NORTHLAND POWER

Burk's Falls West Solar Project

Noise Assessment Study Report

September 13, 2012

Northland Power Inc.
on behalf of
Northland Power Solar
Burk's Falls West L.P.
Toronto, Ontario

Noise Assessment Study Report

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Executive Summary

This report presents the results of the Noise Assessment Study required for Solar Facilities under Ontario Regulation (O. Reg.) 359/09 and 521/10, as part of the Renewable Energy Approval (REA) Process. Northland Power Solar Burk's Falls West L.P. ("Northland") is proposing to develop a 10-Megawatt (MW) solar photovoltaic (PV) project titled Burk's Falls West Solar Project (the "Project"). The Project will be located on approximately 40 hectares (ha) of land, located south of Highway 520 at the border of Armour and Ryerson Townships, in the single tier municipality of Armour Township.

This Noise Assessment Study Report has been prepared based on the document entitled "Basic Comprehensive Certificates of Approval (Air) – User Guide" by the Ontario Ministry of the Environment (MOE, 2004). The sound pressure levels at the points of reception (POR) have been estimated using ISO 9613-2, implemented in the CADNA-A computer code. The performance limits used for verification of compliance correspond to the values for rural areas of 40-dBA. The results presented in this report are based on the best available information at this time. It is the intention that, in the detailed engineering phase of the project, certified noise data based on final plans and designs will confirm the conclusions of this noise impact assessment study.

The results obtained in this study show that the sound pressure levels at POR will not exceed MOE requirements for rural areas of 40-dBA.

Project Report

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1. Introduction

1.1 Project Description

Northland Power Solar Burk's Falls West L.P. ("Northland") is proposing to develop a 10-megawatt (MW) solar photovoltaic (PV) project titled Burk's Falls West Solar Project (the "Project"). The Project will be located on approximately 40 ha of land within Armour Township, Ontario.

The proposed Project is a renewable energy generation facility which will use solar photovoltaic technology to generate electricity. Electricity generated by solar photovoltaic panels will be converted from Direct Current (DC) to Alternating Current (AC) by inverter clusters which will also step up the voltage to 27.6 kV. A main transformer, located in the substation, will step up the voltage from the clusters to 44-kV prior to being transmitted to the existing local distribution line. In order to meet the Ontario Power Authority (OPA)'s Feed-In-Tariff (FIT) Program requirements, a specific percentage of equipment will be manufactured in Ontario.

The construction of the Project will begin once the Renewable Energy Approval (REA) has been obtained and a power purchase agreement is finalized with the OPA. The anticipated operational lifespan of the Project is 30 years.

1.2 Renewable Energy Approval Legislative Requirements

Ontario Regulation (O. Reg.) 359/09 and 521/10, made under the *Environmental Protection Act* identify the Renewable Energy Approval (REA) requirements for green energy projects in Ontario. As per Section 4 of these regulations, ground mounted solar facilities with a name plate capacity greater than 12 kilowatts (kW) are classified as a Class 3 solar facility, and therefore, require an REA.

Section 13 of the O. Reg. 359/09 requires proponents of Class 3 solar facilities to complete a Noise Study Report in accordance with Appendix A of the publication "Basic Comprehensive Certificates of Approval (Air) – User Guide, 2004" by the Ministry of the Environment (MOE, 2004).

The Noise Study Report is to include a general description of the facility, sources and points of reception (POR), Assessment of Compliance, as well as all the supporting information relevant to the Project. A draft of the Noise Study Report must be made available to the public, the local municipality and identified Aboriginal communities, at least 60 days prior to the final public consultation meeting in accordance with O. Reg. 359/09 and 521/10.

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2. Facility Description

The Project will utilize photovoltaic (PV) panels installed on fixed racking structures mounted on the ground. The PV panels generate DC electricity which will be converted to AC electricity by inverters. The Project layout is based on six inverter clusters each one containing two inverters and one medium-voltage (360-V/27.6-kV/1.6-MVA) transformer, and one 27.6-kV/44-kV/10-MVA substation transformer. The 27.6-kV power, collected from the inverter clusters, will be stepped-up to 44 kV by the substation transformer prior to being transmitted to the existing local distribution line.

Since the panels will be ground-mounted and the total nameplate capacity is over 12 kW, the Project is considered to be a Class 3 Solar Facility according to the classification presented in O. Reg. 521/10.

Table 2.1 General Project Description

Project Description	Ground-mounted Solar PV, Class 3
System Nameplate Capacity	10-MW AC
Local Distribution Company	Hydro One Networks Inc.

2.1 Project Location

The Project Location[1] will be on privately owned land totalling approximately 40 ha. The Project Location is zoned as residential in accordance to the zoning by-law for Armour Township. Figure A.1 in Appendix A shows the zoning designation plan. Also, Figure A.2 presents the Project Area Location Plan.

2.2 Acoustical Environment

The Project will be surrounded by forested areas to the west, east and south. The background noise levels are expected to be typical of rural areas, classified as a Class 3 based on Publication NPC-232 by the MOE. Some traffic noise, mainly during day hours, is expected from Highway 520 passing directly north of the Project Location. A quarry is located about 2 km northwest of the Project Location and Burks's Falls town resides about 1.5 km to the east. There are no airports within 5 km of the Project Location.

2.3 Life of Project

The expected life of the Project is 30 years. The manufacturer's warranty on the PV modules is 25 years and the expected life of solar power plants of this type is typically 35 to 40 years. At that time (or earlier if the 20-yr power purchase agreement is not extended), the Project will be decommissioned or refurbished depending on market conditions and/or technological changes.

2.4 Operating Hours

Solar PV facilities produce electricity during the day hours, when the sun rays are collected by the panels. After sunset the facility will not receive solar radiation to generate any electricity. Under these conditions the inverters will not produce any noise and the transformers will be energized, but not in operation (no fans in operation).

[1] "Project Location" in the context of this study is an area occupied by the Project infrastructure.

2.5 Approach to the Study

The sound pressure levels at the POR were predicted using procedures from ISO 9613-2, which is a widely used and generally accepted standard for the evaluation of noise impact in environmental assessments. The sound power level for the inverters was provided by the manufacturer while the sound power level for the transformers was estimated. The software package CADNA-A, which implements ISO-9613-2, was used to predict the noise levels at the POR. This numerical modeling software is able to simulate sound sources as well as sound mitigation measures taking into account atmospheric and ground attenuation. Some of the CADNA-A configurations used in the modeling are shown in Figure 2.1.

Elevation contours were not included in the CADNA-A model. This conservative approach was applied in order to avoid including any barrier effects of ground surface obstacles.

Vegetation that blocks some of the POR from the sources has not been incorporated.

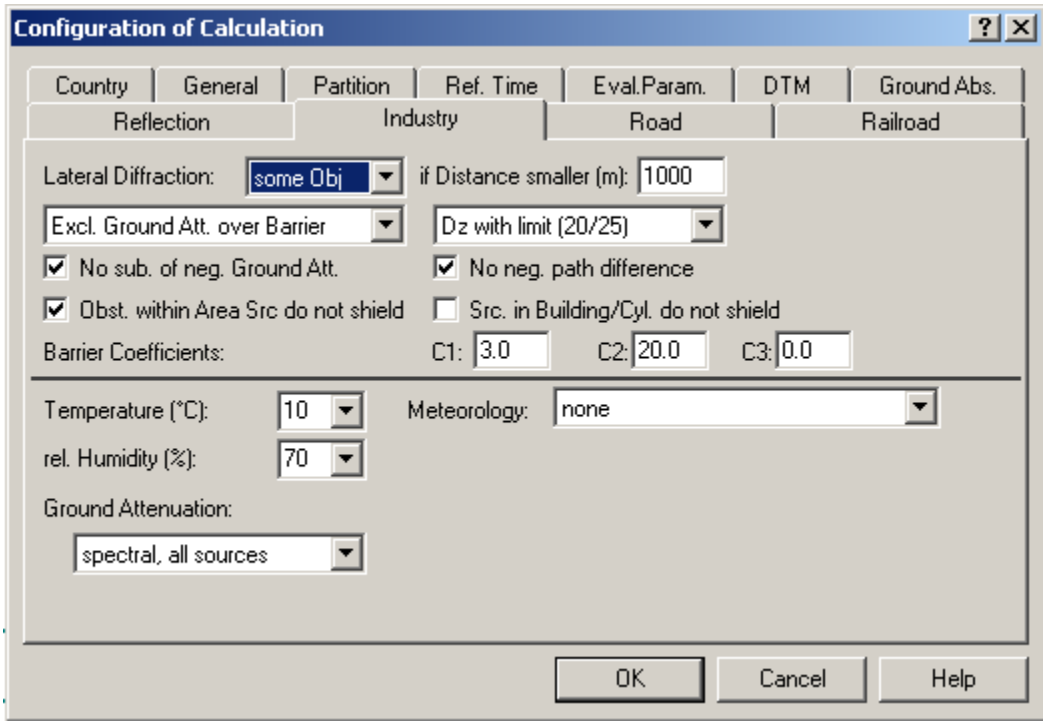

Figure 2.1 CADNA-A Configurations

3. Noise Sources

The main sources of noise from the Project will be six inverter clusters, each one containing two inverters and one medium-voltage transformer, and a substation containing the main step-up transformer. The Project layout is provided in Figure A.2. The coordinates of each modeled noise source are presented in Table B.1 of Appendix B.

All noise sources were modeled as non-directional point sources.

Switchgear and a small step-down transformer used for lighting, located at the substation, do not emit any significant noise and consequently have not been considered as sources of noise.

For the purpose of this study it is assumed that all inverters and transformers will be operating 24 hours at full capacity.

3.1 Substation Transformer

A 10-MVA step-up transformer that will step up the 27.6-kV power to 44 kV, required by the local distribution company, will be located in the substation. Since the transformer make and model has not been selected at this point (although it is known that the transformer will be of ONAF (oil natural air forced) type), a conservative estimate of sound power level was based on the data from NEMA TRI – 1993 (2000) and 35-m^2 transformer surface area. This standard provides maximum sound level values for transformers, and manufacturers routinely meet this specification. Hence, the results based on NEMA may slightly overestimate the impact on POR since the actual transformer is expected to be quieter. The NEMA levels were then converted into frequency spectra using empirical correlations for transformer noise (Crocker, 2007). This calculation is available in Figure B.3 of Appendix B. The transformer configurations are expected to be similar to those shown in Figure B.2. Noise source height representing the transformer was assumed 3.5 m.

Power transformers are considered by the MOE to be tonal noise sources. A 5-dB penalty was added to the sound power spectrum, as recommended by Publication NPC-104, "Sound Level Adjustments" for tonality. Table B.2 in Appendix B shows the frequency spectrum used to model the substation transformer.

3.2 Inverter Clusters

Northland is planning to use inverters manufactured by SMA. Six inverter clusters will be installed as part of the Project. Each cluster comprises of two SMA Sunny Central 800CP inverters and one medium voltage transformer. The installed capacity of each Sunny Central 800CP inverter is 800-kW, making for a total cluster capacity of 1.6 MW. A schematic layout with approximate dimensions of such cluster is available in Figure 3.1. The cluster components listed above were modeled as point sources shown in Figure 3.2. *Note that the planned enclosure over the inverters was not taken into account as a mitigation measure in the noise model.*

SMA provided third-octave noise data for the Sunny Central 800CP inverter (Appendix B). The provided third octave spectrum was converted to a full octave spectrum and the contribution from both inverters was combined into a single sound power spectrum for use with CADNA-A model (calculations are available in Figure B.4 of Appendix B). A 5-dBA penalty was added to the frequency spectrum, as stipulated in Publication NPC-104, "Sound Level Adjustments," to allow for tonality. The frequency spectrum used to model combined noise emission from the two inverters located next

to each other within the same cluster is shown in Table B.2 of Appendix B. Table B.3 of Appendix B contains coordinates of the individual inverters.

A 1.6-MVA transformer used to step-up the 360-V power from the inverters to 27.6 kV will be located in close proximity to the inverters. Since the transformer make and model have not been selected at this point (although it is known that the transformer will be of ONAN (oil natural air natural) type), the sound power level resulting from the operation of the transformer was evaluated using data from NEMA TR 1-1993 (R2000) and 14.88-m^2 transformer surface area. The NEMA levels were then converted into frequency spectrum using empirical correlations for transformer noise (Crocker, 2007). This calculation is available in Figure B.5 of Appendix B. Power transformers are considered by the MOE to be tonal noise sources. A 5-dB penalty was added to the sound power spectrum, as recommended by Publication NPC-104, "Sound Level Adjustments" for tonality. Table B.2 in Appendix B shows the frequency spectrum used to model the transformers located in the clusters.

Although for the modeling purposes it was assumed that the facility will operate 24-h at full capacity, in reality at night the facility will be idle. Under these conditions the inverters do not produce noise. The transformers (at the substation and clusters) are energized and make some magnetostrictive noise at a reduced level, but no cooling fans are in operation.

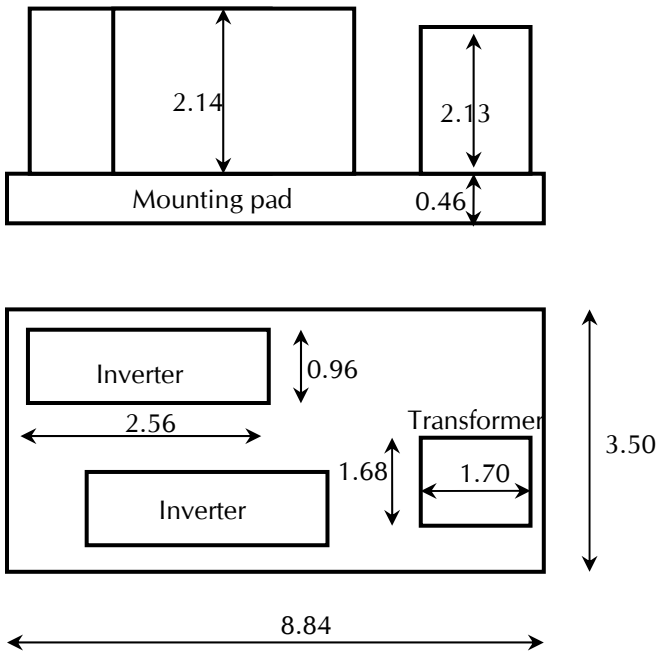

Figure 3.1 Schematic Inverter Cluster Layout
(all dimensions in metres)

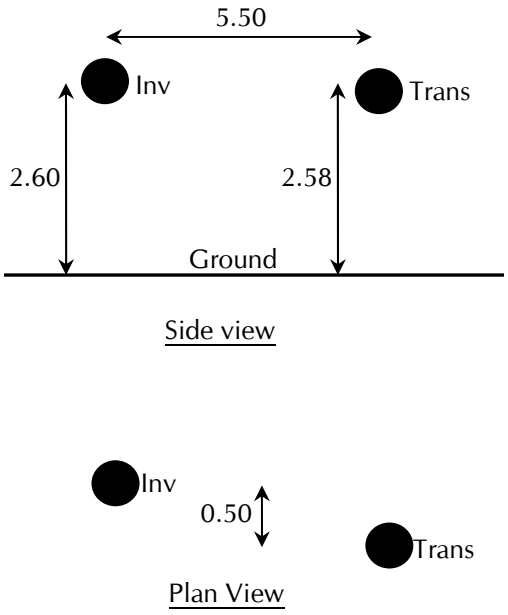

Figure 3.2 Inverter Cluster CADNA-A Acoustical Model

where: Inv = Noise Source Representing Two Sunny Central 800CP Inverters; and Trans = Noise Source Representing 360-V/27.6-kV/1.6-MVA Cluster Transformer (all dimensions in metres).

3.3 Noise Source Summary Table

A summary of the sound sources described above, including sound power level, sound characteristics and proposed noise control measures, is presented in Table 3.1.

Table 3.1 Noise Source Summary for Burk's Falls West Solar Project

Source ID	Description	Total Sound Power Level (dBA)	Source Location	Sound Characteristics	Noise Control Measures
Sub	27.6-kV/44-kV/10-MVA substation transformer	90.8	O	S-T	U
Inv1	Two Sunny Central 800CP inverters at Cluster 1	91.3	O	S-T	U
Inv2	Two Sunny Central 800CP inverters at Cluster 2	91.3	O	S-T	U
Inv3	Two Sunny Central 800CP inverters at Cluster 3	91.3	O	S-T	U
Inv4	Two Sunny Central 800CP inverters at Cluster 4	91.3	O	S-T	U

Source ID	Description	Total Sound Power Level (dBA)	Source Location	Sound Characteristics	Noise Control Measures
Inv5	Two Sunny Central 800CP inverters at Cluster 5	91.3	O	S-T	U
Inv6	Two Sunny Central 800CP inverters at Cluster 6	91.3	O	S-T	U
Trans1	360-V/27.6-kV/1.6-MVA cluster transformer at Cluster 1	80.1	O	S-T	U
Trans2	360-V/27.6-kV/1.6-MVA cluster transformer at Cluster 2	80.1	O	S-T	U
Trans3	360-V/27.6-kV/1.6-MVA cluster transformer at Cluster 3	80.1	O	S-T	U
Trans4	360-V/27.6-kV/1.6-MVA cluster transformer at Cluster 4	80.1	O	S-T	U
Trans5	360-V/27.6-kV/1.6-MVA cluster transformer at Cluster 5	80.1	O	S-T	U
Trans6	360-V/27.6-kV/1.6-MVA cluster transformer at Cluster 6	80.1	O	S-T	U

Notes:
1. A 5-dBA penalty is included in this table.
2. Location: Inside building (I), Outside building (O).
3. Sound Characteristics: Steady (S), Tonal (T), Impulsive (I), Quasi-Steady Impulsive (QSI).
4. Noise Control: Silencer (S), Acoustic lining (A), Barrier (B), Lagging (L), Enclosure (E), Other (O), Uncontrolled (U).

3.4 Adjacent Solar Projects

To identify the adjacent solar projects Hatch's internal database of solar projects and MOE records available in http://www.ene.gov.on.ca/environment/en/subject/renewable_energy/projects/index.htm were searched (September 11, 2012)

There are no Noise Receptors that are within 1 km of equipment in the Project and any adjacent project. As a result, there are no adjacent projects included in this study.

4. Noise Receptors and Points of Reception

The Noise Receptors used in this study were identified from the OBM and Google Earth Pro aerial imagery (June 2005) within 1-km distance from the Project Site[2] boundary, and also from visual observations of the Project Site surroundings conducted in Summer 2010. The Noise Receptors were indentified in accordance with O. Reg. 359/09, and its amendment (O. Reg. 521/10).

The Noise Receptors corresponding to the vacant lots were added based on parcel information provided by First Base Solutions (Teranet Data) and located according to the requirements outlined in O. Reg. 359/09, and its amendment (O. Reg. 521/10).

The total number of Noise Receptors within a 1-km distance from the Project Site of Burk's Falls West Solar Project boundary is 257, including the vacant lots. Noise Receptors were represented in the CADNA-A computer model by POR according to the following rules:

1) existing Noise Receptors located in the immediate proximity to the Burk's Falls West Solar Project Site were represented by building footprints with a POR located at the point on the façade where sound pressure level is maximum at 4.5 m above ground height

2) existing Noise Receptors located in the immediate proximity to the Burk's Falls West Solar Project Site were also represented by envelopes extended 30 m from the building footprints and trimmed by property lines with a POR located at the point on the envelope where sound pressure level is maximum at 1.5 m above ground height

3) existing and vacant lot Noise Receptors located further away from the Burk's Falls West Solar Project Site were represented by a POR placed at the center of building footprint elevated 4.5 m above ground

4) existing and vacant lot Noise Receptors located further away from the Burk's Falls West Solar Project Site were also represented by a POR located within 30-m distance measured from the POR position as defined in Item 3) where sound pressure level is max at 1.5 m above ground height.

Six of these POR, identified in Table 4.1 and Table 4.2, were chosen as representative for evaluating the noise contribution from each individual source. These POR were chosen in order to represent sound pressure level contributions on different areas around the Project Location. The complete set of results for all POR representing 257 Noise Receptors is provided in Table 6.2 while a list containing coordinates of building footprint centers for all 257 Noise Receptors is provided in Table C. 1 of Appendix C.

[2] "Project Site" in the context of this study is the complete area designated for the Project, but not necessary occupied with the project infrastructure. Project Location is always contained within Project Site.

Table 4.1 4.5-m Case - Point of Reception Noise Impact from Individual Noise Sources of Burk's Falls West Solar Project

Source ID	Noise Receptor ID					
	R025		R034		R087	
	Dist [m]	Sound Pressure Contribution [dBA]	Dist [m]	Sound Pressure Contribution [dBA]	Dist [m]	Sound Pressure Contribution [dBA]
Sub	242.1	31.7	678.4	22.1	962.7	18.5
Inv1	836.8	20.0	215.5	32.6	364.9	28.0
Inv2	459.1	25.9	504.4	25.0	640.2	22.7
Inv3	327.8	29.0	581.4	23.6	880.0	19.4
Inv4	679.2	22.1	487.8	25.3	417.6	26.7
Inv5	839.4	19.9	368.5	27.9	268.2	30.7
Inv6	509.5	24.9	396.0	27.2	749.2	21.1
Trans1	831.9	9.0	219.0	21.6	365.6	17.1
Trans2	455.7	15.0	503.9	14.0	644.4	11.6
Trans3	327.7	18.1	583.6	12.6	884.7	8.3
Trans4	682.9	11.0	483.2	14.4	413.4	15.9
Trans5	835.9	8.9	364.1	17.1	273.0	19.7
Trans6	504.0	14.0	401.0	16.2	751.3	10.0

Table 4.2 1.5-m Case - Point of Reception Noise Impact from Individual Noise Sources of Burk's Falls West Solar Project

Source ID	Noise Receptor ID					
	R025		R034		R087	
	Dist [m]	Sound Pressure Contribution [dBA]	Dist [m]	Sound Pressure Contribution [dBA]	Dist [m]	Sound Pressure Contribution [dBA]
Sub	212.7	31.3	679.8	20.0	932.9	16.5
Inv1	809.7	17.9	187.0	32.2	337.1	26.8
Inv2	434.5	24.3	491.5	23.1	610.8	20.9
Inv3	297.9	28.0	582.7	21.4	850.0	17.4
Inv4	657.9	20.1	463.7	23.7	389.9	25.4
Inv5	815.2	17.9	339.6	26.7	238.2	30.0
Inv6	479.6	23.3	398.6	25.2	719.5	19.2
Trans1	804.9	7.2	190.6	21.5	337.7	16.2
Trans2	431.0	13.8	491.3	12.4	615.0	10.1
Trans3	297.7	17.4	585.1	10.6	854.7	6.5
Trans4	661.5	9.3	458.9	13.1	385.6	14.9
Trans5	811.6	7.1	335.2	16.3	243.0	19.3
Trans6	474.1	12.8	403.5	14.4	721.5	8.4

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5. Mitigation Measures

The analysis indicates that no mitigation measures are necessary to meet the MOE requirement of 40 dBA for all POR.

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6. Impact Assessment

The purpose of the acoustic Assessment report is to demonstrate that the facility is in compliance with the noise performance limits. The Project will be located in a Class 3 Area, based on the classification defined in Publication NPC-232 by the MOE. Class 3 area means a rural area with an acoustical environment that is dominated by natural sounds, with little or no traffic noise.

Table 6.1 shows the performance limits set by the MOE for Class 3 Areas, according to Publication NPC-232.

Table 6.1 Performance Limits (One-Hour L_{eq}) by Time of Day for Class 3 Areas

Time of Day	One Hour L_{eq} (dBA) Class 3 Area
07:00 to 19:00	45.0
19:00 to 23:00	40.0
23:00 to 07:00	40.0

The solar facility will be operating during the daylight hours, that is, between 07:00 and 19:00 during most days of the year. However, in the summer months the sun may shine before 07:00 or until past 19:00. As such, during the summer the facility will be operating at the time when the applicable performance limit changes from 45 dBA to 40 dBA. Also, the transformers remain energized at night. In order to account for this, the study assumes that the facility will be operating 24 hours and compares the impact from the facility with the 40-dBA limit. In reality, the cooling fans will not be in operation at night.

For this study, the overall ground attenuation coefficient was estimated to be 0.7. Appendix D includes a list of all the parameters used in the CADNA-A model to predict the sound pressure levels at the POR.

The modelling does not consider the effect of the solar panels on the predicted sound pressure levels at the points of reception. The solar panels may act as barriers to further reduce noise at the POR.

6.1 Compliance with Performance Limits

Table C. 1 presents the predicted sound pressure levels for the POR representing the Noise Receptors located within 1 km from the Project Site. Sound pressure contours at 4.5 m and 1.5 m are available in Figure C.1.1, Figure C.1.2 and Figure C.2. Appendix D includes a detailed calculation log for the representative POR.

The results of this study show that all Noise Receptors are compliant with MOE guidelines based on the 40-dBA performance limit.

Table 6.2 Calculated Sound Pressure Levels at POR within 1 km of Burk's Falls West Solar Project
(Shaded rows correspond to representative POR)
Existing = Existing dwelling, Vacant = Vacant Lot. The performance limit is 40.0-dBA.

Noise Receptor ID	Description	Point of Reception at 4.5 m					Point of Reception at 1.5 m				
		UTM Coordinates NAD 83 Zone 17 [m]		Sound Power Level (dBA)	Nearest Project Source		UTM Coordinates NAD 83 Zone 17 (m)		Sound Power Level (dBA)	Nearest Project Source	
		X	Y		Dist[m]	ID	X	Y		Dist (m)	ID
R001	Existing	621955.8	5052176.7	26.1	908.7	Trans3	621984.8	5052168.8	24.0	879.3	Trans3
R002	Existing	622047.6	5052054.1	27.4	769.6	Sub	622077.3	5052049.7	25.5	741.5	Sub
R005	Existing	622071.8	5052043.9	27.7	743.5	Sub	622101.5	5052039.6	25.8	715.5	Sub
R006	Vacant	622093.9	5052982.2	22.7	1286.8	Inv6	622111.4	5052957.8	20.4	1256.8	Inv6
R007	Vacant	622144.4	5052066.7	28.5	690.9	Trans3	622173.9	5052061.1	26.6	661.9	Trans3
R008	Existing	622188.1	5052477.0	26.6	850.9	Inv6	622211.3	5052457.9	24.5	820.9	Inv6
R009	Vacant	622200.3	5052088.6	29.1	651.4	Trans3	622228.5	5052078.2	27.2	621.8	Trans3
R010	Existing	622236.8	5052123.7	29.3	637.8	Inv6	622265.5	5052114.7	27.5	607.8	Inv6
R011	Vacant	622322.4	5052121.0	30.4	555.6	Inv6	622349.4	5052108.1	28.7	525.8	Inv6
R012	Existing	622326.5	5052448.2	27.9	728.4	Inv6	622347.8	5052427.1	25.9	698.4	Inv6
R013	Vacant	622348.4	5051200.7	28.3	612.2	Sub	622365.3	5051225.6	26.4	582.2	Sub
R014	Vacant	622384.5	5052131.6	31.2	501.3	Inv6	622410.9	5052117.4	29.5	471.4	Inv6
R015	Vacant	622386.1	5052564.5	27.4	777.2	Inv6	622403.7	5052540.2	25.4	747.2	Inv6
R016	Existing	622398.8	5052303.7	29.8	578.0	Inv6	622421.9	5052284.5	28.0	548.0	Inv6
R017	Existing	622433.3	5052134.3	31.8	457.7	Inv6	622459.2	5052119.1	30.2	427.9	Inv6
R018	Existing	622435.8	5052362.7	29.6	590.6	Inv6	622456.6	5052341.0	27.8	560.6	Inv6
R019	Existing	622439.8	5052415.7	29.2	627.1	Inv6	622459.2	5052392.7	27.3	597.1	Inv6
R020	Existing	622463.2	5052098.0	32.6	415.7	Inv6	622490.0	5052084.5	31.1	385.8	Inv6
R021	Existing	622475.3	5052345.1	30.2	550.7	Inv6	622495.4	5052322.8	28.4	520.7	Inv6
R022	Existing	622647.8	5052438.7	30.6	538.0	Inv6	622663.1	5052412.9	28.8	508.4	Inv6

Noise Receptor ID	Description	Point of Reception at 4.5 m					Point of Reception at 1.5 m				
		UTM Coordinates NAD 83 Zone 17 [m]		Sound Power Level (dBA)	Nearest Project Source		UTM Coordinates NAD 83 Zone 17 (m)		Sound Power Level (dBA)	Nearest Project Source	
		X	Y		Dist[m]	ID	X	Y		Dist (m)	ID
R023	Existing	622672.0	5052349.8	31.9	446.6	Inv6	622688.2	5052324.5	30.3	417.1	Inv6
R024	Existing	622687.8	5052355.7	32.0	446.1	Inv6	622703.4	5052330.0	30.3	416.7	Inv6
R025	Existing	622730.6	5051443.0	35.4	242.1	Sub	622735.5	5051472.6	34.5	212.7	Sub
R028	Vacant	622751.4	5052275.2	33.7	349.6	Inv6	622766.4	5052249.2	32.2	320.6	Inv6
R029	Existing	622775.8	5052383.7	32.3	450.4	Inv6	622787.8	5052356.2	30.6	421.4	Inv6
R030	Existing	622878.8	5052409.7	32.6	424.5	Inv1	622896.1	5052385.2	31.0	395.5	Inv1
R031	Existing	622929.7	5052431.4	32.6	402.9	Inv1	622945.2	5052405.7	31.0	373.6	Inv1
R032	Vacant	622936.1	5052341.6	34.1	337.2	Inv1	622953.2	5052317.0	32.7	308.6	Inv1
R033	Existing	623013.9	5052465.5	32.6	380.8	Inv1	623025.7	5052437.9	31.0	351.0	Inv1
R034	Existing	623045.0	5052282.1	36.4	215.5	Inv1	623071.7	5052268.5	35.3	187.0	Inv1
R035	Existing	623050.1	5052481.8	32.5	379.2	Inv1	623060.2	5052453.6	30.9	349.2	Inv1
R036	Vacant	623058.8	5050527.9	23.5	1204.9	Sub	623054.4	5050557.6	21.2	1175.1	Sub
R037	Vacant	623103.2	5052506.6	32.2	385.1	Inv1	623110.8	5052477.6	30.7	355.1	Inv1
R038	Existing	623103.7	5052440.8	33.4	321.8	Inv1	623086.3	5052416.4	31.8	304.8	Inv1
R039	Existing	623123.2	5052616.5	30.5	488.5	Inv1	623129.0	5052587.1	28.7	458.5	Inv1
R040	Existing	623126.0	5052432.2	33.7	307.4	Inv1	623111.0	5052415.5	32.0	295.5	Inv1
R041	Existing	623144.8	5052521.7	32.0	391.5	Inv1	623149.1	5052492.0	30.5	361.5	Inv1
R042	Existing	623162.4	5052526.1	32.0	393.7	Inv1	623167.3	5052496.5	30.4	363.7	Inv1
R043	Existing	623168.8	5052608.7	30.6	475.5	Inv1	623172.9	5052579.0	28.9	445.5	Inv1
R044	Existing	623189.8	5052554.2	31.5	419.9	Inv1	623193.4	5052524.4	29.9	390.1	Inv1
R045	Existing	623203.5	5052676.9	29.6	542.5	Inv1	623206.0	5052647.0	27.8	512.6	Inv1
R046	Vacant	623216.8	5052619.1	30.4	484.9	Inv1	623215.9	5052589.1	28.7	454.9	Inv1
R047	Vacant	623237.9	5052567.1	31.2	434.2	Inv1	623235.4	5052537.2	29.6	404.2	Inv1

Noise Receptor ID	Description	Point of Reception at 4.5 m					Point of Reception at 1.5 m				
		UTM Coordinates NAD 83 Zone 17 [m]		Sound Power Level (dBA)	Nearest Project Source		UTM Coordinates NAD 83 Zone 17 (m)		Sound Power Level (dBA)	Nearest Project Source	
		X	Y		Dist[m]	ID	X	Y		Dist (m)	ID
R048	Existing	623253.4	5052488.1	32.6	357.4	Inv1	623249.1	5052458.4	31.2	327.4	Inv1
R049	Existing	623270.1	5052575.2	31.0	446.0	Inv1	623270.3	5052545.2	29.4	416.4	Inv1
R050	Existing	623275.4	5051375.3	32.2	463.8	Inv2	623260.2	5051401.1	30.6	433.8	Inv2
R051	Existing	623278.8	5052655.7	29.8	526.9	Inv1	623274.5	5052626.0	28.0	496.9	Inv1
R052	Existing	623281.6	5052707.1	29.1	578.2	Inv1	623277.4	5052677.4	27.2	548.2	Inv1
R053	Vacant	623285.5	5052594.8	30.7	467.9	Inv1	623280.1	5052565.3	29.0	437.9	Inv1
R054	Existing	623292.8	5052657.7	29.7	531.1	Inv1	623284.5	5052628.8	27.9	501.3	Inv1
R055	Existing	623306.8	5052586.7	30.7	464.2	Inv1	623305.5	5052556.7	29.1	434.8	Inv1
R056	Existing	623307.3	5051427.2	32.8	425.3	Inv4	623289.1	5051451.0	31.2	400.4	Inv4
R057	Vacant	623325.0	5052518.0	31.8	402.8	Inv1	623316.0	5052489.4	30.3	372.8	Inv1
R058	Existing	623337.8	5052534.7	31.5	422.7	Inv1	623326.8	5052506.7	29.9	392.7	Inv1
R059	Existing	623344.8	5052620.7	30.1	506.8	Inv1	623336.4	5052591.8	28.3	476.8	Inv1
R060	Existing	623351.8	5052541.7	31.3	433.9	Inv1	623341.6	5052513.5	29.7	403.9	Inv1
R061	Existing	623354.9	5051443.2	32.6	415.9	Inv4	623349.1	5051472.7	31.0	385.9	Inv4
R062	Existing	623360.8	5052603.7	30.3	495.4	Inv1	623357.4	5052573.9	28.5	466.1	Inv1
R063	Vacant	623365.0	5051513.8	33.6	349.4	Inv4	623357.3	5051542.8	32.2	319.4	Inv4
R064	Vacant	623370.0	5052661.3	29.4	553.0	Inv1	623359.5	5052633.2	27.6	523.0	Inv1
R065	Existing	623373.5	5052548.1	31.1	447.9	Inv1	623361.6	5052520.6	29.4	417.9	Inv1
R066	Existing	623375.8	5052622.7	29.9	518.3	Inv1	623364.7	5052594.8	28.2	488.3	Inv1
R067	Vacant	623382.7	5052747.6	28.3	639.3	Inv1	623379.1	5052717.8	26.3	609.7	Inv1
R068	Vacant	623387.7	5051473.9	32.8	394.1	Inv4	623379.2	5051502.7	31.3	364.1	Inv4
R069	Existing	623387.8	5052609.7	30.1	510.3	Inv1	623383.3	5052580.0	28.3	481.1	Inv1
R070	Existing	623388.8	5052624.7	29.8	524.6	Inv1	623384.4	5052595.0	28.1	495.4	Inv1

Noise Receptor ID	Description	Point of Reception at 4.5 m					Point of Reception at 1.5 m				
		UTM Coordinates NAD 83 Zone 17 [m]		Sound Power Level (dBA)	Nearest Project Source		UTM Coordinates NAD 83 Zone 17 (m)		Sound Power Level (dBA)	Nearest Project Source	
		X	Y		Dist[m]	ID	X	Y		Dist (m)	ID
R071	Existing	623405.9	5051538.0	33.6	339.9	Inv4	623401.8	5051564.1	32.1	314.4	Inv4
R072	Vacant	623406.5	5052681.0	29.0	583.6	Inv1	623395.2	5052653.2	27.2	553.6	Inv1
R073	Existing	623410.8	5052640.7	29.5	547.6	Inv1	623399.0	5052613.1	27.7	517.6	Inv1
R074	Existing	623418.8	5052632.7	29.6	543.4	Inv1	623413.7	5052603.1	27.8	514.3	Inv1
R075	Existing	623429.8	5052653.7	29.3	567.0	Inv1	623424.4	5052624.2	27.4	537.9	Inv1
R076	Vacant	623431.5	5051555.4	33.6	335.2	Inv4	623417.6	5051582.0	32.2	305.2	Inv4
R077	Existing	623439.8	5052639.7	29.4	558.4	Inv1	623433.8	5052610.3	27.6	529.3	Inv1
R078	Vacant	623445.4	5052329.6	34.3	312.0	Inv1	623427.6	5052305.4	33.1	283.1	Inv1
R079	Vacant	623447.6	5052773.3	27.7	684.5	Inv1	623442.3	5052743.8	25.7	655.1	Inv1
R080	Vacant	623457.2	5052476.3	31.6	426.6	Inv1	623441.8	5052450.5	30.1	396.8	Inv1
R081	Vacant	623470.6	5051578.4	33.5	336.4	Inv4	623453.3	5051602.9	32.1	306.4	Inv4
R082	Vacant	623474.5	5052656.2	29.0	588.6	Inv1	623461.1	5052629.3	27.1	558.6	Inv1
R083	Existing	623481.8	5050476.7	22.4	1372.5	Inv2	623469.8	5050504.2	20.1	1342.6	Inv2
R084	Existing	623492.8	5050510.7	22.6	1343.9	Inv2	623480.4	5050538.0	20.3	1314.0	Inv2
R085	Vacant	623524.3	5051601.5	33.0	353.8	Inv4	623503.3	5051622.9	31.6	323.8	Inv4
R086	Vacant	623562.5	5051624.9	32.8	366.9	Inv4	623539.1	5051643.7	31.3	337.0	Inv4
R087	Vacant	623566.6	5052148.7	34.7	268.2	Inv5	623539.1	5052136.7	33.7	238.2	Inv5
R088	Existing	623589.8	5052674.7	28.1	665.0	Inv1	623578.0	5052647.1	26.1	635.8	Inv1
R089	Existing	623596.8	5052695.7	27.8	686.2	Inv1	623585.0	5052668.1	25.9	656.9	Inv1
R090	Vacant	623598.5	5051645.0	32.5	384.8	Inv4	623573.4	5051661.4	31.0	354.8	Inv4
R091	Existing	623598.8	5052660.7	28.2	659.1	Inv1	623586.4	5052633.3	26.2	629.9	Inv1
R092	Existing	623601.8	5050565.7	22.7	1326.7	Inv4	623587.3	5050591.9	20.4	1297.7	Inv4
R093	Existing	623603.8	5052711.7	27.6	703.3	Inv1	623592.0	5052684.1	25.6	674.0	Inv1

Noise Receptor ID	Description	Point of Reception at 4.5 m					Point of Reception at 1.5 m				
		UTM Coordinates NAD 83 Zone 17 [m]		Sound Power Level (dBA)	Nearest Project Source		UTM Coordinates NAD 83 Zone 17 (m)		Sound Power Level (dBA)	Nearest Project Source	
		X	Y		Dist[m]	ID	X	Y		Dist (m)	ID
R094	Existing	623610.8	5052724.7	27.4	718.0	Inv1	623595.3	5052699.0	25.4	688.1	Inv1
R095	Existing	623617.8	5052738.7	27.2	733.5	Inv1	623602.4	5052713.0	25.2	703.6	Inv1
R096	Vacant	623621.6	5052634.0	28.3	652.5	Inv1	623607.9	5052607.3	26.4	623.3	Inv1
R097	Existing	623626.8	5052750.7	27.1	748.5	Inv1	623614.8	5052723.2	25.0	719.1	Inv1
R098	Existing	623632.8	5052765.7	26.9	764.3	Inv1	623620.8	5052738.2	24.8	734.8	Inv1
R099	Existing	623635.8	5052861.7	26.0	846.8	Inv1	623616.4	5052838.8	23.8	817.3	Inv1
R100	Existing	623636.8	5050534.7	22.4	1365.6	Inv4	623623.8	5050561.7	20.1	1336.1	Inv4
R101	Existing	623639.8	5052507.7	29.5	566.4	Inv5	623622.8	5052483.0	27.7	536.4	Inv5
R102	Existing	623642.8	5052875.7	25.8	862.4	Inv1	623631.9	5052847.7	23.7	832.8	Inv1
R103	Existing	623645.8	5052786.7	26.6	788.9	Inv1	623625.3	5052764.8	24.5	759.3	Inv1
R104	Vacant	623652.7	5052982.2	24.8	960.1	Inv1	623634.4	5052958.4	22.6	930.6	Inv1
R105	Existing	623654.8	5052893.7	25.6	884.0	Inv1	623635.5	5052870.7	23.4	854.4	Inv1
R107	Existing	623660.8	5052535.7	29.0	601.4	Inv5	623643.7	5052511.0	27.2	571.4	Inv5
R108	Existing	623662.8	5052755.7	26.8	773.5	Inv1	623646.7	5052730.4	24.8	743.6	Inv1
R109	Existing	623663.8	5052399.7	30.4	497.0	Inv5	623643.0	5052378.1	28.7	467.1	Inv5
R110	Existing	623664.8	5052815.7	26.2	823.6	Inv1	623652.5	5052788.3	24.1	794.1	Inv1
R111	Existing	623665.8	5052911.7	25.4	905.1	Inv1	623654.7	5052883.8	23.2	875.5	Inv1
R112	Existing	623674.8	5052929.7	25.2	925.2	Inv1	623663.6	5052901.8	23.0	895.6	Inv1
R113	Vacant	623679.9	5052501.8	29.2	585.2	Inv5	623661.4	5052478.2	27.4	555.2	Inv5
R114	Vacant	623680.5	5051837.5	32.5	406.8	Trans4	623650.5	5051838.9	31.1	376.8	Trans4
R115	Existing	623698.8	5052669.7	27.4	730.3	Inv1	623683.3	5052644.0	25.4	700.9	Inv1
R116	Existing	623700.8	5052954.7	24.8	960.0	Inv1	623681.6	5052931.6	22.6	930.4	Inv1
R117	Existing	623706.8	5052569.7	28.3	655.6	Inv5	623689.0	5052545.5	26.4	625.6	Inv5

Noise Receptor ID	Description	Point of Reception at 4.5 m					Point of Reception at 1.5 m				
		UTM Coordinates NAD 83 Zone 17 [m]		Sound Power Level (dBA)	Nearest Project Source		UTM Coordinates NAD 83 Zone 17 (m)		Sound Power Level (dBA)	Nearest Project Source	
		X	Y		Dist[m]	ID	X	Y		Dist (m)	ID
R118	Existing	623708.8	5052984.7	24.5	989.8	Inv1	623689.8	5052961.5	22.3	960.2	Inv1
R119	Existing	623709.8	5052466.7	29.2	577.5	Inv5	623689.5	5052444.6	27.4	547.5	Inv5
R120	Vacant	623720.1	5051347.0	28.3	673.4	Inv4	623700.3	5051369.6	26.3	643.4	Inv4
R121	Existing	623726.8	5050577.7	22.4	1351.7	Inv4	623710.5	5050602.8	20.1	1322.5	Inv4
R122	Vacant	623730.5	5052744.0	26.5	806.8	Inv1	623715.3	5052718.1	24.4	777.3	Inv1
R123	Vacant	623734.9	5052589.1	27.9	688.0	Inv5	623710.8	5052571.3	25.9	659.3	Inv5
R124	Existing	623738.8	5053034.7	24.0	1048.2	Inv1	623727.1	5053007.0	21.8	1018.4	Inv1
R125	Existing	623746.8	5052774.7	26.1	840.7	Inv1	623731.7	5052748.8	24.0	811.2	Inv1
R126	Existing	623748.8	5052493.7	28.6	623.8	Inv5	623723.3	5052477.8	26.7	594.8	Inv5
R127	Existing	623751.8	5053059.7	23.8	1076.3	Inv1	623737.3	5053033.4	21.5	1046.3	Inv1
R128	Existing	623756.8	5052603.7	27.5	712.8	Inv5	623732.7	5052585.9	25.6	684.0	Inv5
R129	Vacant	623765.9	5052515.2	28.2	651.1	Inv5	623740.5	5052499.2	26.3	622.1	Inv5
R130	Vacant	623775.3	5052645.0	27.0	756.9	Inv5	623751.5	5052626.7	25.0	728.1	Inv5
R131	Vacant	623776.0	5052534.1	28.0	671.9	Inv5	623750.8	5052517.9	26.0	642.9	Inv5
R132	Existing	623780.8	5053073.7	23.5	1103.3	Inv1	623761.8	5053050.4	21.3	1073.6	Inv1
R133	Vacant	623789.0	5052558.2	27.7	698.4	Inv5	623763.9	5052541.6	25.7	669.4	Inv5
R134	Vacant	623789.0	5052676.9	26.7	790.7	Inv5	623771.1	5052652.8	24.6	760.7	Inv5
R135	Existing	623798.8	5052797.7	25.6	892.2	Inv1	623780.9	5052773.6	23.5	862.4	Inv1
R136	Vacant	623806.5	5052823.2	25.3	916.4	Inv1	623790.6	5052797.8	23.2	886.8	Inv1
R137	Vacant	623806.5	5052713.5	26.2	830.6	Inv5	623788.9	5052689.2	24.2	800.6	Inv5
R138	Vacant	623806.5	5052585.4	27.3	730.4	Inv5	623781.7	5052568.5	25.3	701.4	Inv5
R139	Existing	623809.8	5053102.7	23.2	1143.2	Inv1	623790.8	5053079.5	20.9	1113.5	Inv1
R140	Existing	623810.8	5053143.7	22.9	1178.7	Inv1	623792.1	5053120.2	20.6	1148.9	Inv1

Noise Receptor ID	Description	Point of Reception at 4.5 m					Point of Reception at 1.5 m				
		UTM Coordinates NAD 83 Zone 17 [m]		Sound Power Level (dBA)	Nearest Project Source		UTM Coordinates NAD 83 Zone 17 (m)		Sound Power Level (dBA)	Nearest Project Source	
		X	Y		Dist[m]	ID	X	Y		Dist (m)	ID
R141	Existing	623812.5	5053033.7	23.7	1086.9	Inv1	623792.7	5053011.1	21.4	1057.2	Inv1
R142	Vacant	623817.6	5052603.6	27.0	751.4	Inv5	623792.9	5052586.5	25.0	722.3	Inv5
R143	Existing	623822.0	5052616.4	26.9	763.9	Inv5	623797.4	5052599.1	24.9	734.8	Inv5
R144	Existing	623822.9	5052725.5	26.0	849.9	Inv5	623805.1	5052701.3	23.9	819.9	Inv5
R145	Vacant	623823.8	5052833.2	25.2	935.4	Inv1	623801.7	5052812.9	23.0	905.6	Inv1
R146	Vacant	623830.7	5052347.4	28.9	595.0	Inv5	623803.0	5052335.7	27.0	565.3	Inv5
R147	Existing	623840.7	5052967.6	24.0	1049.9	Inv1	623824.0	5052942.8	21.8	1019.9	Inv1
R148	Existing	623845.5	5052624.2	26.6	785.3	Inv5	623825.4	5052601.9	24.6	755.3	Inv5
R149	Vacant	623848.7	5052818.4	25.1	940.8	Inv5	623826.2	5052798.5	23.0	911.4	Inv1
R151	Vacant	623858.2	5052935.0	24.2	1035.2	Inv1	623836.8	5052913.9	22.0	1005.3	Inv1
R152	Existing	623858.7	5052659.4	26.3	820.5	Inv5	623834.4	5052641.9	24.2	791.4	Inv5
R157	Vacant	623873.6	5052844.3	24.8	976.2	Inv5	623851.1	5052824.4	22.6	947.1	Inv5
R158	Existing	623873.8	5052692.7	25.9	855.6	Inv5	623849.7	5052674.8	23.8	826.4	Inv5
R160	Vacant	623876.1	5052869.7	24.6	997.5	Inv1	623853.9	5052849.5	22.4	967.6	Inv1
R162	Existing	623876.5	5052919.1	24.2	1034.7	Inv1	623854.8	5052898.3	22.0	1004.9	Inv1
R163	Existing	623878.2	5052899.9	24.3	1021.4	Inv1	623856.3	5052879.4	22.1	991.5	Inv1
R164	Existing	623878.9	5052881.9	24.5	1008.4	Inv1	623862.2	5052856.9	22.3	978.8	Inv1
R165	Existing	623883.8	5052761.7	25.3	915.5	Inv5	623865.3	5052738.1	23.2	885.5	Inv5
R166	Existing	623896.8	5052762.7	25.2	924.3	Inv5	623878.1	5052739.3	23.1	894.3	Inv5
R167	Vacant	623900.7	5053055.4	23.1	1156.0	Inv1	623880.1	5053033.6	20.8	1126.2	Inv1
R168	Vacant	623904.1	5051774.6	28.9	635.1	Inv4	623874.4	5051779.0	27.0	605.1	Inv4
R169	Existing	623915.8	5052777.7	25.0	947.9	Inv5	623896.9	5052754.4	22.8	917.9	Inv5
R170	Existing	623926.0	5052825.1	24.6	991.5	Inv5	623902.9	5052806.0	22.4	962.3	Inv5

Noise Receptor ID	Description	Point of Reception at 4.5 m					Point of Reception at 1.5 m				
		UTM Coordinates NAD 83 Zone 17 [m]		Sound Power Level (dBA)	Nearest Project Source		UTM Coordinates NAD 83 Zone 17 (m)		Sound Power Level (dBA)	Nearest Project Source	
		X	Y		Dist[m]	ID	X	Y		Dist (m)	ID
R172	Vacant	623941.0	5052961.3	23.6	1109.0	Inv1	623919.1	5052940.8	21.3	1079.1	Inv1
R173	Existing	623941.8	5052800.7	24.7	982.1	Inv5	623918.3	5052782.0	22.5	952.9	Inv5
R175	Vacant	623949.6	5052924.9	23.8	1085.8	Inv5	623927.3	5052904.8	21.5	1056.6	Inv5
R177	Vacant	623956.3	5052883.9	24.0	1056.6	Inv5	623933.5	5052864.4	21.8	1027.4	Inv5
R178	Existing	623956.8	5052795.7	24.6	987.8	Inv5	623937.4	5052772.8	22.4	957.8	Inv5
R179	Existing	623965.8	5053075.7	22.7	1212.2	Inv1	623944.8	5053054.2	20.4	1182.3	Inv1
R180	Existing	623966.8	5053035.7	22.9	1182.0	Inv1	623945.4	5053014.6	20.6	1152.2	Inv1
R181	Existing	623979.8	5052998.7	23.1	1162.7	Inv1	623958.0	5052978.1	20.8	1132.8	Inv1
R182	Existing	623984.5	5052846.8	24.1	1044.8	Inv5	623965.4	5052823.7	21.9	1014.8	Inv5
R183	Existing	623985.8	5052804.7	24.4	1013.5	Inv5	623962.0	5052786.4	22.1	984.1	Inv5
R185	Existing	623990.8	5053017.7	22.9	1184.2	Inv1	623969.1	5052997.0	20.6	1154.3	Inv1
R186	Existing	623994.8	5053051.7	22.7	1212.4	Inv1	623973.3	5053030.7	20.4	1182.5	Inv1
R187	Existing	623996.6	5052952.9	23.3	1136.0	Inv5	623974.1	5052933.0	21.1	1106.7	Inv5
R188	Existing	623999.0	5052935.3	23.4	1123.3	Inv5	623980.8	5052911.4	21.2	1093.3	Inv5
R189	Existing	624005.8	5052978.7	23.1	1162.3	Inv5	623983.5	5052958.6	20.8	1132.9	Inv5
R190	Existing	624005.8	5053007.7	22.9	1185.9	Inv5	623988.4	5052983.2	20.6	1155.9	Inv5
R192	Vacant	624006.6	5052918.5	23.5	1114.7	Inv5	623983.8	5052899.1	21.2	1085.4	Inv5
R193	Existing	624011.8	5052862.7	23.8	1074.5	Inv5	623988.4	5052843.9	21.6	1045.1	Inv5
R194	Existing	624011.8	5052903.7	23.5	1106.3	Inv5	623988.8	5052884.5	21.3	1076.9	Inv5
R195	Existing	624016.8	5052996.7	22.9	1183.3	Inv5	623994.6	5052976.5	20.6	1154.0	Inv5
R197	Vacant	624026.2	5052866.4	23.7	1086.7	Inv5	624002.6	5052847.8	21.5	1057.3	Inv5
R199	Existing	624031.8	5052945.7	23.2	1151.6	Inv5	624009.0	5052926.2	20.9	1122.2	Inv5
R201	Existing	624036.8	5052813.7	24.0	1054.2	Inv5	624012.7	5052795.8	21.7	1024.8	Inv5

Noise Receptor ID	Description	Point of Reception at 4.5 m					Point of Reception at 1.5 m				
		UTM Coordinates NAD 83 Zone 17 [m]		Sound Power Level (dBA)	Nearest Project Source		UTM Coordinates NAD 83 Zone 17 (m)		Sound Power Level (dBA)	Nearest Project Source	
		X	Y		Dist[m]	ID	X	Y		Dist (m)	ID
R203	Vacant	624046.4	5052882.4	23.5	1111.9	Inv5	624022.9	5052863.8	21.2	1082.5	Inv5
R205	Existing	624058.4	5052822.8	23.8	1075.6	Inv5	624037.7	5052801.1	21.5	1045.6	Inv5
R207	Existing	624067.5	5052944.5	23.0	1173.1	Inv5	624044.4	5052925.4	20.7	1143.6	Inv5
R208	Vacant	624072.4	5052883.5	23.3	1129.9	Inv5	624052.4	5052861.1	21.1	1099.9	Inv5
R209	Existing	624074.8	5052720.7	24.3	1015.7	Inv5	624052.5	5052700.6	22.1	985.7	Inv5
R210	Existing	624078.5	5052790.7	23.8	1066.6	Inv5	624053.9	5052773.6	21.6	1037.1	Inv5
R211	Existing	624088.8	5052738.7	24.1	1038.2	Inv5	624063.7	5052722.3	21.8	1008.6	Inv5
R212	Existing	624094.8	5052838.7	23.4	1112.2	Inv5	624070.5	5052821.0	21.2	1082.7	Inv5
R213	Existing	624112.3	5052798.9	23.6	1096.5	Inv5	624087.5	5052781.9	21.3	1066.9	Inv5
R214	Existing	624125.8	5052736.7	23.8	1064.5	Inv5	624100.4	5052720.7	21.6	1034.9	Inv5
R215	Existing	624127.8	5051574.7	25.8	897.8	Inv4	624098.9	5051582.7	23.6	867.9	Inv4
R216	Existing	624128.8	5052755.7	23.7	1079.3	Inv5	624103.6	5052739.5	21.5	1049.7	Inv5
R217	Existing	624133.8	5052846.7	23.2	1145.3	Inv5	624112.5	5052825.6	20.9	1115.3	Inv5
R218	Existing	624144.8	5052822.7	23.2	1136.4	Inv5	624120.1	5052805.7	20.9	1106.8	Inv5
R219	Existing	624154.8	5052808.7	23.2	1134.1	Inv5	624129.9	5052792.0	21.0	1104.5	Inv5
R220	Vacant	624165.9	5052764.6	23.4	1113.1	Inv5	624140.5	5052748.6	21.1	1083.4	Inv5
R221	Existing	624179.8	5052734.7	23.5	1104.6	Inv5	624154.1	5052719.2	21.2	1074.9	Inv5
R222	Existing	624182.8	5052723.7	23.5	1100.0	Inv5	624157.0	5052708.4	21.2	1070.3	Inv5
R223	Existing	624184.8	5052711.7	23.5	1094.2	Inv5	624158.9	5052696.6	21.3	1064.5	Inv5
R224	Vacant	624191.1	5052691.0	23.6	1086.6	Inv5	624164.9	5052676.3	21.4	1056.9	Inv5
R225	Existing	624199.8	5052633.7	23.8	1060.4	Inv5	624173.2	5052619.9	21.6	1030.6	Inv5
R226	Existing	624201.8	5052480.7	24.5	984.6	Inv5	624174.0	5052469.4	22.3	954.7	Inv5
R227	Existing	624202.8	5052679.7	23.6	1089.3	Inv5	624176.5	5052665.2	21.3	1059.6	Inv5

Noise Receptor ID	Description	Point of Reception at 4.5 m					Point of Reception at 1.5 m				
		UTM Coordinates NAD 83 Zone 17 [m]		Sound Power Level (dBA)	Nearest Project Source		UTM Coordinates NAD 83 Zone 17 (m)		Sound Power Level (dBA)	Nearest Project Source	
		X	Y		Dist[m]	ID	X	Y		Dist (m)	ID
R228	Existing	624204.8	5052491.7	24.4	992.2	Inv5	624177.1	5052480.2	22.2	962.4	Inv5
R229	Existing	624207.8	5052660.7	23.6	1082.3	Inv5	624181.4	5052646.5	21.4	1052.6	Inv5
R230	Existing	624209.8	5052628.7	23.8	1065.9	Inv5	624183.1	5052615.0	21.5	1036.1	Inv5
R231	Existing	624212.8	5052592.7	23.9	1049.0	Inv5	624185.8	5052579.6	21.7	1019.2	Inv5
R232	Existing	624214.8	5052526.7	24.2	1017.5	Inv5	624187.3	5052514.7	22.0	987.6	Inv5
R233	Existing	624222.8	5052509.7	24.2	1016.5	Inv5	624196.2	5052495.8	22.0	986.5	Inv5
R234	Existing	624228.8	5052497.7	24.2	1016.4	Inv5	624201.1	5052486.3	22.0	986.5	Inv5
R235	Vacant	624235.2	5052582.0	23.8	1062.5	Inv5	624208.0	5052569.3	21.6	1032.7	Inv5
R236	Vacant	624241.6	5051918.0	25.3	927.6	Inv5	624211.6	5051918.3	23.1	897.8	Inv5
R237	Vacant	624253.7	5052466.2	24.1	1025.1	Inv5	624225.6	5052455.6	21.9	995.1	Inv5
R238	Vacant	624271.8	5052401.4	24.2	1016.8	Inv5	624243.3	5052392.1	22.0	986.8	Inv5
R239	Existing	624289.8	5052341.7	24.2	1014.2	Inv5	624261.0	5052333.5	22.0	984.2	Inv5
R240	Existing	624301.8	5052374.7	24.0	1035.9	Inv5	624273.1	5052365.9	21.8	1005.9	Inv5
R241	Existing	624307.7	5052306.2	24.2	1021.4	Inv5	624278.7	5052298.8	22.0	991.4	Inv5
R242	Existing	624312.8	5052361.7	24.0	1042.2	Inv5	624283.5	5052355.5	21.8	1012.3	Inv5
R243	Existing	624313.8	5052249.7	24.3	1014.1	Inv5	624285.8	5052239.0	22.1	984.4	Inv5
R244	Existing	624315.1	5052065.6	24.5	993.6	Inv5	624285.2	5052062.9	22.4	963.6	Inv5
R245	Existing	624326.8	5052130.7	24.4	1009.1	Inv5	624297.1	5052126.7	22.2	979.1	Inv5
R246	Vacant	624362.8	5051809.2	24.1	1066.0	Inv5	624332.9	5051811.7	21.9	1036.2	Inv5
R247	Existing	624364.8	5052151.7	24.0	1049.0	Inv5	624335.1	5052147.4	21.8	1019.0	Inv5
R248	Existing	624364.8	5052240.7	23.8	1062.3	Inv5	624335.4	5052234.7	21.6	1032.3	Inv5
R249	Existing	624401.8	5052118.7	23.7	1082.9	Inv5	624372.0	5052115.1	21.5	1052.9	Inv5
R250	Existing	624410.8	5052160.7	23.6	1095.7	Inv5	624381.1	5052156.3	21.3	1065.7	Inv5

Noise Receptor ID	Description	Point of Reception at 4.5 m					Point of Reception at 1.5 m				
		UTM Coordinates NAD 83 Zone 17 [m]		Sound Power Level (dBA)	Nearest Project Source		UTM Coordinates NAD 83 Zone 17 (m)		Sound Power Level (dBA)	Nearest Project Source	
		X	Y		Dist[m]	ID	X	Y		Dist (m)	ID
R251	Existing	624423.8	5052128.7	23.5	1105.6	Inv5	624394.1	5052125.0	21.3	1075.6	Inv5
R252	Existing	624424.0	5051863.6	23.6	1115.9	Inv5	624394.0	5051864.9	21.3	1086.1	Inv5
R253	Vacant	624434.1	5051740.5	23.4	1151.5	Inv5	624404.3	5051744.1	21.1	1121.8	Inv5
R254	Existing	624435.8	5052122.7	23.4	1117.1	Inv5	624406.0	5052119.1	21.2	1087.1	Inv5
R255	Existing	624448.8	5052139.7	23.3	1131.4	Inv5	624419.1	5052135.8	21.0	1101.4	Inv5
R256	Existing	624482.5	5051755.3	23.0	1194.8	Inv5	624452.7	5051758.5	20.7	1165.1	Inv5
R257	Existing	624521.6	5051913.5	22.8	1206.3	Inv5	624491.6	5051913.8	20.5	1176.4	Inv5

7. Conclusions and Recommendations

For the Burk's Falls West Solar Project, the sound pressure levels at the POR have been estimated using the CADNA-A model, based on ISO 9613-2. No mitigations are required for the Project operation.

Based on the results obtained in this study, it is concluded that the sound pressure levels at the POR, resulting from the Burk's Falls West Solar Project operation, will be below MOE requirements for Class 3 areas of 40 dBA at all times.

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8. Signatures

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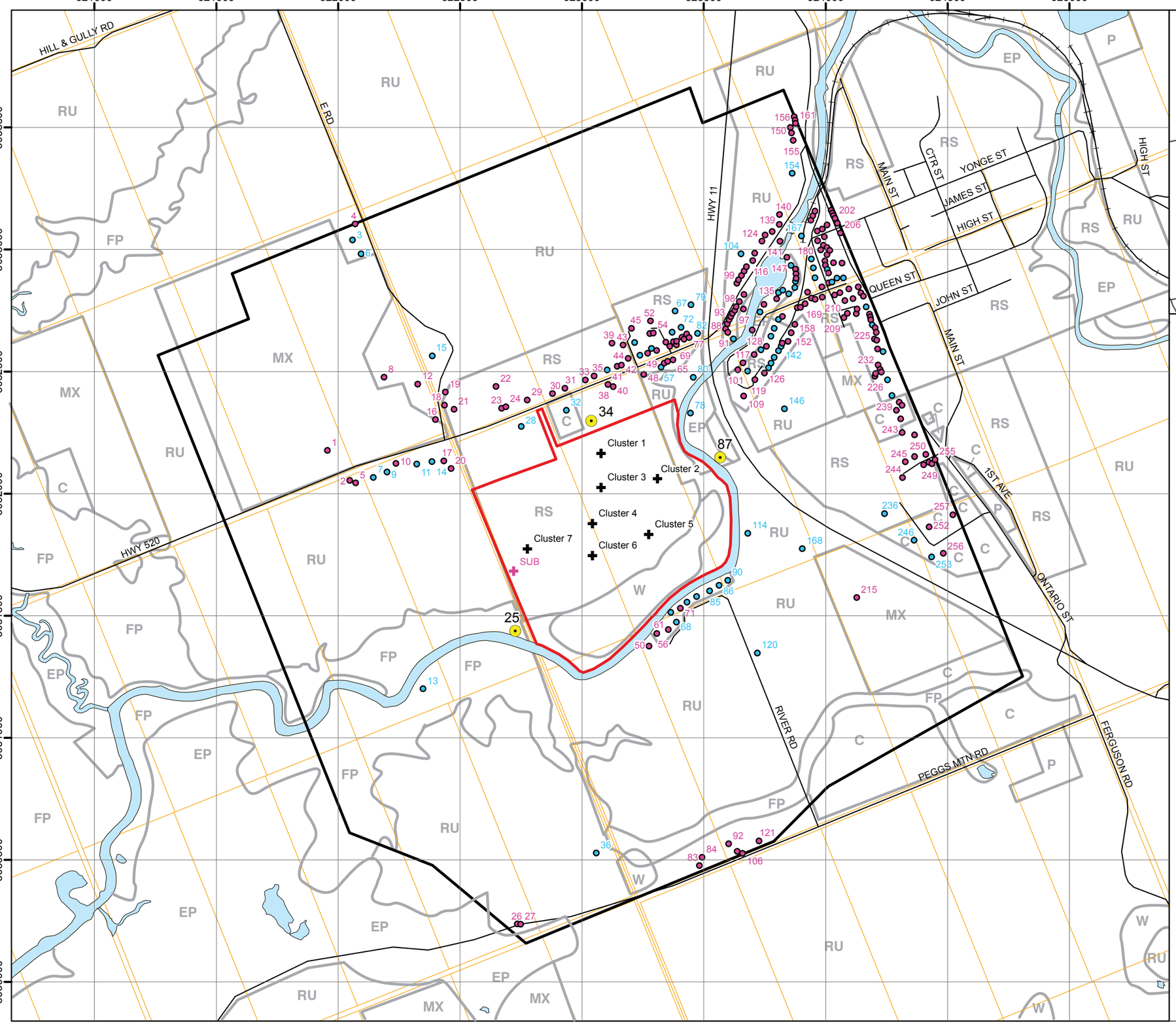
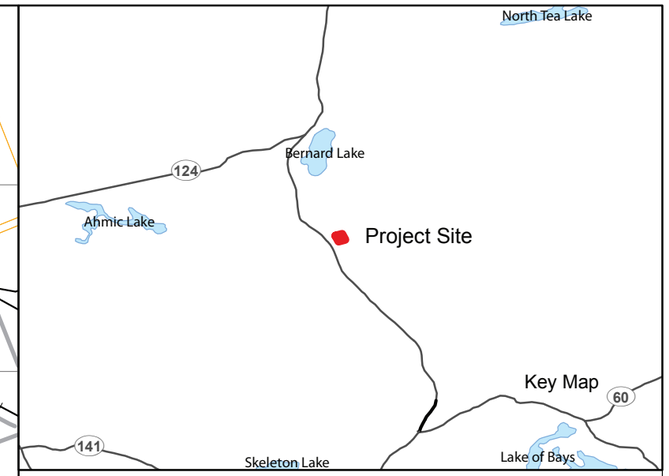
Appendix A

Land Use Zoning Designation Plan and Area Location Plan





Legend

- Cluster # — Inverter Cluster
- SUB — Substation Transformer
- # — Noise Receptor -Existing
- # — Noise Receptor - Vacant
- # — Representative Noise Receptor
- Railway
- Road
- Parcel
- Waterbody

Zones

RU	Rural
RS	Residential
MX	Extractive Industrial
C	Commercial
IN	Institutional
EP	Environmental Protection Area
W	Wetlands Protection
FP	Floodplain
P	Public

Notes:
1. Produced by Hatch under licence from Ontario Ministry of Natural Resources, Copyright (c) Queens Printer 2011.
2. Spatial referencing UTM NAD 83.

0 125 250 500 Metres

1:16,000

NORTH

Figure A.1
Northland Power Solar
Burk's Falls West L.P.

Burk's Falls West Solar Project
Zoning Designation Plan

HATCH

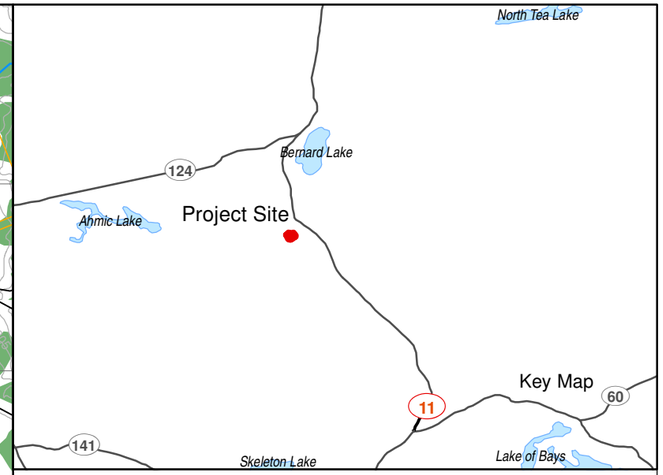
621000 621500 622000 622500 623000 623500 624000 624500 625000

5053500 5053000 5052500 5052000 5051500 5051000 5050500 5050000

E RD
HWY 11
HWY 520
MAIN ST
C7R ST
YONGE ST
JAMES ST
HIGH ST
QUEEN ST
JOHN ST
HIGH ST
MAIN ST
ONTARIO ST
1ST AVE
RIVER RD
PEGGS MTN RD
FERGUSON RD

Cluster 1
Cluster 2
Cluster 3
Cluster 4
Cluster 5
Cluster 6
Cluster 7
SUB

34
87
25



Legend

- Cluster # — Inverter Cluster
- SUB — Substation Transformer
- # — Noise Receptor - Existing
- # — Noise Receptor - Vacant
- # — Representative Noise Receptor
- Railway
- Road
- Topographic Contour (5 m interval)
- Watercourse
- Project Site
- 1000 m from Project Site
- Parcel
- Waterbody
- Wooded Area

Notes:
1. Produced by Hatch under licence from Ontario Ministry of Natural Resources, Copyright (c) Queens Printer 2011.
2. Spatial referencing UTM NAD 83.
3. Due to scale limitations, the three-part inverter unit is represented as a single point.

0 125 250 500 Metres

1:16,000

NORTH

Figure A.2
Northland Power Solar
Burk's Falls West L.P.

Burk's Falls West Solar Project
Scaled Area Location Plan

HATCH™

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Appendix B

Noise Sources

Table B.1 Point Sources from Burk's Falls West Solar Project Used in CADNA-A, Includes 5.0-dBA Tonality Penalty

Source ID	Description	Spectra ID	Total sound power level (dBA)	Correction (dBA)	Height (m)	Coordinates, UTM NAD 83 Zone 17 (m)	
						X	Y
Sub	27.6-kV/44-kV/10-MVA substation transformer	T44kV_10MVA	90.8	5.0	3.50	622722.9	5051685.0
Inv1	Two Sunny Central 800CP inverters at Cluster 1	SMA_SC800CPX2	91.3	5.0	2.60	623202.0	5052134.4
Inv2	Two Sunny Central 800CP inverters at Cluster 2	SMA_SC800CPX2	91.3	5.0	2.60	623044.9	5051777.7
Inv3	Two Sunny Central 800CP inverters at Cluster 3	SMA_SC800CPX2	91.3	5.0	2.60	622773.2	5051768.1
Inv4	Two Sunny Central 800CP inverters at Cluster 4	SMA_SC800CPX2	91.3	5.0	2.60	623273.6	5051851.1
Inv5	Two Sunny Central 800CP inverters at Cluster 5	SMA_SC800CPX2	91.3	5.0	2.60	623321.9	5052038.9
Inv6	Two Sunny Central 800CP inverters at Cluster 6	SMA_SC800CPX2	91.3	5.0	2.60	622847.3	5051939.0
Trans1	360-V/27.6-kV/1.6-MVA cluster transformer at Cluster 1	T27.6kV_1.6MVA	80.1	5.0	2.58	623201.5	5052128.9
Trans2	360-V/27.6-kV/1.6-MVA cluster transformer at Cluster 2	T27.6kV_1.6MVA	80.1	5.0	2.58	623039.4	5051778.2
Trans3	360-V/27.6-kV/1.6-MVA cluster transformer at Cluster 3	T27.6kV_1.6MVA	80.1	5.0	2.58	622767.7	5051768.6
Trans4	360-V/27.6-kV/1.6-MVA cluster transformer at Cluster 4	T27.6kV_1.6MVA	80.1	5.0	2.58	623274.1	5051856.6
Trans5	360-V/27.6-kV/1.6-MVA cluster transformer at Cluster 5	T27.6kV_1.6MVA	80.1	5.0	2.58	623316.4	5052039.4
Trans6	360-V/27.6-kV/1.6-MVA cluster transformer at Cluster 6	T27.6kV_1.6MVA	80.1	5.0	2.58	622846.8	5051933.5

Table B.2 Frequency Spectra Used for Modelling the Noise Sources, Not Including Tonality Penalty

Spectra ID	Octave Spectrum (dBA)									
	31.5	63	125	250	500	1000	2000	4000	8000	A
SMA_SC800CPX2		63.1	73.9	80.5	82.3	78.7	74.1	65.0	72.7	86.3
T27.6kV_1.6MVA	32.3	51.5	63.6	66.1	71.5	68.7	64.9	59.7	50.6	75.1
T44kV_10MVA	43.0	62.2	74.3	76.8	82.2	79.4	75.6	70.4	61.3	85.8

Table B.3 Individual Inverter Coordinates for Burk's Falls West Solar Project

Note: Modeled noise source representing inverter cluster uses a central location of the cluster. This table provides central points of individual inverters found within the same cluster.

Inverter ID	Description	Sound Power Level (dBA)	UTM Coordinates NAD 83 Zone 17 [m]	
			X	Y
Inv1.1	Sunny Central 800CP inverter at Cluster 1	83.3	623203.12	5052134.40
Inv1.2	Sunny Central 800CP inverter at Cluster 1	83.3	623200.88	5052134.40
Inv2.1	Sunny Central 800CP inverter at Cluster 2	83.3	623044.90	5051778.82
Inv2.2	Sunny Central 800CP inverter at Cluster 2	83.3	623044.90	5051776.58
Inv3.1	Sunny Central 800CP inverter at Cluster 3	83.3	622773.20	5051769.22
Inv3.2	Sunny Central 800CP inverter at Cluster 3	83.3	622773.20	5051766.98
Inv4.1	Sunny Central 800CP inverter at Cluster 4	83.3	623274.72	5051851.10
Inv4.2	Sunny Central 800CP inverter at Cluster 4	83.3	623272.48	5051851.10
Inv5.1	Sunny Central 800CP inverter at Cluster 5	83.3	623321.90	5052040.02
Inv5.2	Sunny Central 800CP inverter at Cluster 5	83.3	623321.90	5052037.78
Inv6.1	Sunny Central 800CP inverter at Cluster 6	83.3	622848.42	5051939.00
Inv6.2	Sunny Central 800CP inverter at Cluster 6	83.3	622846.18	5051939.00

SC 720CP-10 / SC 760CP-10 / SC 800CP-10

Economic

- Direct deployment in the field due to outdoor enclosure
- Simplified shipping without concrete substation

Efficient

- Full nominal power at ambient temperatures up to 50 °C
- 10 % additional power for constant operation at ambient temperatures up to 25 °C

Flexible

- Powerful grid management functions (including LVRT)
- DC voltage range configurable

Reliable

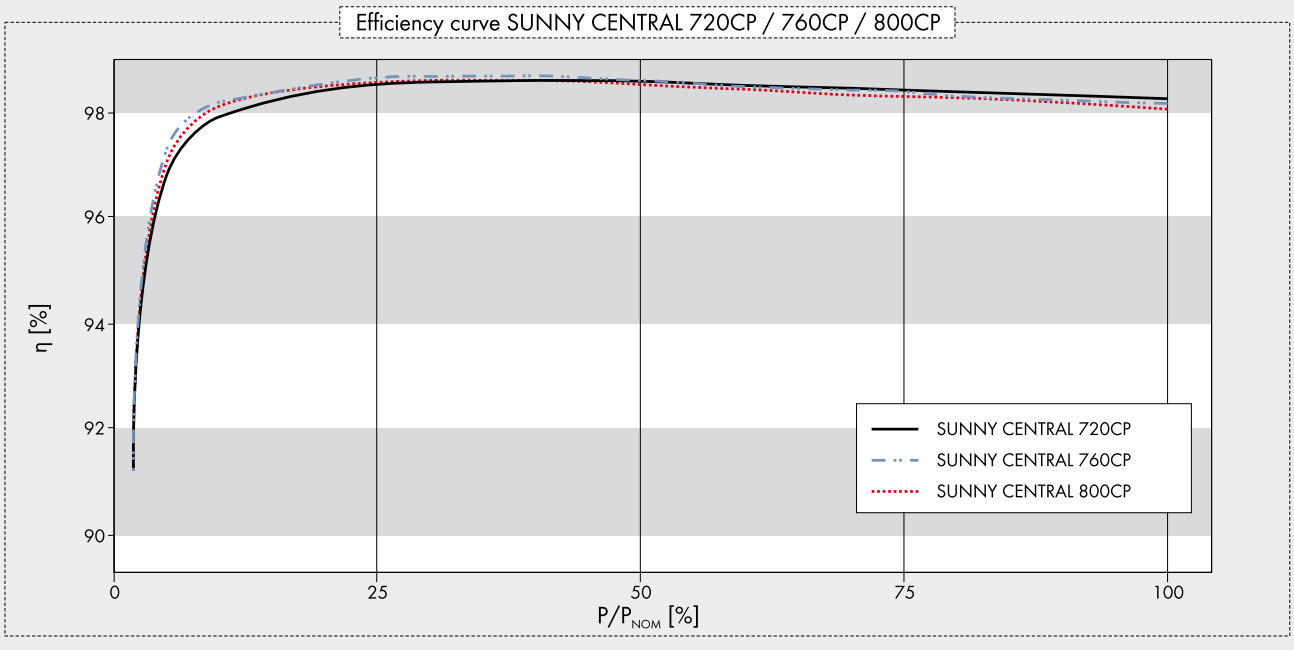
- Easy and safe installation due to a separate connection area
- Optional: extended input voltage range up to 1,100 V

SUNNY CENTRAL 720CP / 760CP / 800CP

High performance as standard

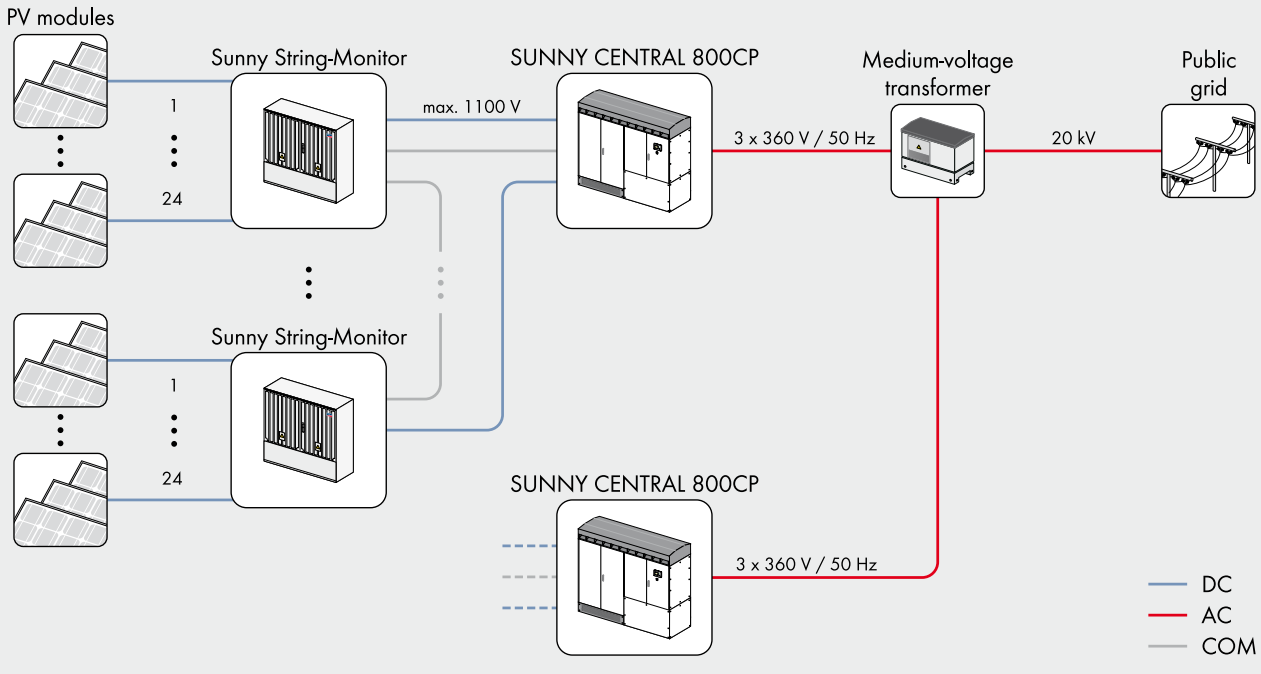
The completely new design of the Sunny Central CP series saves you real money. The compact and weatherproof enclosure is easy to load and transport and can be installed almost anywhere – there is no need for heavy protective concrete substations any longer. The innovative cooling concept OptiCool allows it to operate at full nominal power with ambient temperatures up to 50 °C. With the powerful grid management functions you are perfectly prepared for today's utility requirements as well as those still to come. The intelligent power management is the most important feature: in continuous operation, the Sunny Central 800CP can feed 880 kVA to the grid at ambient temperatures of up to 25 °C – that's 10 % more than the rated nominal power.

Technical data	Sunny Central 720CP	Sunny Central 760CP	Sunny Central 800CP
Input Data			
MPP voltage range	515 V – 820 V [3] [5]	545 V – 820 V [3] [5]	570 V – 820 V [3] [5]
Max. DC voltage		1000 V / 1100 V [1] Optional	
Max. DC current	1400 A	1400 A	1400 A
Number of DC inputs		9 fused inputs	
Output Values			
Nominal AC output @ 50 °C	720 kVA	760 kVA	800 kVA
Continuous AC power @ 25 °C	792 kVA	836 kVA	880 kVA
Max. AC current	1411 A	1411 A	1411 A
Nominal AC-current	1283 A	1283 A	1283 A
Nominal AC-voltage ±10 %	324 V	342 V	360 V
AC grid frequency 50 Hz	●	●	●
AC grid frequency 60 Hz	●	●	●
Power factor (cos φ)		0.9 leading ... 0.9 lagging	
Max. THD	< 3 %	< 3 %	< 3 %
Power consumption			
Internal consumption in operation	< 1500 W [4]	< 1500 W [4]	< 1500 W [4]
Standby consumption	< 100 W	< 100 W	< 100 W
External auxiliary voltage	3 x 230 V, 50 / 60 Hz	3 x 230 V, 50 / 60 Hz	3 x 230 V, 50 / 60 Hz
Dimensions and Weight			
Dimensions (W / H / D) in mm	2562 / 2279 / 956	2562 / 2279 / 956	2562 / 2279 / 956
Weight	1800 kg	1800 kg	1800 kg
Efficiency [2]			
Max. efficiency	98.6 %	98.6 %	98.6 %
Euro ETA	98.4 %	98.4 %	98.4 %
CEC-eta	98.4 %	98.4 %	98.4 %
Protection Rating and Ambient Conditions			
Protection rating (as per IEC 60529)	IP54	IP54	IP54
Protection rating (as per IEC 60721-3-3) Ambient conditions: fixed location, with protection against wind and weather	• Classification of chemically active substances: 3C2 • Classification of mechanically active substances: 3S2		
Operation temperature range	–20 °C ... +50 °C	–20 °C ... +50 °C	–20 °C ... +50 °C
Rel. humidity	15 % ... 95 %	15 % ... 95 %	15 % ... 95 %
Fresh air consumption	3000 m³/h	3000 m³/h	3000 m³/h
Max. altitude above sea level	2000 m	2000 m	2000 m

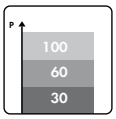


	Sunny Central 720CP	Sunny Central 760CP	Sunny Central 800CP
Features			
Sunny WebBox	●	●	●
Communication	Ethernet (optical fiber optional)	Ethernet (optical fiber optional)	Ethernet (optical fiber optional)
Communication with Sunny String-Monitor	RS485	RS485	RS485
LCD graphic display	●	●	●
Enclosure color	RAL 9016	RAL 9016	RAL 9016
Color of base	RAL 7005	RAL 7005	RAL 7005
Color of roof	RAL 7004	RAL 7004	RAL 7004
Ground fault monitoring / insulation monitoring	●	●	●
Circuit breaker AC side	●	●	●
Motor driven load disconnection switch on DC side	●	●	●
AC overvoltage protector	●	●	●
DC overvoltage protector	●	●	●
Overvoltage protectors for auxiliary supply	●	●	●
Certificates / Listings			
EMC	EN 61000-6-2 EN 61000-6-4		
CE conformity	●	●	●
BDEW-MSRL / FGW / TR8 [6]	●	●	●
RD 1633 / 2000	●	●	●
Arrêté du 23 / 04 / 08	●	●	●
● Standard features ❍ Optional features – Not available			
Type name	SC 720CP-10	SC 760CP-10	SC 800CP-10

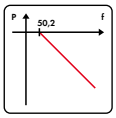
1) Startup at DC voltage < 1000 V
2) Efficiency measured without internal power supply
3) Further AC voltages, DC voltages and power classes can be configured (For detailed information see Technical Information „Innovations_CP“ at www.SMA.de)
4) Internal consumption at nominal power
5) At 1.05 $U_{AC,nom}$ and cos φ= 1
6) With complete dynamic grid support



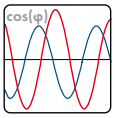
POWERFUL GRID MANAGEMENT FUNCTIONS



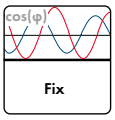
Remote controlled power reduction in case of grid overload
In order to avoid short-term grid overload, the grid operator presets a nominal active power value which the inverter will implement within 60 seconds. The nominal value is transmitted to the inverters via a ripple control receiver in combination with the SMA Power Reducer Box. Typical limit values are 100, 60, 30 or 0 per cent of the nominal power.



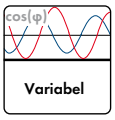
Frequency-dependent control of active power
As of a grid frequency of 50.2 Hz, the inverter automatically reduces the fed-in of active power according to a definable characteristic curve which thereby contributes to the stabilization of the grid frequency.



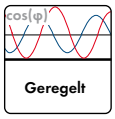
Static voltage support based on reactive power
To stabilize the grid voltage, SMA inverters feed reactive power (leading or lagging) into the grid. Three different modes are available:



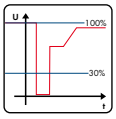
a) Fixed definition of the reactive power by the grid operator
The grid operator defines a fixed reactive power value or a fixed displacement factor between $\cos(\varphi)_{leading}$= 0.90 and $\cos(\varphi)_{lagging}$= 0.90.



b) Definition of a dynamic setpoint of the reactive power by the utility operator
The grid operator defines a dynamic displacement factor - any value between $\cos(\varphi)_{leading}$= 0.90 und $\cos(\varphi)_{lagging}$= 0.90. It is transmitted either through a communication unit the evaluation can e.g. be evaluated and processed by the SMA Power Reducer Box.

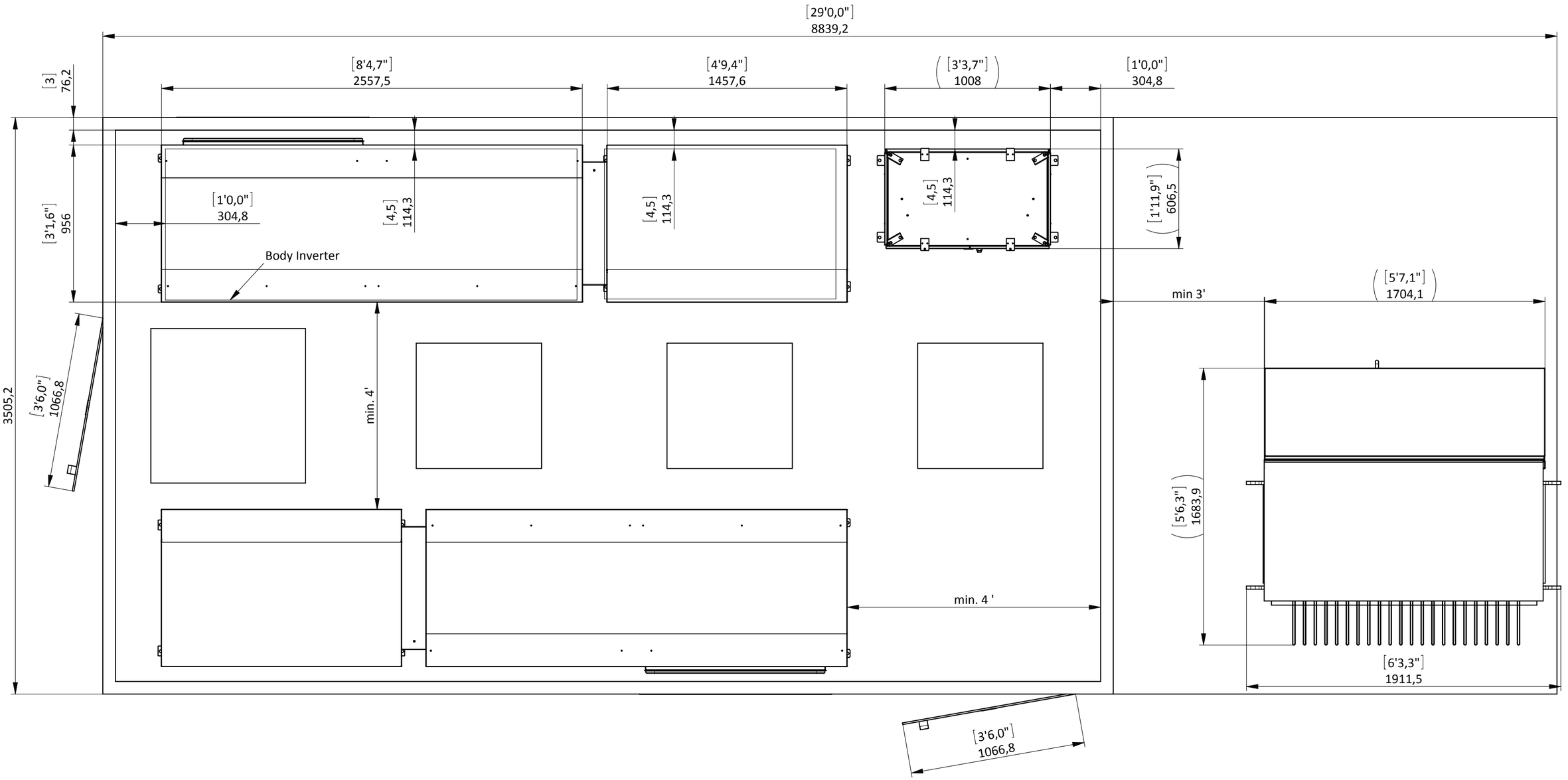


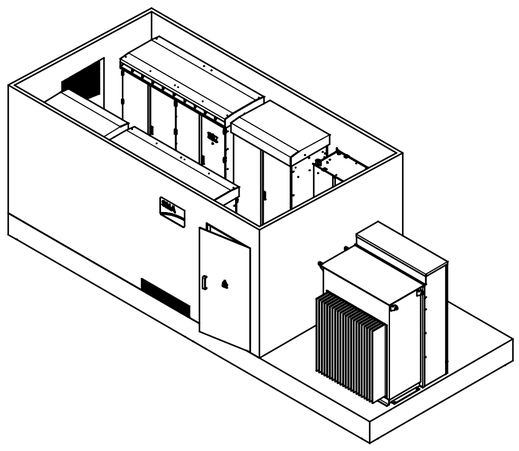
c) Control of the reactive power over a characteristic curve
The reactive power or the phase shift is controlled by a pre-defined characteristic curve – depending on the active power fed into the grid or the grid voltage.



Limited Dynamic Grid Support
The inverter continues to feed to the grid after short term voltage drops – as long as the grid voltage is within a defined voltage window.

Dynamic Grid Support
LVRT (Low-Voltage Ride Through): The inverter stays connected to the grid during voltage drops and supports the grid by feeding reactive power.





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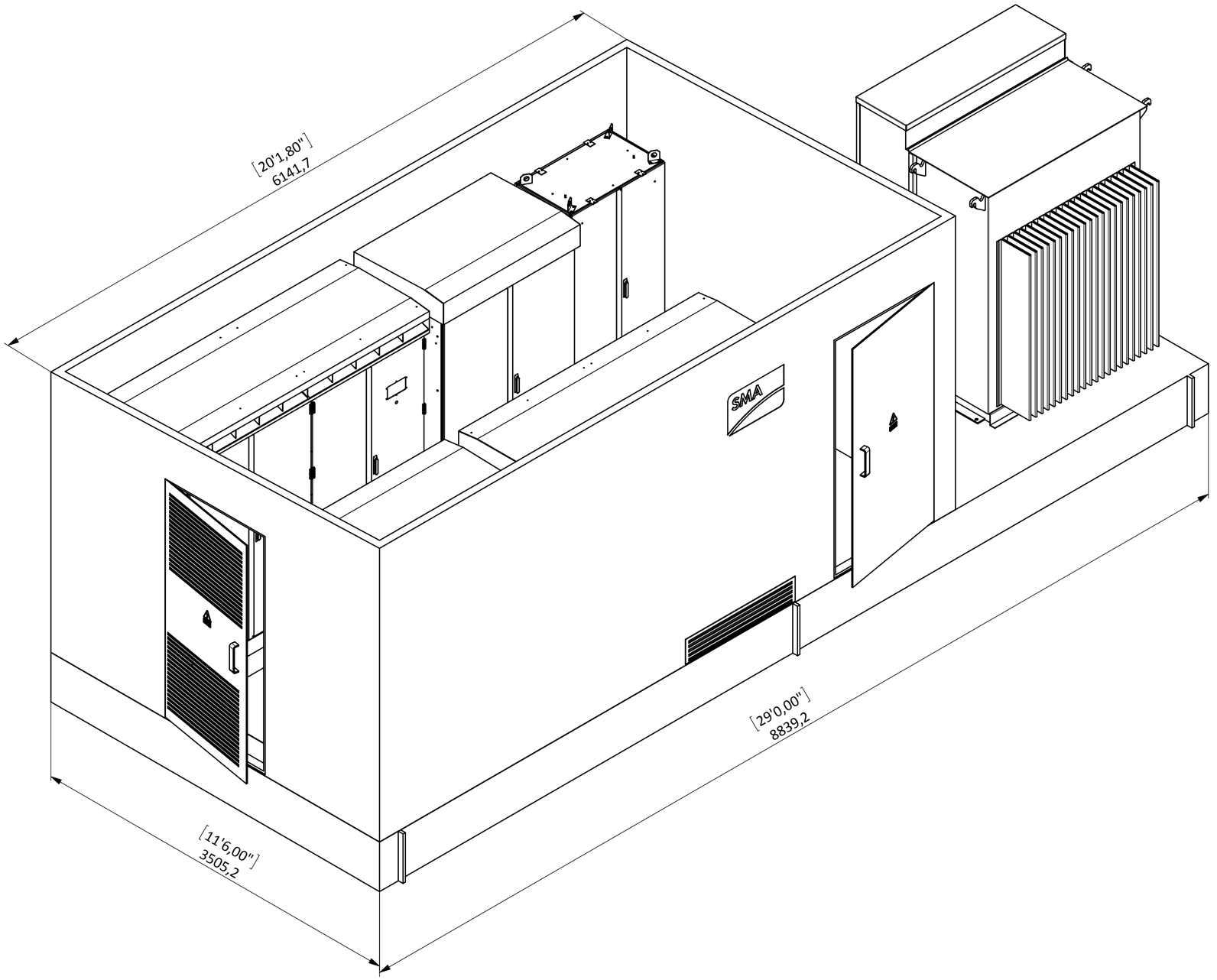
Verwendbar für: / To be used for: **SMA SKID**						all dimensions and tolerances are in millimeters [feet / inches] alle Maß- und Toleranzangaben sind in mm [feet / inches]
				Datum / Date	Name	**Clearance**
			Bearb.	25.02.2011	Mihelic	
			Gepr.			
			Norm			
			Freigabe			
				SMA Solar Technology AG Sonnenallee 1 34266 Niestetal Tel.: +49 561 9522-0		Z-Nr.: A2 Blatt / Page 1
						D.-No.:
						EDV-Nr.: Bl. / o.P. 1
Rev.	Datum	Name	Urspr.: / Origin.:			Name : Erstellt mit SolidWorks



Verwendbar für: / To be used for:

SMA SKID

all dimensions and tolerances are in millimeters [feet / inches]
alle Maß- und Toleranzangaben sind in mm [feet / inches]

Layout enclosure

				Datum / Date	Name
			Bearb.	25.02.2011	Mihelic
			Gepr.		
			Norm		
			Freigabe		

Rev.	Datum	Name	Ursprr.: / Origin.:

SMA Solar Technology AG
Sonnenallee 1
34266 Niestetal
Tel.: +49 561 9522-0

Z-Nr.:
D.-No.:
EDV-Nr.:
Name :

A2

Blatt / Page 1
Bl. / o.P. 1

Erstellt mit SolidWorks

Terz-midle-frequency [kHz]	Soundpower-level L_{xpA} [dB_A]500kW	Soundpower-level L_{xpA} [dB_A]640kW	Soundpower-level L_{xpA} [dB_A]720kW	Soundpower-level L_{xpA} [dB_A]760kW	Soundpower level L_{xpA} [dB_A]800kW
0,05	63,30	55,30	57,70	67,00	56,50
0,063	60,80	53,10	56,80	63,20	54,00
0,08	63,90	56,30	56,50	59,50	55,20
0,1	64,10	66,20	65,00	66,50	68,10
0,125	65,70	64,50	60,60	65,20	62,00
0,16	72,30	65,80	65,50	63,20	66,40
0,2	67,30	64,60	66,80	64,90	67,80
0,25	66,10	76,20	77,50	70,80	72,40
0,315	78,40	79,80	77,70	82,20	75,10
0,4	73,70	73,90	73,90	72,80	66,70
0,5	77,80	78,70	77,70	77,40	74,70
0,63	78,90	78,90	74,60	77,40	77,00
0,8	70,60	72,50	74,10	70,60	72,00
1	72,20	71,00	70,00	68,90	67,90
1,25	72,40	72,00	71,50	70,80	71,80
1,6	67,30	68,30	76,70	68,60	68,50
2	69,30	66,30	66,50	67,20	65,30
2,5	65,10	66,80	64,60	64,80	63,90
3,15	62,60	64,30	65,00	63,20	61,00
4,0	53,50	54,20	54,70	52,30	53,80
5,0	51,30	49,50	50,50	51,20	49,80
6,3	68,90	72,60	73,50	73,50	69,70

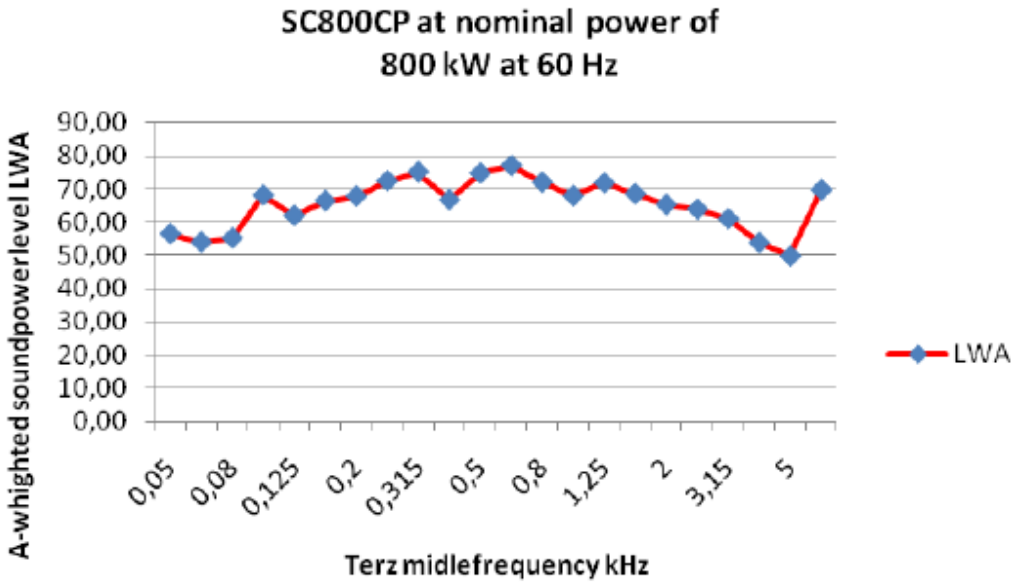
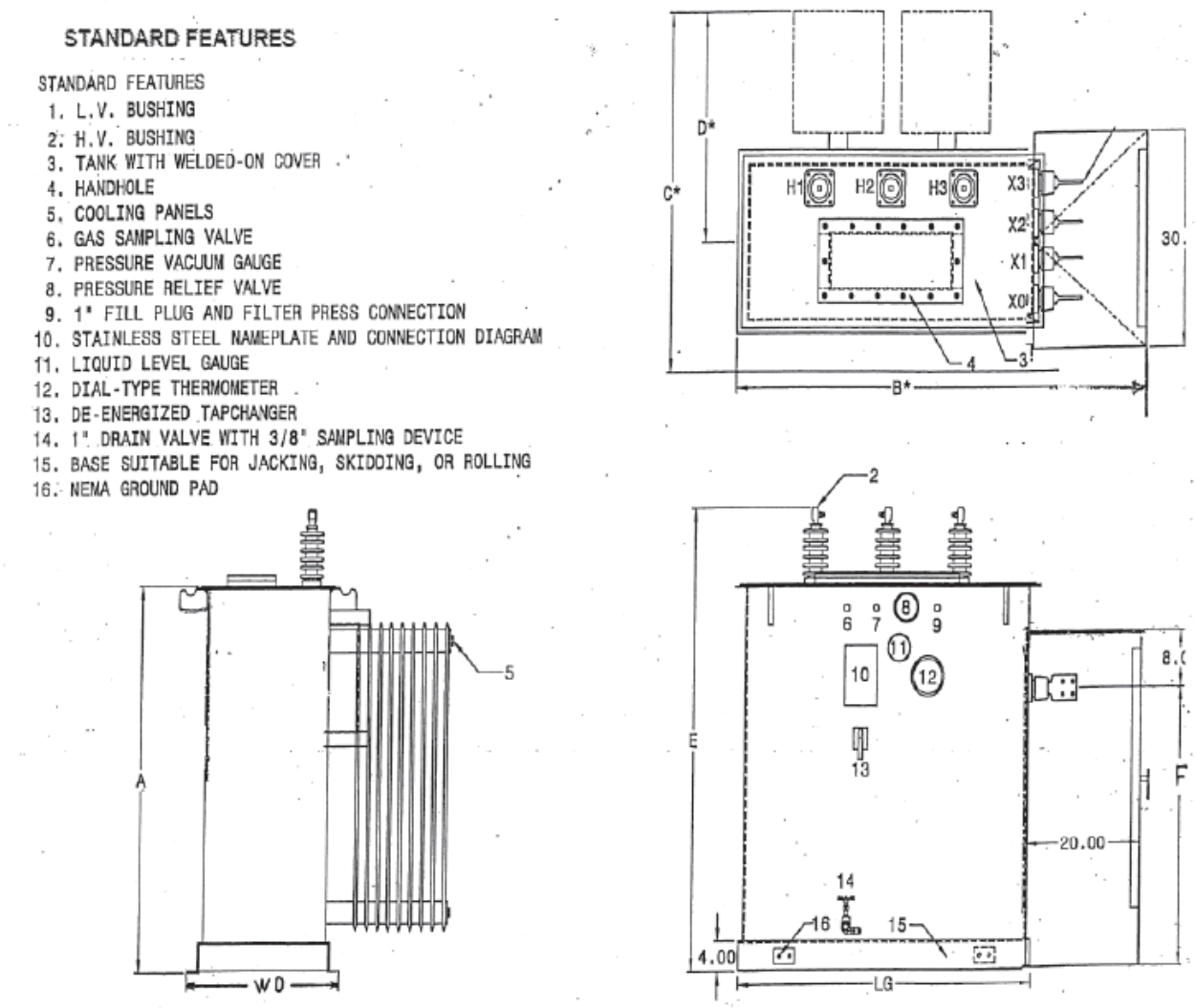


Figure B.1 SC800CP Inverter Sound Power Level as Provided by SMA. Note that the Header in the Table above Represents Various Inverter Models of CS###CP Series.



KVA	Fluid	Cond	HV BIL	LV BIL	WD	LG	A	B	C	D	E	F	Gal Liquid	Weight
10000	O	C	250	150	48	95	111	113	138	TBD	132	82	1530	37597

Figure B.2 44-kVA/10-MVA Substation Transformer Catalogue Dimensions (inches).

Estimated Frequency Spectra for Transformers

Transformer - 44kV/10MVA

From Handbook of Noise and Vibration Control (Crocker, 2007, page 1335-1336, Eq. 18 and Table 20)

Average LpA	68 dBA	Based on NEMA TR1-1993 (R2000), Table 0-2
Estimated surface area	35 m^2	Estimated based on similar transformer dimensions

Correction factors are in dB

Freq. (Hz)	31	63	125	250	500	1000	2000	4000	8000	Notes
C1	-11.0	-5.0	-3.0	-8.0	-8.0	-14.0	-19.0	-24.0	-31.0	Outdoors, indoors in mechanical room over 140 m^3
C2	-11	-2	3	-2	-2	-11	-19	-24	-31	Indoors
C3	-11	-2	3	2	2	-4	-9	-14	-21	Serious Noise Problems

Sound Power Level calculated as Lw=Average LpA + 10*log(Estimated surface area) + C + 10

Freq. (Hz)	31	63	125	250	500	1000	2000	4000	8000	Combined [dB]
C1 based [dB]	82.4	88.4	90.4	85.4	85.4	79.4	74.4	69.4	62.4	**94.5**
C2 based [dB]	82.4	91.4	96.4	91.4	91.4	82.4	74.4	69.4	62.4	**99.5**
C3 based [dB]	82.4	91.4	96.4	95.4	95.4	89.4	84.4	79.4	72.4	**101.5**

Resulting A-weighted sound power level

Freq. (Hz)	A-Weight	C1 based [dBA]	C2 based [dBA]	C2 based [dBA]
31	-39.4	43.0	52.0	57.0
63	-26.2	62.2	65.2	65.2
125	-16.1	74.3	80.3	80.3
250	-8.6	76.8	82.8	86.8
500	-3.2	82.2	88.2	92.2
1000	0	79.4	82.4	89.4
2000	1.2	75.6	75.6	85.6
4000	1	70.4	70.4	80.4
8000	-1.1	61.3	61.3	71.3
LwA [dBA]		**85.8**	**90.8**	**95.6**

Used in the study

Figure B.3 Sound Power Level Calculation for 27.6-kV/44-kV/10-MVA Substation Transformer.

Sound Power Level Calculation for SMA Sunny Central 800CP, 100% LOAD

Third octave, as provided		
Freq #	Freq (Hz)	LwA (dBA)
1	25	
2	31.5	
3	40	
4	50	56.5
5	63	54.0
6	80	55.2
7	100	68.1
8	125	62.0
9	160	66.4
10	200	67.8
11	250	72.4
12	315	75.1
13	400	66.7
14	500	74.7
15	630	77.0
16	800	72.0
17	1000	67.9
18	1250	71.8
19	1600	68.5
20	2000	65.3
21	2500	63.9
22	3150	61.0
23	4000	53.8
24	5000	49.8
25	6300	69.7
26	8000	
27	10000	
	Total LwA	**83.3**

Full octave, as used in CADNA-A model			
Freq #	Freq (Hz)	LwA 1 inverter (dBA)	LwA 2 inverters (dBA)
	31.5		
5	63	60.1	63.1
8	125	70.9	73.9
11	250	77.5	80.5
14	500	79.3	82.3
17	1000	75.7	78.7
20	2000	71.1	74.1
23	4000	62.0	65.0
26	8000	69.7	72.7
	Total LwA	**83.3**	**86.3**

$$10\log\left(10^{\frac{56.5}{10}}+10^{\frac{54.0}{10}}+10^{\frac{55.2}{10}}\right)=60.1dBA$$

$$10\log\left(10^{\frac{60.1}{10}}+10^{\frac{60.1}{10}}\right)=63.1dBA$$

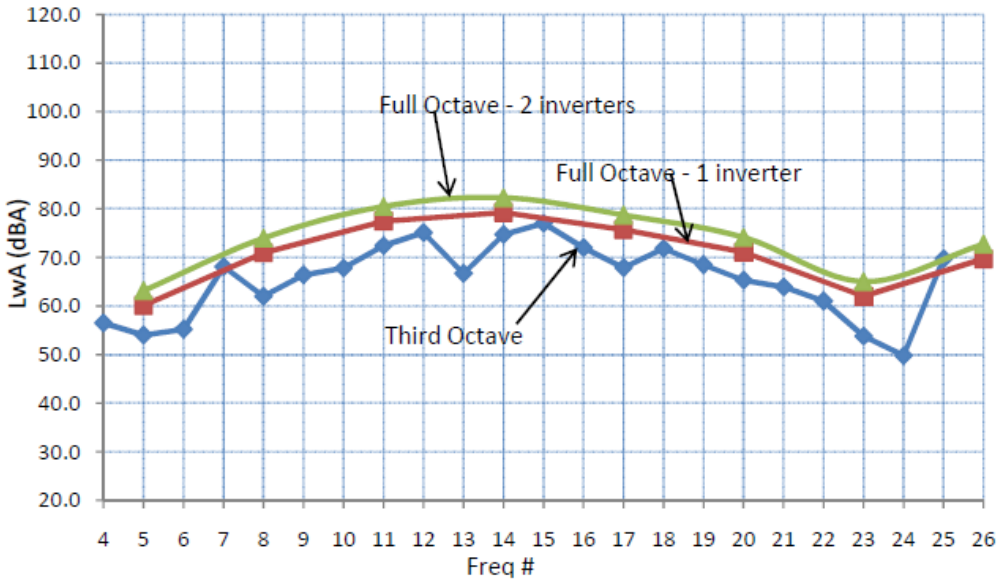


Figure B.4 Sound Power Level Calculation for SMA Sunny Central 800CP, 100% LOAD.

Estimated Frequency Spectra for Transformers

Transformer - 27.6kV/1.6MVA

From Handbook of Noise and Vibration Control (Crocker, 2007, page 1335-1336, Eq. 18 and Table 20)

Average LpA	61 dBA	Based on NEMA TR1-1993 (R2000), Table 0-2
Estimated surface area	14.872 m^2	Estimated based on client transformer drawings

Correction factors are in dB

Freq. (Hz)	31	63	125	250	500	1000	2000	4000	8000	Notes
C1	-11.0	-5.0	-3.0	-8.0	-8.0	-14.0	-19.0	-24.0	-31.0	Outdoors, indoors in mechanical room over 140 m^3
C2	-11	-2	3	-2	-2	-11	-19	-24	-31	Indoors
C3	-11	-2	3	2	2	-4	-9	-14	-21	Serious Noise Problems

Sound Power Level calculated as Lw=Average LpA + 10*log(Estimated surface area) + C + 10

Freq. (Hz)	31	63	125	250	500	1000	2000	4000	8000	Combined [dB]
C1 based [dB]	71.7	77.7	79.7	74.7	74.7	68.7	63.7	58.7	51.7	**83.8**
C2 based [dB]	71.7	80.7	85.7	80.7	80.7	71.7	63.7	58.7	51.7	**88.8**
C3 based [dB]	71.7	80.7	85.7	84.7	84.7	78.7	73.7	68.7	61.7	**90.8**

Resulting A-weighted sound power level

Freq. (Hz)	A-Weight	C1 based [dBA]	C2 based [dBA]	C2 based [dBA]
31	-39.4	32.3	41.3	46.3
63	-26.2	51.5	54.5	54.5
125	-16.1	63.6	69.6	69.6
250	-8.6	66.1	72.1	76.1
500	-3.2	71.5	77.5	81.5
1000	0	68.7	71.7	78.7
2000	1.2	64.9	64.9	74.9
4000	1	59.7	59.7	69.7
8000	-1.1	50.6	50.6	60.6
LwA [dBA]		**75.1**	**80.1**	**84.9**

Used in the study

Figure B.5 Sound Power Level Calculation for 360-V/27.6-kV/1.6-MVA Cluster Transformer.

Appendix C

Noise Maps from CADNA-A, Complete Noise Receptor List

Table C. 1 List of all Noise Receptors considered for the noise study. Coordinates represent building footprint centers

ID	Description	Coordinates, UTM NAD83 Zone17 (m)	
		X (m)	Y (m)
R001	Existing	621955.8	5052176.7
R002	Existing	622047.6	5052054.1
R005	Existing	622071.8	5052043.9
R006	Vacant	622093.9	5052982.2
R007	Vacant	622144.4	5052066.7
R008	Existing	622188.1	5052477.0
R009	Vacant	622200.3	5052088.6
R010	Existing	622236.8	5052123.7
R011	Vacant	622322.4	5052121.0
R012	Existing	622326.5	5052448.2
R013	Vacant	622348.4	5051200.7
R014	Vacant	622384.5	5052131.6
R015	Vacant	622386.1	5052564.5
R016	Existing	622398.8	5052303.7
R017	Existing	622433.3	5052134.3
R018	Existing	622435.8	5052362.7
R019	Existing	622439.8	5052415.7
R020	Existing	622462.4	5052106.2
R021	Existing	622475.3	5052345.1
R022	Existing	622647.8	5052438.7
R023	Existing	622672.0	5052349.8
R024	Existing	622687.8	5052355.7
R025	Existing	622724.6	5051438.5
R028	Vacant	622751.4	5052275.2
R029	Existing	622775.8	5052383.7
R030	Existing	622878.8	5052409.7
R031	Existing	622929.7	5052431.4
R032	Vacant	622936.1	5052341.6
R033	Existing	623013.9	5052465.5
R034	Existing	623038.7	5052297.9
R035	Existing	623050.1	5052481.8
R036	Vacant	623058.8	5050527.9
R037	Vacant	623103.2	5052506.6
R038	Existing	623106.9	5052447.3
R039	Existing	623123.2	5052616.5
R040	Existing	623128.3	5052438.0
R041	Existing	623144.8	5052521.7
R042	Existing	623162.4	5052526.1
R043	Existing	623168.8	5052608.7

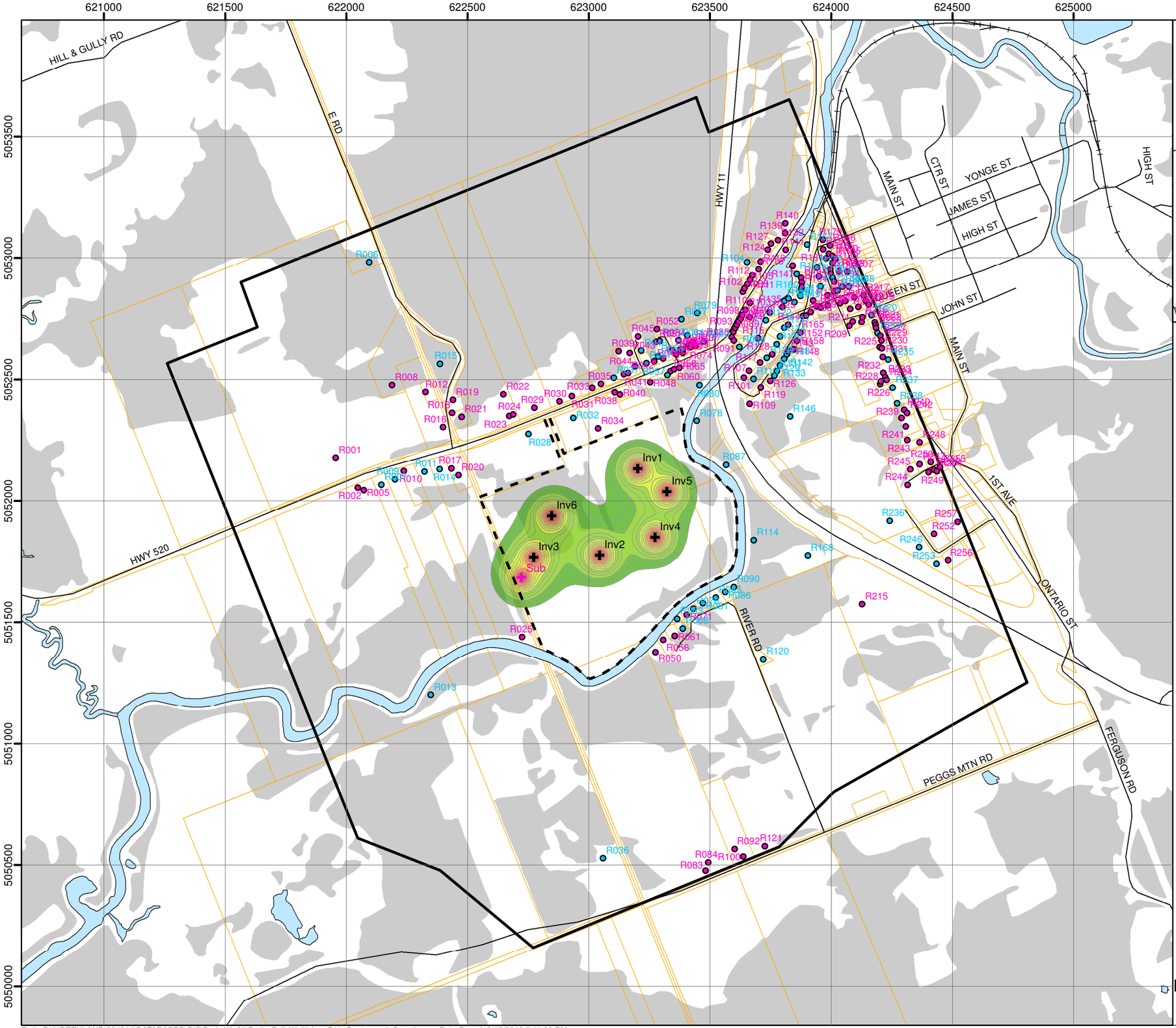
ID	Description	Coordinates, UTM NAD83 Zone17 (m)	
		X (m)	Y (m)
R044	Existing	623189.8	5052554.2
R045	Existing	623203.5	5052676.9
R046	Vacant	623216.8	5052619.1
R047	Vacant	623237.9	5052567.1
R048	Existing	623253.4	5052488.1
R049	Existing	623270.1	5052575.2
R050	Existing	623275.4	5051375.3
R051	Existing	623278.8	5052655.7
R052	Existing	623281.6	5052707.1
R053	Vacant	623285.5	5052594.8
R054	Existing	623292.8	5052657.7
R055	Existing	623306.8	5052586.7
R056	Existing	623307.3	5051427.2
R057	Vacant	623325.0	5052518.0
R058	Existing	623337.8	5052534.7
R059	Existing	623344.8	5052620.7
R060	Existing	623351.8	5052541.7
R061	Existing	623354.9	5051443.2
R062	Existing	623360.8	5052603.7
R063	Vacant	623365.0	5051513.8
R064	Vacant	623370.0	5052661.3
R065	Existing	623373.5	5052548.1
R066	Existing	623375.8	5052622.7
R067	Vacant	623382.7	5052747.6
R068	Vacant	623387.7	5051473.9
R069	Existing	623387.8	5052609.7
R070	Existing	623388.8	5052624.7
R071	Existing	623404.4	5051530.3
R072	Vacant	623406.5	5052681.0
R073	Existing	623410.8	5052640.7
R074	Existing	623418.8	5052632.7
R075	Existing	623429.8	5052653.7
R076	Vacant	623431.5	5051555.4
R077	Existing	623439.8	5052639.7
R078	Vacant	623445.4	5052329.6
R079	Vacant	623447.6	5052773.3
R080	Vacant	623457.2	5052476.3
R081	Vacant	623470.6	5051578.4
R082	Vacant	623474.5	5052656.2
R083	Existing	623481.8	5050476.7
R084	Existing	623492.8	5050510.7
R085	Vacant	623524.3	5051601.5
R086	Vacant	623562.5	5051624.9

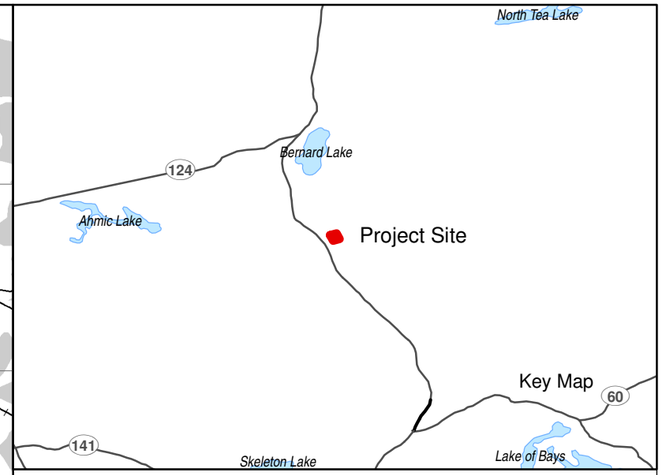
ID	Description	Coordinates, UTM NAD83 Zone17 (m)	
		X (m)	Y (m)
R087	Vacant	623566.6	5052148.7
R088	Existing	623589.8	5052674.7
R089	Existing	623596.8	5052695.7
R090	Vacant	623598.5	5051645.0
R091	Existing	623598.8	5052660.7
R092	Existing	623601.8	5050565.7
R093	Existing	623603.8	5052711.7
R094	Existing	623610.8	5052724.7
R095	Existing	623617.8	5052738.7
R096	Vacant	623621.6	5052634.0
R097	Existing	623626.8	5052750.7
R098	Existing	623632.8	5052765.7
R099	Existing	623635.8	5052861.7
R100	Existing	623636.8	5050534.7
R101	Existing	623639.8	5052507.7
R102	Existing	623642.8	5052875.7
R103	Existing	623645.8	5052786.7
R104	Vacant	623652.7	5052982.2
R105	Existing	623654.8	5052893.7
R107	Existing	623660.8	5052535.7
R108	Existing	623662.8	5052755.7
R109	Existing	623663.8	5052399.7
R110	Existing	623664.8	5052815.7
R111	Existing	623665.8	5052911.7
R112	Existing	623674.8	5052929.7
R113	Vacant	623679.9	5052501.8
R114	Vacant	623680.5	5051837.5
R115	Existing	623698.8	5052669.7
R116	Existing	623700.8	5052954.7
R117	Existing	623706.8	5052569.7
R118	Existing	623708.8	5052984.7
R119	Existing	623709.8	5052466.7
R120	Vacant	623720.1	5051347.0
R121	Existing	623726.8	5050577.7
R122	Vacant	623730.5	5052744.0
R123	Vacant	623734.9	5052589.1
R124	Existing	623738.8	5053034.7
R125	Existing	623746.8	5052774.7
R126	Existing	623748.8	5052493.7
R127	Existing	623751.8	5053059.7
R128	Existing	623756.8	5052603.7
R129	Vacant	623765.9	5052515.2
R130	Vacant	623775.3	5052645.0

ID	Description	Coordinates, UTM NAD83 Zone17 (m)	
		X (m)	Y (m)
R131	Vacant	623776.0	5052534.1
R132	Existing	623780.8	5053073.7
R133	Vacant	623789.0	5052558.2
R134	Vacant	623789.0	5052676.9
R135	Existing	623798.8	5052797.7
R136	Vacant	623806.5	5052823.2
R137	Vacant	623806.5	5052713.5
R138	Vacant	623806.5	5052585.4
R139	Existing	623809.8	5053102.7
R140	Existing	623810.8	5053143.7
R141	Existing	623812.5	5053033.7
R142	Vacant	623817.6	5052603.6
R143	Existing	623822.0	5052616.4
R144	Existing	623822.9	5052725.5
R145	Vacant	623823.8	5052833.2
R146	Vacant	623830.7	5052347.4
R147	Existing	623840.7	5052967.6
R148	Existing	623845.5	5052624.2
R149	Vacant	623848.7	5052818.4
R151	Vacant	623858.2	5052935.0
R152	Existing	623858.7	5052659.4
R157	Vacant	623873.6	5052844.3
R158	Existing	623873.8	5052692.7
R160	Vacant	623876.1	5052869.7
R162	Existing	623876.5	5052919.1
R163	Existing	623878.2	5052899.9
R164	Existing	623878.9	5052881.9
R165	Existing	623883.8	5052761.7
R166	Existing	623896.8	5052762.7
R167	Vacant	623900.7	5053055.4
R168	Vacant	623904.1	5051774.6
R169	Existing	623915.8	5052777.7
R170	Existing	623926.0	5052825.1
R172	Vacant	623941.0	5052961.3
R173	Existing	623941.8	5052800.7
R175	Vacant	623949.6	5052924.9
R177	Vacant	623956.3	5052883.9
R178	Existing	623956.8	5052795.7
R179	Existing	623965.8	5053075.7
R180	Existing	623966.8	5053035.7
R181	Existing	623979.8	5052998.7
R182	Existing	623984.5	5052846.8
R183	Existing	623985.8	5052804.7

ID	Description	Coordinates, UTM NAD83 Zone17 (m)	
		X (m)	Y (m)
R185	Existing	623990.8	5053017.7
R186	Existing	623994.8	5053051.7
R187	Existing	623996.6	5052952.9
R188	Existing	623999.0	5052935.3
R189	Existing	624005.8	5052978.7
R190	Existing	624005.8	5053007.7
R192	Vacant	624006.6	5052918.5
R193	Existing	624011.8	5052862.7
R194	Existing	624011.8	5052903.7
R195	Existing	624016.8	5052996.7
R197	Vacant	624026.2	5052866.4
R199	Existing	624031.8	5052945.7
R201	Existing	624036.8	5052813.7
R203	Vacant	624046.4	5052882.4
R205	Existing	624058.4	5052822.8
R207	Existing	624067.5	5052944.5
R208	Vacant	624072.4	5052883.5
R209	Existing	624074.8	5052720.7
R210	Existing	624078.5	5052790.7
R211	Existing	624088.8	5052738.7
R212	Existing	624094.8	5052838.7
R213	Existing	624112.3	5052798.9
R214	Existing	624125.8	5052736.7
R215	Existing	624127.8	5051574.7
R216	Existing	624128.8	5052755.7
R217	Existing	624133.8	5052846.7
R218	Existing	624144.8	5052822.7
R219	Existing	624154.8	5052808.7
R220	Vacant	624165.9	5052764.6
R221	Existing	624179.8	5052734.7
R222	Existing	624182.8	5052723.7
R223	Existing	624184.8	5052711.7
R224	Vacant	624191.1	5052691.0
R225	Existing	624199.8	5052633.7
R226	Existing	624201.8	5052480.7
R227	Existing	624202.8	5052679.7
R228	Existing	624204.8	5052491.7
R229	Existing	624207.8	5052660.7
R230	Existing	624209.8	5052628.7
R231	Existing	624212.8	5052592.7
R232	Existing	624214.8	5052526.7
R233	Existing	624222.8	5052509.7
R234	Existing	624228.8	5052497.7

ID	Description	Coordinates, UTM NAD83 Zone17 (m)	
		X (m)	Y (m)
R235	Vacant	624235.2	5052582.0
R236	Vacant	624241.6	5051918.0
R237	Vacant	624253.7	5052466.2
R238	Vacant	624271.8	5052401.4
R239	Existing	624289.8	5052341.7
R240	Existing	624301.8	5052374.7
R241	Existing	624307.7	5052306.2
R242	Existing	624312.8	5052361.7
R243	Existing	624313.8	5052249.7
R244	Existing	624315.1	5052065.6
R245	Existing	624326.8	5052130.7
R246	Vacant	624362.8	5051809.2
R247	Existing	624364.8	5052151.7
R248	Existing	624364.8	5052240.7
R249	Existing	624401.8	5052118.7
R250	Existing	624410.8	5052160.7
R251	Existing	624423.8	5052128.7
R252	Existing	624424.0	5051863.6
R253	Vacant	624434.1	5051740.5
R254	Existing	624435.8	5052122.7
R255	Existing	624448.8	5052139.7
R256	Existing	624482.5	5051755.3
R257	Existing	624521.6	5051913.5





Legend

- Inv# — Inverter Cluster
- Sub — Substation Transformer
- # — Noise Receptor - Existing
- # — Noise Receptor - Vacant
- Railway
- Road
- Parcel
- Project Site
- 1000m Offset from Project Site
- Waterbody
- Wooded Area

Sound Pressure Level (dBA)

40.0 - 41.0	41.1 - 44.0	44.1 - 47.0	47.1 - 49.0	49.1 - 52.0	> 52.1

Notes:
1. Produced by Hatch under licence from Ontario Ministry of Natural Resources, Copyright (c) Queens Printer 2011.
2. Spatial referencing UTM NAD 83.

0 125 250 500 Metres

NORTH

1:16,000

Figure C.1.1
Northland Power Solar
Burk's Falls West L.P.

Burk's Falls West Solar Project
Noise Contours at 4.5 m

HATCH™

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622400 622800 623200 623600

5052400

5052000

5051600

HWY 520

F RD

HWY 11

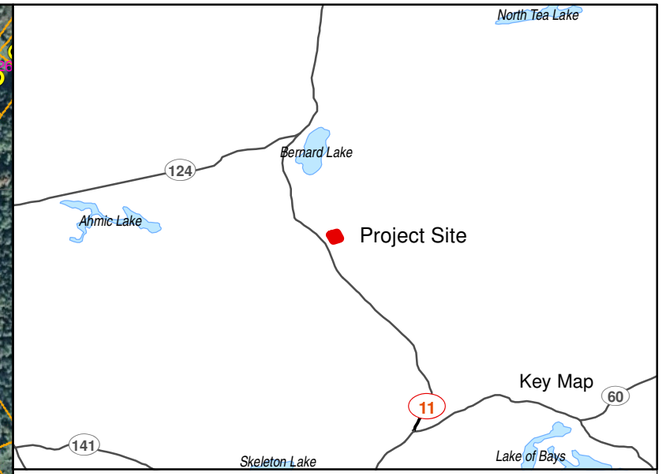
SMITHES ST

RIVER RD

Inv1 Inv2 Inv3 Inv4 Inv5 Inv6

Sub

R012 R013 R014 R015 R016 R017 R018 R019 R020 R021 R022 R023 R024 R025 R026 R027 R028 R029 R030 R031 R032 R033 R034 R035 R036 R037 R038 R039 R040 R041 R042 R043 R044 R045 R046 R047 R048 R049 R050 R051 R052 R053 R054 R055 R056 R057 R058 R059 R060 R061 R062 R063 R064 R065 R066 R067 R068 R069 R070 R071 R072 R073 R074 R075 R076 R077 R078 R079 R080 R081 R082 R083 R084 R085 R086 R087 R088 R089 R090 R091 R092 R093 R094 R095 R096 R097 R098 R099 R100 R101 R102 R103 R104 R105 R106 R107 R108 R109 R110 R111 R112 R113 R114



Legend

- Inv# — Inverter Cluster
- Sub — Substation Transformer
- # — Noise Receptor - Existing
- # — Noise Receptor - Vacant
- Point of Reception
- Noise Receptor Footprint
- Road
- Parcel
- Project Site
- Waterbody

Sound Pressure Level (dBA)

40.0 - 41.0	41.1 - 44.0	44.1 - 47.0	47.1 - 49.0	49.1 - 52.0	> 52.1

Notes:
1. Produced by Hatch under licence from Ontario Ministry of Natural Resources, Copyright (c) Queens Printer 2011.
2. Spatial referencing UTM NAD 83.
3. Imagery from Google Earth Pro.

0 50 100 200 Metres NORTH

1:5,000

Figure C.1.2
Northland Power Solar
Burk's Falls West L.P.

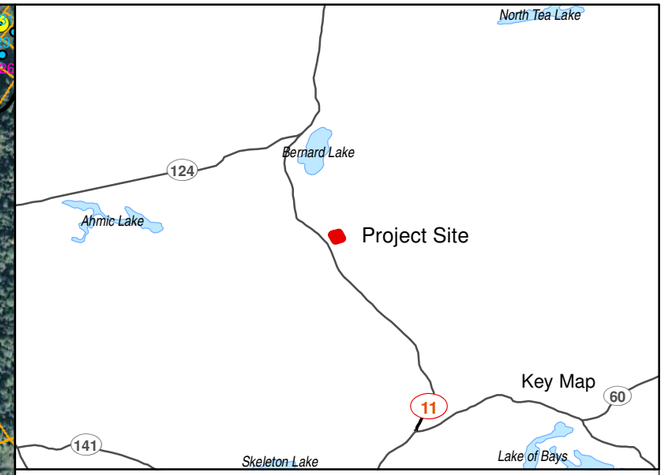
Burk's Falls West Solar Project
Noise Contours at 4.5 m

HATCH™

Path: P:\NORTHLAND\334844\DATABASES\GIS\BurksW_Alt\Burks FallsW_Noise_C12_Contours_4_5.mxd Date Saved: 9/14/2012 12:56:03 PM

622400 622800 623200 623600

5052400 5052000 5051600



Legend

- Inv# — Inverter Cluster
- Sub — Substation Transformer
- # — Noise Receptor - Existing
- # — Noise Receptor - Vacant
- Point of Reception
- Noise Receptor Footprint
- 30m from Noise Receptor Footprint
- Road
- Parcel
- Project Site
- 30m from Noise Receptor Centre
- Waterbody

Sound Pressure Level (dBA)

40.0 - 41.0	41.1 - 44.0	44.1 - 47.0	47.1 - 49.0	49.1 - 52.0	> 52.1

Notes:
1. Produced by Hatch under licence from Ontario Ministry of Natural Resources, Copyright (c) Queens Printer 2011.
2. Spatial referencing UTM NAD 83.
3. Imagery from Google Earth Pro.

0 50 100 200 Metres NORTH

1:5,000

Figure C.2
Northland Power Solar
Burk's Falls West L.P.

Burk's Falls West Solar Project
Noise Contours at 1.5 m

HATCH

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Appendix D

CADNA-A Sample Calculations

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (m)	3000.00
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)	0.00
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: Receptors - Existing
ID: 25.0
X: 622726.39
Y: 5051438.41
Z: 289.50

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	623073.63	5052165.82	310.85	0	63	68.1	-88.0	0.0	0.0	69.1	0.1	-5.2	0.0	0.0	4.9	0.0	-0.0	-0.9	-88.0
2	623073.63	5052165.82	310.85	0	125	78.9	-88.0	0.0	0.0	69.1	0.3	3.9	0.0	0.0	1.3	0.0	-0.0	4.3	-88.0
3	623073.63	5052165.82	310.85	0	250	85.5	-88.0	0.0	0.0	69.1	0.8	2.7	0.0	0.0	2.9	0.0	-0.0	9.9	-88.0
4	623073.63	5052165.82	310.85	0	500	87.3	-88.0	0.0	0.0	69.1	1.6	-1.1	0.0	0.0	6.4	0.0	-0.0	11.4	-88.0
5	623073.63	5052165.82	310.85	0	1000	83.7	-88.0	0.0	0.0	69.1	2.9	-1.6	0.0	0.0	7.5	0.0	-0.0	5.6	-88.0
6	623073.63	5052165.82	310.85	0	2000	79.1	-88.0	0.0	0.0	69.1	7.8	-1.6	0.0	0.0	9.2	0.0	-0.0	-5.5	-88.0
7	623073.63	5052165.82	310.85	0	4000	70.0	-88.0	0.0	0.0	69.1	26.4	-1.6	0.0	0.0	11.4	0.0	-0.0	-35.4	-88.0
8	623073.63	5052165.82	310.85	0	8000	77.7	-88.0	0.0	0.0	69.1	94.2	-1.6	0.0	0.0	13.9	0.0	-0.0	-98.0	-88.0

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	623315.19	5052060.42	301.03	0	63	68.1	-88.0	0.0	0.0	69.7	0.1	-5.3	0.0	0.0	4.8	0.0	-0.0	-1.2	-88.0
2	623315.19	5052060.42	301.03	0	125	78.9	-88.0	0.0	0.0	69.7	0.4	4.0	0.0	0.0	0.8	0.0	-0.0	4.1	-88.0
3	623315.19	5052060.42	301.03	0	250	85.5	-88.0	0.0	0.0	69.7	0.9	2.7	0.0	0.0	2.1	0.0	-0.0	10.2	-88.0
4	623315.19	5052060.42	301.03	0	500	87.3	-88.0	0.0	0.0	69.7	1.7	-1.1	0.0	0.0	4.8	0.0	-0.0	12.4	-88.0
5	623315.19	5052060.42	301.03	0	1000	83.7	-88.0	0.0	0.0	69.7	3.1	-1.6	0.0	0.0	4.8	0.0	-0.0	7.7	-88.0
6	623315.19	5052060.42	301.03	0	2000	79.1	-88.0	0.0	0.0	69.7	8.3	-1.6	0.0	0.0	4.8	0.0	-0.0	-2.0	-88.0
7	623315.19	5052060.42	301.03	0	4000	70.0	-88.0	0.0	0.0	69.7	28.1	-1.6	0.0	0.0	4.8	0.0	-0.0	-30.9	-88.0
8	623315.19	5052060.42	301.03	0	8000	77.7	-88.0	0.0	0.0	69.7	100.1	-1.6	0.0	0.0	4.8	0.0	-0.0	-95.3	-88.0

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	623084.63	5052025.62	305.99	0	63	68.1	-88.0	0.0	0.0	67.8	0.1	-5.1	0.0	0.0	5.0	0.0	-0.0	0.4	-88.0
2	623084.63	5052025.62	305.99	0	125	78.9	-88.0	0.0	0.0	67.8	0.3	3.6	0.0	0.0	1.7	0.0	-0.0	5.5	-88.0
3	623084.63	5052025.62	305.99	0	250	85.5	-88.0	0.0	0.0	67.8	0.7	2.7	0.0	0.0	3.4	0.0	-0.0	10.9	-88.0
4	623084.63	5052025.62	305.99	0	500	87.3	-88.0	0.0	0.0	67.8	1.3	-1.1	0.0	0.0	7.6	0.0	-0.0	11.7	-88.0
5	623084.63	5052025.62	305.99	0	1000	83.7	-88.0	0.0	0.0	67.8	2.5	-1.5	0.0	0.0	9.4	0.0	-0.0	5.5	-88.0
6	623084.63	5052025.62	305.99	0	2000	79.1	-88.0	0.0	0.0	67.8	6.6	-1.5	0.0	0.0	11.7	0.0	-0.0	-5.4	-88.0
7	623084.63	5052025.62	305.99	0	4000	70.0	-88.0	0.0	0.0	67.8	22.6	-1.5	0.0	0.0	14.2	0.0	-0.0	-33.0	-88.0
8	623084.63	5052025.62	305.99	0	8000	77.7	-88.0	0.0	0.0	67.8	80.4	-1.5	0.0	0.0	17.0	0.0	-0.0	-85.9	-88.0

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	623048.43	5051877.72	312.46	0	63	68.1	-88.0	0.0	0.0	65.7	0.1	-4.8	0.0	0.0	0.0	0.0	-0.0	7.1	-88.0
2	623048.43	5051877.72	312.46	0	125	78.9	-88.0	0.0	0.0	65.7	0.2	3.2	0.0	0.0	0.0	0.0	-0.0	9.7	-88.0
3	623048.43	5051877.72	312.46	0	250	85.5	-88.0	0.0	0.0	65.7	0.6	2.8	0.0	0.0	0.0	0.0	-0.0	16.4	-88.0
4	623048.43	5051877.72	312.46	0	500	87.3	-88.0	0.0	0.0	65.7	1.1	-1.0	0.0	0.0	0.0	0.0	-0.0	21.5	-88.0
5	623048.43	5051877.72	312.46	0	1000	83.7	-88.0	0.0	0.0	65.7	2.0	-1.4	0.0	0.0	0.0	0.0	-0.0	17.4	-88.0
6	623048.43	5051877.72	312.46	0	2000	79.1	-88.0	0.0	0.0	65.7	5.3	-1.5	0.0	0.0	0.0	0.0	-0.0	9.6	-88.0
7	623048.43	5051877.72	312.46	0	4000	70.0	-88.0	0.0	0.0	65.7	17.9	-1.5	0.0	0.0	0.0	0.0	-0.0	-12.2	-88.0
8	623048.43	5051877.72	312.46	0	8000	77.7	-88.0	0.0	0.0	65.7	63.7	-1.5	0.0	0.0	0.0	0.0	-0.0	-50.3	-88.0

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	623279.43	5051834.22	296.57	0	63	68.1	-88.0	0.0	0.0	67.6	0.1	-5.1	0.0	0.0	4.8	0.0	-0.0	0.7	-88.0
2	623279.43	5051834.22	296.57	0	125	78.9	-88.0	0.0	0.0	67.6	0.3	3.6	0.0	0.0	1.2	0.0	-0.0	6.2	-88.0
3	623279.43	5051834.22	296.57	0	250	85.5	-88.0	0.0	0.0	67.6	0.7	2.7	0.0	0.0	2.0	0.0	-0.0	12.4	-88.0
4	623279.43	5051834.22	296.57	0	500	87.3	-88.0	0.0	0.0	67.6	1.3	-1.1	0.0	0.0	4.8	0.0	-0.0	14.7	-88.0
5	623279.43	5051834.22	296.57	0	1000	83.7	-88.0	0.0	0.0	67.6	2.5	-1.5	0.0	0.0	4.8	0.0	-0.0	10.3	-88.0

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)
6	623279.43	5051834.22	296.57	0	2000	79.1	-88.0	0.0	0.0	67.6	6.6	-1.5	0.0	0.0	4.8	0.0	-0.0	1.6	-88.0
7	623279.43	5051834.22	296.57	0	4000	70.0	-88.0	0.0	0.0	67.6	22.3	-1.5	0.0	0.0	4.8	0.0	-0.0	-23.2	-88.0
8	623279.43	5051834.22	296.57	0	8000	77.7	-88.0	0.0	0.0	67.6	79.5	-1.5	0.0	0.0	4.8	0.0	-0.0	-72.7	-88.0

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	623048.43	5051747.22	305.73	0	63	68.1	-88.0	0.0	0.0	64.0	0.1	-4.6	0.0	0.0	0.0	0.0	-0.0	8.6	-88.0
2	623048.43	5051747.22	305.73	0	125	78.9	-88.0	0.0	0.0	64.0	0.2	2.9	0.0	0.0	0.0	0.0	-0.0	11.8	-88.0
3	623048.43	5051747.22	305.73	0	250	85.5	-88.0	0.0	0.0	64.0	0.5	2.9	0.0	0.0	0.0	0.0	-0.0	18.2	-88.0
4	623048.43	5051747.22	305.73	0	500	87.3	-88.0	0.0	0.0	64.0	0.9	-0.9	0.0	0.0	0.0	0.0	-0.0	23.4	-88.0
5	623048.43	5051747.22	305.73	0	1000	83.7	-88.0	0.0	0.0	64.0	1.6	-1.4	0.0	0.0	0.0	0.0	-0.0	19.4	-88.0
6	623048.43	5051747.22	305.73	0	2000	79.1	-88.0	0.0	0.0	64.0	4.3	-1.4	0.0	0.0	0.0	0.0	-0.0	12.2	-88.0
7	623048.43	5051747.22	305.73	0	4000	70.0	-88.0	0.0	0.0	64.0	14.6	-1.4	0.0	0.0	0.0	0.0	-0.0	-7.3	-88.0
8	623048.43	5051747.22	305.73	0	8000	77.7	-88.0	0.0	0.0	64.0	52.2	-1.4	0.0	0.0	0.0	0.0	-0.0	-37.1	-88.0

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	622782.35	5051774.02	308.36	0	63	68.1	-88.0	0.0	0.0	61.6	0.0	-4.1	0.0	0.0	0.0	0.0	-0.0	10.5	-88.0
2	622782.35	5051774.02	308.36	0	125	78.9	-88.0	0.0	0.0	61.6	0.1	2.6	0.0	0.0	0.0	0.0	-0.0	14.5	-88.0
3	622782.35	5051774.02	308.36	0	250	85.5	-88.0	0.0	0.0	61.6	0.4	3.0	0.0	0.0	0.0	0.0	-0.0	20.5	-88.0
4	622782.35	5051774.02	308.36	0	500	87.3	-88.0	0.0	0.0	61.6	0.7	-0.8	0.0	0.0	0.0	0.0	-0.0	25.8	-88.0
5	622782.35	5051774.02	308.36	0	1000	83.7	-88.0	0.0	0.0	61.6	1.3	-1.2	0.0	0.0	0.0	0.0	-0.0	22.0	-88.0
6	622782.35	5051774.02	308.36	0	2000	79.1	-88.0	0.0	0.0	61.6	3.3	-1.2	0.0	0.0	0.0	0.0	-0.0	15.4	-88.0
7	622782.35	5051774.02	308.36	0	4000	70.0	-88.0	0.0	0.0	61.6	11.2	-1.2	0.0	0.0	0.0	0.0	-0.0	-1.6	-88.0
8	622782.35	5051774.02	308.36	0	8000	77.7	-88.0	0.0	0.0	61.6	39.8	-1.2	0.0	0.0	0.0	0.0	-0.0	-22.5	-88.0

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	622719.76	5051683.74	301.18	0	32	48.0	48.0	0.0	0.0	58.8	0.0	-3.1	0.0	0.0	0.0	0.0	-0.0	-7.8	-7.8
2	622719.76	5051683.74	301.18	0	63	67.2	67.2	0.0	0.0	58.8	0.0	-3.1	0.0	0.0	0.0	0.0	-0.0	11.4	11.4
3	622719.76	5051683.74	301.18	0	125	79.3	79.3	0.0	0.0	58.8	0.1	3.0	0.0	0.0	0.0	0.0	-0.0	17.4	17.4
4	622719.76	5051683.74	301.18	0	250	81.8	81.8	0.0	0.0	58.8	0.3	2.0	0.0	0.0	0.0	0.0	-0.0	20.7	20.7
5	622719.76	5051683.74	301.18	0	500	87.2	87.2	0.0	0.0	58.8	0.5	-0.9	0.0	0.0	0.0	0.0	-0.0	28.8	28.8
6	622719.76	5051683.74	301.18	0	1000	84.4	84.4	0.0	0.0	58.8	0.9	-0.9	0.0	0.0	0.0	0.0	-0.0	25.6	25.6
7	622719.76	5051683.74	301.18	0	2000	80.6	80.6	0.0	0.0	58.8	2.4	-0.9	0.0	0.0	0.0	0.0	-0.0	20.3	20.3
8	622719.76	5051683.74	301.18	0	4000	75.4	75.4	0.0	0.0	58.8	8.1	-0.9	0.0	0.0	0.0	0.0	-0.0	9.5	9.5
9	622719.76	5051683.74	301.18	0	8000	66.3	66.3	0.0	0.0	58.8	28.7	-0.9	0.0	0.0	0.0	0.0	-0.0	-20.3	-20.3

Point Source, ISO 9613, Name: "Trans1", ID: "Trans1"																			
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	623079.13	5052165.32	310.96	0	32	37.3	37.3	0.0	0.0	69.1	0.0	-5.2	0.0	0.0	4.8	0.0	-0.0	-31.5	-31.5
2	623079.13	5052165.32	310.96	0	63	56.5	56.5	0.0	0.0	69.1	0.1	-5.2	0.0	0.0	4.9	0.0	-0.0	-12.4	-12.4
3	623079.13	5052165.32	310.96	0	125	68.6	68.6	0.0	0.0	69.1	0.3	3.9	0.0	0.0	1.2	0.0	-0.0	-6.0	-6.0
4	623079.13	5052165.32	310.96	0	250	71.1	71.1	0.0	0.0	69.1	0.8	2.7	0.0	0.0	2.8	0.0	-0.0	-4.4	-4.4
5	623079.13	5052165.32	310.96	0	500	76.5	76.5	0.0	0.0	69.1	1.6	-1.1	0.0	0.0	6.1	0.0	-0.0	0.8	0.8
6	623079.13	5052165.32	310.96	0	1000	73.7	73.7	0.0	0.0	69.1	3.0	-1.6	0.0	0.0	7.1	0.0	-0.0	-4.0	-4.0
7	623079.13	5052165.32	310.96	0	2000	69.9	69.9	0.0	0.0	69.1	7.8	-1.6	0.0	0.0	8.6	0.0	-0.0	-14.1	-14.1
8	623079.13	5052165.32	310.96	0	4000	64.7	64.7	0.0	0.0	69.1	26.5	-1.6	0.0	0.0	10.7	0.0	-0.0	-40.0	-40.0
9	623079.13	5052165.32	310.96	0	8000	55.6	55.6	0.0	0.0	69.1	94.5	-1.6	0.0	0.0	13.1	0.0	-0.0	-119.5	-119.5

Point Source, ISO 9613, Name: "Trans2", ID: "Trans2"																			
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	623309.69	5052060.92	301.06	0	32	37.3	37.3	0.0	0.0	69.6	0.0	-5.3	0.0	0.0	4.8	0.0	-0.0	-31.9	-31.9
2	623309.69	5052060.92	301.06	0	63	56.5	56.5	0.0	0.0	69.6	0.1	-5.3	0.0	0.0	4.8	0.0	-0.0	-12.7	-12.7
3	623309.69	5052060.92	301.06	0	125	68.6	68.6	0.0	0.0	69.6	0.4	4.0	0.0	0.0	0.8	0.0	-0.0	-6.1	-6.1
4	623309.69	5052060.92	301.06	0	250	71.1	71.1	0.0	0.0	69.6	0.9	2.7	0.0	0.0	2.1	0.0	-0.0	-4.2	-4.2
5	623309.69	5052060.92	301.06	0	500	76.5	76.5	0.0	0.0	69.6	1.6	-1.1	0.0	0.0	4.8	0.0	-0.0	1.6	1.6
6	623309.69	5052060.92	301.06	0	1000	73.7	73.7	0.0	0.0	69.6	3.1	-1.6	0.0	0.0	4.8	0.0	-0.0	-2.3	-2.3

Point Source, ISO 9613, Name: "Trans2", ID: "Trans2"																			
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)
7	623309.69	5052060.92	301.06	0	2000	69.9	69.9	0.0	0.0	69.6	8.2	-1.6	0.0	0.0	4.8	0.0	-0.0	-11.2	-11.2
8	623309.69	5052060.92	301.06	0	4000	64.7	64.7	0.0	0.0	69.6	28.0	-1.6	0.0	0.0	4.8	0.0	-0.0	-36.1	-36.1
9	623309.69	5052060.92	301.06	0	8000	55.6	55.6	0.0	0.0	69.6	99.7	-1.6	0.0	0.0	4.8	0.0	-0.0	-117.0	-117.0

Point Source, ISO 9613, Name: "Trans3", ID: "Trans3"																			
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	623079.13	5052026.12	306.83	0	32	37.3	37.3	0.0	0.0	67.7	0.0	-5.1	0.0	0.0	5.0	0.0	-0.0	-30.3	-30.3
2	623079.13	5052026.12	306.83	0	63	56.5	56.5	0.0	0.0	67.7	0.1	-5.1	0.0	0.0	5.3	0.0	-0.0	-11.5	-11.5
3	623079.13	5052026.12	306.83	0	125	68.6	68.6	0.0	0.0	67.7	0.3	3.6	0.0	0.0	2.3	0.0	-0.0	-5.3	-5.3
4	623079.13	5052026.12	306.83	0	250	71.1	71.1	0.0	0.0	67.7	0.7	2.8	0.0	0.0	4.2	0.0	-0.0	-4.3	-4.3
5	623079.13	5052026.12	306.83	0	500	76.5	76.5	0.0	0.0	67.7	1.3	-1.1	0.0	0.0	8.4	0.0	-0.0	0.1	0.1
6	623079.13	5052026.12	306.83	0	1000	73.7	73.7	0.0	0.0	67.7	2.5	-1.5	0.0	0.0	10.4	0.0	-0.0	-5.4	-5.4
7	623079.13	5052026.12	306.83	0	2000	69.9	69.9	0.0	0.0	67.7	6.6	-1.5	0.0	0.0	12.7	0.0	-0.0	-15.7	-15.7
8	623079.13	5052026.12	306.83	0	4000	64.7	64.7	0.0	0.0	67.7	22.5	-1.5	0.0	0.0	15.4	0.0	-0.0	-39.3	-39.3
9	623079.13	5052026.12	306.83	0	8000	55.6	55.6	0.0	0.0	67.7	80.1	-1.5	0.0	0.0	18.2	0.0	-0.0	-108.9	-108.9

Point Source, ISO 9613, Name: "Trans4", ID: "Trans4"																			
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	623042.93	5051878.22	313.05	0	32	37.3	37.3	0.0	0.0	65.7	0.0	-4.8	0.0	0.0	0.0	0.0	-0.0	-23.6	-23.6
2	623042.93	5051878.22	313.05	0	63	56.5	56.5	0.0	0.0	65.7	0.1	-4.8	0.0	0.0	0.0	0.0	-0.0	-4.4	-4.4
3	623042.93	5051878.22	313.05	0	125	68.6	68.6	0.0	0.0	65.7	0.2	3.2	0.0	0.0	0.0	0.0	-0.0	-0.5	-0.5
4	623042.93	5051878.22	313.05	0	250	71.1	71.1	0.0	0.0	65.7	0.6	2.8	0.0	0.0	0.0	0.0	-0.0	2.0	2.0
5	623042.93	5051878.22	313.05	0	500	76.5	76.5	0.0	0.0	65.7	1.1	-1.0	0.0	0.0	0.0	0.0	-0.0	10.8	10.8
6	623042.93	5051878.22	313.05	0	1000	73.7	73.7	0.0	0.0	65.7	2.0	-1.4	0.0	0.0	0.0	0.0	-0.0	7.5	7.5
7	623042.93	5051878.22	313.05	0	2000	69.9	69.9	0.0	0.0	65.7	5.2	-1.5	0.0	0.0	0.0	0.0	-0.0	0.4	0.4
8	623042.93	5051878.22	313.05	0	4000	64.7	64.7	0.0	0.0	65.7	17.8	-1.5	0.0	0.0	0.0	0.0	-0.0	-17.3	-17.3
9	623042.93	5051878.22	313.05	0	8000	55.6	55.6	0.0	0.0	65.7	63.4	-1.5	0.0	0.0	0.0	0.0	-0.0	-72.0	-72.0

Point Source, ISO 9613, Name: "Trans5", ID: "Trans5"																			
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	623273.93	5051834.72	297.17	0	32	37.3	37.3	0.0	0.0	67.6	0.0	-5.1	0.0	0.0	4.8	0.0	-0.0	-30.0	-30.0
2	623273.93	5051834.72	297.17	0	63	56.5	56.5	0.0	0.0	67.6	0.1	-5.1	0.0	0.0	4.8	0.0	-0.0	-10.9	-10.9
3	623273.93	5051834.72	297.17	0	125	68.6	68.6	0.0	0.0	67.6	0.3	3.6	0.0	0.0	1.2	0.0	-0.0	-4.0	-4.0
4	623273.93	5051834.72	297.17	0	250	71.1	71.1	0.0	0.0	67.6	0.7	2.8	0.0	0.0	2.0	0.0	-0.0	-2.0	-2.0
5	623273.93	5051834.72	297.17	0	500	76.5	76.5	0.0	0.0	67.6	1.3	-1.1	0.0	0.0	4.8	0.0	-0.0	3.9	3.9
6	623273.93	5051834.72	297.17	0	1000	73.7	73.7	0.0	0.0	67.6	2.5	-1.5	0.0	0.0	4.8	0.0	-0.0	0.4	0.4
7	623273.93	5051834.72	297.17	0	2000	69.9	69.9	0.0	0.0	67.6	6.5	-1.5	0.0	0.0	4.8	0.0	-0.0	-7.5	-7.5
8	623273.93	5051834.72	297.17	0	4000	64.7	64.7	0.0	0.0	67.6	22.2	-1.5	0.0	0.0	4.8	0.0	-0.0	-28.3	-28.3
9	623273.93	5051834.72	297.17	0	8000	55.6	55.6	0.0	0.0	67.6	79.0	-1.5	0.0	0.0	4.8	0.0	-0.0	-94.3	-94.3

Point Source, ISO 9613, Name: "Trans6", ID: "Trans6"																			
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	623042.93	5051747.72	305.45	0	32	37.3	37.3	0.0	0.0	63.9	0.0	-4.6	0.0	0.0	0.0	0.0	-0.0	-22.1	-22.1
2	623042.93	5051747.72	305.45	0	63	56.5	56.5	0.0	0.0	63.9	0.1	-4.6	0.0	0.0	0.0	0.0	-0.0	-2.9	-2.9
3	623042.93	5051747.72	305.45	0	125	68.6	68.6	0.0	0.0	63.9	0.2	2.9	0.0	0.0	0.0	0.0	-0.0	1.6	1.6
4	623042.93	5051747.72	305.45	0	250	71.1	71.1	0.0	0.0	63.9	0.5	2.9	0.0	0.0	0.0	0.0	-0.0	3.8	3.8
5	623042.93	5051747.72	305.45	0	500	76.5	76.5	0.0	0.0	63.9	0.9	-0.9	0.0	0.0	0.0	0.0	-0.0	12.6	12.6
6	623042.93	5051747.72	305.45	0	1000	73.7	73.7	0.0	0.0	63.9	1.6	-1.4	0.0	0.0	0.0	0.0	-0.0	9.5	9.5
7	623042.93	5051747.72	305.45	0	2000	69.9	69.9	0.0	0.0	63.9	4.3	-1.4	0.0	0.0	0.0	0.0	-0.0	3.1	3.1
8	623042.93	5051747.72	305.45	0	4000	64.7	64.7	0.0	0.0	63.9	14.5	-1.4	0.0	0.0	0.0	0.0	-0.0	-12.4	-12.4
9	623042.93	5051747.72	305.45	0	8000	55.6	55.6	0.0	0.0	63.9	51.8	-1.4	0.0	0.0	0.0	0.0	-0.0	-58.7	-58.7

Point Source, ISO 9613, Name: "Trans7", ID: "Trans7"																			
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	622776.85	5051774.52	308.67	0	32	37.3	37.3	0.0	0.0	61.6	0.0	-4.1	0.0	0.0	0.0	0.0	-0.0	-20.2	-20.2
2	622776.85	5051774.52	308.67	0	63	56.5	56.5	0.0	0.0	61.6	0.0	-4.1	0.0	0.0	0.0	0.0	-0.0	-1.1	-1.1
3	622776.85	5051774.52	308.67	0	125	68.6	68.6	0.0	0.0	61.6	0.1	2.6	0.0	0.0	0.0	0.0	-0.0	4.2	4.2
4	622776.85	5051774.52	308.67	0	250	71.1	71.1	0.0	0.0	61.6	0.4	3.0	0.0	0.0	0.0	0.0	-0.0	6.1	6.1

Point Source, ISO 9613, Name: "Trans7", ID: "Trans7"																			
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	622776.85	5051774.52	308.67	0	500	76.5	76.5	0.0	0.0	61.6	0.7	-0.8	0.0	0.0	0.0	0.0	-0.0	15.0	15.0
6	622776.85	5051774.52	308.67	0	1000	73.7	73.7	0.0	0.0	61.6	1.3	-1.2	0.0	0.0	0.0	0.0	-0.0	12.0	12.0
7	622776.85	5051774.52	308.67	0	2000	69.9	69.9	0.0	0.0	61.6	3.3	-1.2	0.0	0.0	0.0	0.0	-0.0	6.2	6.2
8	622776.85	5051774.52	308.67	0	4000	64.7	64.7	0.0	0.0	61.6	11.2	-1.2	0.0	0.0	0.0	0.0	-0.0	-6.9	-6.9
9	622776.85	5051774.52	308.67	0	8000	55.6	55.6	0.0	0.0	61.6	39.8	-1.2	0.0	0.0	0.0	0.0	-0.0	-44.6	-44.6