84.9	0.0	0.0	61.8	11.4	-1.2	0.0	0.0	0.0	0.0	-0.0	12.8	12.8
8	366788.51	4902971.99	131.06	0	8000	70.4	70.4	0.0	0.0	61.8	40.7	-1.2	0.0	0.0	0.0	0.0	-0.0	-31.0	-31.0

Point Source, ISO 9613, Name: "Inv7", ID: "Inv7"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	366694.57	4902824.65	129.90	0	63	59.8	59.8	0.0	0.0	65.0	0.1	-4.6	0.0	0.0	0.0	0.0	-0.0	-0.7	-0.7
2	366694.57	4902824.65	129.90	0	125	73.9	73.9	0.0	0.0	65.0	0.2	3.3	0.0	0.0	0.0	0.0	-0.0	5.4	5.4
3	366694.57	4902824.65	129.90	0	250	86.0	86.0	0.0	0.0	65.0	0.5	1.6	0.0	0.0	0.0	0.0	-0.0	18.9	18.9
4	366694.57	4902824.65	129.90	0	500	80.6	80.6	0.0	0.0	65.0	1.0	-1.3	0.0	0.0	0.0	0.0	-0.0	16.0	16.0
5	366694.57	4902824.65	129.90	0	1000	72.1	72.1	0.0	0.0	65.0	1.8	-1.4	0.0	0.0	0.0	0.0	-0.0	6.6	6.6
6	366694.57	4902824.65	129.90	0	2000	74.6	74.6	0.0	0.0	65.0	4.8	-1.4	0.0	0.0	0.0	0.0	-0.0	6.1	6.1
7	366694.57	4902824.65	129.90	0	4000	84.9	84.9	0.0	0.0	65.0	16.4	-1.4	0.0	0.0	0.0	0.0	-0.0	4.8	4.8
8	366694.57	4902824.65	129.90	0	8000	70.4	70.4	0.0	0.0	65.0	58.6	-1.4	0.0	0.0	0.0	0.0	-0.0	-51.9	-51.9

Point Source, ISO 9613, Name: "Inv8", ID: "Inv8"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	366844.48	4902838.54	129.83	0	63	59.8	59.8	0.0	0.0	64.8	0.1	-4.5	0.0	0.0	0.0	0.0	-0.0	-0.5	-0.5
2	366844.48	4902838.54	129.83	0	125	73.9	73.9	0.0	0.0	64.8	0.2	3.2	0.0	0.0	0.0	0.0	-0.0	5.7	5.7
3	366844.48	4902838.54	129.83	0	250	86.0	86.0	0.0	0.0	64.8	0.5	1.6	0.0	0.0	0.0	0.0	-0.0	19.1	19.1
4	366844.48	4902838.54	129.83	0	500	80.6	80.6	0.0	0.0	64.8	0.9	-1.3	0.0	0.0	0.0	0.0	-0.0	16.2	16.2
5	366844.48	4902838.54	129.83	0	1000	72.1	72.1	0.0	0.0	64.8	1.8	-1.4	0.0	0.0	0.0	0.0	-0.0	6.9	6.9
6	366844.48	4902838.54	129.83	0	2000	74.6	74.6	0.0	0.0	64.8	4.7	-1.4	0.0	0.0	0.0	0.0	-0.0	6.5	6.5
7	366844.48	4902838.54	129.83	0	4000	84.9	84.9	0.0	0.0	64.8	16.0	-1.4	0.0	0.0	0.0	0.0	-0.0	5.6	5.6
8	366844.48	4902838.54	129.83	0	8000	70.4	70.4	0.0	0.0	64.8	56.9	-1.4	0.0	0.0	0.0	0.0	-0.0	-49.9	-49.9

Point Source, ISO 9613, Name: "Inv9", ID: "Inv9"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	366750.93	4902691.77	128.75	0	63	59.8	59.8	0.0	0.0	67.0	0.1	-4.8	0.0	0.0	0.0	0.0	-0.0	-2.4	-2.4
2	366750.93	4902691.77	128.75	0	125	73.9	73.9	0.0	0.0	67.0	0.3	3.5	0.0	0.0	0.0	0.0	-0.0	3.2	3.2
3	366750.93	4902691.77	128.75	0	250	86.0	86.0	0.0	0.0	67.0	0.7	1.5	0.0	0.0	0.0	0.0	-0.0	16.9	16.9
4	366750.93	4902691.77	128.75	0	500	80.6	80.6	0.0	0.0	67.0	1.2	-1.4	0.0	0.0	0.0	0.0	-0.0	13.8	13.8
5	366750.93	4902691.77	128.75	0	1000	72.1	72.1	0.0	0.0	67.0	2.3	-1.5	0.0	0.0	0.0	0.0	-0.0	4.3	4.3
6	366750.93	4902691.77	128.75	0	2000	74.6	74.6	0.0	0.0	67.0	6.1	-1.5	0.0	0.0	0.0	0.0	-0.0	3.0	3.0
7	366750.93	4902691.77	128.75	0	4000	84.9	84.9	0.0	0.0	67.0	20.6	-1.5	0.0	0.0	0.0	0.0	-0.0	-1.2	-1.2

Point Source, ISO 9613, Name: "Inv9", ID: "Inv9"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
8	366750.93	4902691.77	128.75	0	8000	70.4	70.4	0.0	0.0	67.0	73.5	-1.5	0.0	0.0	0.0	0.0	-0.0	-68.6	-68.6

Point Source, ISO 9613, Name: "Inv10", ID: "Inv10"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	366900.68	4902704.83	128.59	0	63	59.8	59.8	0.0	0.0	67.0	0.1	-4.8	0.0	0.0	0.0	0.0	-0.0	-2.4	-2.4
2	366900.68	4902704.83	128.59	0	125	73.9	73.9	0.0	0.0	67.0	0.3	3.5	0.0	0.0	0.0	0.0	-0.0	3.2	3.2
3	366900.68	4902704.83	128.59	0	250	86.0	86.0	0.0	0.0	67.0	0.7	1.5	0.0	0.0	0.0	0.0	-0.0	16.9	16.9
4	366900.68	4902704.83	128.59	0	500	80.6	80.6	0.0	0.0	67.0	1.2	-1.4	0.0	0.0	0.0	0.0	-0.0	13.9	13.9
5	366900.68	4902704.83	128.59	0	1000	72.1	72.1	0.0	0.0	67.0	2.3	-1.5	0.0	0.0	0.0	0.0	-0.0	4.3	4.3
6	366900.68	4902704.83	128.59	0	2000	74.6	74.6	0.0	0.0	67.0	6.1	-1.5	0.0	0.0	0.0	0.0	-0.0	3.0	3.0
7	366900.68	4902704.83	128.59	0	4000	84.9	84.9	0.0	0.0	67.0	20.6	-1.5	0.0	0.0	0.0	0.0	-0.0	-1.2	-1.2
8	366900.68	4902704.83	128.59	0	8000	70.4	70.4	0.0	0.0	67.0	73.4	-1.5	0.0	0.0	0.0	0.0	-0.0	-68.5	-68.5

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SunE Westbrook Solar Farm

Acoustic Assessment Report
March, 2012

Prepared for:
SunEdison Canada, LLC
595 Adelaide Street East, Suite 400
Toronto, ON M5A 1N8

Prepared by:
GENIVAR Inc.
600 Cochrane Drive, 5th Floor
Markham, Ontario L3R 5K3

Project No. 111-18734-00

GENIVAR

Project No. 111-18734-00

March 01, 2012

Robert Miller
SunEdison Canada, LLC
945 Princess Street
Kingston, ON K7L 3N6

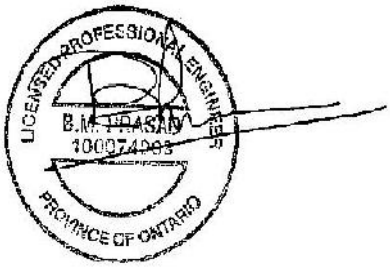
Re: SunE Westbrook Solar Farm
Draft Acoustic Assessment Report

Dear Mr. Miller:

Please find, attached, a copy of Acoustic Assessment Report carried out for the SunE Westbrook Solar Farm to be located in the area of Westbrook, north of the City of Kingston, Ontario.

If you have any question, please, feel free to call me at 905-475-7270 ext. 18384 or email me at bhuwan.prasad@genivar.com.

Yours truly,
GENIVAR Inc.



Bhuwan M. Prasad, P. Eng.
Environmental Engineer

/bp

Executive Summary

GENIVAR Inc. (GENIVAR) was retained by SunEdison to prepare an acoustic assessment report for the SunE Westbrook Solar Farm with an installed capacity of 10 MW to be located in the area of Westbrook, north of the City of Kingston, Ontario in support of the Renewable Energy Approval (REA) application under Ontario Regulation 359/09 (O.Reg.359/09) of the Environmental Protection Act.

According to the project classification scheme outlined in Part II (Classes of Renewable Energy Generation Facilities); Section 4 of O. Reg. 359/09 the SunE Westbrook solar farm is categorized as a Class 3 solar facility. This acoustic assessment report has been prepared in accordance with Appendix A of the publication of the Ontario Ministry of the Environment entitled, “Basic Comprehensive Certificates of Approval (Air) – User Guide”, dated April 2004 and subsequent amendments.

The noise analysis was conducted using the CadnaA (Computer Aided Noise Abatement) 3-D acoustical modelling software V4.2 to predict the noise levels at the points of reception, within one (1) km distance around the site boundary in each direction, with all noise sources operating at full load simultaneously. CadnaA is based on ISO Standard 9613-2 “*Acoustics - Attenuation of Sound During Propagation Outdoors – Part 2: General Method of Calculation*”. The applicable sound level limits for this Facility are considered to be the exclusionary minimum sound levels for Class 3 areas (45 dBA for daytime and 40 dBA for evening & nighttime).

Based on the results obtained in this noise study, the environmental noise produced by the proposed SunE Westbrook Solar Farm would be well below the applicable MOE noise guidelines at all Points of Reception.

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1. Introduction

SunEdison Canada (SunEdison), through its wholly owned subsidiary, SunE Westbrook LP, is proposing a single Class 3 Solar Facility with a nameplate capacity of 10 MW (AC) in the area of Westbrook, north of the City of Kingston, Ontario. If approved, this facility will convert solar energy into electricity to be fed into the Hydro One distribution grid. The defined study area is presented as Figure 1 in Appendix A, covering approximately 70 hectares (ha). Noise sources include inverters and transformers, with 22 Points of Reception identified as sensitive receptors, and 19 Points of Reception as vacant lots (total of 41 Points of Reception) within one km distance around the site boundary in each direction, for assessment.

SunEdison is a global leader in solar energy generation with a current operating portfolio of more than 350 facilities generating over a combined 120 Megawatts (MW) of solar power across the globe. Active Ontario solar farms currently owned and operated by SunEdison include First Light 1 (9.1 MW) located in Stone Mills, north of Napanee, Norfolk I and II (18 MW combined) located in Norfolk County and Erie Ridge (9.3 MW) in Ridgetown, Chatham-Kent.

Subject to receiving all approvals, the preliminary schedule anticipates that full commercial operation of the SunE Westbrook Solar Farm will be achieved by the end of 2012. The project has received a 20-year FIT contract from the Ontario Power Authority to sell the generated electricity to the Ontario electricity grid. As such, the project is anticipated to operate until at least 2032, at which time it may continue to generate electricity or the site may be decommissioned and the land returned to its former vacant use.

1.1 Report Objectives

GENIVAR Inc. (GENIVAR) was retained by SunEdison to prepare this acoustic assessment report in support of the Renewable Energy Approval (REA) application for the SunE Westbrook Solar Farm in Westbrook, north of the City of Kingston, Ontario.

Ontario Regulation 359/09 (O. Reg. 359/09) of the Environmental Protection Act received Royal Assent on September 24, 2009 and was filed and came into force on October 1, 2009. O. Reg. 359/09 contains the current requirements for approval of a renewable energy project under the REA process. According to the project classification scheme outlined in Part II (Classes of Renewable Energy Generation Facilities); Section 4 of O. Reg. 359/09 the SunE Westbrook solar farm is categorized as a Class 3 solar facility. A Class 3 solar facility is defined as a facility of solar panels situated at any location other than mounted on the roof or wall of a building with a name plate capacity greater than 12 kW.

As required by O. Reg. 359/09 for a Class 3 solar facility, this noise study report has been prepared in accordance with Appendix A of the publication of the Ministry of the Environment entitled, “Basic Comprehensive Certificates of Approval (Air) – User Guide”, dated April 2004 and subsequent amendments.

1.2 Project Location

The project is located on Concession 5, north of the City of Kingston. The area is generally bounded by:

→ Westbrook Road to the east

→ Glenvale Creek along the west

The following coordinates (in UTM NAD 83, Zone 18N coordinate system) define the extremities of the Study Area for the project:

- North-west: Easting 369472 Northing 4907093
- North-east: Easting 369960 Northing 4907118
- South-east: Easting 369994 Northing 4906058
- South-west: Easting 369180 Northing 4906030

The solar farm will be located on privately owned land which has A2 agricultural zoning. The electrical substation of the project will also be located on site. One overhead electrical connection line will run south within the Westbrook Road right-of-way to connect to the existing Hydro One distribution line running east-west along Princess Street.

The noise sources and receptors are shown on Figure 1 in Appendix A and the zoning / land-use information is provided in Appendix B.

2. Facility Description

The Facility will consist of solar modules, inverters, transformers and other ancillary equipment to convert solar energy into electricity (equipment list provided in Appendix C). The modules will be held by a single-axis tracking system which is supported off the ground by vertical posts. The major components of the proposed project are as follows:

- Approximately 40,000 x MEMC solar modules (260 to 300-watt generation capacity)
- Approximately 320 disconnect combiners
- 44 kV Substation including pole-top motor-operated disconnect, 44kV switchgear, 10 MVA oil filled pad-mount transformer, interrupter switches, communication equipment, etc.
- 10 inverter huts, each inverter hut consisting of two 500-kW inverters within an enclosure (or a house) and one corresponding 1000 kVA transformer located outside the enclosure.

The Facility will operate 24 hours per day and 7 days per week to convert sunlight into electricity whenever solar energy is available. During daylight hours, the facility will convert the available energy from the sun's rays into electricity to be transmitted to the Hydro One grid.

In the absence of sunlight, no electricity generation will take place. This scenario is found at nighttime after sunset, and under these conditions the inverters are not operating and therefore not producing any noise. The medium-voltage transformers are energized from the energy generation process during hours or sunlight, and therefore continue to generate some magnetostrictive noise at reduced levels during the evening, even without the cooling fans in operation.

3. Noise Source Summary

The main sources of noise associated with the Project will be the inverter huts (each hut containing two inverters and one medium-voltage transformer) and the substation containing the main step-up transformer installed on a concrete pad.

Switch gear and a small step-down transformer meant for lighting within the substation are insignificant sources of noise in comparison to above sources. The trackers operate using small motors and only emit noise when moving the panels. This noise is not significant and the motors have not been considered as sources of noise.

3.1 Inverter Huts

The facility will have ten (10) inverter huts, each consisting of a set of two (2) 500 kW inverters and an associated 1 MVA transformer contained within a sound dampening enclosure. Based on the inverter design (Appendix C), each inverter hut has been considered to have two noise components: (a) two (2) 500 kW inverters in an enclosure and (b) 1 MVA transformer located outside of the inverter enclosure (descriptions of which are provided below).

The inverters and associated transformer in each hut are identified by unique identification numbers. For example, H1T is the transformer of Hut 1, while H1|1 and H1|2 are inverter 1 and inverter 2 respectively for Hut 1; H2T is the transformer of Hut 2, while H2|1 and H2|2 are inverter 1 and inverter 2 respectively for Hut 2; etc. The complete list of inverters and associated transformers can be found in Table 2.

3.1.1 Inverters

Noise data has been received for two different 500 kW Inverters: (a) Satcon, the inverters which mostly likely to be used in this facility as given in Appendix C and (b) Solaron as provided in Appendix D by Advanced Energy Industries (AEI). The inverter make and model has not been selected at this time, although it is anticipated that Satcon inverters will be used.

The overall noise level of the Solaron inverter, given in the third-octave band frequency, is higher than that of the Satcon inverter. For modeling purposes and a more conservative estimate, the Solaron noise data has been used to assess the anticipated noise levels of this Project.

The third-octave spectrum noise data, provided for the Solaron 500 unit, Configuration 2 (similar input voltage level as Satcon), was converted into a full octave spectrum for modeling purposes.

The sound power levels include a 5 dB tonal penalty per MOE publication NPC-104 as the MOE considers these sources to be tonal.

As the two inverters for each Hut are within an enclosure, on the advice of Ontario MOE, inverter enclosure attenuation has been applied to the overall sound power levels as per the values provided in Table 1.

.

3.1.2 Transformers

The sound power levels for the 1 MVA transformers were calculated in the same manner as for the substation transformer, details of which are given in Section 3.2 Substation Transformer below. The sound power levels include a 5 dB tonal penalty per MOE publication NPC-104 as the MOE considers these sources to be tonal.

3.2 Substation Transformer

The octave band sound power levels of the transformers are calculated using Equation 7-23 in "*Noise Control for Building and Manufacturing Plants*" report (provided in Appendix E; Reference 1) and National Electrical Manufacturers Association (NEMA) sound data for the transformers (Appendix E):

$$L_w = \text{NEMA Rating} + 10 \log A + C$$

Where, NEMA Rating = the A weighted sound level of the transformer
A = the total surface area of the sidewall of the transformer in ft²
C = octave band correction (Appendix C, Reference 1, Table 7-30)

The sound power levels include a 5 dB tonal penalty per MOE publication NPC-104 as the MOE considers these sources to be tonal.

An overall list of all noise sources of the Facility is shown in Table 2: Noise Source Summary Table, along with the corresponding coordinates as shown on Figure 1 (Appendix A). The height of the substation transformer is modeled as 2.5 metres, where as the heights of the inverters and inverter transformers are modeled as 1.8 metres above the ground so as to model them as point sources.

Two different scenarios have been modeled as per the details given below:

Daytime Scenario: When all the above equipment is in operation.

Nighttime Scenario: When all other equipment is in operation except inverters (i.e. only hut transformers and the substation transformer being in operation).

4. Points of Reception Summary

Forty one (41) Points of Reception (PORs) within a one (1) km distance around the site boundary in each direction were identified for this acoustic assessment as shown on Figure 1 (Appendix A).

With a recent aerial photo, land information and site shape files loaded into the GIS program, ArcMap, the noise receptors and vacant lots were determined by visual review of the composite map. Structures that were identified as potential occupied buildings/houses were plotted on the map as noise receptors. This data was stored and saved into the shapefile entitled, *Noise Receptors*. Once all the potential noise receptors were identified, any lots without noise receptor plots were marked with a vacant lot receptor. Each marker was plotted on the vacant lot where future development would most likely take place (i.e. near the existing road access to the lot). The vacant lot receptors were plotted and saved in a separate shapefile entitled, *Vacant Lots*.

The daytime POR noise impact for each receptor from each individual noise source is shown in Table 3 and includes the distance in metres from each source to each receptor and the sound level at each receptor (Leq in dBA). The nighttime POR noise impact from each individual noise source is not presented since the nighttime noise impacts follow the same trend but with lesser impacts.

To simulate a worst-case scenario, each receptor was set to a height of 4.5 m above ground representing an upper storey window of a two-storey structure since they are most exposed to elevated sources at the subject site and benefit least from ground absorption of sound.

5. Assessment Criteria (Performance Limits)

The solar farm will be located on privately owned land which has A2 agricultural zoning. Therefore, all PORs have been considered to be located in Class 3 rural areas to reflect the rural nature of the area.

In predicting the sound level at each POR due to the proposed solar farm, MOE publication NPC-232 requires the application of the principle of “predictable worst case” noise impact. The predictable worst case impact is defined as the largest noise excess produced by the facility over the applicable limit.

The background sound level is considered to be traffic noise and other sounds in the area excluding the sound from the facility under assessment. The sound level limit for the residential receptors in a Class 3 area can be described as follows:

> *The energy averaged sound level (Leq) produced by a source at a receptor location in any one hour period should not exceed the greater of: the energy averaged background sound level in the same hour period, or 45 dBA in the daytime of 07:00 – 19:00, or 40 dBA in the evening period of 19:00 – 23:00 and 40 dBA in the nighttime period of 23:00 – 07:00.*

The applicable sound level limits for this Facility are considered to be the exclusionary minimum sound levels for Class 3 areas as follows:

Time Period	**Sound Level Limit for POR in Class 3 Area**
Daytime (07:00 – 19:00)	45 dBA
Evening (19:00 – 23:00)	40 dBA
Nighttime (23:00 – 07:00)	40 dBA

6. Impact Assessment

The noise analysis was conducted using the CadnaA (Computer Aided Noise Abatement) 3-D acoustical modelling software V4.2 to predict the noise levels at the Points of Reception with all noise sources operating at full load simultaneously and each noise source modelled as a point source. CadnaA is based on ISO Standard 9613-2 “*Acoustics - Attenuation of Sound During Propagation Outdoors – Part 2: General Method of Calculation*”. The CadnaA configuration settings are summarized in Appendix F.

The attenuation due to atmospheric absorption was based on the atmospheric coefficients for 10 °C temperature and 70% relative humidity. The Ground Attenuation value (G) was calculated using the “General” method in standard ISO 9613-2 (included in the CadnaA software), with a global value ground factor of G = 0.7 being used (this is based on MOE wind farm guidelines for rural areas). G = 1 was used

to model the porous soil nearby where the sound energy would be completely absorbed and G = 0 to model for hard surfaces such as paved hard roads where sound energy would be reflected totally.

The predicted sound levels at the receptors for both daytime and nighttime scenarios are provided in Table 4: Acoustic Assessment Summary Table which indicates that the predicted noise levels for all identified PORs are in compliance with the respective performance limits. As a result, no mitigation is required.

Due to the nature of the noise sources, a vibration assessment is not required. The CadnaA noise modeling graphic output for the SunE Westbrook Solar Farm for daytime and nighttime scenarios are shown on Figure 1 and Figure 2, respectively.

It should be noted that the acoustic assessment carried out for this project is conservative since the Sound Power Level used for the Inverters (Advanced Energy Industries) is greater than that of the actual Inverters (Satcon) to be used for the project.

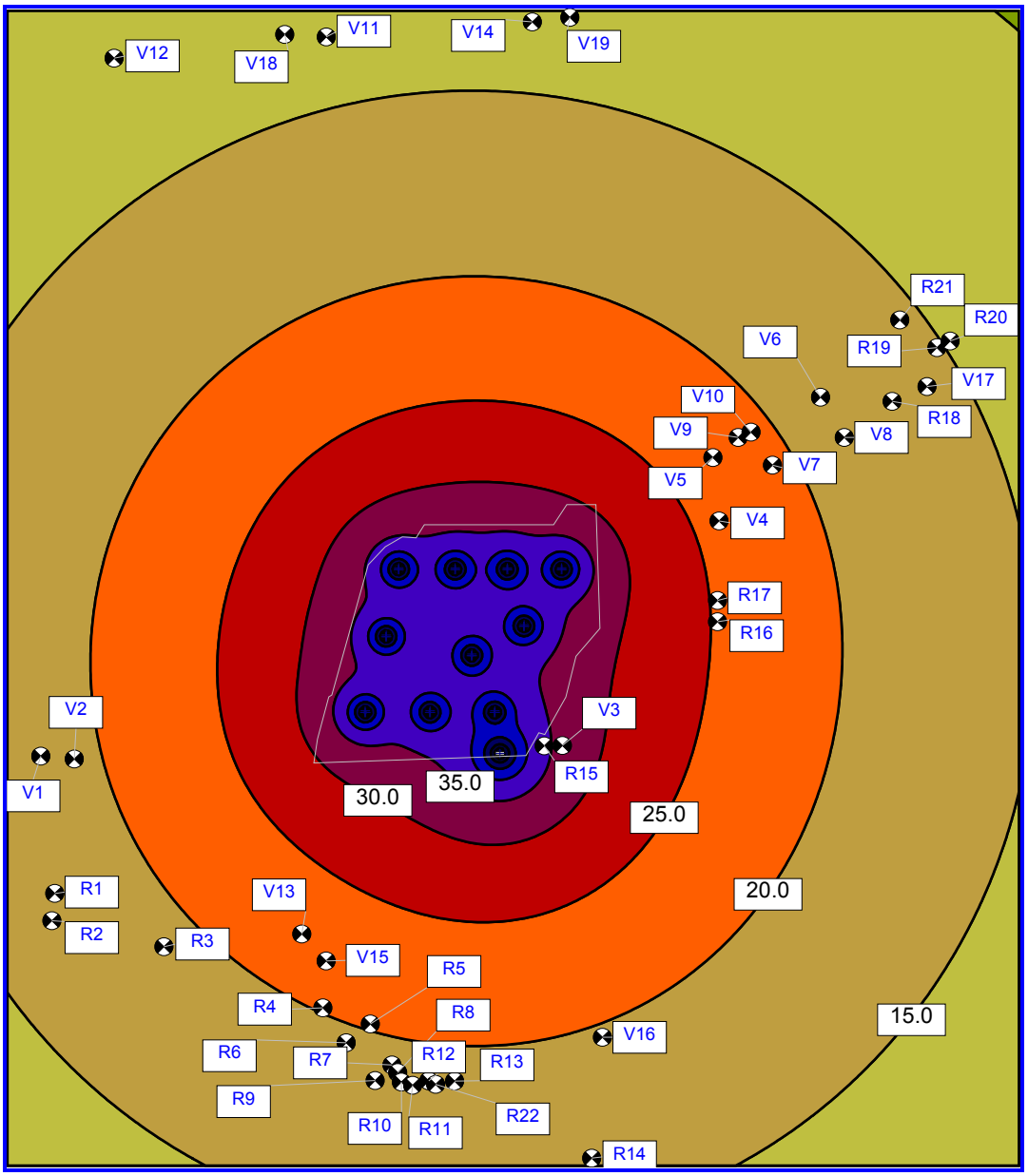

Figure 1 Westbrook Solar Noise Impact Graphics in dBA for Daytime Scenario

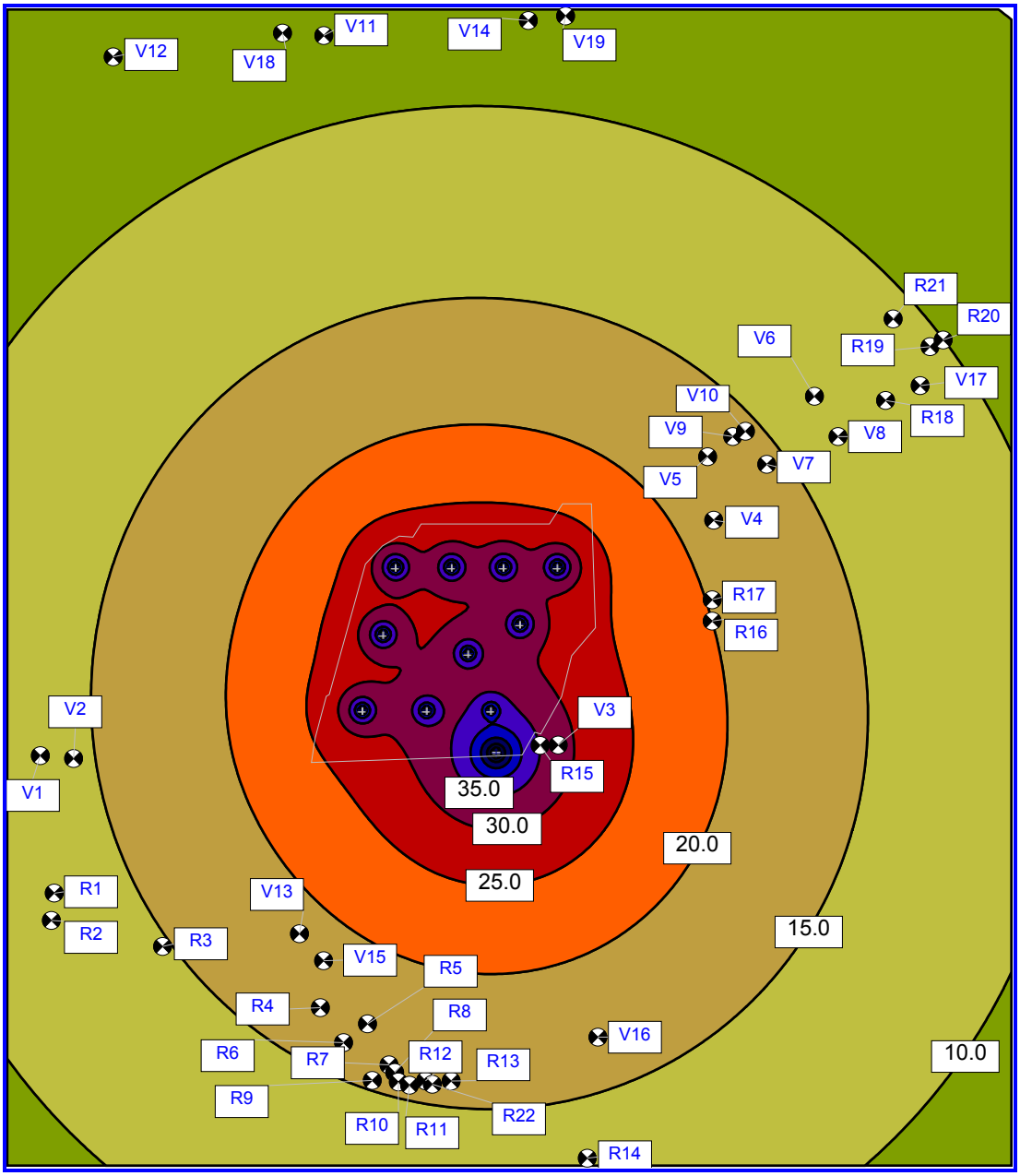

Figure 2 Westbrook Solar Noise Impact Graphics in dBA for Nighttime Scenario

7. Conclusions

For the proposed SunE Westbrook Solar Farm to be located in Westbrook, Ontario, a noise impact study has been carried out by GENIVAR. The study was carried out using CadnaA V4.2 to predict the noise levels at the Points of Reception (PORs), within a one (1) km distance around the site boundary in each direction, with all noise sources operating at full load simultaneously during the daytime scenario and only transformers (without inverters) operating at full load during the nighttime scenario. The applicable sound level limits for this Facility are considered to be the exclusionary minimum sound levels for Class 3 areas (45 dBA for daytime and 40 dBA for evening & nighttime). Based on the results presented in this report, it is concluded that the environmental noise produced by the proposed SunE Westbrook Solar Farm would be well below the applicable MOE noise guidelines at all PORs.

Table 1: Solar Power Inverter and Transformer Sound Levels
SunE Westbrook Solar Farm, Westbrook, Ontario

Inverter - AEI Solaron 500 - based on April 2010 test report (see Appendix D)										
					Octave Band Centre Frequency (Hz)					
Sound Description	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**	**Sum**	**Description**
AEI Solaron 500 PWL (dB)*	83.4	89.6	81.8	81.0	78.0	73.1	70.3	75.2	**91.9**	Appendix D, Table 1, Configuration 2
AEI Solaron 500 SPL (dB)	75.4	81.6	73.8	73.0	70.0	65.1	62.3	67.2	**83.9**	at 1 m
AEI Solaron 500 PWL (dBA)	57.2	73.5	73.2	77.8	78.0	74.3	71.3	74.1	**83.7**	less than 84 dBA from report
AEI Solaron 500 SPL (dBA)	49.2	65.5	65.2	69.8	70.0	66.3	63.3	66.1	**75.7**	at 1 m - close to other vendors
Tonal Penalty (dB)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		as per NPC-104
Inverter Total PWL (dB)	88.4	94.6	86.8	86.0	83.0	78.1	75.3	80.2	**96.9**	including Tonal Penalty
Inverters Enclosures Attenuation	5.0	6.0	7.0	7.0	8.0	8.0	7.0	7.0		
* Each Octave bands have been normalised with its adjacent 1/3 octave sound power levels, for example, PWL for 63 Hz is log sum of PWLs of 50, 63 & 80 Hz										

Inverter transformer NEMA rating (dBA)	58	(CSA C227.4-06, Table 5, 1,000 kVA)
Area of four sides (ft^2)	175	Based on Satcon Prism MVP1 Transformer

					Octave Band Centre Frequency (Hz)					
Sound Description	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**	**Sum**	**Description**
Inverter Transformer PWL (dB) 1,000 kVA	75.4	77.4	72.4	72.4	66.4	61.4	56.4	49.4	**81.2**	Ref. 1, Eq. 7-23 and Table 7-30, C_1 octave band corrections
PWL (dBA)	49.2	61.3	63.8	69.2	66.4	62.6	57.4	48.3	**72.8**	
SPL (dBA) at 1 m	41.2	53.3	55.8	61.2	58.4	54.6	49.4	40.3	**64.8**	
Transformer Total PWL (dB)	80.4	82.4	77.4	77.4	71.4	66.4	61.4	54.4	**86.2**	including Tonal Penalty

Substation transformer NEMA rating (dBA)	68	(CSA-C88-M90, Table 8, 10 MVA)
Area of four sides (ft^2)	251	Estimated based on ABB 3ph 5 MVA unit

					Octave Band Centre Frequency (Hz)					
Sound Description	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**	**Sum**	**Description**
Substation Transformer PWL (dB) 10,000 kVA	87.0	89.0	84.0	84.0	78.0	73.0	68.0	61.0	**92.8**	Ref. 1, Eq. 7-23 and Table 7-30, C_3 octave band corrections
PWL (dBA)	60.8	72.9	75.4	80.8	78.0	74.2	69.0	59.9	**84.4**	
SPL (dBA) at 1 m	52.8	64.9	67.4	72.8	70.0	66.2	61.0	51.9	**76.4**	
Transformer Total PWL (dB)	92.0	94.0	89.0	89.0	83.0	78.0	73.0	66.0	**97.8**	including Tonal Penalty

Reference 1: Noise Control for Buildings, Manufacturing Plants, Equipment and Products (19th printing, 2005)

Table 2: Noise Source Summary Table
SunE Westbrook Solar Farm, Westbrook, Ontario

Source ID	Source Description	Sound Power Level	Coordinates		Height	Daytime Source	Nighttime Source	Source Location	Source Characteristics	Noise Control Measures
		(dBA)	X m)	Y (m)	(m)	Yes or No	Yes or No	(1)	(2)	(3)
H1T	Hut 1 Transformer	72.8	369688.2	4906177.7	1.8	Y	Y	O	S, T	U
H1I1	Hut 1 Inverter 1	83.7	369686.9	4906173.0	2.5	Y	N	O	S, T	E
H1I2	Hut 1 Inverter 2	83.7	369689.4	4906173.0	2.5	Y	N	O	S, T	E
H2T	Hut 2 Transformer	72.8	369506.4	4906177.7	1.8	Y	Y	O	S, T	U
H2I1	Hut 2 Inverter 1	83.7	369505.1	4906173.0	2.5	Y	N	O	S, T	E
H2I2	Hut 2 Inverter 2	83.7	369507.7	4906173.0	2.5	Y	N	O	S, T	E
H3T	Hut 3 Transformer	72.8	369324.7	4906177.7	1.8	Y	Y	O	S, T	U
H3I1	Hut 3 Inverter 1	83.7	369323.4	4906173.0	2.5	Y	N	O	S, T	E
H3I2	Hut 3 Inverter 2	83.7	369325.9	4906173.0	2.5	Y	N	O	S, T	E
H4T	Hut 4 Transformer	72.8	369418.6	4906582.7	1.8	Y	Y	O	S, T	U
H4I1	Hut 4 Inverter 1	83.7	369417.3	4906578.0	2.5	Y	N	O	S, T	E
H4I2	Hut 4 Inverter 2	83.7	369419.8	4906578.0	2.5	Y	N	O	S, T	E
H5T	Hut 5 Transformer	72.8	369876.0	4906582.7	1.8	Y	Y	O	S, T	U
H5I1	Hut 5 Inverter 1	83.7	369874.7	4906578.0	2.5	Y	N	O	S, T	E
H5I2	Hut 5 Inverter 2	83.7	369877.2	4906578.0	2.5	Y	N	O	S, T	E
H6T	Hut 6 Transformer	72.8	369770.5	4906421.7	1.8	Y	Y	O	S, T	U
H6I1	Hut 6 Inverter 1	83.7	369769.3	4906417.0	2.5	Y	N	O	S, T	E
H6I2	Hut 6 Inverter 2	83.7	369771.8	4906417.0	2.5	Y	N	O	S, T	E
H7T	Hut 7 Transformer	72.8	369723.6	4906582.7	1.8	Y	Y	O	S, T	U
H7I1	Hut 7 Inverter 1	83.7	369722.3	4906578.0	2.5	Y	N	O	S, T	E
H7I2	Hut 7 Inverter 2	83.7	369724.8	4906578.0	2.5	Y	N	O	S, T	E
H8T	Hut 8 Transformer	72.8	369577.1	4906582.7	1.8	Y	Y	O	S, T	U
H8I1	Hut 8 Inverter 1	83.7	369575.8	4906578.0	2.5	Y	N	O	S, T	E
H8I2	Hut 8 Inverter 2	83.7	369578.3	4906578.0	2.5	Y	N	O	S, T	E
H9T	Hut 9 Transformer	72.8	369383.4	4906392.4	1.8	Y	Y	O	S, T	U
H9I1	Hut 9 Inverter 1	83.7	369382.1	4906387.6	2.5	Y	N	O	S, T	E
H9I2	Hut 9 Inverter 2	83.7	369384.6	4906387.6	2.5	Y	N	O	S, T	E
H10T	Hut 10 Transformer	72.8	369623.8	4906338.7	1.8	Y	Y	O	S, T	U
H10I1	Hut 10 Inverter 1	83.7	369622.5	4906334.0	2.5	Y	N	O	S, T	E
H10I2	Hut 10 Inverter 2	83.7	369625.1	4906334.0	2.5	Y	N	O	S, T	E
ST	Substation Transformer	84.4	369702.9	4906057.0	2.5	Y	Y	O	S, T	U

Notes:

(1) Source Location:
O - located/installed outside the building, including on the roof
I - located/installed inside the building

(2) Sound Characteristics:
S - Steady
Q - Quasi Steady Impulsive
I - Impulsive
B - Buzzing
T - Tonal
C - Cyclic

(3) Noise Control Measures:
S - silencer, acoustic louvre, muffler
A - acoustic lining, plenum
B - barrier, berm, screening
L - lagging
E - acoustic enclosure
O - other
U - uncontrolled

Table 3: Point of Reception Noise Impact (Daytime)
SunE Westbrook Solar Farm, Westbrook, Ontario

Noise Source ID	Point of Reception R1		Point of Reception R2		Point of Reception R3		Point of Reception R4		Point of Reception R5		Point of Reception R6	
	Distance to R1 (m)	Sound Level at R1 (Leq) (dBA)	Distance to R2 (m)	Sound Level at R2 (Leq) (dBA)	Distance to R3 (m)	Sound Level at R3 (Leq) (dBA)	Distance to R4 (m)	Sound Level at R4 (Leq) (dBA)	Distance to R5 (m)	Sound Level at R5 (Leq) (dBA)	Distance to R6 (m)	Sound Level at R6 (Leq) (dBA)
H1T	1339.2	0.3	1377.8	<1	1144.0	2.1	969.7	3.9	953.0	4.1	1028.4	3.3
H1I1	1336.2	4.0	1374.6	3.6	1140.2	5.8	965.0	7.6	948.1	7.8	1023.5	7.0
H1I2	1338.6	3.9	1376.9	3.6	1142.2	5.7	966.3	7.6	949.1	7.8	1024.6	6.9
H2T	1173.7	1.8	1216.3	1.4	1002.1	3.6	893.3	4.8	902.3	4.7	969.0	3.9
H2I1	1170.5	5.5	1212.9	5.1	998.0	7.2	888.4	8.5	897.5	8.4	964.1	7.6
H2I2	1172.8	5.4	1215.1	5.0	999.9	7.2	889.3	8.5	897.9	8.4	964.7	7.6
H3T	1013.7	3.4	1061.5	2.9	875.1	5.0	849.5	5.4	886.7	4.9	941.5	4.2
H3I1	1010.2	7.1	1057.8	6.6	870.6	8.7	844.7	9.1	882.0	8.6	936.7	7.9
H3I2	1012.4	7.1	1059.9	6.6	872.3	8.7	845.0	9.0	882.0	8.6	936.8	7.9
H4T	1335.4	0.3	1395.0	<1	1259.3	1.0	1264.2	0.9	1294.1	0.7	1353.0	0.2
H4I1	1331.2	4.0	1390.8	3.5	1254.6	4.7	1259.3	4.6	1289.3	4.4	1348.2	3.8
H4I2	1333.0	4.0	1392.5	3.5	1256.0	4.7	1259.8	4.6	1289.5	4.4	1348.5	3.8
H5T	1695.8	<1	1745.2	<1	1548.5	<1	1415.0	<1	1398.9	<1	1474.7	<1
H5I1	1692.2	1.2	1741.5	0.8	1544.3	2.3	1410.3	3.3	1394.1	3.5	1469.9	2.8
H5I2	1694.3	1.2	1743.6	0.8	1546.2	2.2	1411.5	3.3	1395.0	3.5	1471.0	2.8
H6T	1521.8	<1	1568.2	<1	1361.6	0.1	1223.4	1.3	1210.3	1.4	1285.0	0.8
H6I1	1518.3	2.5	1564.6	2.1	1357.5	3.8	1218.6	5.0	1205.4	5.1	1280.2	4.4
H6I2	1520.5	2.4	1566.8	2.1	1359.4	3.8	1219.8	5.0	1206.3	5.1	1281.2	4.4
H7T	1570.1	<1	1622.6	<1	1442.5	<1	1349.5	0.2	1347.7	0.2	1419.0	<1
H7I1	1566.3	2.1	1618.7	1.7	1438.2	3.1	1344.7	3.9	1342.8	3.9	1414.2	3.3
H7I2	1568.4	2.1	1620.7	1.7	1439.9	3.1	1345.6	3.9	1343.6	3.9	1415.0	3.3
H8T	1454.1	<1	1509.9	<1	1349.0	0.2	1300.3	0.6	1313.4	0.5	1379.3	<1
H8I1	1450.1	3.0	1505.8	2.6	1344.5	3.9	1295.4	4.3	1308.6	4.2	1374.4	3.6
H8I2	1452.1	3.0	1507.7	2.5	1346.1	3.9	1296.2	4.3	1309.0	4.2	1375.0	3.6
H9T	1183.9	1.7	1238.8	1.2	1080.9	2.7	1070.6	2.8	1102.2	2.5	1160.0	1.9
H9I1	1179.9	5.4	1234.7	4.9	1076.3	6.4	1065.8	6.5	1097.4	6.2	1155.2	5.6
H9I2	1182.0	5.4	1236.7	4.8	1077.8	6.4	1066.2	6.5	1097.5	6.2	1155.5	5.6
H10T	1353.2	0.2	1399.9	<1	1197.6	1.6	1085.9	2.7	1085.7	2.7	1156.1	2.0
H10I1	1349.7	3.8	1396.2	3.4	1193.4	5.2	1081.0	6.4	1080.8	6.4	1151.2	5.7
H10I2	1351.9	3.8	1398.4	3.4	1195.3	5.2	1082.0	6.3	1081.5	6.3	1152.0	5.6
ST	1311.4	13.2	1343.9	12.9	1090.7	15.3	875.4	17.7	848.1	18.0	926.1	17.1

Table 3: Point of Reception Noise Impact (Daytime)
SunE Westbrook Solar Farm, Westbrook, Ontario

Noise Source ID	Point of Reception R7		Point of Reception R8		Point of Reception R9		Point of Reception R10		Point of Reception R11		Point of Reception R12	
	Distance to R7 (m)	Sound Level at R7 (Leq) (dBA)	Distance to R8 (m)	Sound Level at R8 (Leq) (dBA)	Distance to R9 (m)	Sound Level at R9 (Leq) (dBA)	Distance to R10 (m)	Sound Level at R10 (Leq) (dBA)	Distance to R11 (m)	Sound Level at R11 (Leq) (dBA)	Distance to R12 (m)	Sound Level at R12 (Leq) (dBA)
H1T	1043.8	3.1	1060.1	2.9	1099.4	2.5	1083.5	2.7	1085.1	2.7	1064.2	2.9
H1I1	1038.9	6.8	1055.2	6.6	1094.5	6.2	1078.6	6.4	1080.3	6.4	1059.4	6.6
H1I2	1039.6	6.8	1055.9	6.6	1095.3	6.2	1079.3	6.4	1080.8	6.4	1059.8	6.6
H2T	1008.8	3.5	1028.5	3.3	1058.1	3.0	1054.4	3.0	1061.5	2.9	1048.0	3.1
H2I1	1004.0	7.2	1023.7	7.0	1053.3	6.6	1049.6	6.7	1056.7	6.6	1043.3	6.7
H2I2	1004.3	7.2	1024.0	7.0	1053.7	6.6	1049.8	6.7	1056.9	6.6	1043.3	6.7
H3T	1006.0	3.5	1028.6	3.3	1047.2	3.1	1056.2	3.0	1068.7	2.8	1063.1	2.9
H3I1	1001.4	7.2	1024.0	7.0	1042.5	6.8	1051.7	6.7	1064.2	6.5	1058.7	6.6
H3I2	1001.2	7.2	1023.8	7.0	1042.5	6.8	1051.4	6.7	1063.9	6.5	1058.3	6.6
H4T	1408.3	<1	1429.6	<1	1453.4	<1	1456.4	<1	1465.9	<1	1455.5	<1
H4I1	1403.6	3.4	1424.8	3.2	1448.6	3.0	1451.7	3.0	1461.2	2.9	1450.9	3.0
H4I2	1403.6	3.4	1424.9	3.2	1448.7	3.0	1451.7	3.0	1461.2	2.9	1450.7	3.0
H5T	1486.5	<1	1501.8	<1	1543.4	<1	1524.3	<1	1523.9	<1	1500.1	<1
H5I1	1481.6	2.7	1496.9	2.6	1538.5	2.3	1519.4	2.5	1519.0	2.5	1495.2	2.6
H5I2	1482.4	2.7	1497.7	2.6	1539.4	2.3	1520.1	2.4	1519.7	2.4	1495.9	2.6
H6T	1301.1	0.6	1317.2	0.5	1356.9	0.1	1340.4	0.3	1341.4	0.3	1319.4	0.4
H6I1	1296.2	4.3	1312.3	4.2	1352.1	3.8	1335.5	4.0	1336.5	3.9	1314.6	4.1
H6I2	1297.0	4.3	1313.0	4.2	1352.9	3.8	1336.2	4.0	1337.1	3.9	1315.1	4.1
H7T	1444.9	<1	1462.3	<1	1498.6	<1	1486.4	<1	1489.3	<1	1469.7	<1
H7I1	1440.0	3.1	1457.4	2.9	1493.7	2.7	1481.6	2.7	1484.5	2.7	1464.8	2.9
H7I2	1440.6	3.1	1458.0	2.9	1494.3	2.6	1482.1	2.7	1484.9	2.7	1465.2	2.9
H8T	1419.3	<1	1438.6	<1	1469.1	<1	1464.2	<1	1470.3	<1	1454.9	<1
H8I1	1414.4	3.3	1433.8	3.1	1464.3	2.9	1459.3	2.9	1465.4	2.9	1450.1	3.0
H8I2	1414.8	3.3	1434.1	3.1	1464.7	2.9	1459.6	2.9	1465.7	2.9	1450.3	3.0
H9T	1217.9	1.4	1239.6	1.2	1261.9	1.0	1266.7	0.9	1277.2	0.8	1268.4	0.9
H9I1	1213.2	5.1	1234.9	4.9	1257.1	4.7	1262.0	4.6	1272.6	4.5	1263.8	4.6
H9I2	1213.2	5.1	1234.9	4.9	1257.2	4.7	1262.0	4.6	1272.4	4.5	1263.6	4.6
H10T	1185.5	1.7	1203.6	1.5	1238.0	1.2	1228.4	1.3	1232.6	1.2	1215.0	1.4
H10I1	1180.6	5.4	1198.8	5.2	1233.1	4.9	1223.5	5.0	1227.8	4.9	1210.2	5.1
H10I2	1181.1	5.4	1199.2	5.2	1233.7	4.9	1223.9	5.0	1228.1	4.9	1210.5	5.1
ST	933.1	17.0	948.4	16.8	990.3	16.3	971.0	16.5	971.2	16.5	948.6	16.8

Table 3: Point of Reception Noise Impact (Daytime)
SunE Westbrook Solar Farm, Westbrook, Ontario

Noise Source ID	Point of Reception R13		Point of Reception R14		Point of Reception R15		Point of Reception R16		Point of Reception R17		Point of Reception R18	
	Distance to R13 (m)	Sound Level at R13 (Leq) (dBA)	Distance to R14 (m)	Sound Level at R14 (Leq) (dBA)	Distance to R15 (m)	Sound Level at R15 (Leq) (dBA)	Distance to R16 (m)	Sound Level at R16 (Leq) (dBA)	Distance to R17 (m)	Sound Level at R17 (Leq) (dBA)	Distance to R18 (m)	Sound Level at R18 (Leq) (dBA)
H1T	1054.7	3.0	1295.7	0.7	170.9	20.8	674.2	7.8	699.1	7.4	1418.8	<1
H1I1	1049.8	6.7	1291.4	4.3	169.2	24.6	677.2	11.4	702.3	11.0	1422.8	3.2
H1I2	1050.1	6.7	1290.8	4.4	167.1	24.7	674.9	11.4	700.1	11.0	1420.8	3.2
H2T	1050.9	3.0	1345.7	0.2	335.9	14.6	845.5	5.4	865.5	5.2	1565.8	<1
H2I1	1046.3	6.7	1341.7	3.9	335.7	18.3	848.2	9.0	868.4	8.8	1569.5	2.1
H2I2	1046.1	6.7	1340.8	3.9	333.3	18.4	845.8	9.0	866.0	8.8	1567.4	2.1
H3T	1078.2	2.7	1417.4	<1	512.3	10.6	1020.5	3.4	1037.0	3.2	1719.4	<1
H3I1	1073.9	6.4	1413.8	3.3	512.7	14.2	1022.9	7.0	1039.7	6.8	1723.0	0.9
H3I2	1073.3	6.4	1412.6	3.3	510.2	14.3	1020.4	7.0	1037.3	6.8	1720.8	1.0
H4T	1462.1	<1	1757.4	<1	649.0	8.2	907.9	4.6	899.7	4.7	1463.5	<1
H4I1	1457.5	2.9	1753.3	0.7	646.2	11.9	908.4	8.3	900.5	8.4	1466.2	2.9
H4I2	1457.3	2.9	1752.6	0.7	644.6	11.9	905.9	8.3	898.0	8.4	1463.8	2.9
H5T	1484.4	<1	1673.9	<1	506.5	10.7	463.5	11.6	447.2	11.9	1040.9	3.1
H5I1	1479.5	2.8	1669.2	1.3	501.7	14.4	463.1	15.2	447.5	15.6	1044.2	6.7
H5I2	1480.0	2.8	1669.1	1.3	501.9	14.4	460.7	15.3	445.0	15.6	1041.9	6.8
H6T	1307.3	0.6	1522.7	<1	347.8	14.3	543.0	10.0	547.3	9.9	1211.6	1.4
H6I1	1302.5	4.2	1518.2	2.5	343.4	18.1	544.4	13.6	549.1	13.5	1215.1	5.0
H6I2	1302.8	4.2	1517.8	2.5	343.0	18.1	541.8	13.7	546.6	13.6	1213.0	5.1
H7T	1461.2	<1	1688.5	<1	514.7	10.5	609.4	8.8	597.1	9.0	1178.8	1.7
H7I1	1456.4	3.0	1684.0	1.2	510.3	14.3	609.5	12.5	597.7	12.7	1181.9	5.4
H7I2	1456.6	2.9	1683.6	1.2	509.8	14.3	607.0	12.5	595.2	12.7	1179.5	5.4
H8T	1453.7	<1	1715.2	<1	562.8	9.6	752.1	6.7	742.2	6.8	1314.4	0.5
H8I1	1448.9	3.0	1710.9	1.0	559.2	13.3	752.4	10.3	742.9	10.4	1317.3	4.1
H8I2	1448.9	3.0	1710.3	1.0	558.1	13.4	750.0	10.3	740.4	10.5	1314.9	4.1
H9T	1277.8	0.8	1589.9	<1	543.7	10.0	930.9	4.4	935.3	4.3	1567.2	<1
H9I1	1273.3	4.5	1586.0	1.9	542.0	13.7	932.4	8.0	937.1	7.9	1570.4	2.1
H9I2	1273.0	4.5	1585.0	2.0	539.9	13.7	929.8	8.0	934.5	8.0	1568.1	2.1
H10T	1210.6	1.4	1466.9	<1	330.3	14.8	695.7	7.5	706.1	7.3	1380.1	<1
H10I1	1205.8	5.1	1462.6	2.9	327.4	18.5	697.6	11.1	708.4	10.9	1383.6	3.5
H10I2	1205.9	5.1	1462.0	2.9	325.8	18.6	695.1	11.1	705.9	11.0	1381.5	3.6
ST	936.7	16.9	1174.7	14.4	126.3	36.0	715.4	19.8	748.6	19.3	1485.4	11.8

Table 3: Point of Reception Noise Impact (Daytime)
SunE Westbrook Solar Farm, Westbrook, Ontario

Noise Source ID	Point of Reception R19		Point of Reception R20		Point of Reception R21		Point of Reception R22		Point of Reception V1		Point of Reception V2	
	Distance to R19 (m)	Sound Level at R19 (Leq) (dBA)	Distance to R20 (m)	Sound Level at R20 (Leq) (dBA)	Distance to R21 (m)	Sound Level at R21 (Leq) (dBA)	Distance to R22 (m)	Sound Level at R22 (Leq) (dBA)	Distance to V1 (m)	Sound Level at V1 (Leq) (dBA)	Distance to V2 (m)	Sound Level at V2 (Leq) (dBA)
H1T	1612.6	<1	1653.0	<1	1587.2	<1	1070.8	2.8	1280.7	0.8	1188.4	1.6
H1I1	1616.6	1.7	1657.0	1.4	1591.5	1.9	1065.9	6.5	1278.9	4.5	1186.6	5.3
H1I2	1614.6	1.7	1655.0	1.4	1589.6	1.9	1066.3	6.5	1281.5	4.4	1189.1	5.3
H2T	1756.4	<1	1797.3	<1	1722.1	<1	1058.0	3.0	1100.0	2.5	1008.1	3.5
H2I1	1760.2	0.7	1801.1	0.4	1726.1	0.9	1053.3	6.6	1098.2	6.2	1006.2	7.1
H2I2	1758.1	0.7	1799.0	0.4	1724.2	0.9	1053.3	6.6	1100.7	6.2	1008.7	7.1
H3T	1906.7	<1	1947.9	<1	1865.0	<1	1076.1	2.8	919.7	4.5	828.4	5.6
H3I1	1910.3	<1	1951.5	<1	1868.8	<1	1071.7	6.5	917.8	8.2	826.4	9.3
H3I2	1908.1	<1	1949.4	<1	1866.8	<1	1071.3	6.5	920.3	8.1	828.9	9.3
H4T	1635.0	<1	1676.3	<1	1572.3	<1	1466.5	<1	1137.5	2.1	1059.7	2.9
H4I1	1638.0	1.6	1679.3	1.3	1575.6	2.0	1461.9	2.9	1134.1	5.8	1056.1	6.6
H4I2	1635.7	1.6	1677.0	1.3	1573.3	2.0	1461.7	2.9	1136.4	5.8	1058.3	6.6
H5T	1224.7	1.3	1266.1	0.9	1180.9	1.7	1505.0	<1	1556.3	<1	1471.6	<1
H5I1	1228.2	4.9	1269.6	4.5	1184.7	5.3	1500.2	2.6	1553.5	2.2	1468.6	2.9
H5I2	1226.0	4.9	1267.4	4.6	1182.7	5.3	1500.8	2.6	1555.9	2.2	1471.0	2.8
H6T	1400.0	<1	1441.1	<1	1363.0	0.1	1325.4	0.4	1406.8	<1	1319.0	0.5
H6I1	1403.7	3.4	1444.8	3.0	1367.0	3.7	1320.5	4.1	1404.3	3.4	1316.4	4.1
H6I2	1401.6	3.4	1442.7	3.1	1365.0	3.7	1321.0	4.1	1406.8	3.4	1318.8	4.1
H7T	1358.1	0.1	1399.5	<1	1306.6	0.6	1476.7	<1	1414.1	<1	1331.0	0.3
H7I1	1361.4	3.7	1402.8	3.4	1310.2	4.2	1471.8	2.8	1411.1	3.3	1327.9	4.0
H7I2	1359.1	3.8	1400.6	3.4	1308.0	4.2	1472.2	2.8	1413.5	3.3	1330.3	4.0
H8T	1489.8	<1	1531.2	<1	1432.3	<1	1463.9	<1	1279.6	0.8	1198.6	1.6
H8I1	1492.9	2.7	1534.3	2.3	1435.7	3.1	1459.1	2.9	1276.5	4.5	1195.4	5.2
H8I2	1490.6	2.7	1532.0	2.4	1433.5	3.1	1459.2	2.9	1278.8	4.5	1197.6	5.2
H9T	1747.8	<1	1789.2	<1	1695.9	<1	1280.1	0.8	1028.3	3.3	943.5	4.2
H9I1	1751.1	0.8	1792.5	0.5	1699.5	1.1	1275.5	4.5	1025.6	6.9	940.5	7.9
H9I2	1748.9	0.8	1790.3	0.5	1697.3	1.1	1275.2	4.5	1028.0	6.9	942.9	7.9
H10T	1568.2	<1	1609.3	<1	1529.4	<1	1223.1	1.3	1244.0	1.1	1155.1	2.0
H10I1	1571.8	2.0	1613.0	1.7	1533.4	2.3	1218.3	5.0	1241.7	4.8	1152.7	5.6
H10I2	1569.7	2.1	1610.9	1.8	1531.4	2.4	1218.5	5.0	1244.1	4.8	1155.1	5.6
ST	1681.4	10.3	1721.2	10.0	1663.7	10.4	954.5	16.7	1289.0	13.4	1195.4	14.3

Table 3: Point of Reception Noise Impact (Daytime)
SunE Westbrook Solar Farm, Westbrook, Ontario

Noise Source ID	Point of Reception V3		Point of Reception V4		Point of Reception V5		Point of Reception V6		Point of Reception V7		Point of Reception V8	
	Distance to R25 V3 (m)	Sound Level at V3 (Leq) (dBA)	Distance to V4 (m)	Sound Level at V4 (Leq) (dBA)	Distance to V5 (m)	Sound Level at V5 (Leq) (dBA)	Distance to V6 (m)	Sound Level at V6 (Leq) (dBA)	Distance to V7 (m)	Sound Level at V7 (Leq) (dBA)	Distance to V8 (m)	Sound Level at V8 (Leq) (dBA)
H1T	214.1	18.7	828.2	5.6	943.4	4.2	1275.1	0.8	1045.2	3.1	1250.0	1.1
H1I1	213.2	22.4	832.3	9.2	947.9	7.8	1279.3	4.5	1049.3	6.7	1253.9	4.7
H1I2	210.9	22.5	830.3	9.2	946.2	7.8	1277.5	4.5	1047.4	6.7	1251.9	4.7
H2T	384.8	13.4	973.6	3.9	1070.4	2.8	1411.2	<1	1187.0	1.7	1397.2	<1
H2I1	384.8	17.0	977.3	7.5	1074.5	6.4	1415.1	3.3	1190.8	5.3	1400.9	3.4
H2I2	382.4	17.1	975.2	7.5	1072.7	6.4	1413.2	3.3	1188.7	5.3	1398.8	3.4
H3T	562.4	9.7	1129.5	2.2	1211.4	1.4	1556.6	<1	1338.5	0.3	1551.8	<1
H3I1	562.8	13.3	1132.9	5.8	1215.3	5.0	1560.3	2.1	1342.0	3.9	1555.2	2.2
H3I2	560.3	13.3	1130.7	5.9	1213.2	5.1	1558.2	2.2	1339.8	3.9	1553.0	2.2
H4T	681.8	7.7	909.1	4.6	935.9	4.3	1279.1	0.8	1089.0	2.6	1304.3	0.6
H4I1	679.2	11.4	911.0	8.2	938.7	7.9	1282.1	4.4	1091.5	6.2	1306.9	4.2
H4I2	677.4	11.4	908.5	8.3	936.3	7.9	1279.7	4.4	1089.1	6.3	1304.4	4.2
H5T	503.4	10.8	461.5	11.6	527.3	10.3	872.9	5.1	659.6	8.0	875.2	5.0
H5I1	498.7	14.5	464.1	15.2	531.2	13.9	876.6	8.7	662.9	11.6	878.4	8.6
H5I2	498.7	14.5	461.6	15.3	529.1	13.9	874.5	8.7	660.6	11.6	876.1	8.7
H6T	359.0	14.0	621.3	8.6	710.9	7.2	1052.6	3.0	831.0	5.6	1043.7	3.1
H6I1	354.9	17.8	624.6	12.2	715.0	10.8	1056.5	6.6	834.7	9.2	1047.2	6.7
H6I2	354.1	17.8	622.4	12.3	713.1	10.8	1054.5	6.6	832.6	9.2	1045.0	6.7
H7T	526.6	10.3	609.0	8.8	656.4	8.1	1003.4	3.5	799.2	6.0	1015.5	3.4
H7I1	522.5	14.0	611.3	12.4	659.7	11.7	1006.8	7.1	802.2	9.6	1018.4	7.0
H7I2	521.8	14.0	608.8	12.5	657.5	11.7	1004.5	7.2	799.8	9.6	1016.0	7.0
H8T	586.7	9.2	752.7	6.6	788.3	6.2	1133.9	2.2	937.2	4.3	1153.2	2.0
H8I1	583.3	12.9	754.8	10.3	791.4	9.7	1137.1	5.8	939.9	7.9	1155.9	5.6
H8I2	582.0	12.9	752.3	10.3	789.0	9.8	1134.8	5.8	937.5	7.9	1153.5	5.6
H9T	585.7	9.2	988.9	3.7	1046.2	3.1	1393.2	<1	1186.6	1.7	1402.6	<1
H9I1	584.3	12.9	991.6	7.3	1049.6	6.7	1396.6	3.4	1189.7	5.3	1405.7	3.4
H9I2	582.1	12.9	989.2	7.3	1047.4	6.7	1394.4	3.5	1187.4	5.3	1403.3	3.4
H10T	363.4	13.9	789.8	6.1	876.3	5.0	1219.7	1.4	999.4	3.6	1212.2	1.4
H10I1	361.0	17.6	793.2	9.7	880.3	8.6	1223.5	5.0	1003.0	7.2	1215.7	5.0
H10I2	359.2	17.7	791.0	9.8	878.4	8.6	1221.5	5.0	1000.9	7.2	1213.6	5.1
ST	176.9	32.9	901.1	17.3	1029.5	15.9	1352.1	12.9	1119.0	15.0	1317.2	13.2