Appendix A – Acoustic Assessment Results and Sound Waivers

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SOUND LEVEL ASSESSMENT REPORT

Otter Tail Luverne Wind Repower Project
Steele County, North Dakota

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1.0 EXECUTIVE SUMMARY

The Luverne Wind Energy Center Repowering Project (the Project) is an existing wind park in Steele County, North Dakota that is planned to be repowered by Otter Tail Power Company (Otter Tail). Atwell has retained Epsilon Associates, Inc. (Epsilon) to conduct a sound level assessment for this Project. This report presents the results of the sound level modeling from the proposed repower in Steele County.

This sound level assessment includes computer modeling to predict worst-case future L_{eq} sound levels from the Project, and a comparison of operational sound levels to the North Dakota Administrative Code Energy Conversion Facility Siting Criteria of 45 dBA within 100 feet of an inhabited residence or community building. Additionally, receptors that have signed noise waivers with Otter Tail Power have been compared to the Waiver criterion of 50 dBA within 200 feet of the inhabited residence or community building. Sound level modeling was conducted for all Otter Tail Luverne Wind Repower wind turbines.

The L_{eq} sound levels modeled at receptors in Steele County ranged from 23 to 48 dBA. The highest L_{eq} sound level modeled at a receptor that has signed a waiver with Otter Tail is 48 dBA. The highest L_{eq} sound level modeled at a receptor that has not signed a waiver with Otter Tail is 45 dBA. Using the mitigation described in this report, the L_{eq} sound levels at all receptors without a signed waiver are at or below the limit of 45 dBA within 100 feet of an inhabited residence or community building. Therefore, the Project meets the State's regulations with respect to sound.

2.0 INTRODUCTION

The proposed repower Project will consist of 33 repowered wind turbines. The proposed wind turbines are all GE 1.5MW units with a rotor diameter of 97 meters and a hub height of 80 meters. Figure 2-1 shows the locations of the 33 wind turbines in Steele County over aerial imagery.

A detailed discussion of sound from wind turbines is presented in a white paper prepared by the Renewable Energy Research Laboratory.[1] A few points are repeated herein. Wind turbine sound can originate from two different sources: mechanical sound from the interaction of turbine components, and aerodynamic sound produced by the flow of air over the rotor blades. Prior to the 1990's, both were significant contributors to wind turbine sound. However, recent advances in wind turbine design have greatly reduced the contribution of mechanical sound. Aerodynamic sound has also been reduced from modern wind turbines due to slower rotational speeds and changes in materials of construction. Aerodynamic sound, in general, is broadband (has contributions from a wide range of frequencies). It originates from encounters of the wind turbine blades with localized airflow inhomogeneities and wakes from other turbine blades and from airflow across the surface of the blades, particularly the front and trailing edges. Aerodynamic sound generally increases with increasing wind speed up to a certain point, then typically remains constant, even with higher wind speeds. However, sound levels in general also increase with increasing wind speed with or without the presence of wind turbines.

This report presents the findings of a sound level modeling analysis for the Project. The Project wind turbines were modeled in CadnaA using sound data from GE technical reports. The results of this analysis are found within this report.

[1] Renewable Energy Research Laboratory, Department of Mechanical and Industrial Engineering, University of Massachusetts at Amherst, Wind Turbine Acoustic Noise, June 2002, amended January 2006.

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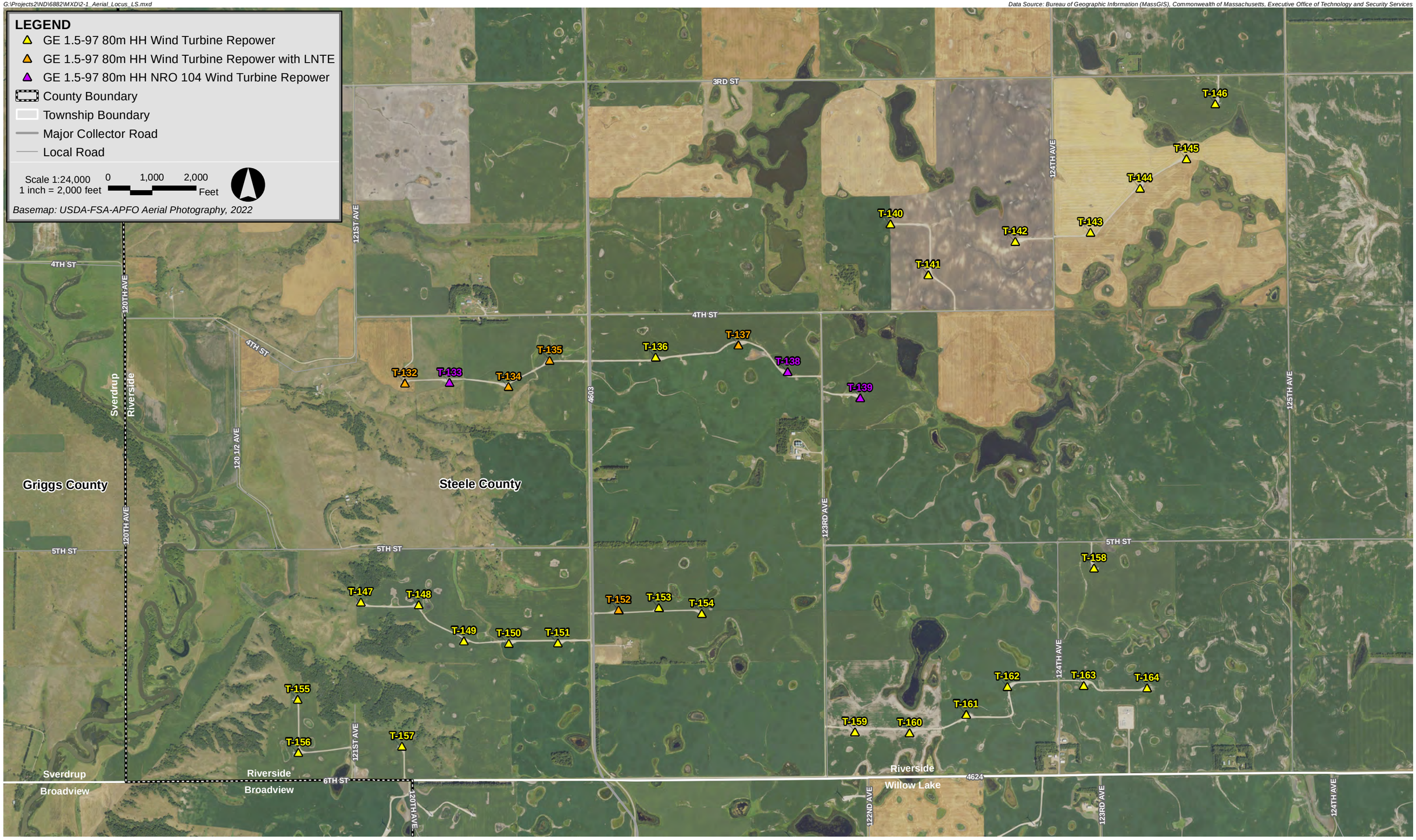
Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

LEGEND

- GE 1.5-97 80m HH Wind Turbine Repower
- GE 1.5-97 80m HH Wind Turbine Repower with LNTE
- GE 1.5-97 80m HH NRO 104 Wind Turbine Repower
- County Boundary
- Township Boundary
- Major Collector Road
- Local Road

Scale 1:24,000
1 inch = 2,000 feet
0 1,000 2,000 Feet

Basemap: USDA-FSA-APFO Aerial Photography, 2022



Luverne Wind Repower **Steele County, North Dakota**

Epsilon Associates Inc.

Figure 2-1
Aerial Locus

3.0 SOUND TERMINOLOGY

There are several ways in which sound levels are measured and quantified. All of them use the logarithmic decibel (dB) scale. The following information defines the sound level terminology used in this analysis.

The decibel scale is logarithmic to accommodate the wide range of sound intensities found in the environment. A property of the decibel scale is that the sound pressure levels of two or more separate sounds are not directly additive. For example, if a sound of 50 dB is added to another sound of 50 dB, the total is only a 3-decibel increase (53 dB), which is equal to doubling in sound energy, but not equal to a doubling in decibel quantity (100 dB). Thus, every 3-dB change in sound level represents a doubling or halving of sound energy. The human ear does not perceive changes in the sound pressure level as equal changes in loudness. Scientific research demonstrates that the following general relationships hold between sound level and human perception for two sound levels with the same or very similar frequency characteristics[2]:

- 3 dB increase or decrease results in a change in sound that is just perceptible to the average person,
- 5 dB increase or decrease is described as a clearly noticeable change in sound level, and
- 10 dB increase or decrease is described as twice or half as loud.

Another mathematical property of decibels is that if one source of sound is at least 10 dB louder than another source, then the total sound level is simply the sound level of the higher-level source. For example, a sound source at 60 dB plus another sound source at 47 dB is equal to 60 dB.

A sound level meter (SLM) that is used to measure sound is a standardized instrument.[3] It contains "weighting networks" (e.g., A-, C-, Z-weightings) to adjust the frequency response of the instrument. Frequencies, reported in Hertz (Hz), are detailed characterizations of sounds, often addressed in musical terms as "pitch" or "tone". The most commonly used weighting network is the A-weighting because it most closely approximates how the human ear responds to sound at various frequencies. The A-weighting network is the accepted scale used for community sound level measurements; therefore, sounds are frequently reported as detected with a sound level meter using this weighting. A-weighted sound levels emphasize middle frequency sounds (i.e., middle pitched – around 1,000 Hz), and de-emphasize low and high frequency sounds. These sound levels are reported in decibels designated as "dBA". The C-weighting network has a nearly flat response for frequencies between 63 Hz and 4,000 Hz and is noted as dBC. Z-weighted sound levels are measured sound levels without any weighting curve and are otherwise referred

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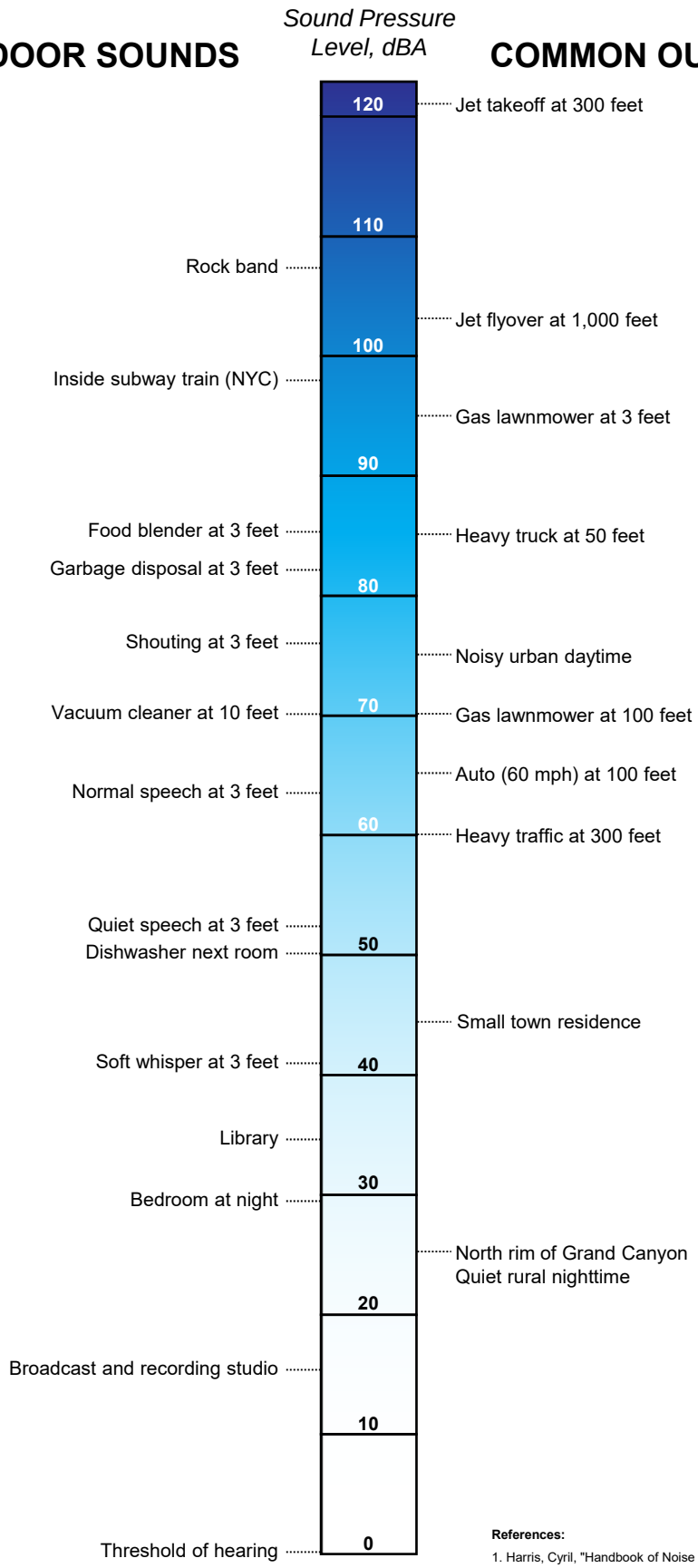
2 Bies, David, and Colin Hansen. 2009. *Engineering Noise Control: Theory and Practice*, 4th Edition. New York: Taylor and Francis.

3 *American National Standard Electroacoustics – Sound Level Meters – Part 1: Specifications,* ANSI S1.4-2014 (R2019), published by the Standards Secretariat of the Acoustical Society of America, Melville, NY.

to as “unweighted”. Sound pressure levels for some common indoor and outdoor environments are shown in Figure 3-1.

Because the sounds in our environment vary with time they cannot simply be described with a single number. Two methods are used for describing variable sounds. These are exceedance levels and the equivalent level, both of which are derived from some number of moment-to-moment A-weighted sound level measurements. Exceedance levels are values from the cumulative amplitude distribution of all the sound levels observed during a measurement period. Exceedance levels are designated L_n, where n can have a value between 0 and 100 in terms of percentage. The L_{eq} is a sound level metric that is commonly reported in community sound level monitoring and is utilized in this report. The L_{eq} is described in further detail below.

- L_{eq}, the equivalent level, is the level of a hypothetical steady sound that would have the same energy (*i.e.,* the same time-averaged mean square sound pressure) as the actual fluctuating sound observed. The equivalent level is designated L_{eq} and is typically A-weighted. The equivalent level represents the time average of the fluctuating sound pressure, but because sound is represented on a logarithmic scale and the averaging is done with linear mean square sound pressure values, the L_{eq} is mostly determined by loud sounds if there are fluctuating sound levels.



References:

1. Harris, Cyril, "Handbook of Noise Acoustical Measurements and Noise Control", p 1-10., 1998
2. "Controlling Noise", USAF, AFMC, AFDTC, Elgin AFB, Fact Sheet, August 1996
3. California Dept. of Trans., "Technical Noise Supplement", Oct, 1998

Figure 3-1

Common Indoor and Outdoor Sound Levels

4.0 NOISE REGULATIONS

4.1 Federal Regulations

There are no federal community noise regulations applicable to this Project.

4.2 North Dakota State Regulations

The Project, located in North Dakota, is required to comply with the following sound requirement:

Section 69-06-08-01 Energy Conversion Facility Siting Criteria

4. Additional avoidance areas for wind energy conversion facilities. A wind energy conversion facility site must not include a geographic area where, due to operation of the facility, the sound levels within one hundred feet of an inhabited residence or a community building will exceed forty-five dBA. The sound level avoidance area criteria may be waived in writing by the owner of the occupied residence or the community building.

4.3 Local Regulations

There are no local community noise regulations applicable to this Project.

Therefore, modeling receptors were evaluated in this analysis against the 45 dBA limit.

5.0 MODELED SOUND LEVELS

5.1 Sound Sources

5.1.1 Project Wind Turbines

The sound level analysis for the Project includes 33 wind turbines. These 33 wind turbines are depicted in Figure 5-1. The array consists of one (1) wind turbine model: the GE 1.5-97 at a hub height of 80-meters. Wind turbines T-132, T-134, T-135, T-137, and T152 will have Low Noise Trailing Edge (LNTE) blades. Wind turbines T-133, T-138, and T-139 will be in Noise Reduced Operations (NRO) 104 mode. The GE 1.5-97 wind turbines have a rotor diameter of 97 meters. Technical reports from GE[4,5,6] were provided to Epsilon which documented the expected sound power levels associated with the GE 1.5-97.

5.2 Modeling Methodology

The sound impacts associated with the proposed wind turbines were predicted using the CadnaA sound level calculation software developed by DataKustik GmbH. This software uses the ISO 9613-2 international standard for sound propagation.[7] The benefits of this software are a more refined set of computations due to the inclusion of topography, ground attenuation, multiple building reflections (if applicable), drop-off with distance, and atmospheric absorption. The CadnaA software allows for octave band calculation of sound from multiple sources as well as computation of diffraction.

Inputs and significant parameters employed in the model are described below and summarized in Table 5-1 below.

- *Project Array:* This analysis is for the wind turbine array dated December 20, 2022. The proposed Project array is identified in Figure 5-1. The wind turbine coordinates are provided in Appendix A.

- *Modeling Receptor Locations:* A modeling receptor dataset dated January 26, 2023 was provided to Epsilon. The dataset included 40 receptors. Atwell provided additional information indicating if each receptor was inhabited or uninhabited, the resulting 39 inhabited receptors were input to the CadnaA model. All modeling receptors were input as discrete points at a height of 1.5 meters above ground level to mimic the ears of a typical standing person. In order to provide robust modeling coverage of each inhabited location, additional modeling locations were included offset by 100 feet

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4 General Electric Company, Technical Documentation Wind Turbine Generator Systems 1.6-97 RePower – 60 Hz Product Acoustic Specifications, Rev. 02, 2020.

5 General Electric Company, Technical Documentation Wind Turbine Generator Systems 1.6-97 RePower with LNTE – 60Hz Product Acoustic Specifications Normal Specifications, Rev. 01, 2021.

6 General Electric Company, Technical Documentation Wind Turbine Generator Systems 1.6-97 RePower with LNTE – 60Hz Product Acoustic Specifications Noise Reduced Operation, Rev. 01, 2021.

7 *Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation,* International Standard ISO 9613-2:1996 (International Organization for Standardization, Geneva, Switzerland, 1996).

away (or 200 feet for receptors with signed waivers) from the center point of the receptor in each of the four cardinal directions (north, south, east and west). Therefore, each inhabited location was evaluated at a total of five locations; the center point of the receptor itself, and at the four offset locations on land 100 feet (or 200 feet for receptors with signed waivers) from the receptor. This resulted in a total of 195 receptors. The center points of the modeled locations (receptors) are shown in Figure 5-1. Details of each modeling location are presented in Appendix B.

- *Modeling Grid:* A modeling grid with 20-meter spacing was calculated for the entire Project Area and the surrounding region. The grid was modeled at a height of 1.5 meters above ground level for consistency with the discrete modeling points. This modeling grid allowed for the creation of sound level isolines.

- *Terrain Elevation:* Elevation contours for the modeling domain were directly imported into CadnaA which allowed for consideration of terrain shielding where appropriate. The terrain height contour elevations for the modeling domain were generated from elevation information derived from the National Elevation Dataset (NED) developed by the U.S. Geological Survey.

- *Source Sound Levels:* Sound power levels used in the modeling were described in Section 5.1. Documentation from GE provided levels that represent "worst-case" operational sound level emissions for the Project's proposed wind turbines were input into the model.

- *Meteorological Conditions:* A temperature of 10°C (50°F) and a relative humidity of 70% was assumed in the model.

- *Ground Attenuation:* Spectral ground absorption was calculated using a G-factor of 0 which corresponds to "hard ground" consisting of a hard ground surface. The model, consistent with the standard, allows inputs between 0 (hard ground) and 1 (porous ground). This is a conservative approach as the vast majority of the area is actually agricultural.

Octave band sound power levels corresponding to the highest available wind turbine broadband sound power level for each wind turbine type were input into CadnaA to model wind turbine generated L_{eq} sound pressure levels during conditions when worst-case sound power levels are expected. Sound pressure levels were modeled at 39 receptors within the vicinity of the Project. In addition to modeling at discrete points, sound levels were also modeled throughout a large grid of points, each spaced 20 meters apart to allow for the generation of sound level isolines.

Several modeling assumptions inherent in the ISO 9613-2 calculation methodology, or selected as conditional inputs by Epsilon, were implemented in the CadnaA model to ensure conservative results (i.e., higher sound levels), and are described below:

- All modeled sources were assumed to be operating simultaneously and at the design wind speed corresponding to the greatest sound level impacts.

- As per ISO 9613-2, the model assumed favorable conditions for sound propagation, corresponding to a moderate, well-developed ground-based temperature inversion, as might occur on a calm, clear night or equivalently downwind propagation.

- Meteorological conditions assumed in the model (T=10°C/RH=70%) were selected to minimize atmospheric attenuation in the 500 Hz and 1 kHz octave bands where the human ear is most sensitive.

- No additional attenuation due to tree shielding, air turbulence, or wind shadow effects was considered in the model.

Table 5-1 Summary of Key Sound Level Modeling Inputs

Modeling Parameter	Description / Value
Wind Turbine Array	Provided by Atwell
Terrain	U.S.G.S. Data
Wind Turbine Sound Power Levels	GE Specifications Documentation
Meteorological Conditions	T=10°C / RH=70%
Ground Absorption Factor	0

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Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

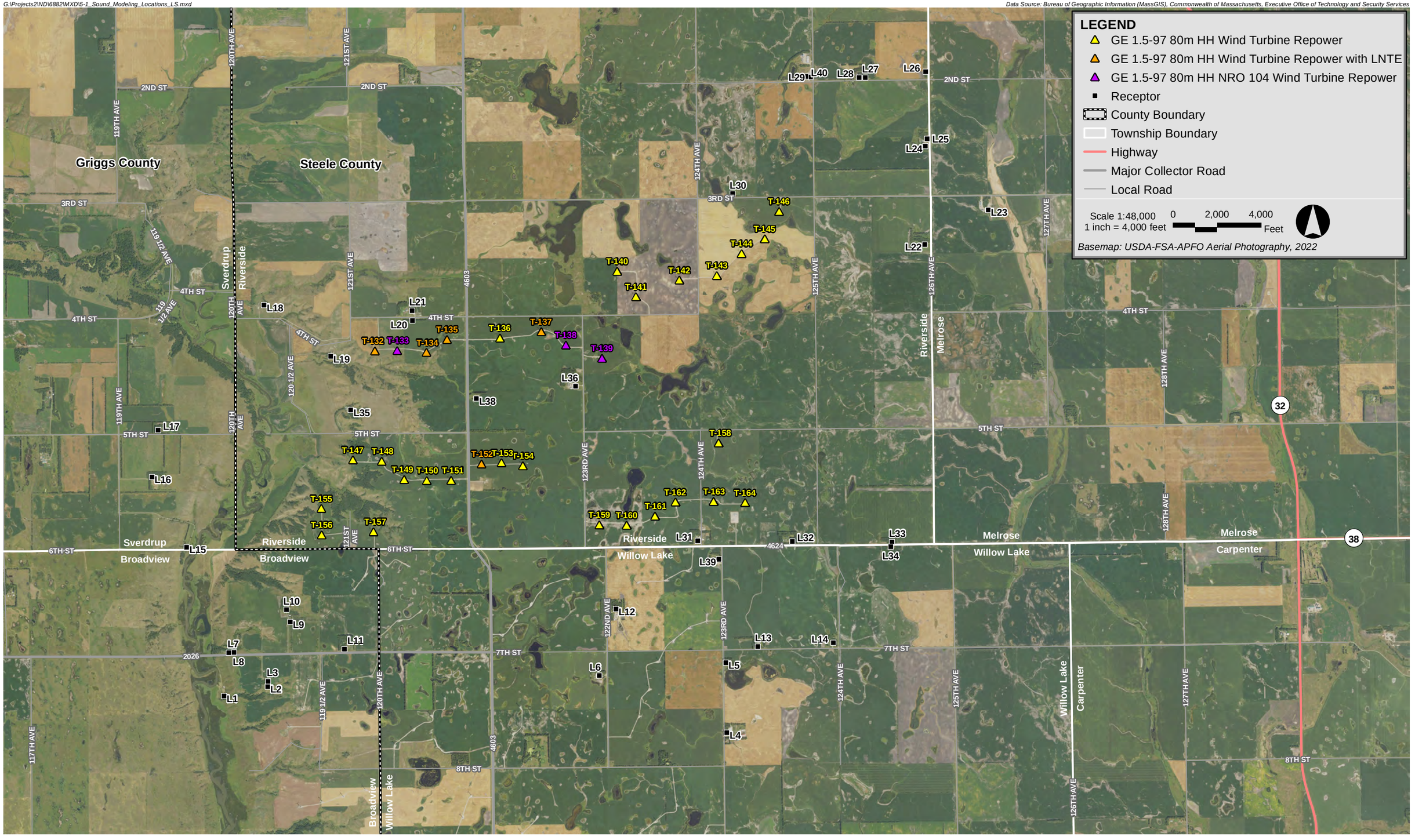

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Figure 5-1

Sound Level Modeling Locations

5.3 Sound Level Modeling Results

All modeled sound levels, as output from CadnaA are A-weighted equivalent sound levels (L_{eq}, dBA). Table B-1.1 in Appendix B shows the predicted broadband (dBA) sound levels at the 39 receptors and their additional offset locations modeled for the Project. The broadband L_{eq} sound levels range from 23 to 48 dBA. These sound levels represent the worst-case future L_{eq} sound levels produced by the Project wind turbines. The maximum modeled sound level of 48 dBA occurs at receptors #20 and #31, which have signed waivers with Otter Tail Power. The highest modeled sound level at a receptor which has not signed a waiver with Otter Tail Power is 45 dBA, which occurs at four receptors (#21, #30, #36, and #38). Table B-1.2 in Appendix B shows the predicted sound levels sorted from high to low.

In addition to the discrete modeling points, L_{eq} sound level isolines generated from the modeling grid are presented in Figure 5-2.

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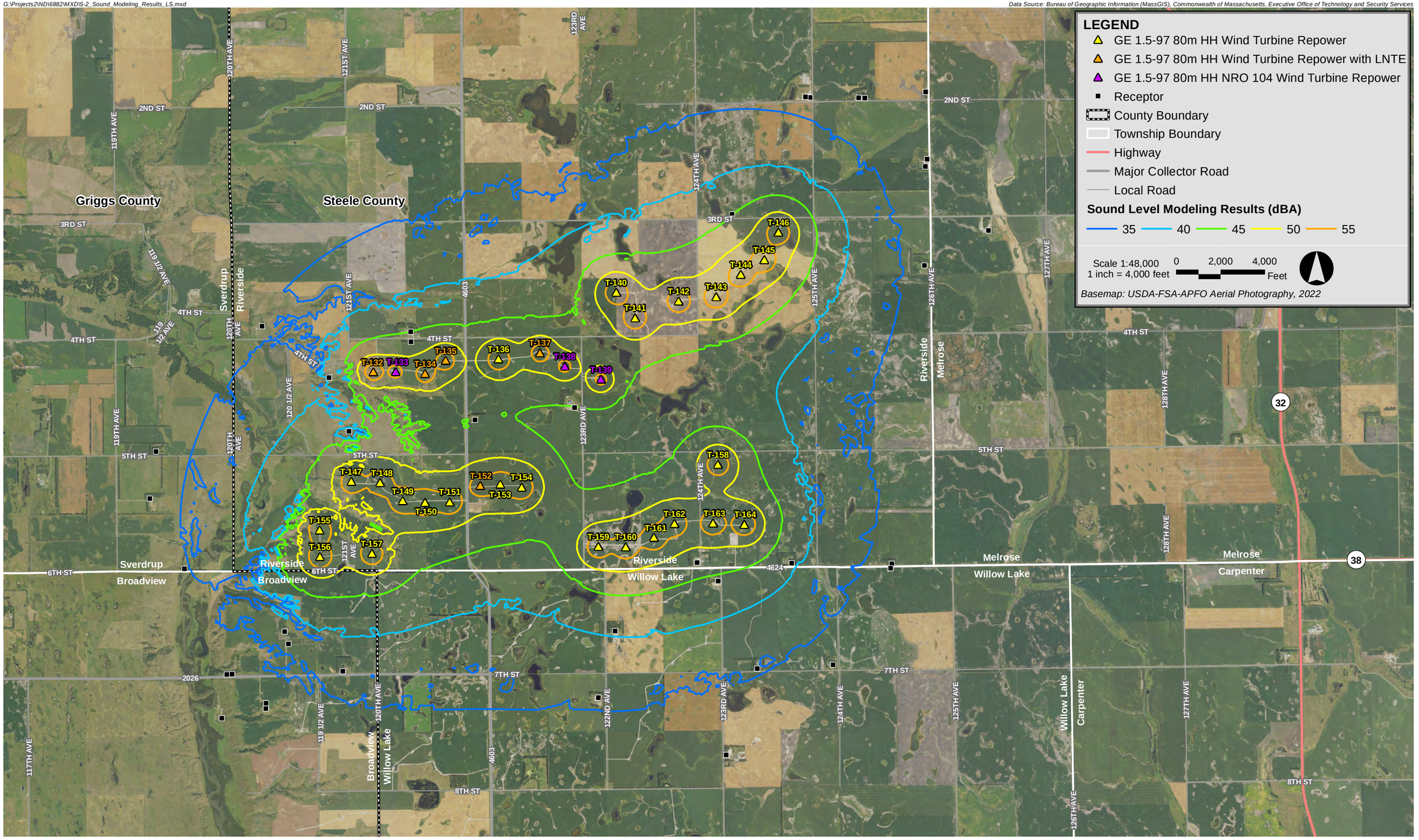
Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Luverne Wind Repower **Steele County, North Dakota**

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Figure 5-2
Sound Level Modeling Results

6.0 EVALUATION OF SOUND LEVELS

The Project is subject to the requirements contained in the North Dakota Energy Conversion Facility Siting Criteria**.** Sound levels from operation of the Project are limited by these regulations to 45 dBA within 100 feet of an inhabited residence or community building. Additionally, sound levels from the operation of the Project are limited by the Noise Waiver to 50 dBA within 200 feet of an inhabited residence or community building for any locations which has a signed Noise Waiver with Otter Tail Power. All modeled sound levels, as output from CadnaA and presented in Appendix B, are A-weighted equivalent sound levels (L_{eq}, dBA). These levels may be used in evaluating measured sound pressure levels over typical averaging durations, (i.e., ten (10) minutes or one (1) hour).

A review of Table B-1.2 in Appendix B shows the highest sound level within 100 feet of an inhabited residence or community building that has not signed a waiver with Otter Tail Power in this analysis to be 45 dBA. This occurs at Receptors #21, #30, #36, and #38. The results also show that the highest sound level within 200 feet of an inhabited residence or community building that has signed a waiver with Otter Tail Power in this analysis to be 48 dBA. This occurs at Receptors #20 and #31. Therefore, the Project is in compliance with the North Dakota Administrative Code Energy Conversion Facility Siting Criteria with respect to sound.

7.0 CONCLUSIONS

A comprehensive sound level modeling assessment was conducted for the Otter Tail Luverne Wind Repower Project within Steele County, North Dakota. Sound levels resulting from the operation of all 33 Project wind turbines were calculated at 39 modeling receptors, and isolines were generated from a grid encompassing the area surrounding the wind turbines. The predicted L_{eq} sound levels at all receptors in the study area ranged from 23 to 48 dBA. Predicted sound levels at all receptor locations that have not signed a waiver with Otter Tail Power are at or below the state limit of 45 dBA within 100 feet of an inhabited residence or community building. Predicted sound levels at all receptor locations that have signed waivers with Otter Tail Power are below the waiver limit of 50 dBA within 200 feet of an inhabited residence or community building. Thus, the Project meets the requirements with respect to sound in the regulations.

Appendix A
Sound Source Coordinates

Table A-1: Wind Turbine Coordinates

Wind Turbine ID	Wind Turbine Type	Hub Height (m)	Coordinates NAD83 UTM Zone 14N (meters)	
			X (Easting)	Y (Northing)
T-132	GE 1.5-97	80	578517.24	5244672.39
T-133	GE 1.5-97	80	578826.67	5244676.53
T-134	GE 1.5-97	80	579235.03	5244648.56
T-135	GE 1.5-97	80	579519.62	5244830.47
T-136	GE 1.5-97	80	580251.83	5244851.41
T-137	GE 1.5-97	80	580824.66	5244937.29
T-138	GE 1.5-97	80	581167.19	5244752.82
T-139	GE 1.5-97	80	581668.21	5244570.68
T-140	GE 1.5-97	80	581878.53	5245774.06
T-141	GE 1.5-97	80	582139.93	5245422.35
T-142	GE 1.5-97	80	582741.17	5245652.97
T-143	GE 1.5-97	80	583261.20	5245715.78
T-144	GE 1.5-97	80	583604.29	5246020.87
T-145	GE 1.5-97	80	583926.35	5246225.65
T-146	GE 1.5-97	80	584124.89	5246606.30
T-147	GE 1.5-97	80	578212.34	5243156.78
T-148	GE 1.5-97	80	578613.18	5243139.56
T-149	GE 1.5-97	80	578926.12	5242888.10
T-150	GE 1.5-97	80	579235.93	5242870.26
T-151	GE 1.5-97	80	579576.05	5242874.84
T-152	GE 1.5-97	80	579996.11	5243102.73
T-153	GE 1.5-97	80	580275.47	5243117.98
T-154	GE 1.5-97	80	580570.56	5243077.44
T-155	GE 1.5-97	80	577775.59	5242483.98
T-156	GE 1.5-97	80	577780.43	5242117.25
T-157	GE 1.5-97	80	578497.71	5242160.33
T-158	GE 1.5-97	80	583286.60	5243393.02
T-159	GE 1.5-97	80	581632.29	5242258.43
T-160	GE 1.5-97	80	582010.61	5242252.24
T-161	GE 1.5-97	80	582401.49	5242380.30
T-162	GE 1.5-97	80	582685.87	5242572.91
T-163	GE 1.5-97	80	583215.05	5242580.37
T-164	GE 1.5-97	80	583653.42	5242564.57

Appendix B

Sound Level Modeling Results - Tabular

Table B-1.1: Sound Level Modeling Results Sorted by Receptor ID

Receptor ID	Signed Wavier	Coordinates UTM NAD83 Zone 14N		Source Only L_{eq} Sound Level (dBA)
		X (m)	Y (m)	
L1	No	576423.27	5239881.84	23
L1-E	No	576453.73	5239882.23	23
L1-S	No	576423.66	5239851.37	23
L1-W	No	576392.80	5239881.44	23
L1-N	No	576422.87	5239912.31	23
L2	No	577029.96	5240014.58	28
L2-E	No	577060.43	5240014.98	33
L2-S	No	577030.36	5239984.11	25
L2-W	No	576999.50	5240014.18	25
L2-N	No	577029.57	5240045.05	30
L3	No	577035.85	5240087.47	30
L3-E	No	577066.32	5240087.86	30
L3-S	No	577036.25	5240057.00	30
L3-W	No	577005.39	5240087.07	26
L3-N	No	577035.46	5240117.93	31
L4	No	583399.72	5239374.00	32
L4-E	No	583430.19	5239374.43	32
L4-S	No	583400.15	5239343.53	32
L4-W	No	583369.25	5239373.57	32
L4-N	No	583399.29	5239404.46	32
L5	No	583387.15	5240348.46	35
L5-E	No	583417.62	5240348.89	35
L5-S	No	583387.58	5240317.99	35
L5-W	No	583356.69	5240348.03	35
L5-N	No	583386.72	5240378.93	35
L6	No	581632.42	5240165.69	36
L6-E	No	581662.89	5240166.11	36
L6-S	No	581632.85	5240135.22	36
L6-W	No	581601.96	5240165.26	36
L6-N	No	581632.00	5240196.15	36
L7	No	576491.93	5240485.96	28
L7-E	No	576522.40	5240486.35	28
L7-S	No	576492.32	5240455.49	26
L7-W	No	576461.46	5240485.56	30
L7-N	No	576491.53	5240516.42	25
L8	No	576564.55	5240490.68	31
L8-E	No	576595.02	5240491.08	32
L8-S	No	576564.95	5240460.21	31
L8-W	No	576534.08	5240490.29	30
L8-N	No	576564.15	5240521.15	26
L9	No	577344.04	5240910.55	38
L9-E	No	577374.51	5240910.95	38

Table B-1.1: Sound Level Modeling Results Sorted by Receptor ID

Receptor ID	Signed Wavier	Coordinates UTM NAD83 Zone 14N		Source Only L_{eq} Sound Level (dBA)
		X (m)	Y (m)	
L9-S	No	577344.44	5240880.09	38
L9-W	No	577313.57	5240910.15	37
L9-N	No	577343.64	5240941.02	38
L10	No	577289.60	5241080.11	39
L10-E	No	577320.07	5241080.51	39
L10-S	No	577290.00	5241049.65	39
L10-W	No	577259.13	5241079.71	39
L10-N	No	577289.20	5241110.58	39
L11	No	578096.72	5240534.24	37
L11-E	No	578127.19	5240534.64	37
L11-S	No	578097.13	5240503.77	37
L11-W	No	578066.25	5240533.83	37
L11-N	No	578096.32	5240564.71	37
L12	No	581862.55	5241090.16	41
L12-E	No	581893.02	5241090.59	41
L12-S	No	581862.98	5241059.69	40
L12-W	No	581832.09	5241089.74	41
L12-N	No	581862.13	5241120.63	41
L13	No	583831.22	5240569.56	35
L13-E	No	583861.69	5240569.99	35
L13-S	No	583831.65	5240539.09	35
L13-W	No	583800.75	5240569.12	35
L13-N	No	583830.79	5240600.02	35
L14	No	584880.11	5240621.88	33
L14-E	No	584910.58	5240622.32	33
L14-S	No	584880.55	5240591.42	32
L14-W	No	584849.64	5240621.45	33
L14-N	No	584879.67	5240652.35	33
L15	No	575905.69	5241949.56	35
L15-E	No	575936.16	5241949.95	35
L15-S	No	575906.09	5241919.09	35
L15-W	No	575875.23	5241949.17	35
L15-N	No	575905.30	5241980.03	35
L16	No	575424.70	5242922.41	33
L16-E	No	575455.16	5242922.80	33
L16-S	No	575425.09	5242891.94	33
L16-W	No	575394.23	5242922.02	33
L16-N	No	575424.31	5242952.87	33
L17	No	575509.75	5243573.82	33
L17-E	No	575540.22	5243574.21	33
L17-S	No	575510.14	5243543.35	33
L17-W	No	575479.28	5243573.42	33

Table B-1.1: Sound Level Modeling Results Sorted by Receptor ID

Receptor ID	Signed Wavier	Coordinates UTM NAD83 Zone 14N		Source Only L_{eq} Sound Level (dBA)
		X (m)	Y (m)	
L17-N	No	575509.36	5243604.28	33
L18	No	576978.42	5245308.26	34
L18-E	No	577008.89	5245308.66	34
L18-S	No	576978.82	5245277.79	34
L18-W	No	576947.96	5245307.86	34
L18-N	No	576978.03	5245338.73	34
L19	No	577903.54	5244595.42	40
L19-E	No	577934.00	5244595.83	41
L19-S	No	577903.94	5244564.95	41
L19-W	No	577873.07	5244595.02	40
L19-N	No	577903.13	5244625.89	41
L20	Yes	579040.35	5245093.04	47
L20-E	Yes	579070.82	5245093.45	47
L20-S	Yes	579040.76	5245062.57	48
L20-W	Yes	579009.88	5245092.63	47
L20-N	Yes	579039.94	5245123.51	46
L21	No	579035.09	5245231.44	45
L21-E	No	579065.56	5245231.85	45
L21-S	No	579035.50	5245200.97	45
L21-W	No	579004.62	5245231.03	45
L21-N	No	579034.68	5245261.91	45
L22	No	586144.56	5246150.00	33
L22-E	No	586175.02	5246150.45	33
L22-S	No	586145.00	5246119.54	33
L22-W	No	586114.09	5246149.56	34
L22-N	No	586144.11	5246180.47	31
L23	No	587027.75	5246631.22	30
L23-E	No	587058.22	5246631.67	30
L23-S	No	587028.20	5246600.75	29
L23-W	No	586997.28	5246630.77	30
L23-N	No	587027.30	5246661.68	30
L24	No	586153.90	5247517.22	32
L24-E	No	586184.37	5247517.67	32
L24-S	No	586154.35	5247486.75	32
L24-W	No	586123.43	5247516.77	32
L24-N	No	586153.45	5247547.69	32
L25	No	586178.12	5247618.30	32
L25-E	No	586208.58	5247618.74	31
L25-S	No	586178.56	5247587.83	32
L25-W	No	586147.65	5247617.85	32
L25-N	No	586177.67	5247648.76	32
L26	No	586157.97	5248548.89	30

Table B-1.1: Sound Level Modeling Results Sorted by Receptor ID

Receptor ID	Signed Wavier	Coordinates UTM NAD83 Zone 14N		Source Only L_{eq} Sound Level (dBA)
		X (m)	Y (m)	
L26-E	No	586188.43	5248549.33	30
L26-S	No	586158.41	5248518.42	30
L26-W	No	586127.50	5248548.44	30
L26-N	No	586157.52	5248579.35	30
L27	No	585319.35	5248466.39	29
L27-E	No	585349.81	5248466.83	30
L27-S	No	585319.79	5248435.92	29
L27-W	No	585288.88	5248465.95	28
L27-N	No	585318.90	5248496.86	30
L28	No	585233.95	5248467.61	32
L28-E	No	585264.41	5248468.05	30
L28-S	No	585234.39	5248437.14	33
L28-W	No	585203.48	5248467.16	32
L28-N	No	585233.51	5248498.07	32
L29	No	584561.59	5248475.39	34
L29-E	No	584592.06	5248475.83	34
L29-S	No	584562.03	5248444.93	34
L29-W	No	584531.12	5248474.96	34
L29-N	No	584561.15	5248505.86	33
L30	No	583482.04	5246855.54	45
L30-E	No	583512.51	5246855.97	45
L30-S	No	583482.48	5246825.07	45
L30-W	No	583451.58	5246855.10	45
L30-N	No	583481.61	5246886.00	45
L31	Yes	582997.86	5242037.63	47
L31-E	Yes	583028.33	5242038.05	47
L31-S	Yes	582998.29	5242007.16	47
L31-W	Yes	582967.39	5242037.20	48
L31-N	Yes	582997.43	5242068.09	48
L32	No	584307.76	5242029.53	41
L32-E	No	584338.23	5242029.97	41
L32-S	No	584308.20	5241999.07	41
L32-W	No	584277.29	5242029.10	41
L32-N	No	584307.32	5242060.00	41
L33	No	585692.25	5242020.78	34
L33-E	No	585722.72	5242021.22	33
L33-S	No	585692.70	5241990.31	34
L33-W	No	585661.79	5242020.34	34
L33-N	No	585691.81	5242051.25	34
L34	No	585673.49	5241957.43	33
L34-E	No	585703.96	5241957.87	32
L34-S	No	585673.93	5241926.96	33

Table B-1.1: Sound Level Modeling Results Sorted by Receptor ID

Receptor ID	Signed Wavier	Coordinates UTM NAD83 Zone 14N		Source Only L_{eq} Sound Level (dBA)
		X (m)	Y (m)	
L34-W	No	585643.02	5241956.99	33
L34-N	No	585673.05	5241987.90	34
L35	No	578181.62	5243851.70	37
L35-E	No	578212.08	5243852.11	37
L35-S	No	578182.02	5243821.24	38
L35-W	No	578151.15	5243851.30	37
L35-N	No	578181.21	5243882.17	37
L36	No	581301.12	5244181.87	45
L36-E	No	581331.59	5244182.29	45
L36-S	No	581301.54	5244151.40	45
L36-W	No	581270.65	5244181.45	45
L36-N	No	581300.70	5244212.34	45
L38	No	579925.20	5244012.65	45
L38-E	No	579955.66	5244013.07	45
L38-S	No	579925.61	5243982.18	45
L38-W	No	579894.73	5244012.24	45
L38-N	No	579924.78	5244043.12	45
L39	No	583289.33	5241779.21	44
L39-E	No	583319.80	5241779.64	44
L39-S	No	583289.76	5241748.74	44
L39-W	No	583258.87	5241778.78	44
L39-N	No	583288.90	5241809.68	44
L40	No	584496.45	5248483.45	34
L40-E	No	584526.92	5248483.89	34
L40-S	No	584496.89	5248452.99	34
L40-W	No	584465.99	5248483.01	34
L40-N	No	584496.02	5248513.92	33

Table B-1.2: Sound Level Modeling Results Sorted by Sound Level

Receptor ID	Participation Status	Coordinates UTM NAD83 Zone 14N		Source Only L_{eq} Sound Level (dBA)
		X (m)	Y (m)	
L31-N	Yes	582997.43	5242068.09	48
L20-S	Yes	579040.76	5245062.57	48
L31-W	Yes	582967.39	5242037.20	48
L31	Yes	582997.86	5242037.63	47
L31-E	Yes	583028.33	5242038.05	47
L20-E	Yes	579070.82	5245093.45	47
L20	Yes	579040.35	5245093.04	47
L31-S	Yes	582998.29	5242007.16	47
L20-W	Yes	579009.88	5245092.63	47
L20-N	Yes	579039.94	5245123.51	46
L21-S	No	579035.50	5245200.97	45
L38-S	No	579925.61	5243982.18	45
L38-N	No	579924.78	5244043.12	45
L38	No	579925.20	5244012.65	45
L38-E	No	579955.66	5244013.07	45
L38-W	No	579894.73	5244012.24	45
L30-S	No	583482.48	5246825.07	45
L30-E	No	583512.51	5246855.97	45
L36-N	No	581300.70	5244212.34	45
L21-E	No	579065.56	5245231.85	45
L21	No	579035.09	5245231.44	45
L21-W	No	579004.62	5245231.03	45
L36-E	No	581331.59	5244182.29	45
L36	No	581301.12	5244181.87	45
L36-W	No	581270.65	5244181.45	45
L30	No	583482.04	5246855.54	45
L36-S	No	581301.54	5244151.40	45
L30-W	No	583451.58	5246855.10	45
L21-N	No	579034.68	5245261.91	45
L30-N	No	583481.61	5246886.00	45
L39-N	No	583288.90	5241809.68	44
L39-W	No	583258.87	5241778.78	44
L39	No	583289.33	5241779.21	44
L39-E	No	583319.80	5241779.64	44
L39-S	No	583289.76	5241748.74	44
L32-W	No	584277.29	5242029.10	41
L32-N	No	584307.32	5242060.00	41
L19-N	No	577903.13	5244625.89	41
L32	No	584307.76	5242029.53	41
L32-S	No	584308.20	5241999.07	41
L32-E	No	584338.23	5242029.97	41
L12-N	No	581862.13	5241120.63	41

Table B-1.2: Sound Level Modeling Results Sorted by Sound Level

Receptor ID	Participation Status	Coordinates UTM NAD83 Zone 14N		Source Only L_{eq} Sound Level (dBA)
		X (m)	Y (m)	
L19-E	No	577934.00	5244595.83	41
L12-E	No	581893.02	5241090.59	41
L12	No	581862.55	5241090.16	41
L12-W	No	581832.09	5241089.74	41
L19-S	No	577903.94	5244564.95	41
L12-S	No	581862.98	5241059.69	40
L19	No	577903.54	5244595.42	40
L19-W	No	577873.07	5244595.02	40
L10-N	No	577289.20	5241110.58	39
L10-E	No	577320.07	5241080.51	39
L10	No	577289.60	5241080.11	39
L10-W	No	577259.13	5241079.71	39
L10-S	No	577290.00	5241049.65	39
L9-N	No	577343.64	5240941.02	38
L9-E	No	577374.51	5240910.95	38
L9	No	577344.04	5240910.55	38
L35-S	No	578182.02	5243821.24	38
L9-S	No	577344.44	5240880.09	38
L35-E	No	578212.08	5243852.11	37
L9-W	No	577313.57	5240910.15	37
L35	No	578181.62	5243851.70	37
L11-N	No	578096.32	5240564.71	37
L35-W	No	578151.15	5243851.30	37
L11-E	No	578127.19	5240534.64	37
L11	No	578096.72	5240534.24	37
L35-N	No	578181.21	5243882.17	37
L11-W	No	578066.25	5240533.83	37
L11-S	No	578097.13	5240503.77	37
L6-N	No	581632.00	5240196.15	36
L6-E	No	581662.89	5240166.11	36
L6	No	581632.42	5240165.69	36
L6-W	No	581601.96	5240165.26	36
L6-S	No	581632.85	5240135.22	36
L13-N	No	583830.79	5240600.02	35
L13-W	No	583800.75	5240569.12	35
L13	No	583831.22	5240569.56	35
L13-S	No	583831.65	5240539.09	35
L13-E	No	583861.69	5240569.99	35
L15-E	No	575936.16	5241949.95	35
L5-W	No	583356.69	5240348.03	35
L5-N	No	583386.72	5240378.93	35
L15-N	No	575905.30	5241980.03	35

Table B-1.2: Sound Level Modeling Results Sorted by Sound Level

Receptor ID	Participation Status	Coordinates UTM NAD83 Zone 14N		Source Only L_{eq} Sound Level (dBA)
		X (m)	Y (m)	
L5-S	No	583387.58	5240317.99	35
L15	No	575905.69	5241949.56	35
L15-S	No	575906.09	5241919.09	35
L5	No	583387.15	5240348.46	35
L5-E	No	583417.62	5240348.89	35
L15-W	No	575875.23	5241949.17	35
L18-S	No	576978.82	5245277.79	34
L18	No	576978.42	5245308.26	34
L18-E	No	577008.89	5245308.66	34
L18-W	No	576947.96	5245307.86	34
L33-W	No	585661.79	5242020.34	34
L40-S	No	584496.89	5248452.99	34
L33-N	No	585691.81	5242051.25	34
L29-S	No	584562.03	5248444.93	34
L34-N	No	585673.05	5241987.90	34
L18-N	No	576978.03	5245338.73	34
L33	No	585692.25	5242020.78	34
L33-S	No	585692.70	5241990.31	34
L29-W	No	584531.12	5248474.96	34
L40-W	No	584465.99	5248483.01	34
L22-W	No	586114.09	5246149.56	34
L29	No	584561.59	5248475.39	34
L40	No	584496.45	5248483.45	34
L40-E	No	584526.92	5248483.89	34
L29-E	No	584592.06	5248475.83	34
L34	No	585673.49	5241957.43	33
L29-N	No	584561.15	5248505.86	33
L40-N	No	584496.02	5248513.92	33
L16-E	No	575455.16	5242922.80	33
L34-S	No	585673.93	5241926.96	33
L17-E	No	575540.22	5243574.21	33
L16-S	No	575425.09	5242891.94	33
L16	No	575424.70	5242922.41	33
L17-S	No	575510.14	5243543.35	33
L17	No	575509.75	5243573.82	33
L16-N	No	575424.31	5242952.87	33
L17-N	No	575509.36	5243604.28	33
L22-S	No	586145.00	5246119.54	33
L22	No	586144.56	5246150.00	33
L17-W	No	575479.28	5243573.42	33
L16-W	No	575394.23	5242922.02	33
L34-W	No	585643.02	5241956.99	33

Table B-1.2: Sound Level Modeling Results Sorted by Sound Level

Receptor ID	Participation Status	Coordinates UTM NAD83 Zone 14N		Source Only L_{eq} Sound Level (dBA)
		X (m)	Y (m)	
L33-E	No	585722.72	5242021.22	33
L22-E	No	586175.02	5246150.45	33
L14-E	No	584910.58	5240622.32	33
L14-N	No	584879.67	5240652.35	33
L14-W	No	584849.64	5240621.45	33
L14	No	584880.11	5240621.88	33
L2-E	No	577060.43	5240014.98	33
L28-S	No	585234.39	5248437.14	33
L28-W	No	585203.48	5248467.16	32
L28	No	585233.95	5248467.61	32
L24-W	No	586123.43	5247516.77	32
L4-N	No	583399.29	5239404.46	32
L4-W	No	583369.25	5239373.57	32
L24-S	No	586154.35	5247486.75	32
L28-N	No	585233.51	5248498.07	32
L34-E	No	585703.96	5241957.87	32
L4	No	583399.72	5239374.00	32
L24	No	586153.90	5247517.22	32
L4-E	No	583430.19	5239374.43	32
L4-S	No	583400.15	5239343.53	32
L24-N	No	586153.45	5247547.69	32
L25-W	No	586147.65	5247617.85	32
L25	No	586178.12	5247618.30	32
L25-S	No	586178.56	5247587.83	32
L25-N	No	586177.67	5247648.76	32
L24-E	No	586184.37	5247517.67	32
L14-S	No	584880.55	5240591.42	32
L8-E	No	576595.02	5240491.08	32
L3-N	No	577035.46	5240117.93	31
L8	No	576564.55	5240490.68	31
L8-S	No	576564.95	5240460.21	31
L22-N	No	586144.11	5246180.47	31
L25-E	No	586208.58	5247618.74	31
L3	No	577035.85	5240087.47	30
L8-W	No	576534.08	5240490.29	30
L26-S	No	586158.41	5248518.42	30
L2-N	No	577029.57	5240045.05	30
L26	No	586157.97	5248548.89	30
L7-W	No	576461.46	5240485.56	30
L26-N	No	586157.52	5248579.35	30
L26-E	No	586188.43	5248549.33	30
L26-W	No	586127.50	5248548.44	30

Table B-1.2: Sound Level Modeling Results Sorted by Sound Level

Receptor ID	Participation Status	Coordinates UTM NAD83 Zone 14N		Source Only L_{eq} Sound Level (dBA)
		X (m)	Y (m)	
L23-N	No	587027.30	5246661.68	30
L3-E	No	577066.32	5240087.86	30
L27-E	No	585349.81	5248466.83	30
L27-N	No	585318.90	5248496.86	30
L28-E	No	585264.41	5248468.05	30
L3-S	No	577036.25	5240057.00	30
L23-W	No	586997.28	5246630.77	30
L23-E	No	587058.22	5246631.67	30
L23	No	587027.75	5246631.22	30
L27-S	No	585319.79	5248435.92	29
L23-S	No	587028.20	5246600.75	29
L27	No	585319.35	5248466.39	29
L2	No	577029.96	5240014.58	28
L27-W	No	585288.88	5248465.95	28
L7-E	No	576522.40	5240486.35	28
L7	No	576491.93	5240485.96	28
L3-W	No	577005.39	5240087.07	26
L7-S	No	576492.32	5240455.49	26
L8-N	No	576564.15	5240521.15	26
L7-N	No	576491.53	5240516.42	25
L2-W	No	576999.50	5240014.18	25
L2-S	No	577030.36	5239984.11	25
L1-N	No	576422.87	5239912.31	23
L1-E	No	576453.73	5239882.23	23
L1	No	576423.27	5239881.84	23
L1-W	No	576392.80	5239881.44	23
L1-S	No	576423.66	5239851.37	23

DRAFTED BY AND AFTER RECORDING RETURN TO:

Vogel Law Firm
218 NP Avenue
PO Box 1389
Fargo, ND 58102
Attn: Dan Bueide

98489 Fee: $85.00 Pg: 1 of 26

State of North Dakota)
County of Steele)
Recorded: 10/30/2008 At 1:15 PM

(This space reserved for recording information)

WIND FARM EASEMENT AGREEMENT

1. **Parties.** This is an agreement ("Agreement") dated 16th of October, 2008 (the "Effective Date"), between Vernon L. Johnson, a widower, and his successors in interest ("Owner"), as owners of the real property described on attached Exhibit A ("Owner's Property"), and M-Power, LLC, a North Dakota limited liability company, and its successors in interest ("Developer").

2. **Purpose.** This Agreement is a grant by Owner to Developer of the easements and other specified rights in Owner's Property needed by Developer for its wind energy project located in Steele, Griggs and Barnes counties, North Dakota. It also establishes the rights of the parties and their duties to each other with regard to the financing, construction, operation, repair, maintenance, replacement, and removal of all Wind Farm Improvements whether located on or off Owner's Property.

3. **Definitions.** Capitalized terms used in this Agreement have the meaning given them in the text of the agreement or in this definitions section.

"Access Rights" means the right of unobstructed ingress and egress to and from the Wind Farm Improvements by Developer, its agents, contractors, successors and assigns.

"Annual Installment Payments" means the amounts shown in the Easement Compensation Sheet attached as **Exhibit D**. The parties acknowledge and agree that **Exhibit D** will not be included with this Agreement when recorded with the County Recorder, and that so removing **Exhibit D** prior to recording is intentional and does not in any way affect the validity of this Agreement.

"Collection Facilities" means the underground and above ground electrical collection and telecommunications lines, splice boxes, and all other devices and equipment used to connect the Turbines to electrical collection lines connected to the power grid and to the Wind Farm's Met Towers and operations and maintenance facilities.

6.6 Noise Easement. Owner grants Developer an easement for the right and privilege to generate and maintain audible noise levels in excess of fifty (50) dbA on and above the Noise Easement Property at any or all times of the day or night ("Noise Easement"). The "Noise Easement Property" shall mean the Owner's Property except those portions within a 200-foot radius circle (or lesser distance with Owner's prior written consent) centered on the inside of each presently existing, occupied residence on the Owner's Property. If noise levels emanating from the Turbines exceed fifty (50) dbA without the Owner's written consent as measured within 200 feet (or lesser agreed distance) from the inside of a presently existing residence on Owner's Property by an independent professional applying commonly accepted measurement instruments and standards, Developer shall reduce the noise level to 50 dbA at 200 feet (or lesser agreed distance) from the residence. Measures to be taken by Developer may include installing insulation or sound deadening material in the offending Turbine(s); installing landscaping, insulation, and sound deadening material at the residence; or, changing the operation of the Turbine(s) to reduce noise output.

6.7 Overhang Easement. Owner grants Developer an easement for the right and privilege to permit the rotors of Turbines located on adjacent properties to overhang a portion of the Owner's Property identified and shown on **Exhibit B** (the "Overhang Easement Property") by no more than 110 feet at a height of at least 100 feet above the ground ("Overhang Easement"). Owner shall not interfere with the operation of Turbine rotors that overhang the Overhang Easement Property.

6.8 Met Tower Site Easement. Owner grants Developer an easement to construct, operate, replace, relocate, remove, and maintain a Met Tower and Collection Facilities on each Met Tower Site identified and located as shown on **Exhibit B**. Each Met Tower Site subject to the burden of this easement is referred to as a "Met Tower Site Easement Property."

6.9 Met Tower Access Easement. Owner grants Developer an easement for vehicular and pedestrian ingress and egress to and from the Met Tower ("Met Tower Access Easement"). This Met Tower Access Easement as identified and shown on **Exhibit B** is an extension of the Access Easement; however, Developer shall not construct roads, lanes or other surface improvements in the Met Tower Access Easement except with the express written consent of Owner which consent will not be unreasonably withheld. Owner reserves the right to continue ordinary farming operations on the Met Tower Access Easement, but shall not otherwise obstruct or in any way interfere with Developer's access or other rights under this Met Tower Access Easement. After each use of the Met Tower Access Easement, Developer to the extent reasonably possible shall restore the Met Tower Access Easement to the condition it was in before Developer's use. Developer shall have the absolute right to remove or destroy crops growing in the Met Tower Access Easement as reasonably necessary to enjoyment of its Met Tower Access Easement rights provided it compensates Owner for the damage in the manner provided in **Exhibit D**.

7. **Easement Purchase Price.** Developer shall pay Owner the amounts set forth in the attached **Exhibit D** as the consideration for the Easements, pursuant to the terms and conditions set forth in **Exhibit D**.

The undersigned parties have executed this Agreement as of the Effective Date set forth above.

Owner:

Vernon L. Johnson
Vernon L. Johnson

Developer:
M-Power, LLC,
a North Dakota limited liability company

By: Elizabeth H. Berge

Name: ELIZABETH H. BERGE

Title: Treasurer

98489 Fee: $85.00 Pg: 19 of 26

STATE OF NORTH DAKOTA)
) SS
COUNTY OF Steele)

State of North Dakota)
County of Steele)
Recorded: 10/30/2008 At 1:15 PM

This instrument was acknowledged before me this 16th day of October, 2008, by Vernon L. Johnson, a widower.

ORRIN DELONG III
Notary Public
State of North Dakota
My Commission Expires on August 15, 2014

Orrin DeLong III
Notary Public
My Commission Expires: August 15, 2014

STATE OF NORTH DAKOTA)
) SS:
COUNTY OF Steele)

This instrument was acknowledged before me this 16th day of October, 2008, by Elizabeth H. Berge, the Treasurer of M-Power, LLC, a North Dakota limited liability company, on behalf of the limited liability company.

ORRIN DELONG III
Notary Public
State of North Dakota
My Commission Expires on August 15, 2014

Orrin DeLong III
Notary Public
My Commission Expires: August 15, 2014

98489 Fee: $85.00 Pg: 20 of 26

State of North Dakota}
County of Steele}
Recorded: 10/30/2008 At 1:15 PM

EXHIBIT A

Legal description of Owner's Property

Project Parcel 52: The Northeast Quarter (NE1/4) of Section Thirty-four (34), Township One Hundred Forty-five (145) North, Range Fifty-seven (57) West of the Fifth Principal Meridian, Steele County, North Dakota.

Project Parcel 54: The Southeast Quarter (SE1/4) of Section Thirty-four (34), Township One Hundred Forty-five (145) North, Range Fifty-seven (57) West of the Fifth Principal Meridian, Steele County, North Dakota, less a parcel of land described as follows: Commencing at a point 20 rods East of the Southwest corner of the Southeast Quarter (SE1/4) of Section Thirty-four (34); thence North 8 rods; thence East 10 rods; thence South 8 Rods; thence West 10 rods to the place of beginning.

Project Parcel 56: The Northwest Quarter (NW1/4) of Section Thirty-five (35), Township One Hundred Forty-five (145) North, Range Fifty-seven (57) West of the Fifth Principal Meridian, Steele County, North Dakota.

Project Parcel 57: The Southwest Quarter (SW1/4) of Section Thirty-five (35), Township One Hundred Forty-five (145) North, Range Fifty-seven (57) West of the Fifth Principal Meridian, Steele County, North Dakota.

DRAFTED BY AND AFTER RECORDING
RETURN TO:

Vogel Law Firm
218 NP Avenue
PO Box 1389
Fargo, ND 58102
Attn: Dan Buelde

98500 Fee: $76.00 Pg: 1 of 23

State of North Dakota}
County of Steele}
Recorded: 10/30/2008 At 2:50 PM

(This space reserved for recording information)

WIND FARM EASEMENT AGREEMENT

1. **Parties.** This is an agreement ("Agreement") dated 29th of October, 2008 (the "Effective Date"), between Steven M. Johnson and Stephanie Johnson, husband and wife, and their successors in interest ("Owner"), as owners of the real property described on attached **Exhibit A** ("Owner's Property"), and M-Power, LLC, a North Dakota limited liability company, and its successors in interest ("Developer").

2. **Purpose.** This Agreement is a grant by Owner to Developer of the easements and other specified rights in Owner's Property needed by Developer for its wind energy project located in Steele, Griggs and Barnes counties, North Dakota. It also establishes the rights of the parties and their duties to each other with regard to the financing, construction, operation, repair, maintenance, replacement, and removal of all Wind Farm Improvements whether located on or off Owner's Property.

3. **Definitions.** Capitalized terms used in this Agreement have the meaning given them in the text of the agreement or in this definitions section.

"Access Rights" means the right of unobstructed ingress and egress to and from the Wind Farm Improvements by Developer, its agents, contractors, successors and assigns.

"Annual Installment Payments" means the amounts shown in the Easement Compensation Sheet attached as **Exhibit D**. The parties acknowledge and agree that **Exhibit D** will not be included with this Agreement when recorded with the County Recorder, and that so removing **Exhibit D** prior to recording is intentional and does not in any way affect the validity of this Agreement.

"Collection Facilities" means the underground and above ground electrical collection and telecommunications lines, splice boxes, and all other devices and equipment used to connect the Turbines to electrical collection lines connected to the power grid and to the Wind Farm's Met Towers and operations and maintenance facilities.

6.6 Noise Easement. Owner grants Developer an easement for the right and privilege to generate and maintain audible noise levels in excess of fifty (50) dbA on and above the Noise Easement Property at any or all times of the day or night ("Noise Easement"). The "Noise Easement Property" shall mean the Owner's Property except those portions within a 200-foot radius circle (or lesser distance with Owner's prior written consent) centered on the inside of each presently existing, occupied residence on the Owner's Property. If noise levels emanating from the Turbines exceed fifty (50) dbA without the Owner's written consent as measured within 200 feet (or lesser agreed distance) from the inside of a presently existing residence on Owner's Property by an independent professional applying commonly accepted measurement instruments and standards, Developer shall reduce the noise level to 50 dbA at 200 feet (or lesser agreed distance) from the residence. Measures to be taken by Developer may include installing insulation or sound deadening material in the offending Turbine(s); installing landscaping, insulation, and sound deadening material at the residence; or, changing the operation of the Turbine(s) to reduce noise output.

6.7 Overhang Easement. Owner grants Developer an easement for the right and privilege to permit the rotors of Turbines located on adjacent properties to overhang a portion of the Owner's Property identified and shown on **Exhibit B** (the "Overhang Easement Property") by no more than 110 feet at a height of at least 100 feet above the ground ("Overhang Easement"). Owner shall not interfere with the operation of Turbine rotors that overhang the Overhang Easement Property.

6.8 Met Tower Site Easement. Owner grants Developer an easement to construct, operate, replace, relocate, remove, and maintain a Met Tower and Collection Facilities on each Met Tower Site identified and located as shown on **Exhibit B.** Each Met Tower Site subject to the burden of this easement is referred to as a "Met Tower Site Easement Property."

6.9 Met Tower Access Easement. Owner grants Developer an easement for vehicular and pedestrian ingress and egress to and from the Met Tower ("Met Tower Access Easement"). This Met Tower Access Easement as identified and shown on **Exhibit B** is an extension of the Access Easement; however, Developer shall not construct roads, lanes or other surface improvements in the Met Tower Access Easement except with the express written consent of Owner which consent will not be unreasonably withheld. Owner reserves the right to continue ordinary farming operations on the Met Tower Access Easement, but shall not otherwise obstruct or in any way interfere with Developer's access or other rights under this Met Tower Access Easement. After each use of the Met Tower Access Easement, Developer to the extent reasonably possible shall restore the Met Tower Access Easement to the condition it was in before Developer's use. Developer shall have the absolute right to remove or destroy crops growing in the Met Tower Access Easement as reasonably necessary to enjoyment of its Met Tower Access Easement rights provided it compensates Owner for the damage in the manner provided in **Exhibit D.**

7. **Easement Purchase Price.** Developer shall pay Owner the amounts set forth in the attached **Exhibit D** as the consideration for the Easements, pursuant to the terms and conditions set forth in **Exhibit D.**

98500 Fee: $76.00 Pg: 6 of 23

State of North Dakota)
County of Steele)
Recorded: 10/30/2008 At 2:50 PM

The undersigned parties have executed this Agreement as of the Effective Date set forth above.

Owner:

Steven M. Johnson
Steven M. Johnson

Stephanie Johnson
Stephanie Johnson

Developer:
M-Power, LLC,
a North Dakota limited liability company

By: Elizabeth H. Berge

Name: ELIZABETH H. BERGE

Title: Treasurer

STATE OF NORTH DAKOTA)
) SS:
COUNTY OF Steele)

This instrument was acknowledged before me this 29th day of October, 2008, by Steven M. Johnson and Stephanie Johnson, husband and wife

TRAVIS MOEN
Notary Public
State of North Dakota
My Commission Expires on Aug. 3, 2013

Travis Moen
Notary Public
My Commission Expires: Aug. 3 2013

STATE OF NORTH DAKOTA)
) SS:
COUNTY OF Steele)

This instrument was acknowledged before me this 29th day of October, 2008, by Elizabeth H. Berge, the Treasurer of M-Power, LLC, a North Dakota limited liability company, on behalf of the limited liability company.

TRAVIS MOEN
Notary Public
State of North Dakota
My Commission Expires on Aug. 3, 2013

Travis Moen
Notary Public
My Commission Expires: _____

98500 Fee: $76.00 Pg: 19 of 23

State of North Dakota)
County of Steele)
Recorded: 10/30/2008 At 2:50 PM

EXHIBIT A

Legal description of Owner's Property

Project Parcel 23: The East Half of the Northwest Quarter (E1/2NW1/4) of Section Twenty-Nine (29), Township One Hundred Forty-five (145) North, Range Fifty-seven (57) West of the Fifth Principal Meridian, Steele County, North Dakota.

Project Parcel 24: The Northeast Quarter (NE1/4) of Section Twenty-Nine (29), Township One Hundred Forty-five (145) North, Range Fifty-seven (57) West of the Fifth Principal Meridian, Steele County, North Dakota.

98500 Fee: $76.00 Pg: 20 of 23

State of North Dakota)
County of Steele)
Recorded: 10/30/2008 At 2:50 PM