

Community Wind North LLC

Large Wind Energy Conversion System **Site Permit Application**

Docket No. IP6712/WS-08-1494

January, 2009

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Community Wind North Project

January 19, 2008

Dr. Burl A. Harr
Executive Secretary
Minnesota Public Utilities Commission
Suite 350, 121 7th Place East
Saint Paul, MN 55101-2198

Dear Dr. Harr,

I am pleased to transmit the LWECS Site Permit Application for Community Wind North LLC, (CWN) in accordance with MN Rule 7836.0500. Please do not hesitate to call me with any questions regarding this application. Given that construction on the Project must begin in the spring of 2009 in order for the turbines to be placed in service by December 31, 2009 so they qualify for the federal production tax credit and meet a power sales agreement deadline, we would enormously appreciate an expeditious review and determination on this application and are willing to do anything we reasonably can to facilitate the process.

Sincerely,



Kevin Walli
For David D. Norgaard, Developer
Southwest Wind Consulting, LLC
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Section 1

Introduction

Community Wind North (CWN), LLC, “the Applicant”, submits this Application for a Site Permit to construct a large wind energy conversion system (LWECS). The Community Wind North, LLC Project, “CWN” or “the Project”, is located in Lincoln County west of Lake Benton, Minnesota. The Project is expected to consist of up to fifteen 2-2.5 MW turbines and associated facilities, with the total output not exceeding approximately 30 MW. These 30 MWs will help to satisfy the State of Minnesota’s renewable energy objectives, as defined by the State’s Renewable Portfolio Standard (RPS) which seeks to have 25% of the State’s energy supplied from renewable sources by the year 2025.

CWN is committed to optimizing the wind resources at the Project site, consistent with the energy objectives of the State of Minnesota and the local community. The Project has been designed to make the most efficient use of land and wind resources to maximize sustainable, environmentally beneficial energy supplies while minimizing the potential for environmental impacts. Final project design decisions have been based on environmental, topographical features, available technology, and the nature of the prevailing wind resources. The Project is community-based, developing renewable energy resources while enhancing local economic development.

CWN will proceed as a Community-Based Energy Development (C-BED) project pursuant to Minn. Stat. 216.1612, subd. 2 (f)(1). As a matter of State policy, the Legislature has identified C-BED projects as a priority for utilities that need to construct or purchase additional renewable energy generation capacity. C-BED projects such as the Project will help Minnesota-based utilities meet renewable energy objectives which have been established by the Legislature and the Governor (Minn. Stat. 216B.1691). The Lincoln County Board has approved a resolution supporting the Project as a C-BED project. A copy of this resolution is provided in **Appendix A**.

Lincoln County has issued permits for each of the fifteen (15) turbines, each of which is owned by a separate limited liability company (LLC) with ten (10) Minnesota resident investor/members per LLC (see Appendix B). As a community-based project, there is strong local support for CWN. This Application for a Site Permit accommodates 150 local Minnesota resident shareholders who have planned to admit a financial investor to hold an equity interest in the total 30 MWs in order to fund a large portion of the significant capital costs of the Project.

SWC, will be the construction manager for the Project and in that role will be responsible for retaining the services of a general contractor and certain specialty subcontractors for the Project. This role may, however, be shared with a financial investor as discussed in Section 6. Community Wind North (CWN), LLC will serve as the lead role in managing the ongoing operation of the Project, including monitoring, maintenance and repair activity. Again, much of this work will be performed under contract with operations and maintenance service providers.

Some of the persons involved in CWN have ownership interests in another existing wind park in Lincoln County, the Norgaard Wind Park, built in 2006. In that project, the local ownership interest for each person is in a single Minnesota LLC which owns a single 1.25 MW turbine.

The CWN Project is not a Large Electric Power Generating Plant (LEPGP) as defined by Minn. Stat 216.2421, subd. 2 and therefore does not require the issuance of a Certificate of Need by the Minnesota Public Utilities Commission (pursuant to Minn. Stat. 216B.243).

The Project's authorized representative is David D. Norgaard of SWC. Mr. Norgaard may be contacted by U.S. mail at 1631 – 290th Avenue, Tyler, Minnesota 56178, by e-mail at commish5@frontiernet.net, or by telephone at (507) 247-5672 or (507) 531-0075 (mobile).

SWC is finalizing an agreement with a Minnesota utility for the sale of power generated by the Project. SWC intends to qualify CWN as a C-BED project and as such will have any Wind Generation Purchase Agreement filed with the Minnesota Public Utilities Commission.

As noted above, this Project will comply with the terms and conditions of the State Site Permit process which calls for projects to be developed in an orderly manner consistent with state policies for environmental preservation, sustainable development and efficient use of resources.

Section 2

Proposed Site

2.1 Identification of Project Area

The Project site is located in Lincoln County approximately three to six miles west and southwest of Lake Benton, Minnesota. The Project is in the Verdi Township. Land comprising the Project site is owned by local farmers. CWN controls the right to develop wind energy facilities on these properties through lease agreements. Land leases or agreements have been executed with property owners within the Project area. A limited number of agreements are currently being negotiated and are expected to be finalized by the end of 2008. Approximately 2,400 acres will be involved in the lease arrangements.

The proposed Project site requested for the Site Permit consists of parcels in the following sections: Township 109 North, Range 46 West, Sections 5, 7, 8, 9, 16, 17, 19, 20, and 21.

Figure 2-1 depicts the proposed Project site on a U.S. Geological Survey (USGS) topographic base map. A detailed Project layout and additional mapping are provided in **Appendix C**.

2.2 Wind Characteristics in Project Area

To obtain an accurate representation of the wind resource in the Project area, two wind assessment consulting firms each prepared a comprehensive analysis using the following data:

- Minnesota Department of Commerce state wind resource maps at 80 meters, developed in 2006 by WindLogics (St. Paul, MN);
- 10 year meteorological data from Sioux Falls Airport;
- Site-specific meteorological data from the temporary, onsite 60 meter meteorological tower;
- Data from nearby meteorological towers;
- Minnesota Department of Commerce wind rose data for 2001-2004.

The two wind studies agreed well, and compilation of data from one study is shown in **Table 2.1**. This table presents the capacity factor and energy production for each turbine site at CWN. As shown in the table, the Project area has an average wind speed of 8.45 meters per second (18.9 miles per hour) at a turbine hub height of 80 meters (262 feet), which classifies the project as a Class 4 wind site. **Figure 2-2** depicts the estimated mean annual wind speed around CWN in meters per second at 80 meters (262 feet).

Figure 2-1 – Project Site on USGS Topographic Base Map

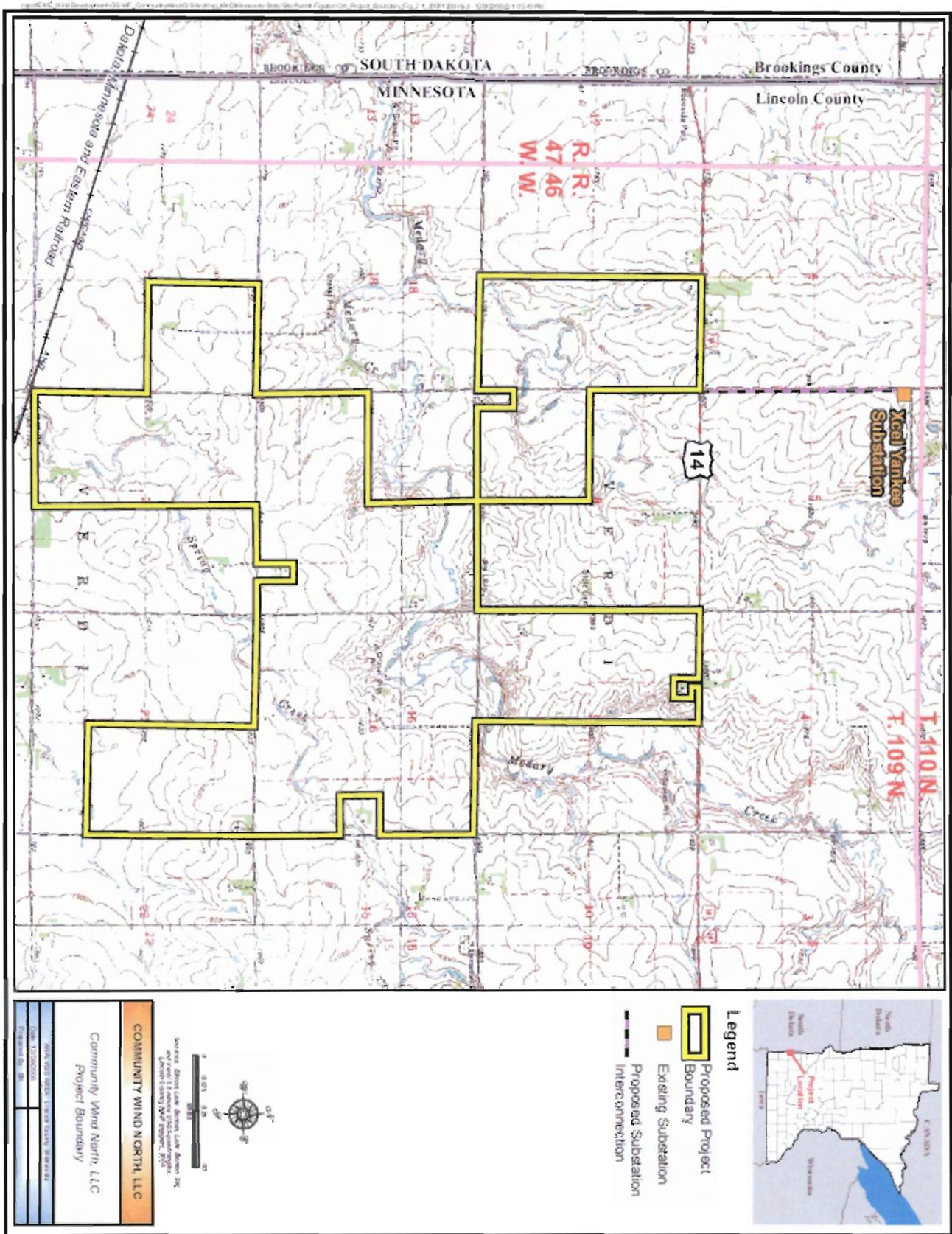


Figure 2-2 – Estimated Mean Annual Wind Speed

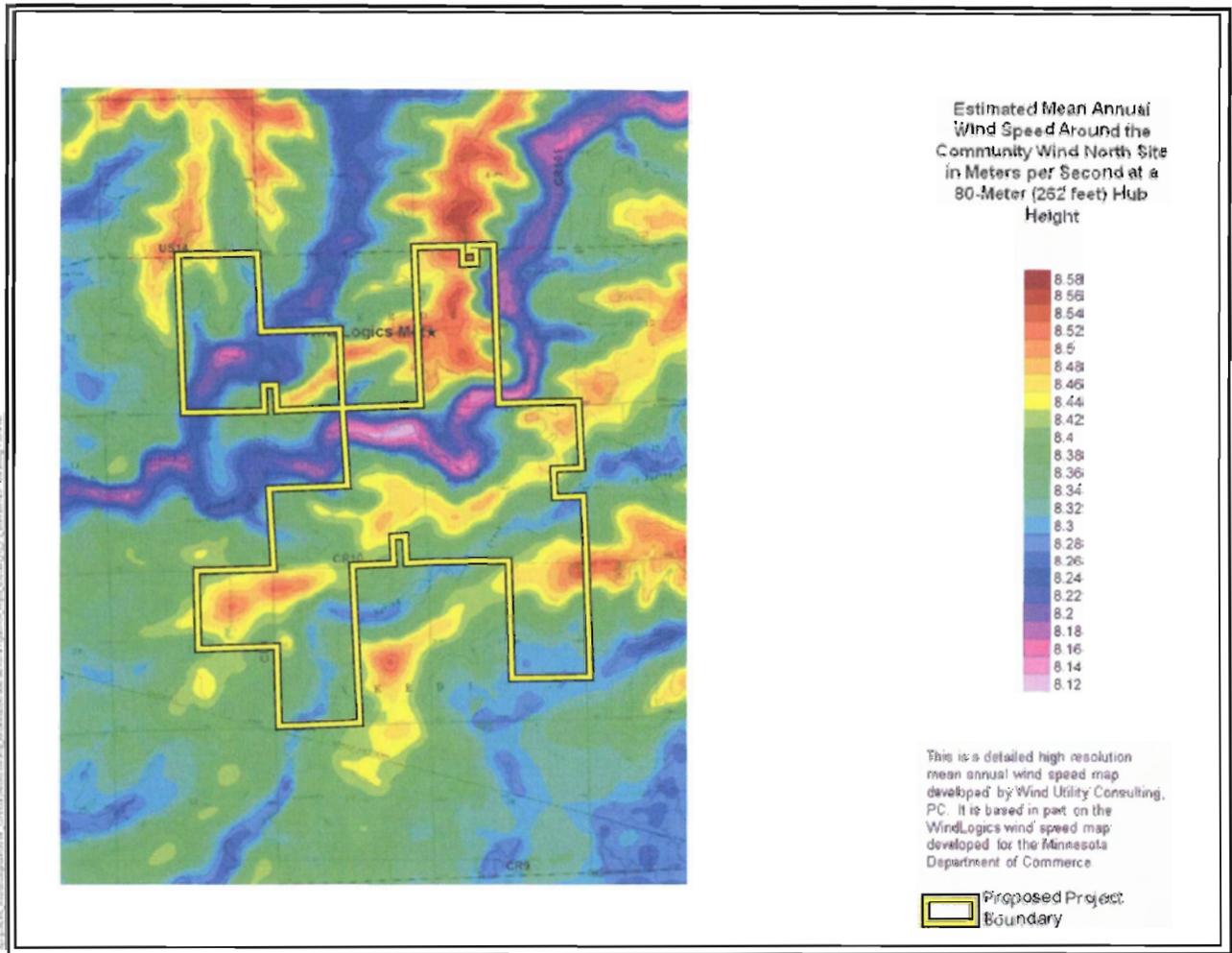


Table 2.1 – Wind Resource Projections

Community Wind North - Net P₅₀ Production				
Turbine	Hub Ht. Speed	With 2.1 Rating	With 2.0 Rating	
1	8.44	7,609,634	7,487,927	
2	8.37	7,534,173	7,416,264	
3	8.48	7,660,526	7,536,506	
4	8.41	7,392,436	7,275,292	
5	8.48	7,437,396	7,316,988	
6	8.41	7,580,943	7,460,811	
7	8.49	7,500,868	7,379,066	
8	8.54	7,459,731	7,336,963	
9	8.51	7,515,463	7,392,757	
10	8.44	7,258,767	7,142,672	
11	8.45	7,244,678	7,128,453	
12	8.46	7,380,587	7,261,821	
13	8.39	7,304,941	7,189,901	
14	8.38	7,220,897	7,107,536	
15	<u>8.48</u>	<u>7,373,404</u>	<u>7,254,032</u>	
Average / Total	8.45	111,474,445	109,686,988	
NCF based on a 2.1 MW Rating		40.4%	39.8%	

Net P₅₀ Production is includes 2% electrical losses and is based on the published power curve. If the actual power curve results in 5% less than the published power curve, then 5% should be deducted from the above totals.

2.2.1 Interannual Variation

The expected annual average wind speed at the site is 8.45 m/s at an 80 meter hub height (18.84 miles/hour at 262 feet). Computer modeling typically indicates that average wind speed has a 50 percent probability of occurrence, and any given year will be within eight percent of the expected average wind speed about 90 percent of the time.

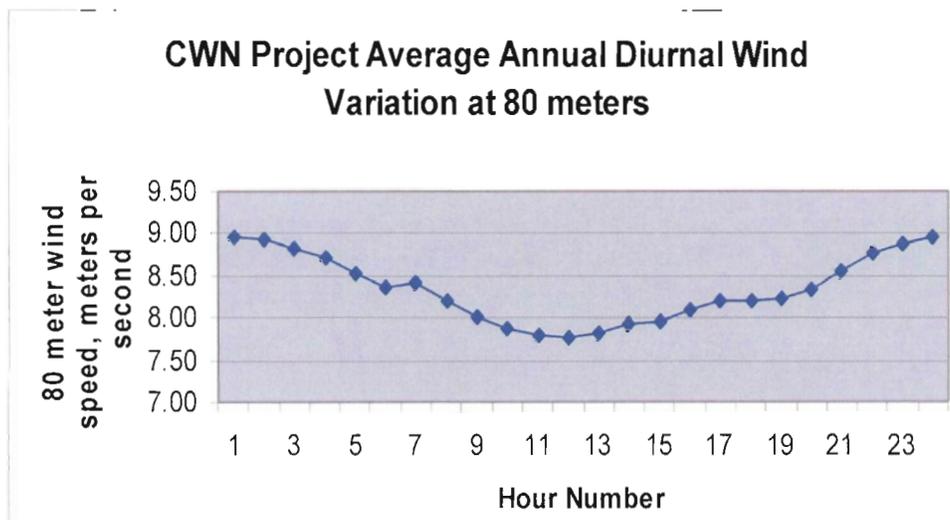
2.2.2 Seasonal Variation

The Wind Logics study shows the predicted monthly average wind speeds for the site at a hub height of 80 meters (262 feet). Wind speeds are highest in January at 9.26m/s (20.65 miles per hour) and lowest in July at 7.16 m/s (15.96 miles per hour). Wind speeds are the highest in spring, fall and winter months. They decrease during the summer months.

2.2.3 Diurnal Conditions

At the project site the winds at turbine hub height (80 meters above ground) generally fall off in the morning as solar warming causes increased mixing of the winds at different levels above ground. After sunset, less mixing occurs and the winds at the hub height will again tend to increase. **Figure 2-3** below shows the annual average diurnal wind speeds. Monthly diurnal wind speed graphs for each month are also available.

Figure 2-3 – Annual Average Diurnal Wind Speeds



2.2.4 Atmospheric Stability

Such data has not been compiled for this site as the inputs are normally not collected with onsite equipment. However, it is expected to be “moderately stable” in the general area, since stability conditions for the open and relatively flat terrain in the southwestern Minnesota region do not vary significantly. Storm events can occur in the area, although their intensity, frequency, and duration are not unusual. Other wind farms have been placed in similar environments.

2.2.5 Turbulence

In general, the turbulence intensity for this part of southwest Minnesota is reasonably anticipated to be low. The 15 meter per second turbulence intensity at 80 meters for the project is 9.3%.

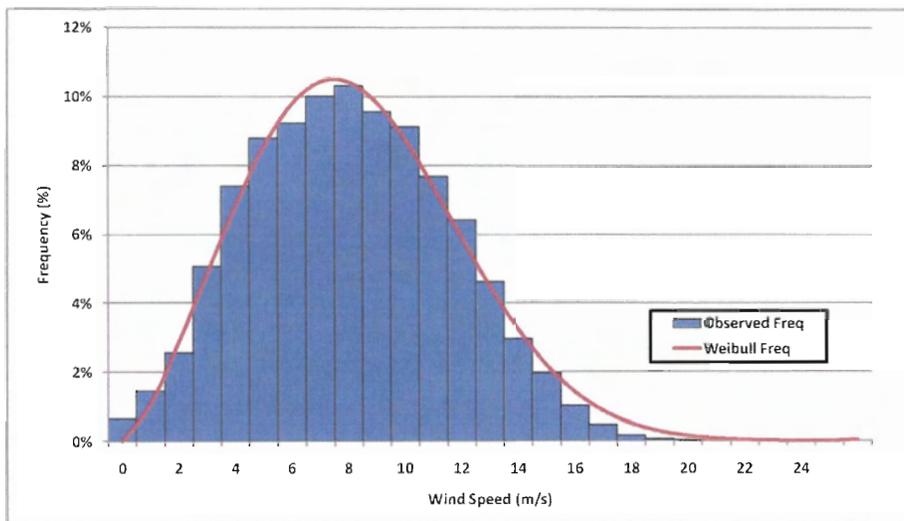
2.2.6 Extreme Wind Conditions

Extreme wind speeds may occur with winds from any of the prevailing directions and may happen during any season. The possibility of a tornado exists in the Project area. 200 miles per hour (89 m/s) can occur in a tornado.

2.2.7 Speed Frequency Distribution

Below, **Figure 2-4**, is a frequency distribution of observed wind speed for the Project site.

Figure 2-4 – Speed Frequency Distribution



2.2.8 Variation with Height

At the meteorological tower the project has an assumed wind shear exponent of 0.207.

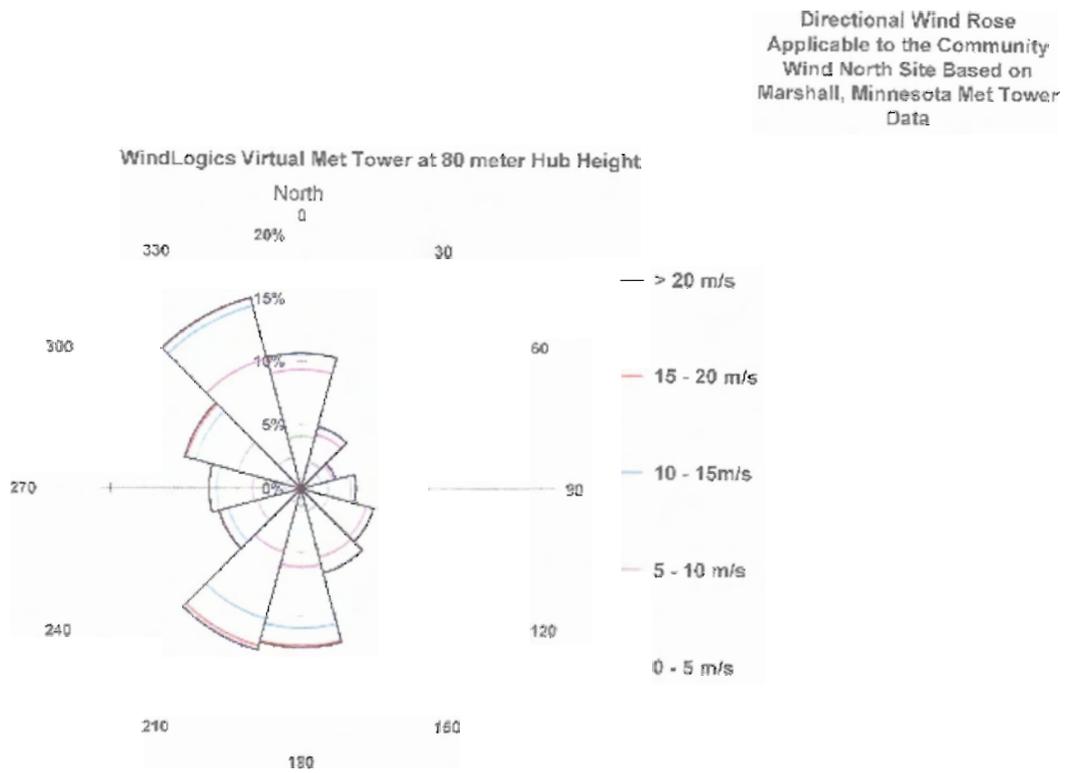
2.2.9 Spatial Wind Variation

Little wind variation exists in the Project area due to the land cover of the area which is mostly farmland and void of significant tree cover.

2.2.10 Wind Rose

Figure 2-5 depicts the directional wind rose for the Project.

Figure 2-5 – Directional Wind Rose



The wind rose is based on data obtained from the Minnesota Department of Commerce (WRAP) for the years of 2001-2004

2.3 Other Meteorological Conditions at Proposed Site

2.3.1 Extreme Weather Conditions

Extreme weather conditions in this area are occasional and include hail, ice storms, lightening, tornados and severe thunderstorms. Due to the low frequency and short duration of these conditions, minimal effects are expected on turbine performance.

2.4 Location of Other Wind Turbines in General Area

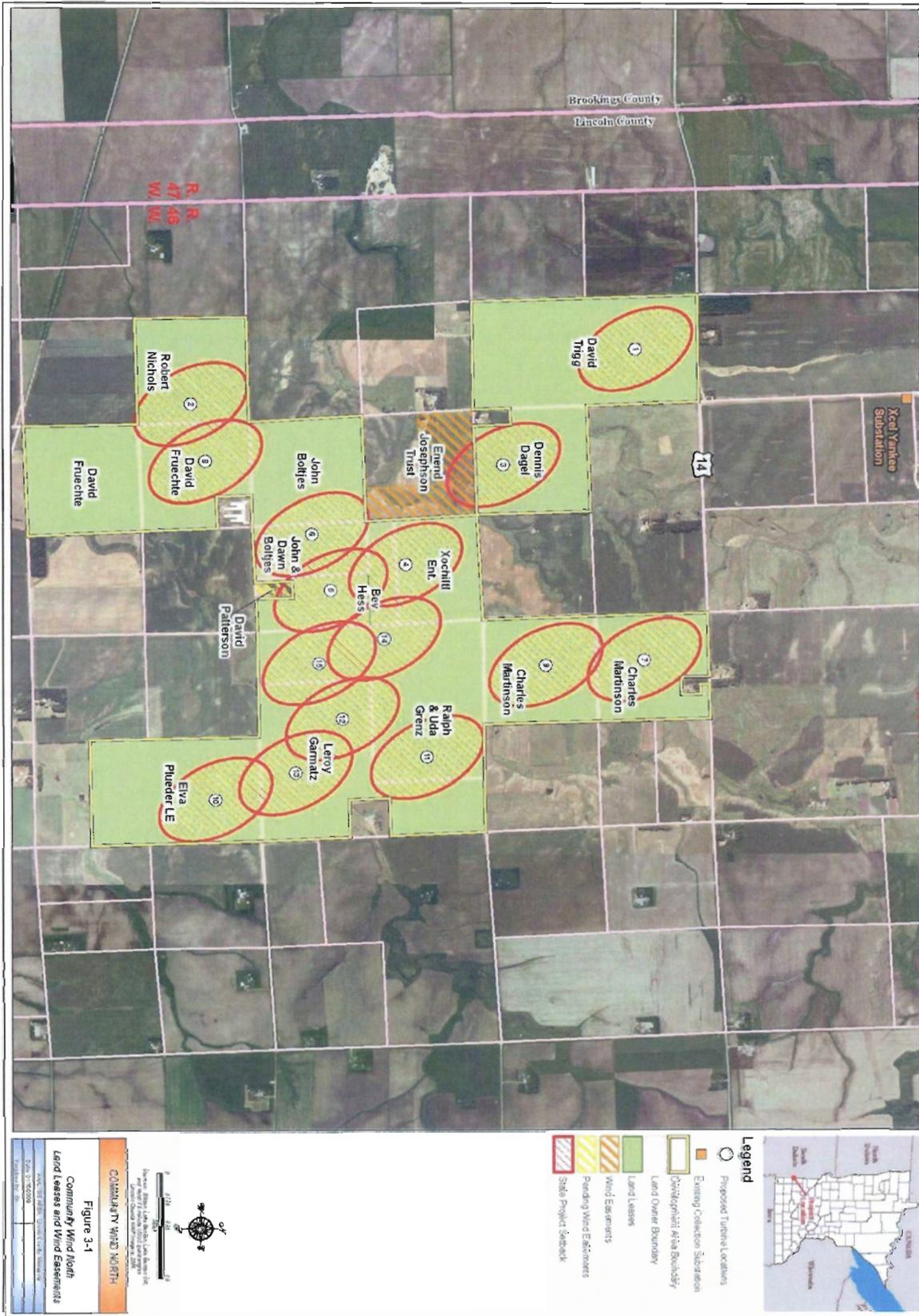
There are several operating wind turbines to the north and east of the Project area. The Lake Benton I project is located approximately three (3) miles to the Northeast of the proposed project site and the Norgaard projects are located approximately one and one-quarter (1 ¼) miles North of the project site.

Section 3

Wind Rights

CWN has worked with local landowners to obtain lease and easement options/agreements sufficient to build this Project. The secured site lease and easement agreements will ensure access to the site for construction and operation of the Project, and prohibit landowners from any activities that might interfere with the implementation of the Project. The lease terms are for 30 years. A few additional wind easement options/agreements are being obtained from property owners with land adjoining the Project. **Figure 3-1** depicts the lands for which wind easement options/agreements are being obtained.

Figure 3-1 – Land and Wind Rights



Section 4

Project Design

4.1 Project Layout

Appendix C includes the detailed layout of the proposed wind farm. Turbines will be placed at a minimum spacing of five rotor diameters (RD) in the prevailing wind direction and three RDs in the non-prevailing wind direction. Proposed turbine locations are shown in **Appendix C**.

These locations are approximate, and are subject to change during final design. The proposed electrical collector system will be located on properties leased by CWN and will be placed underground. The CWN switches and metering equipment will be above-ground and located on land leased by CWN and adjacent to the existing Yankee Substation that is owned by Xcel Energy.

4.2 Major Wind Turbine Components

The Project is expected to consist of 15 Suzlon 2 MW wind generators built on 80 meter tall steel towers with pad-mounted transformers located at the base of each structure. The turbine rotor diameter is 88 meters (288 feet). The blades are made of fiberglass-reinforced epoxy resin. The Suzlon turbine is modeled for the Project but because of supply concerns and uncertainty regarding the ultimate equity partner, three other turbine manufactures have been in contention for turbine purchasing. The current general product specifications for the Suzlon S88 turbine are available upon request from the developer, SWC. (Other turbines that might be considered if the Suzlon Turbine is not available are manufactured by Clipper, GE or Mitsubishi.)

A single free-standing 80-meter permanent meteorological tower will also be constructed at the site. Other system components will be designed and installed in accordance with the standards of high-voltage engineering practice to be compatible with the specified requirements of the interconnecting area transmission system as set forth by the local transmission owners, and the reliability and operating organizations.

4.3 Project Electrical System

The proposed 15 Suzlon 2 MW turbine generators are each rated at a 690 volt (V) output. The electric output from each generator will be transformed to 34.5 kilovolt (kV) via pad-mounted 690 V/34.5 kV transformers at the base of each turbine.

Based on preliminary design plans, power at 34.5 kV will then be collected via an underground system of cables. Power cables and communication lines, if a wireless system is not used, will be buried in trenches within public road right-of-ways or in trenches adjacent to the proposed Project access roads on private property. The cable system will be routed to a nominally rated 60 MVA 34.5 kV switch at a site switchyard located in Xcel Energy's Yankee Substation. From there, Xcel will transform the power to 115 kV and send it down their existing transmission lines to the White and Brookings Substations.

The final electrical system design and interconnection details will be determined through discussions with the Midwest Independent System Operator (MISO) and Xcel Energy. The Project will meet electrical design requirements, including power factor, voltage control, and grid system protection set forth by the MISO, Xcel Energy, and the purchasing utilities.

4.4 Associated Facilities

The individual wind turbines will each have a gravel access road that allows access to the wind turbines year round. These roads are expected to be approximately 16 feet wide with a class-five gravel surface and fabric underlay.

SWC will continue to work with the landowners during micro-siting to reach agreements on the locations of the turbines, access roads, and collector system to minimize land use disruptions.

Foundations for the towers will include a pad foundation of approximately 40 to 60 square feet to a depth of up to 12 feet. The specific foundation will be chosen based on soil borings conducted at each tower location. A gravel pad with a radius of 80 to 100 feet will be established at the base of each tower.

A temporary 60 meter onsite meteorological tower has been constructed and is now collecting data on site. This meteorological tower will be replaced by a permanent free-standing 80 meter meteorological tower.

Section 5

Environmental Analysis

5.1 Description of Environmental Setting

5.1.1 Project Site

The Project site consists of parcels in the following sections: Township 109 North, Range 46 West, Sections 5, 7, 8, 9, 16, 17, 19, 20, and 21, Verdi Township, Lincoln County, Minnesota.

5.2 Human Settlement

5.2.1 Demographics/Homes

The Project site is located in southwest Minnesota in Lincoln County near Lake Benton. Agricultural land use is predominant within the area, including agricultural-related businesses and dispersed rural residential use. The population of the nearby City of Lake Benton is 700, as cited by the US Census Bureau population projections for the year 2006 (projections based on the last official census conducted by the Bureau in 2000).

The construction of the proposed Project will likely have positive impacts on area residents. Local service-related businesses will likely realize short-term benefits resulting from patronage by workers during the construction phases of the Project. The County and local government will benefit from the tax revenue generated by the Project. Additional direct local benefit will be derived from the lease monies paid to local farmers for the use of their properties and/or for wind rights. Since the Project will proceed as a C-BED project, it will also provide strong direct economic benefit to the 150 Minnesota shareholders involved in the Project. Economic benefit to the State of Minnesota is anticipated through helping to satisfy the Minnesota RPS goals.

To minimize the potential for negative impacts on local citizens or homes, the minimum setbacks from residential receptors to turbines will be equal to, or greater than, those required to meet noise standards. The minimum setbacks of turbines from roads will be 76 meters (250 feet).

5.2.2 Noise

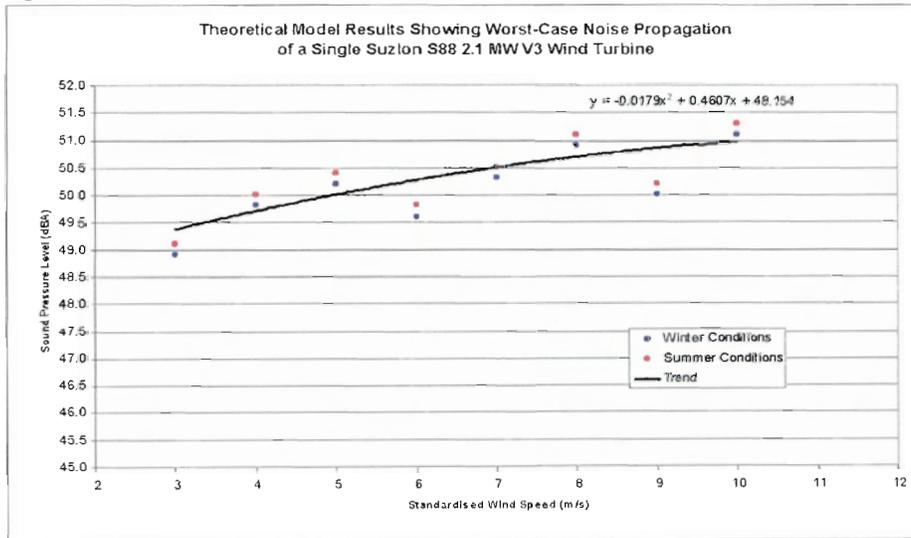
Background noise levels in the Project area are expected to be typical of those in rural agricultural areas and are commonly in the low to mid-30 A-weighted decibel (dBA) range (equivalent to household level noise). These are relatively low background levels and are generally representative of the proposed site location. Higher levels exist near roads and other areas of regular human activity such as noise associated with agricultural practices, and activities occurring nearer to or within Lake Benton.

Wind turbines emit a perceptible sound when in motion. The level of this noise varies with the speed of the turbine and the distance of the noise receptor from the turbine. On relatively windy days, the turbines create more noise; however, the noise from the wind tends to override the turbine noise, especially as distance from the turbines increases. The turbines will comply with noise standards administered by the Minnesota Pollution and Control Agency. The impact to nearby residents and other potentially affected parties will be taken into consideration as part of the final siting of the turbines and design of appropriate setback distances.

The information shown in Figure 5.2.2 is from a Deutsches Windenergie Institute study of the noise emissions of the Suzlon S88 2.1 MW wind turbine. The noise level readings and calculations are based on measurements taken at a distance of 124 meters (407 feet) from the test turbine. CWE will use a minimum setback from occupied buildings of 800 feet. From the information available from actual tests of the Suzlon S88 wind turbine it is expected that these turbines should easily meet the state noise standards.

FIGURE 5.2.2

Figure 5.2.2



- * Noise emission data obtained from Suzlon and Vipac Engineers & Scientists. 2006. Noise Impact Assessment Report, Capital Wind Farm, Document No. 505608-TRP-018284-02.
- * Noise levels were calculated at 124 meters (407 feet) from the WTGS at a height of 5 feet.
- † Average Summer conditions collected from local MET tower: 20 °C, 72% humidity
- ‡ Average Winter conditions collected from local MET tower: -6.3 °C, 74.1% humidity

5.2.3 Visual Impacts

The landscape in the Project site is rural open cropland with gently rolling topography. The area is characterized by agricultural fields and farmsteads. The most widely grown crops in the area are corn and soybeans. Farmsteads are often surrounded by trees planted as windbreaks.

Wind turbines will have a visual effect on the area. This impact is often based on a subjective response. Although a wind farm could be perceived as an intrusion to the rural landscape by introducing structures contrasting in form and color from the existing landscape, wind farms do possess a unique character all of their own. Any perceived visual impacts would likely lessen over time as residents adapt to the change in the visual setting. Population density is fairly low in this area so fewer non-participating neighbors occur proximate to the proposed Project than would in a more densely populated area. Further, the presence of other nearby wind generation projects demonstrates that residents are becoming accustomed to this new form of "farming". Several wind energy projects have been built within Lincoln County with similar agricultural settings, and residents perceive this renewable energy as having characteristics similar to current agricultural practices. In general, local residents and governments understand the visual impact of wind farms and are receptive to their occurrence. As noted in Section 1, Lincoln County previously issued permits for each of the fifteen (15) turbines proposed to comprise the CWN Project.

5.2.4 Public Services and Infrastructure

The proposed wind farm is expected to have minimal effects on existing public services and infrastructure. Impacts may include the following:

- A production tax from the wind energy produced by the turbines will create local tax revenues.
- Short-term wear and tear on local roads will occur as a result of the transport of heavy equipment and other materials.
- CWN is expected to create new job opportunities within the local community, both during construction and operation.

The Project will not generate an increase in traffic volumes or daily human activity, except for a short period of time during construction and occasionally during operation and maintenance activities. Thus the rural and remote setting of the local vicinity would be left intact. The construction contractor will repair any road damage that may occur during the construction of the Project.

5.2.5 Archaeological, Cultural, and Historic Resources

SWC contacted the Minnesota State Historical Society and they indicated that there are no known archaeological sites in the proposed Project area (**See Appendix D**). A consulting archaeologist has also been retained to conduct an archaeological assessment of the proposed site. This consultant's report is expected to be completed in January 2009 and will be e-filed up its receipt. If any archaeological or historic sites are discovered in the proposed area, SWC and the assigned construction contractor will minimize impacts to archaeological and historic sites. An Unanticipated Discovery Plan will be prepared for use during the construction effort in order to provide direction to the construction workforce in the event resources are identified.

SWC also notified various Native American Tribes about the proposed development in conjunction with the Federal Grant Application process through the U.S. Department of Agriculture. A copy of the letter and a list of the tribes to whom it was sent are also included in **Appendix D**.

5.2.6 Recreational Resources

Recreational activities would not be significantly impacted by the Project as the turbines are located on agricultural lands. The impact to wild game/hunting should also not be significant because of the lack of cover for wildlife. The nearest recreational area is Hole in the Mountain County Park located in Lake Benton, which is approximately four miles east of the site.

5.3 Effects on Public Health and Safety

5.3.1 Air Traffic

No public-use airports are located within the proposed Project area. The nearest public airport is the Tyler Municipal Airport, located approximately 12 miles to the east. However, because there is agricultural land use within the Project site, crop dusting may occur periodically. Crop dusting is typically done during the day by small aircraft. Some local aircraft applicators are familiar with application of chemicals in areas where wind turbines have been constructed. Turbines do not constitute any known impediment. In addition to the turbines, a single free-standing permanent 80 meter onsite meteorological tower is proposed.

Notices of Proposed Construction (Form 7460-1) have been filed with the Federal Aviation Administration (FAA) and will be updated as needed during micro-siting. Turbines will be illuminated to meet FAA regulations.

5.3.2 Security

The proposed wind farm is located in a rural area with relatively low population. Construction and operation of the Project would have minimal impacts on the security and safety of the local population. During the Project construction period and during subsequent operation, it is expected that the Project will have no significant impact on the security and safety of the local communities and the surrounding area. Some additional risk for worker or public injury may exist during the construction phase, as it would for any large construction project. However, work plans and specifications would be prepared to address worker safety during Project construction.

5.3.3 Road Traffic

Other than short-term impacts, no significant permanent changes in road traffic patterns or volume are expected. Township and County officials will receive advance notice of the construction schedule, including the timing of the delivery of towers and turbines and arrival of the crane to erect Project equipment. Some wear and tear on roads is anticipated to occur as a result of the transport of heavy equipment and other materials. The Applicant will repair any road damage as required.

5.3.4 Microwave and EMF Assessments

The Project has undertaken an assessment of microwave beam pathways to ensure that the Project does not interfere with microwave paths that have been established for communications systems in the vicinity of the Project. The study, relevant portions of which are provided in **Appendix E**, indicate no interference is anticipated.

5.3.5 Hazardous Materials

During normal operation, all fluids will be contained within the wind turbine structure or the pad-mounted transformers. Leakage from the structures is not anticipated. Proper maintenance procedures and fluid-handling practices will be followed and a Spill Prevention and Countermeasure Control (SPCC) Plan will be prepared.

5.4 Effects on Land-based Economics

5.4.1 Land-Based Economics

The area in which the wind farm will be located consists of rural agricultural-based farming operations, mostly row crop. The proposed land loss due to roads and turbine sites during the time the wind farm is in operation will be approximately 15 to 20 acres. Final acreage is dependent on final site layout. It is anticipated that this Project will contribute to the local economy by way of lease payments, production tax payments, and the acquisition of local goods and services in support of the Project, as well as additional jobs. There are no known mineral or gravel deposits at the Project site or forest cover (other than minor hedgerows).

5.4.2 Tourism and Community Benefits

Tourism in Lincoln County is mainly related to game, wildlife, and agriculture. It is possible that nearby Lake Benton could experience an increase in tourism and community activities associated with the Project, as has proven to be true in other communities which host wind farms. As noted previously, the Project is proposed as a C-BED project which will provide revenues to the 150 participating Minnesota shareholders. In addition, landowners who lease property to the Project will gain lease monies and neighbors with wind easements will benefit financially as well. Another benefit of the Project is the generation of a production tax assessed on the wind farm, which will go directly into the local government treasury and benefit the local community, e.g. fire, police, roads.

5.5 Effects on the Natural Environment

5.5.1 Topography

The majority of Lincoln County is made up of low rolling hills and agricultural land, which was once prairie. The proposed Project has been sited in this area for its openness and ease of site access, as well as the presence of good wind resources. In addition to topography, land-use patterns were also considered in order to minimize or avoid any negative impacts.

No significant impacts on topography are anticipated. Access roads, wind turbine locations, and the proposed underground collector system will not require significant cut or fill. The collector system is proposed to be buried to minimize impact to existing farm operations and any drainage tile disruption will be corrected during construction. Topsoil will be segregated and replaced.

5.5.2 Soil

The soil in the project area consists primarily of a clay-loam. SWC will make every effort to minimize negative soil impacts. Topsoil will be segregated and replaced. Prior to construction a detailed sediment and erosion control plan will be developed. The plan will include Best Management Practices for Topeka shiners, as recommended by John Schladweiler, Assistant Regional Wildlife Manager of the MN Department of Natural Resources (DNR) in his June 21, 2005 letter (**See Appendix F**).

CWN will be making very few changes to the landscape, and will not be significantly affecting drainage patterns. Any temporary disruption to drainage tiles that may occur will be corrected or re-routed at the expense of CWN. Plans for grading, construction and drainage of roads and turbine pads are being developed for construction, as well as a comprehensive plan to restore the site following completion of construction.

5.5.3 Geologic and Groundwater Resources

In the proposed Project area, the land is well-drained and tiled farmland. The foundation designs cannot be completed for the wind turbines and transformers until geotechnical core sampling has been done at each turbine site. The construction of the foundations for each wind turbine and transformers will be done without affecting the local subsurface water resources.

The terrain affected by the Project has very little surface water. The primary feature in the Project area is Medary Creek which will not be affected since all collection lines will be bored under the creek bed to avoid impacts to the waterway. Impacts to geologic and groundwater resources are not anticipated. Water supply needs during construction and operation will be quite limited and will be trucked to the site. Local and regional supplies of trucked water are adequate for construction and operational needs.

5.5.4 Surface Water and Floodplain Resources

The proposed Project will be built on relatively flat agricultural land and fields. Turbines will not be located in a designated flood plain. The Project will implement erosion, sediment and stormwater controls, including Best Management Practices for Topeka shiners, so as to minimize and control run-off during pre- and post-construction activities, as well as during decommissioning. The primary surface water in the project is Medary Creek. The collection lines will be bored under Medary Creek in order to minimize potential affects.

As proposed, construction of wind turbines, the electrical collection lines, and access roads will temporarily disturb approximately 20 to 25 acres of land; of this amount approximately 15 to 20 acres will be permanent. Access roads will be low-profile constructed so as not to impede natural drainage patterns.

If construction is required across drain tile, it will be conducted in a manner such that they will not be impacted or repaired during construction. Construction of collector lines that cross waterways will be conducted by boring beneath the waterway. The entire electrical collector system will be installed underground, and will not alter drainage patterns. Erosion control measures will be used throughout construction until disturbed areas have been re-vegetated.

5.5.5 Wetlands

SWC has made every effort to avoid locating any wind turbines in biologically sensitive areas such as wetlands. To insure that wetlands are not impacted, CWN performed an assessment of wetlands within the proposed project area using National Wetland Inventory (NWI) data base supplemented with a wetlands specialist's field assessment in September 2008. Based on this review, none of the wetlands within the proposed construction activity areas are Class 1 or 2 wetlands.

CWN recorded and mapped the wetlands or waters such as streams or creeks that are within or adjacent to proposed infrastructure (collector lines and access roads, etc.) and has designed the project so that there is no impact to these areas. Infrastructure has been placed outside these areas, and collector lines that must cross these waterways will be conducted by boring beneath the waterway. CWN will submit a 1026 form to the Lincoln County Soil and Water Conservation District to further ensure that no wetlands will be affected by the Project. This form will be submitted to the County in accordance with the Minnesota Wetland Conservation Act and U.S. Natural Resource Conservation Service Farm Service Agency review. Therefore, no permanent impacts to state public waters or state jurisdictional wetlands are anticipated. Also, no permanent impacts to federal jurisdictional wetlands or Water of the U.S. are anticipated. Should final site layout require either temporary or

permanent impacts to jurisdictional wetlands or waters, exceeding any allowable threshold and requiring either pre-construction notification or permit authority, such notification or permit authority will be obtained.

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5.5.6 Vegetation

The proposed wind farm will be located on land which has been historically used for row crop production. One parcel which had been in a corn and soy bean rotation has been seeded back to pasture. Tree coverage is minimal, primarily hedgerows. CWN does not foresee the removal of any trees, groves of trees or shelter belts in its present proposal. Any disturbed grasses in the right-of-ways will be re-seeded.

CWN also reviewed the area for native prairie lands. Initially, CWN reviewed the "Minnesota's Remaining Native Prairie 100 Years after the Public Land Survey" map published by the Minnesota Department of Natural Resources County Biological Survey. Based on the results of the September 2008 field reconnaissance and map review, no native prairie was identified within the proposed project area.

5.5.7 Wildlife

The wildlife found in the Project area is typical of that found in agriculture-related habitats. The resident species are representative of Minnesota game and non-game wildlife that are associated with roadside ditches, fencerows, wetlands, streams, and areas of native grasses and shrubs.

The turbine sites and roads are lacking in cover vegetation for wildlife, therefore it is anticipated that wind farm development will have minimal impact on any resident wildlife. Operation of the wind farm will not change the existing land use.

The following measures will be used to help avoid potential impacts to wildlife in the project area during construction and subsequent development and operation.

- Avoid disturbance of individual wetlands or drainage systems, to the extent feasible, during construction of the Project.
- Protect existing trees and shrubs that are important to the wildlife present in the area. Maintain sound water and soil conservation practices during construction and operation of the Project. Protect topsoil and minimize soil erosion. Practices may include containing excavated material, segregating topsoil, protecting exposed soil, and stabilizing restored material.
- Re-vegetate non-cropland and range areas with native species.

Based on the history of existing wind power projects in the U.S., an additional impact of concern to wildlife would be to avian and bat populations. Birds and bats have been documented to occasionally collide with wind turbines at other sites. This same potential exists in the current proposed wind farm. A comprehensive avian and bat study has been conducted for an area recognized as Buffalo Ridge in Minnesota. This report has been made available to the Minnesota Public Utilities Commission in past cases. Anticipated impacts associated with the Project would be similar to findings identified in the Buffalo Ridge report. The primary avian species that frequent the project area are migratory and song birds, none of which are known to be endangered species.

The U.S. Fish and Wildlife Service (USFWS) database indicates that the following three species could potentially occur in Lincoln County – (1) the federally listed endangered Topeka shiner, (2) the threatened Western prairie fringed orchid, and (3) the candidate Dakota skipper. The Minnesota DNR in a letter dated May 23, 2005 indicated that the only rare plant or animal species potentially occurring in the project area was the Topeka shiner. Additionally, the Minnesota DNR in a letter dated June 21, 2005 indicated that although the Topeka shiner is known to inhabit Medary Creek in a number of locations, the project will not impact the Topeka shiner if proper precautions are implemented (See Appendix F). On November 6, 2008 the USFWS notified the project via email that they do not expect impacts to any of the three species as well (See Appendix G). SWC has provided Minnesota DNR and USFWS with property descriptions and a USGS topographical map identifying four recently added parcels and requested an assessment to determine that no other wildlife impacts will result at the project site (See Appendices F and H).

5.6 Rare and Unique Natural Features

The Endangered Species Act of 1973, as amended, requires protection of those species federally listed as threatened or endangered, as well as protection of habitat designated as critical to the recovery of those listed species. Projects that could potentially have an adverse effect on federally listed species or critical habitat require consultation with the USFWS. The Minnesota DNR’s Natural Heritage Database also maintains records of documented occurrences of state-listed species or other rare and unique species.

SWC has communicated with both the USFWS and the Minnesota DNR since early phases of Project development to ensure that no impacts to threatened or endangered species would occur. The results of both the USFWS and DNR communications indicated that the Topeka shiner was the only protected species within the site area. The Minnesota DNR has requested that specific Best Management Practices for Topeka shiners be implemented during construction, which SWC will adhere to. In addition, CWN has made the decision to bore beneath stream crossings (for placement of underground electric collector lines) to further ensure that there will be no adverse effects on the Topeka shiner habitat in Medary Creek.

Medary Creek, the primary tributary that runs through the site area, does contain federally endangered Topeka shiner habitat, which will be avoided by boring beneath the stream for installation of the electrical collector system. Best Management Practices for Topeka shiners, as provided by DNR (See Appendix F), will also be employed during construction.

[Correspondence with Responsible Agencies]

The applicant has prepared and transmitted letters to the State Historic Preservation Office, Tribal Councils, the Minnesota Department of Natural Resources, and the U.S. Fish and Wildlife Service to request agency review of the project site. This correspondence and agency responses are presented in Appendices D, F, and G to this application.

This Correspondence includes:

- Letter to State Historic Preservation Office 5/5/2005 Response Received: 6/13/2005
- Follow-up Letter to S.H.P.O 8/15/2008 Response Received: 9/5/2008
- Follow-up Letter to S.H.P.O 12/11/2008 Response Received: 12/23/2008

All State Historic Preservation Correspondence Located in Appendix D

- Notice Letter to Tribal Councils 5/5/2005 Response Received: None
- Follow-up Letter to Tribal Councils 12/11/2008 Response Received: None

All Tribal Council Correspondence Located in Appendix D

- Letter to Minnesota DNR 5/5/2005 Response Received: 6/21/2005
- Follow-up Letter to DNR 8/15/2008 Response Received: 11/5/2008 *
- Follow-up Letter to DNR 12/11/2008 Response Received: 12/16/2008 *

All Minnesota DNR Correspondence Located in Appendix F

- Letter to U.S. Fish and Wildlife Service 5/5/2005 Response Received: 6/10/2005
- Follow-up Letter to US F&W Service 8/15/2008 Response Received: 11/6/2008 *
- Follow-up Letter to US F&W Service 10/1/2008 Response Received: 11/6/2008 *
- Follow-up Letter to US F&W Service 12/11/2008 Response Received: Pending

All U.S. Fish and Wildlife Service Correspondence Located in Appendix G

* Information provided in previous correspondence is confirmed as valid in electronic communication -- a copy of which is included in the Appendices.

Section 6

Project Construction

A schedule of preconstruction, construction, and post-construction activities involved in the development of a wind energy project would list hundreds of individual tasks. In order to efficiently work through these processes, SWC will work with a construction contractor. SWC, in cooperation with the selected financing entity, will have an experienced team in place to perform all of the necessary functions that are required to bring the Project into commercial operation. The following is an overview of the manner and sequence in which the Project and associated facilities will be constructed.

Turbines are currently available for the Project through the Project's preferred equity financing partner.

A qualified electrical contractor will assist with the procurement of transformers, design the underground transmission systems, and design the substation for interconnection to the transmission grid system. A qualified electrical contractor will likely be involved in the installation of the underground transmission systems and the substation for interconnection of the transmission grid.

The soil qualification work for the Project will be contracted through a Minnesota state-certified engineering firm. This firm will do the soil boring necessary for the Project, as well as design work for the foundations and roads. Boring will be required for some of the underground transmission lines as well, and engineering will also be responsible for concrete testing during onsite foundation inspection during construction. Local contractors in the immediate southwestern Minnesota area will be solicited for the road construction process. Access road design will be based on previous road experience from projects in this area and will accommodate a road matting and local aggregate combination with an overall capacity rating exceeding nine tons. Rather than provide for more comprehensive design features in the preconstruction phase, the roads will be surveyed as built to eliminate the doubling of costs for this phase.

As previously stated, land surveys will be completed prior to construction of the Project. This will assist contractors during the construction phase, and will be amended after construction to more accurately define the final Project as built.

Several independent contractors were solicited for the erection of the turbines onsite. These companies may include foundation construction, in-tower wiring, erection of the tower and nacelle, and commissioning of the turbine, in their scope of work for the project. A Minnesota-based contractor has been selected and a scope of work is nearly final.

Commissioning will be within the scope of work of the turbine manufacturer. This team will work closely with the erector of the turbines and to ensure that the turbines achieve commercial operation in a timely basis.

6.1 Construction Management

Construction management will be handled using the prior experience of SWC and the investors in the Project. Daily site inspection services can be provided by SWC as requested by investors. Other contractors may be hired for particular areas of expertise, such as civil work, electrical work, and turbine erection. The services of local contractors to assist in Project construction will be secured where possible.

SWC and the investors will also oversee the installation of roads, concrete foundations, towers, turbines and blades, electrical infrastructure, as well as the coordination of material receipt, inventory, and distribution.

The construction team will be onsite to handle materials purchasing, construction, and quality control. An onsite project manager will coordinate all aspects of the work, including ongoing communication with local officials, citizens groups, and landowners.

6.2 Civil Work

Completion of the Project will require various types of civil work and physical improvements to the land. This civil work may include improvement of existing roads, construction of access roads adjacent to the wind turbines; clearing and grading of land, trenching for, and installation of underground electric cables and communication wires, and foundation work. Improvements to existing access roads will typically consist of re-grading and filling of the gravel surface to allow access even in inclement weather. Access roads will be built adjacent to the towers, allowing access both during and after construction. The final roads will be approximately 16 feet wide with a Class-5 gravel surface and fabric underlay. During construction only, those roads will be temporarily widened by an additional 16 feet of compacted soil, covered with geotextile/gravel, if required, to support the size and weight of heavy-duty cranes and turbine delivery vehicles. The final road design will be dependent on geotechnical information obtained during the engineering phase.

During the construction phase, several types of light, medium, and heavy-duty construction vehicles will travel to and from the site, as well as private vehicles used by the construction personnel. The busiest traffic will occur when the majority of the foundation and tower assembly is taking place.

Temporary road radii at intersections will be required during the construction phase to allow the over-length and over-width loads to navigate the intersections. When construction is completed these intersections will be returned to their normal radius.

The specific turbine placement will determine the amount of roadway that will be constructed for this Project. These roads will be sited in consultation with local landowners and completed in accordance with specified design requirements, and will be located to facilitate both construction (cranes) and continued operation and maintenance. Siting roads in areas with unstable soil will be avoided wherever possible. Roads may include appropriate drainage and culverts while still allowing for the crossing of farm equipment. The roads will consist of graded soil, overlain with geotextile and covered with gravel. Once construction is completed, the roads will be re-graded, filled, and dressed as needed. Local requirements will be followed wherever access roads join state or local roadways.

Underground concrete foundations will be constructed to support the steel tubular towers of the turbines. Geotechnical surveys, turbine tower load specifications, and cost considerations will dictate final design parameters of the foundations.

6.3 Commissioning

The Project will be commissioned after completion of the construction and testing phases. Inspection and testing occurs for each component of the wind turbines, as well as the communication system, meteorological system, the low- and high-voltage collector system, and the SCADA system. These commissioning procedures ensure that the generation units are performing to guaranteed levels and that the Project meets electrical system requirements. The turbine manufacturer will provide technical engineers to assist in the commissioning process. The engineers from the turbine manufacturer will continue until the turbine is capable of more than 72 hours of continuous operation.

Section 7

Project Operations and Maintenance

7.1 Project Operations

SWC will enter into a contractual agreement with the turbine vendor, likely Suzlon, to provide service and maintenance for the Project at least through the warranty period given by the turbine vendor. Thereafter, SWC will contract with a qualified contractor for service and maintenance for the Project. The service and maintenance activities will be performed by qualified technicians, trained specifically on the applicable wind turbines. SWC may choose to use a qualified operations manager. A determination has not been made at this time if this will be performed in-house or under a separate contract. The operations manager will oversee the maintenance and service program, ensure utility interconnection and respond to turbine outages. The operations manager will be responsible for all management, administration, service and maintenance activities. After the initial warranty period, Community Wind North (CWN), LLC and the turbine vendor may elect to take over service and maintenance duties.

No onsite operations and maintenance building is anticipated as a component of the Project, instead leased off-site storage may be used. Spare parts in relation to the electrical infrastructure will be maintained based on similar historic project demands. The Project staff will be complemented with the necessary service vehicles—light trucks, boom trucks, cranes, etc.—to ensure timely response. Turbine maintenance will be accomplished as an ongoing cyclical function during the life of the Project, so as to minimize downtime. Transformer maintenance will be accomplished on an annual basis and will be scheduled and performed during non- or low-wind periods.

Onsite service and maintenance activities include routine inspections, regular preventive maintenance on all turbines and related facilities, and unscheduled maintenance and repair. Routine minor maintenance on the wind turbines, electrical power system, and communications system may include maintenance of oil levels and filters, tightening of bolts, minor electrical repairs, upgrading of computer software, and system testing. Civil maintenance includes maintaining Project structures, access roads, drainage systems, and other facilities. The third party may also provide labor, services, consumables, and parts required to perform scheduled and unscheduled major maintenance on the wind farm, including repairs and replacement of parts and removal of failed parts.

Other maintenance activities include management of lubricants, solvents, and other hazardous materials; the hiring, training, and supervision of personnel; and the implementation of appropriate security methods. An operations and maintenance building may be leased offsite to house consumables, spare parts, and some control functions.

7.2 Maintenance Schedule

During turbine commissioning and initial commercial operation, the Project will be inspected onsite daily to see that it is operating within expected parameters. Following the “break-in” period, the turbines will be remotely monitored on a daily basis with planned service and maintenance at the following anticipated intervals:

1. **First service inspection.** The first service inspection will take place one to three months after the turbines have been commissioned. Activities include tightening bolts, greasing bearings, and filtering gear oil.
2. **Semiannual service inspection.** Routine service inspections commence six months after the first inspection. The semiannual inspection consists of lubrication and a safety test of the turbine.

3. ***Annual service inspection.*** The annual service inspection consists of a semiannual inspection plus a full component check.
4. ***Two-year service inspection.*** The two-year service inspection consists of the annual inspection, plus the checking and tightening of terminal connectors.
5. ***Five-year service inspection.*** The five-year inspection consists of the annual inspection, an extensive inspection of the wind braking system, the checking and testing of oil and grease, a balance check and the tightening of terminal connectors.

Section 8

Costs

Specific cost information is confidential to the business of SWC. Final costs for the Project have not yet been confirmed. Based on previous experience, SWC estimates that the installed capital cost for wind farm design and construction will be approximately \$1,900.00 per kilowatt. Operating costs are expected to be about two percent of the capital costs per year.

The actual cost of the project will be finalized after final design, procurement, construction, and contractual arrangements are complete. The project has been selected by and is in the final stages of renegotiating Power Purchase Agreements with a creditworthy Minnesota-based utility with wind energy experience. There are two existing Power Purchase Agreements – one for seven turbines (14 MW) and the other for eight turbines (16 MW) which were executed in March of 2007. The terms of these Agreements are being revisited due to the impact of inflation of project costs since the Agreements were executed.

Section 9

Project Schedule

9.1 Land Acquisition

SWC will obtain land leases and wind rights options for all of the property required to support the Project. The applicant anticipates exercising these and remaining options by January of 2009. A limited number of agreements are currently being negotiated and are expected to be finalized by the end of 2008. Approximately 2,400 acres will be involved in the lease arrangements. The proposed Project site requested for the Site Permit consists of parcels in the following sections: Township 109 North, Range 46 West, Section 5, 7, 8, 9, 16, 17, 19, 20, and 21.

9.2 Permits

SWC will be responsible for undertaking all required environmental review and permits, and seeks to obtain a LWECS Site Permit by April of 2009. This includes all permits indicated in Section 12. Any additional permits required beyond the state site permit will be obtained prior to construction.

9.3 Equipment Procurement, Manufacture, and Delivery

The prospective equity investor has a contract for the purchase of wind turbine components ordered. Delivery of the turbines is anticipated by fall 2009. The switching and metering equipment for the substation will arrive within approximately six months after ordering. Collector system cable will arrive approximately four months after ordering.

9.4 Construction

It is estimated that the construction and commissioning phase will take approximately six to eight months to complete. Construction will likely commence in spring 2009 and must be completed by December 31, 2009.

9.5 Financing

CWN is responsible for financing predevelopment, development, and construction activities. CWN is financing the cost of predevelopment activities through internal shareholder funds. USDA grants are also being considered. Permanent financing is being arranged with partner investors and will be completed prior to commercial operation. The Project will be owned by 150 local Minnesota resident shareholders who have planned to admit a financial investor who will own the majority of the equity interests in the Project Owner for a certain period of time, after which time, the local investors will own a majority of such equity interests. The financial investor will fund capital costs with regard to turbine purchase, construction costs, and project management.

9.6 Expected Commercial Operation Date

SWC anticipates that the Project will begin operation no later than December 2009.

Section 10

Energy Projections

A preliminary analysis of the net energy output based on turbine types and locations indicate that approximately 109,686 MWH (111,879 MWH gross) will be delivered annually to the point of interconnection. Final energy estimates will be developed once the wind farm final design is complete.

Projections for CWN Annual Energy Production were completed by Wind Utility Consulting on October 30, 2008 using onsite meteorological tower data and ten-year Sioux Falls Airport data.

Section 11

Decommissioning and Restoration

At the end of commercial operation, the CWN Project owners will be responsible for removing wind facilities, and removing the turbine foundations to a depth of 48 inches. CWN owners reserve the right to extend options instead of decommissioning at the end of the site permit term. These options may include applying for an extension of the site permit, if necessary, and continuing operation of the Project. In this case, a decision may be made on whether to continue operation with existing equipment or to retrofit the turbines and power system with upgrades based on newer technologies.

11.1 Anticipated Life of the Project

The anticipated Project life is 30 years beyond the date of first commercial operation for each respective phase.

11.2 Decommissioning

The owner will be responsible for costs to decommission the Project and associated facilities. In the event any wind turbine has exhausted its useful life and is decommissioned, the site will be excavated back to four feet below grade.

11.3 List of Decommissioning and Restoration Activities

In addition to any requirements under the site permit, each individual land lease requires proper decommissioning of turbines. Decommissioning of the site would include removal of turbines and related facilities. Removal of related facilities would include access roads, equipment, towers, buildings, transformers, and cables or wires. Foundations will be removed to a depth of four feet below grade and buried back to grade. Additionally, any disturbed surface would be graded, reseeded, and restored as nearly as possible to its preconstruction condition.

CWN has anticipated decommissioning and restoration costs in the Project's financial performance. Beginning in the 16th year of operation, an annual "set aside" of \$5,000 per turbine is scheduled for each year of operation. This will provide a fund in the amount of at least \$750,000 (plus earned interest) to pay for decommissioning and site restoration costs after operations cease.

It is expected that the Project will continue to operate for approximately 30 years. The additional 15 year set-aside span will offer additional interest on funds set aside for decommissioning activities. The cost to dismantle and remove the equipment involves the expense of a crane and crew to dismantle the towers and remove the concrete base to a level of at least four feet below grade – plus restoration costs. These costs are offset by the salvage value of the tower and generator.

Section 12

Identification of Required Permits/Approvals

Signed resolutions of support have been obtained from Lincoln County. (See Appendix B)

A preliminary list of required permits and approvals identified for the project are listed below in Table 12.1.

Table 12.1 – Potentially Required Permits or Approvals

Permit, Review, Approval or Compliance Requirement	Permitting Agency	Item of Consideration	Permit Required
Federal			
Notice of Proposed Construction or Alteration	Federal Aviation Administration	Facility safety lighting	Yes
Determination of No Hazard	Federal Aviation Administration	Turbines and facility safety lighting	Yes
Exempt Wholesale Generator Status	Federal Energy Regulatory Commission	Seeking status as an exempt wholesale generator must file with the Commission	Yes
Market-based Rate Authorization (Petitions for Rate Approval pursuant to Section 284.123(b)(2) 18 C.F.R. Section 381.403)	Federal Energy Regulatory Commission	Delivery of test power	Yes
RGP-003-MN (Regional General Permit)	United States Army Corps of Engineers	Impacts to wetlands or waters	Yes
State of Minnesota			
Site Permit	Minnesota Public Utilities Commission (PUC)	Construction of a Large Wind Energy Conversion System (LWECS) defined as a system capable of generating over 5MW	Yes
General NPDES Permit for Storm water Discharges Associated with Construction Activities	Minnesota Pollution Control Agency (MPCA)	Disturbance of greater than one acre of ground	Yes

Permit, Review, Approval or Compliance Requirement	Permitting Agency	Item of Consideration	Permit Required
License for Crossing Public Lands and Waters	Minnesota DNR	Any wind farm facilities that require crossing of or location on State administered Public Lands or Waters	Yes
Public Waters Work Permit	Minnesota DNR	Any construction activities that impact waterways, including Wetlands, applies to public waters that are identified on DNR public waters inventory maps	Yes
Wetland Conservation Act Compliance	Lincoln County Soil and Water Conservation District – MN Board of Soil and Water Resources (rules)	Construction activities that impact non-state wetlands	Yes
Utility Access Permit	Minnesota Dept. of Transportation	Utility construction impacts to state roads	Yes
Oversize and Overweight Permit	Minnesota Dept. of Transportation	Use of oversize and overweight vehicles	Yes
Local			
Lincoln County	Conditional Use Permit	Meteorological Tower	Yes
	Access Roads		Yes
	County Road Use		Yes
	Township Right-of-Way		Yes