

BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

Ellen Anderson
David C. Boyd
J. Dennis O'Brien
Phyllis A. Reha
Betsy Wergin

Chair
Commissioner
Commissioner
Commissioner
Commissioner

In the Matter of the Application of AWA
Goodhue Wind, LLC for a Site Permit for a 78
Megawatt Large Wind Energy Conversion
System Project in Goodhue County

ISSUE DATE: August 23, 2011

DOCKET NO. IP-6701/WS-08-1233

ORDER ISSUING SITE PERMIT AS
AMENDED

PROCEDURAL HISTORY

On October 19, 2009, AWA Goodhue Wind, LLC (AWA Goodhue or the Applicant) filed its revised site permit application for a large wind energy conversion system. The Applicant also requested a Certificate of Need for the Project, which the Commission approved in Docket No. IP-6701/CN-09-1186.

On November 30, 2009, the Commission accepted the Applicant's site permit application for the Goodhue Wind Project (the Project).

Between July 21 and 22, 2010, four public hearings were held at the Goodhue High School in the City of Goodhue. Administrative Law Judge (ALJ) Eric L. Lipman presided over the hearings and submitted his Summary of Public Testimony on September 7, 2010.

On October 5, 2010, Goodhue County's (the County) Board of Commissioners adopted an amendment to Article 18 of the County Zoning Ordinance governing wind projects.

On November 2, 2010, the Commission issued a Notice and Order for Hearing, referring the matter of the applicability of Goodhue County's ordinance standards on the Goodhue Wind Project to the Office of Administrative Hearings for contested case proceedings.

On April 29, 2011, the Administrative Law Judge (ALJ) assigned to the case submitted her FINDINGS OF FACT, CONCLUSIONS, AND RECOMMENDATIONS (the ALJ's Report).

On May 16, 2011, exceptions to the ALJ's Report were filed by: the Applicant, Goodhue County, an intervenor, and the following additional intervenors: Belle Creek Township, Goodhue Wind Truth, and the Coalition for Sensible Siting (the Intervenors). The Commission also received exceptions to the ALJ's Report from the Department of Natural Resources and from members of the public.

On June 20, 2011, the Energy Facilities Permitting Unit of the Department of Commerce (EFP) filed comments and recommended that the Commission adopt the ALJ's report and issue a site permit to the Applicant; the EFP's filing also included its proposed Findings and Conclusions.

On June 30, 2011, the Commission met to consider the matter, and the record closed under Minn. Stat. § 14.61, subd. 2.

FINDINGS AND CONCLUSIONS

I. Background

AWA Goodhue has requested a site permit for construction of up to 50 General Electric 1.5 MW xle and 1.6 MW xle wind generators mounted on 262-foot towers with a rotor diameter of 271 feet. The overall height of the tower, nacelle, and blade will be approximately 397 feet. The Project will have a nameplate capacity of 78 MW and will generate between 230,000,000 and 270,000,000 kilowatt hours annually. The Project includes buried collection cables, associated access roads, an Operation and Maintenance building, two project substations, and connection to an existing 69 kV transmission line near the existing Goodhue Substation.

The Project will be located in southeastern Goodhue County on agricultural land west of the City of Goodhue and north of the City of Zumbrota. The Project boundary encompasses approximately 32,684 acres and includes portions of the following townships: Belle Creek, Minneola, Vasa, Goodhue, and Zumbrota.

The site permit is subject to the conditions set forth in Minn. Stat., Chapter 216F and Minnesota Rules, Chapter 7854, which govern the siting of Large Wind Energy Conversion Systems (LWECS).

In addition, Xcel Energy has entered into purchase power agreements with AWA Goodhue for the purchase of the Project's total output of 78 MW.¹ The Commission approved those agreements under the C-BED² statute³, which operates in conjunction with other state policy initiatives encouraging renewable generation, including the Renewable Energy Standards (RES), contained in Minn. Stat. §216B.1691.

The RES require utilities to generate or procure specific percentages of their total retail sales using eligible renewable technologies by specific deadlines. By 2020, 24 percent of Xcel Energy's total retail electric sales must be generated by wind energy.⁴

¹ The Commission approved those agreements on April 28, 2010 in Docket Nos. E-002/M-09-1349 and E-002/M-09-1350.

² C-BED means community-based energy development under Minn. Stat. § 216B.1612.

³ Minn. Stat. § 216B.1612.

⁴ Minn. Stat. § 216B.1691, subd. 2(a).

II. The ALJ's Report

The ALJ issued her Report on April 29, 2011. The Report addresses Goodhue County's Wind Energy Conversion System Regulations, as set forth in Article 18 of the County's Zoning Ordinance. The Report includes findings on issues, which the Commission requested to be developed in its

November 2, 2010 Notice and Order for Hearing. The Commission specifically requested the following:

1. that the ALJ develop a record on every standard in Article 18 that is more stringent than what the Commission has heretofore applied to LWECS and make recommendations regarding each such standard whether the Commission should adopt it for Large Wind Energy Conversion Systems in Goodhue County. The Commission has identified two such standards in this Order (Section 4 and Section 6) but is not by this Order restricting the ALJ from developing the record and making recommendations regarding additional standards in Article 18 that upon further examination meet the "more stringent" qualification;
2. that the ALJ allow the parties to develop a factual record on the question of "good cause" as that term appears in Minn. Stat § 216F.081 and to provide recommendations on whether, with respect to each standard in Article 18 identified in the course of her review as "more stringent" than what the Commission has heretofore applied to LWECS, there is "good cause" for the Commission to not apply the standard to siting LWECS in Goodhue County; and
3. as the ALJ addresses the issues identified in the previous two sections, the ALJ is requested to include (but not limited to, by this Order) whether there is sufficient evidence regarding health and safety to support a 10-rotor diameter setback for non-participating residents and the stray voltage requirements.

The ALJ's Report consists of a summary of the comments made, 179 findings and conclusions, and a recommendation that the Commission issue an Order consistent with the findings and conclusions, which support issuing a site permit for the Project.

Having itself examined the record and having considered the Report of the Administrative Law Judge, the Commission concurs in most of her findings and conclusions. On some issues, however, the Commission reaches different conclusions, as delineated and explained below. On all other issues, the Commission accepts, adopts, and incorporates her findings, conclusions, and recommendation.

The issues disputed among the parties are addressed below.

III. Public Comments

The Commission received dozens of public comments on the Project throughout the duration of these proceedings. The Commission also heard from state representatives, including at the Commission's June 30 meeting. Representative Steve Drazkowski and Representative Tim Kelly, both representing portions of Goodhue County, attended the Commission meeting on the matter

and urged the Commission to apply the County's ordinance standards. Members of the public also appeared expressing their views and concerns regarding the Project.

The Commission respects the concerns raised by landowners, businesses, and state representatives of Goodhue County in this proceeding, and the level of their involvement. The Commission recognizes that its decision affects residents, landowners, and businesses in the Project area, and has carefully weighed the evidence presented and the issues raised.

IV. Applicability of Minn. Stat. § 216F.081

A. Introduction

Minn. Stat. § 216F.081 governs the applicability of county standards adopted for Large Wind Energy Conversion Systems that are more stringent than those found in Commission rules or in the Commission's permit standards. In considering a permit application for an LWECS in a county that has adopted more stringent standards, the Commission must consider and apply the county's standards unless the Commission finds good cause not to apply them.

Counties also have the option of assuming permitting authority, under Minn. Stat. § 216F.08, over LWECS under 25 MW in size. Consistent with the Legislature's directive, the Commission has established general permit standards to be applied to permits issued by counties under this provision.⁵

Although the County has not assumed permitting authority for LWECS under Minn. Stat. § 216F.08, the County's ordinance states that "any standards more stringent than those of the MPUC are to be considered and applied to LWECS" under Minn. Stat. § 216F.081. The ordinance then enumerates various standards to be applied to each project, including setbacks from properties, residences, and wetlands, as well as requirements for stray voltage testing.

B. The Applicant

AWA Goodhue argued that the County's standards do not apply to LWECS because the County has not assumed permitting responsibility for LWECS under Minn. Stat. § 216F.08. The Applicant argued that a county may adopt more stringent standards for LWECS of any size only if it has first elected to assume permitting authority for LWECS under 25 MW in size. Because the standards do not apply to the Project, the Applicant argued that the Commission is not required to determine whether there is good cause not to apply the County's standards.

The Applicant also argued, however, that if the Commission determines that the ordinance does apply to LWECS, that there is good cause not to apply the standards to the Project.

⁵ See the Commission's January 11, 2008 *Order Establishing General Wind Permit Standards*, in Docket E,G-999/M-07-1102.

C. The County and the Intervenors

The County and the Intervenors⁶ argued that a county's decision not to assume permitting authority over LWECS does not preclude a county from establishing more stringent standards, which the Commission must apply when considering a permit application for an LWECS. They argued that the statute stands on its own and does not contain the requirement that a county assume permitting authority over LWECS under 25 MW in size as a condition of adopting standards that are more stringent than the Commission's standards. They argued that the ordinance adopted under Minn. Stat. § 216F.081 expressly states that more stringent standards apply to LWECS within the County and that therefore the ordinance standards apply to this Project.

D. Recommendation of the ALJ

The ALJ, in Findings 40-46, concluded that the statute is inapplicable to the Project in this case because the County did not assume permitting authority for projects under 25 MW in size.⁷ The ALJ reasoned that the two provisions – Minn. Stat. §§ 216F.08 and 216F.081 – are conflicting, requiring that the second provision be given a meaning other than its plain meaning.

According to the ALJ's analysis, the two provisions, when construed together consistently, require a county to first assume permitting authority over LWECS under 25 MW in size. Then, a county can adopt more stringent standards, which the Commission must consider and apply to other, larger projects within the county, unless it finds good cause not to apply them.

E. Commission Analysis and Action

The Commission respectfully disagrees with the ALJ that there are conflicting statutory provisions, which render Minn. Stat. § 216F.081 inapplicable to the AWA project.⁸ Rather, the Commission finds that the statute is clear and unambiguous and not inconsistent with any other provisions.

The statute does not require a county to assume permitting authority over LWECS under 25 MW in size, or take any other action, as a condition of adopting more stringent standards, which the Commission must apply unless it finds good cause not to do so. Allowing a county to adopt more stringent standards *only* if the county has first assumed permitting authority for LWECS under Minn. Stat. § 216F.08, establishes a condition not articulated by the Legislature. Further, the statute does not contain any language that, on its own, cannot be clearly construed. Arguments to the contrary simply disregard the statute's plain meaning.

Furthermore, there is no inextricable link between the two provisions the ALJ identified as conflicting. Each provision provides distinct and separate authority. Authorizing a county to assume permitting authority does not conflict with the subsequent provision authorizing a county to adopt

⁶ The Intervenors include Belle Creek Township, Goodhue Wind Truth, and the Coalition for Sensible Siting.

⁷ See ALJ's Report, Finding 45.

⁸ The ALJ's findings on this issue are contained in Findings 40-46 of the ALJ's Report.

more stringent standards for LWECS. For all these reasons, the Commission finds that the County's standards apply unless there is a finding of good cause not to apply them.

V. The Good Cause Standard

As stated above, Minn. Stat. § 216F.081 requires that the Commission apply a county's more stringent standards to an LWECS, unless the Commission finds good cause not to do so.

A. The Applicant

According to AWA Goodhue, finding good cause means having legally sufficient reasons. The Applicant argued that the record demonstrates that there are legally sufficient reasons not to apply the County's standards, including scientific information showing that concerns over health and safety do not justify using such restrictive standards. In addition, the Applicant argued that applying the County's standards would eliminate the possibility of siting this Project within the boundary footprint.

B. The County and the Intervenors

The County, along with the Intervenors, argued that requiring the Commission to find good cause not to apply the County's standards presumes that the ordinance standards are applicable. They argued that the Applicant was required to demonstrate, by clear and convincing evidence, that the County's ordinance requirements are arbitrary and capricious, that the Applicant failed to meet this burden, and as a result, there is no good cause not to apply the County's ordinance standards. They further argued that the Commission has no standards for projects over 25 MW in size and therefore the County's standards must be used because there are no Commission standards to fall back on.

C. The ALJ

According to the ALJ, the common meaning of good cause is a legally sufficient reason, and determining whether good cause exists is a mixed question of fact (what the record shows) and law (whether the showing is sufficient). She used this analysis in evaluating each of the ordinance standards.⁹

She also rejected the claim that the Commission must apply the County's standards because the Commission lacks its own standards. She concluded that the fact that the Commission complied with the legislative directive¹⁰ to provide guidance to counties in its *Order Establishing General Wind Permit Standards*,¹¹ does not mean that the Commission's existing standards, established in other dockets, became inapplicable to LWECS of 25 MW or more.

⁹ See Finding 47 of the ALJ's Report.

¹⁰ In 2007, the legislature directed the Commission, by order, to establish general permit standards for LWECS less than 25 MW that are sited under Minn. Stat. § 216F.08.

¹¹ See the Commission's January 11, 2008 *Order Establishing General Wind Permit Standards*, in Docket E,G-999/M-07-1102

D. Commission Analysis and Action

The Commission concurs with the ALJ that good cause is a mixed question of fact and law and that it is necessary to rely on the record to determine whether there are sufficient reasons, in this case, not to apply the ordinance standards.

The Commission rejects the claim that it must apply the County's standards because it lacks standards of its own. The Commission's rules governing LWECS are found at Minn. Rules, Chapter 7854 and set forth the permitting process, project requirements, and the overarching goal of "siting LWECS in an orderly manner compatible with environmental preservation, sustainable development, and the efficient use of resources," as required under Minn. Stat§ 216F.03.

Further, by formalizing general wind permit standards for LWECS under 25 MW, the Commission did not alter or limit its authority to apply its existing standards to projects 25 MW or larger. That authority is ongoing, and maintaining the Commission's flexibility to evaluate issues that are fact-intensive ensures a careful, thorough, and close examination of each project. It appears that the Legislature, too, has recognized the need for project-responsive standards by authorizing use of standards that are specific to project size and by enabling counties to establish more stringent standards, which the Commission must apply unless it finds good cause not to do so.

VI. Ordinance Standards

There is no dispute among the parties that setbacks from locations such as residences, neighboring properties, and roads are necessary to protect the health and safety of residents and the environment. At issue is whether applying the County's standards to this Project is necessary and whether less stringent standards are sufficient to effectively address the concerns raised. The County standards applicable to this Project are discussed below.

A. Setbacks from Property Lines

The County ordinance governs setbacks for property lines of non-participating property owners¹² based on the prevailing and non-prevailing wind directions. The standard requires turbines to be located a distance of 3 rotor diameters (RD) in the direction of the non-prevailing wind and 5 RD in the direction of the prevailing wind, to be measured horizontally from the tower base. Prevailing wind is the azimuth¹³ between 290 degrees to 30 degrees and between 130 degrees and 230 degrees. Non-prevailing wind is the azimuth between 30 degrees and 130 degrees and between 230 and 290 degrees.

The Commission's general wind permit standards contain a wind access buffer setback from all boundaries of a developer's site control area of 3 RD on the secondary wind axis and 5 RD on the predominant axis.¹⁴

¹² Non-participating property owners are those property owners who do not have turbines on their property.

¹³ The ordinance defines azimuth as a horizontal angle measured clockwise in degrees with 00° 00' 00" being the north reference point.

¹⁴ See the Commission's January 11, 2008 *Order Establishing General Wind Permit Standards*, in Docket E,G-999/M-07-1102, which maintain .

1. The Applicant

AWA Goodhue argued that the County's property line setback creates an unreasonably wide arc for prevailing winds not supported by evidence, such as meteorological data of actual wind conditions in Goodhue County. The Applicant argued that applying the County's standards would ultimately preclude placement of 35 of the 50 turbines.

To determine the prevailing wind in Goodhue County, AWA Goodhue used wind data collected from its onsite meteorological tower and found that the prevailing wind is West/Northwest along a directional line of 300 degrees. The Applicant argued that applying the County's standard is not necessary to protect the wind access rights of non-participating property owners and that the Commission's wind access buffer setback is effective in protecting those rights.

2. The County and the Intervenors

Along with the County, the Intervenors supported using the County's property line setback. According to the County, the standard established for property lines was based on a similar ordinance provision adopted in Nicollet County and designed to protect the wind access rights of non-participating property owners. The County and the Intervenors disputed the Applicant's assertion that the property line setback is unreasonable and argued that there was no factual evidence in the record to support that assertion.

3. The ALJ

The ALJ evaluated the County's property line setback, which uses a broadly defined proxy of two 100 degree arcs for determining the prevailing wind. She found this standard to be less precise than using actual wind data, which the Applicant relied on to incorporate a wind access buffer setback consistent with the Commission's general wind permit standards.¹⁵

The ALJ found that use of the County's proxy is not necessary to protect the wind access rights of non-participating property owners and significantly reduces the availability of land for this Project. As a result, she concluded that there is good cause not to apply the County's property line setback standard to this Project.

4. Commission Analysis and Action

The Commission concurs with the ALJ that use of the County's property line setback is not necessary to protect the rights of non-participating landowners and finds good cause not to apply this standard. Using actual wind data more effectively protects the wind access rights of non-participating property owners and minimizes the effects of wind turbine-induced turbulence downwind. The Commission will therefore require the Applicant to apply its proposed wind access buffer setback, consistent with the Commission's general permit standards.

B. Setback from Neighboring Dwellings – the 10 RD Standard

The County ordinance requires a minimum setback of 750 feet from participating dwellings. For non-participating dwellings, the setback is 10 RD, unless the owner agrees to a lesser setback,

¹⁵ See Finding 54 of the ALJ's Report.

waiving the 10 RD standard. Although the 10 RD setback varies with the size of the turbine, in this case it equals approximately 2,707 feet, over one-half mile.

The Pollution Control Agency's noise standards are contained in Minn. Rules, Chapter 7030. Minn. Rule, part 7840.0040 limits nighttime noise at the L50 sound level to 50 dB (A).¹⁶

The Commission's general wind permit standards require a setback of at least 500 feet from all homes, and any additional distance necessary to meet the PCA noise standards.¹⁷ Typically, the Commission requires between 750 and 1,500 feet from homes, depending on turbine model, layout, and site specific conditions.

1. The Applicant

AWA Goodhue argued that the 10 RD setback is both unnecessary and excessive in this case and would almost certainly preclude the Project due to the amount of land in the Project area that would be restricted if the standard were applied.

The Applicant argued that the record demonstrates that the County's standard is unnecessary to avert adverse effects of noise and shadow flicker and that there are no sufficiently rigorous scientific studies credibly demonstrating that wind turbines cause adverse health effects, either from noise or shadow flicker. The Applicant further argued that its proposed setback of 1,500 feet from neighboring dwellings will reasonably minimize noise and shadow flicker concerns and that no other factors in the record support applying the County's more stringent standard of 10 RD.

The Applicant conducted both a noise study and a shadow flicker study as part of its evaluation of the potential effects from the Project on area residents.¹⁸ According to the Applicant, the results of the studies provide support for using the Applicant's proposed setback of 1,500 feet from neighboring dwellings.

The noise study showed that at a distance of 1,500 feet, the maximum L50 sound level produced by wind turbines within the AWA Goodhue Project is 43 dB (A) at the nearest receptor. At that level, the sound produced is 7 dB (A) below the most stringent applicable state noise standard of 50 dB (A). The state noise standard is met even when a 5 dB buffer¹⁹ - as supported by the report of the Minnesota Department of Health²⁰ - is added to account for low-frequency noise.

¹⁶ Under Minn. Rules, part 7030.0020, L50 means the sound level, expressed in dB(A), exceeded 50 percent of the time for a one hour survey. Under the same rule, dB (A) means A-weighted decibels; and A-weighted means a specific weighting of the sound pressure level for the purpose of determining the human response to sound.

¹⁷ See the Commission's January 11, 2008 *Order Establishing General Wind Permit Standards*, in Docket E,G-999/M-07-1102.

¹⁸ Both studies were conducted by HDR, Inc. on behalf of AWA Goodhue.

¹⁹ In this instance, a buffer is an additive applied to the existing noise level to account for low-frequency noise.

²⁰ On May 22, 2009, the Department of Health issued a report, *Public Health Impacts of Wind Turbines*, as requested by the Department of Commerce

Furthermore, the Applicant argued that under Minn. Stat. § 116.07, subd. 2, the County is prohibited from establishing more stringent noise standards than those of the PCA.

The shadow flicker study used a scenario in which turbines were running 100 percent of the time. The conclusions of that study showed that no residence is expected to experience shadow flicker for more than one percent of the total annual daylight hours; over 96 percent of homes are expected to experience less than 20 hours of cumulative flicker per year, and a majority will experience less than 10 hours per year.

The Applicant argued that there are no other factors unique to Goodhue County that require far greater setbacks than those applied to other wind farms, most of which are located in agricultural zones, rural in character, and with similar population densities.

2. The County and the Intervenors

The County argued that the 10 RD setback is not simply a noise or shadow flicker standard but is aimed at more effectively protecting the quality of life of County residents. The County stated that limited staffing and financial resources made it difficult to conduct scientific studies and that the adverse effects on residents from wind turbines are difficult to ascertain, making it more reasonable to implement a 10 RD distance to more effectively limit possible adverse effects.

The County also disputed that the PCA noise standards provide sufficient protection, claiming that those standards are dated and are not based on current and more reliable scientific information. The County stated that the Minnesota Department of Health's report supports this conclusion by stating that the PCA standards appear to underweight the penetration of low frequency noise into dwellings.

The County and the Intervenors also argued that wind turbine noise is distinctively annoying, leading to adverse health effects. They argued that computer modeling estimates understate the impact of turbines on the community and that the Minnesota Department of Health's report recognizes that significant health and safety concerns exist as a result of wind turbines.

Furthermore, they argued that AWA Goodhue has not made any attempts to increase landowner participation or to obtain waivers from the 10 RD setback. They also argued that the Applicant did not provide an analysis of the amount of land that would be needed to accommodate the Project under the County's ordinance.

And finally, they argued that the Applicant has failed to demonstrate by clear and convincing evidence that the ordinance standards are arbitrary and capricious, and therefore there is no good cause not to apply the County standards.

3. Wind on the Wires

At the Commission meeting, Wind on the Wires²¹ (WOW) commented on the 10 RD standard, stating that there is good cause not to apply the standard. The organization expressed concern that

²¹ Wind on the Wires is a collaborative organization whose aim is to overcome barriers to bringing wind energy to market.

applying the standard would send a broad signal to the wind industry discouraging wind development.

WOW encouraged the Commission to look at the statewide impact of applying such stringent standards on achieving the state's renewable energy requirements and argued that testing the renewable energy requirements against any one particular project would hamstring wind development. Furthermore, WOW also argued that applying new and unexpected standards to this Project at this late point in the process would create uncertainty for future wind development.

4. Energy Facilities Permitting Unit

The Energy Facilities Permitting Unit (EFP), as part of its examination of the Project proposal, assessed both the Applicant's noise and shadow flicker studies. The EFP stated that the noise study, which was conducted in July 2010, was updated in January 2011 and that the update confirmed the results of the July study.

The EFP, in its comments, stated that the Cadna-A wind turbine noise model, used to conduct the noise study, is based on internationally accepted acoustical standards used to calculate outdoor noise and has been used to model a variety of wind projects throughout the world and in Minnesota. The study results showed that noise levels were modeled at 493 receptors within and near the site.

The maximum noise level from all wind turbines operating simultaneously at their highest rated operating speed was 43 dB (A) at the nearest noise-sensitive receptor. This level is below the level permitted under the PCA's nighttime L50 noise limit of 50 dB (A). And with a 5 dB buffer added as a surrogate for low-frequency noise, the turbine noise level is still 2 dB below the PCA noise limit. Further, the draft site permit requires a subsequent noise monitoring to be conducted after completion of the Project.

The shadow flicker study was conducted using 289 potential receptors within the project vicinity, and assumed that all turbines were operating 100 percent of the time and that there were no obstructions to the receptor offsetting the shadow flicker. The results showed that more than 96 percent of the 289 receptors will experience fewer than 20 hours of shadow flicker per year. The EFP concluded that the Applicant's proposed setback of 1,500 feet would effectively protect against noise and shadow flicker concerns.

5. The ALJ

In analyzing the County's 10 RD standard, the ALJ looked at numerous factors, including the County's reasoning for establishing the standard, the state's noise standards, the noise and shadow flicker studies conducted by the Applicant, the potential health and safety effects of the Project, the Applicant's efforts to comply with the 10 RD standard, and the effects on the Project if the standard were applied.

a. Noise and Shadow Flicker

The ALJ found the Applicant's noise study reliable and concluded that the results confirm that the Project will meet the state's noise standards.²² The maximum noise level was 43 dB (A), compared to the PCA's noise limit of 50 dB (A). The study also showed that the existing ambient sound conditions in the Project area are between 33 to 52 dB (A) for hourly median noise and are higher than the average and median noise levels calculated for the turbines of 31 and 32 dB (A) respectively.

She also accepted the shadow flicker study results, which show that 96 percent of homes are expected to experience less than 20 hours of shadow flicker per year; 85 percent are expected to experience less than ten hours per year; and of the 11 homes expected to experience more than 20 hours per year, five are participants and six are non-participants.²³ The maximum number of hours per year expected at the six non-participating homes is 33 hours, 11 minutes, and the maximum for a participating home is 39 hours, 21 minutes.²⁴ The maximum exposure for both participants and non-participants is less than one percent of the available daylight hours per year.²⁵ The Nicollet County ordinance used as a model by Goodhue County limits shadow flicker to 30 hours per year.²⁶

Furthermore, the draft site permit recommended by the EFP requires the Applicant to provide additional data on shadow flicker on both participating and non-participating landowners prior to a pre-construction meeting. And although the Applicant must provide documentation on its efforts to minimize shadow flicker, the ALJ recommended that the site permit include a mitigation plan by the Applicant on how to further alleviate shadow flicker concerns raised by those affected; the Applicant concurred with this recommendation.

b. Health Reports

Recognizing that the state noise standards are the law, the ALJ also relied on reports from the Department of Health and the World Health Organization (WHO) as sources of relevant scientific information regarding the health effects of wind farms. These reports address issues primarily related to noise, including low-frequency noise.

The ALJ found that the state's noise standards are consistent with the interim target nighttime noise levels set by the WHO in 2009 for European Union countries.²⁷ In addition, the Department of Health report recommended using the cumulative impact of all wind turbines to measure noise and stated that human sensitivity to sound is variable and that low-frequency noise may be less

²² See Finding 73 of the ALJ's Report.

²³ See Finding 78 of the ALJ's Report.

²⁴ Id.

²⁵ Id.

²⁶ See Finding 80 of the ALJ's Report.

²⁷ See Finding 90 of the ALJ's Report.

tolerable.²⁸ The report provided examples of mitigation measures, such as adding a buffer, to offset low-frequency noise concerns.

The ALJ concluded that the Applicant's proposed setback of 1,500 feet from the dwellings of non-participating landowners not only complies with the state's noise standards, but that the noise study followed the recommendation of the Department of Health to include the cumulative impact of all wind turbines. Furthermore, the noise modeling results meet state standards, even if a 5 dB buffer were added to account for low-frequency noise. And although the County established its 10 RD to better protect the quality of life of its residents, the ALJ concluded that the County's regulation is primarily aimed at noise and shadow flicker concerns, which are not significant issues under a 1,500 setback.

c. Other Considerations

The ALJ also considered the Applicant's information regarding whether the Applicant could comply with the 10 RD setback by using fewer, larger turbines. Because the setback is based on rotor diameters, however, using larger turbines would further increase the setback distance.²⁹ She also concluded that using smaller turbines would reduce the Project from 50 MW to 36 MW.³⁰ Further, she found that the Applicant's analysis showed that expanding the Project area would require so much additional land (approximately 7 times more than the current acreage obtained), that the Project would become cost-prohibitive.³¹

For all these reasons, she concluded that there is good cause not to apply the 10 RD standard to this Project.

6. Commission Analysis and Action

The Applicant's noise study included the cumulative impact of all turbines, consistent with a recommendation made by the Department of Health in its report on wind turbines. The Applicant also applied a low-frequency noise buffer, consistent with an example provided in that same report. The noise study showed that the maximum noise level was less than the maximum allowed under the PCA's standards, even with the buffer added to account for low-frequency noise.

In addition, the Applicant's shadow flicker study showed that 96 percent of homes will experience less than 20 hours of shadow flicker per year, and importantly, the maximum number of hours per year for a non-participant is 33 hours. The results of these studies demonstrate that there is no reasonable likelihood of adverse health impacts from this Project.

The County has stated that the 10 RD standard is not aimed simply at shadow flicker and noise but is intended to better protect the quality of life of its residents. Further, the County stated that its limited resources would prevent it from effectively enforcing a standard based on noise limits or

²⁸ See Finding 87 of the ALJ's Report.

²⁹ See Finding 83 of the ALJ's Report.

³⁰ Id.

³¹ Id.

duration of exposure to shadow flicker. The County therefore set a limit to essentially avoid the possibility of *any* exposure.

A de facto “no exposure” standard is not necessary to protect the health, safety, and quality of life of Goodhue County residents. Further, a “no exposure” standard could severely hinder the implementation of state renewable energy policies, which depend in part upon carefully sited wind farms to achieve their goals. There is therefore good cause not to apply a “no exposure” standard to applications for LWECS site permits.

At the same time, however, the Legislature clearly envisioned county governments playing a meaningful role in the orderly siting of LWECS, consistent with environmental preservation, sustainable development, and the efficient use of resources. Meaningful local input in siting LWECS requires close collaboration between wind developers and host communities, and it is not clear in this case that all opportunities for that collaboration have been fully explored.

For example, the record shows that the Applicant has not made any additional attempts to gain participation from landowners – or to obtain waivers of the 10 RD setback from non-participating landowners – since the ordinance was passed. Instead, the Applicant took the position that full compliance was impracticable and that there was no need for further engagement with landowners and community leaders.

At the Commission meeting, however, the Applicant conceded that in some cases a waiver of only 100-200 feet would have met ordinance requirements and satisfied County concerns. Further, while the Applicant did not submit detailed schemata showing alternative wind turbine locations – focusing instead on the difficulties of maintaining 10-RD setbacks throughout the Project footprint – the record strongly suggests that setbacks exceeding the 1,500 feet proposed by the Applicant may be widely achievable.

Under these circumstances, it is reasonable to require serious efforts to accommodate the County’s concerns. The Commission will therefore require the Applicant to make a good-faith effort to meet the 10-RD standard – by increasing landowner participation, by obtaining waivers from non-participating landowners, by reexamining site configurations, and by any other means further study may suggest. The Commission will also require that no turbines be sited closer than 6 RD from any non-participating residence without further Commission review.³²

And finally, the Commission will require the Applicant to take steps to mitigate shadow flicker, including, for example, use of timed-suspension of the turbines, shades for windows, and trees as buffers.

C. Setbacks from Wetlands

The Ordinance requires turbines to be placed either 1,000 feet from wetlands or at a distance of 3 RD based on the non-prevailing wind and 5 RD based on the prevailing wind.

³² The 6 RD standard in this case is the equivalent to 1,626 feet.

The Commission's general wind permit standards prohibit wind turbines from being placed in wetlands but do not contain a setback for turbines from wetlands.³³

1. The Applicant

The Applicant stated that it had taken all measures of precaution to adhere to local, state, and federal regulations regarding wetlands and to minimize the Project's effects on wetlands. The Applicant has worked in consultation with the U.S. Army Corps of Engineers, the Minnesota Department of Natural Resources (DNR), the Minnesota Board of Water and Soil Resources, and the Goodhue County Soil and Water Conservation District.

The Applicant argued that the County's Ordinance does not define a wetland and requires either a 1,000 foot setback or a 3 RD non-prevailing and 5 RD prevailing distance, without stating when either applies. Further, the Applicant argued that establishing an RD distance setback to an irregularly shaped wetland boundary is impractical. And finally, the Applicant argued that establishing a wetland setback pushes turbines into other land areas that are likely to be greater habitat or environmental quality areas, potentially causing more impact to plants and wildlife.

2. The County and the Intervenors

The County and the Intervenors argued that it is necessary to apply the County's wetland setback particularly because there is no Commission setback requirement for wetlands. Furthermore, they argued that the DNR had previously recommended a turbine setback from wetlands of 1,000 feet. The County and the Intervenors urged the Commission to apply the County standard.

3. The ALJ

The ALJ determined that the County's Ordinance was problematic because it did not define the term wetland or clarify whether the 1,000 foot setback or the 3 RD and 5 RD distance setback would apply.³⁴

She also found that the Applicant's efforts to work with regulatory agencies in addition to the Commission, including the DNR, the St. Paul District of the U.S. Army Corps of Engineers, the Minnesota Board of Water and Soil Resources, and the Goodhue County Soil and Water Conservation District, were useful in identifying and addressing possible impacts to wetlands in the Project area. Furthermore, the draft site permit requires the Applicant to provide a desktop and field inventory of potentially impacted native prairies, wetlands, and any other biologically sensitive areas within the site and to submit the results to the Commission and the DNR.

Analysis of the wetland impact was provided through meetings between the Applicant and these agencies and showed that within the Project area there are 45 wetlands that would potentially incur impacts due to access roads. Based on the most current projections of the Project, the ALJ concluded that 0.225 acres of wetlands would be permanently impacted by access roads and subject to replacement through a wetland bank credit.

³³ See the Commission's January 11, 2008 *Order Establishing General Wind Permit Standards*, in Docket E,G-999/M-07-1102

³⁴ See ALJ Finding 130.

The ALJ concluded that the Applicant's work with these agencies has resulted in an individualized and valuable analysis of the impacts on the specific quantity, quality, and biological diversity of wetlands in the Project area. She concluded that for these reasons, there is good cause not to apply the County standard to this Project.³⁵

4. The Department of Natural Resources

The DNR filed two exceptions to the ALJ findings regarding wetlands but did not recommend a specific setback or use of the County standard. The DNR did encourage continued evaluation of the effects of turbines on wetlands and incorporating information gained from this and other projects in future project planning.

D. Commission Analysis and Action

The Commission concurs with the ALJ that there is good cause not to apply the wetland setback to this Project. The Applicant's adherence to the input of the various agencies involved in the regulation and protection of wetlands has demonstrated that the Applicant is effectively putting into place protections that accurately reflect and address the concerns raised by placing turbines near wetlands. The agencies have incorporated their expertise on how to prevent and minimize adverse effects on wetlands in the Project area. Furthermore, the draft site permit reiterates the Applicant's obligations under regulations of the DNR and the U.S. Army Corps of Engineers.

For these reasons, the Commission finds good cause not to apply the County standard to this Project.

E. Stray Voltage

The Ordinance requires two preconstruction stray voltage tests at all registered feedlots within the proposed project boundary and within a one-mile radius beyond the proposed project boundary.

The Commission's general wind permit standards do not require stray voltage testing.³⁶

1. The Applicant

The Applicant argued that requiring stray voltage testing is unwarranted. Stray voltage, which is neutral-to-earth voltage that occurs where grounded neutral systems are used to supply electricity to the farm, is not known to occur from wind farms. Stray voltage is caused by faulty wiring on a farm or between the farm and the local utility distribution system. The Applicant argued that the County's desire to establish a baseline for stray voltage, despite the lack of evidence that wind farms cause or contribute to stray voltage, does not justify a requirement that the Applicant be required to test preexisting stray voltage conditions.

³⁵ Id.

³⁶ See the Commission's January 11, 2008 *Order Establishing General Wind Permit Standards*, in Docket E,G-999/M-07-1102

2. The County and the Intervenors

The County acknowledged that stray voltage, which can expose livestock to electrical shock, is not likely to occur but argued that because there is little evidence to disprove the possibility that stray voltage could occur if the system is faulty, stray voltage testing is necessary. Testing would result in collection of data on the subject and produce more understanding of the issue. The County and the Intervenors argued that establishing a baseline is in the community's interest.

3. The EFP

In its comments, the EFP concurred with the Applicant that stray voltage is associated with distribution lines, not transmission lines. This Project will not have any direct electrical connection, including grounded circuit conductors, to conductors originating in another system. It will not connect with the local distribution systems. In addition, it will have its own substation and transformers and will be connected to the transmission grid through dedicated 69 kV lines.

The EFP is not aware of any reports of stray voltage associated with any other wind farms in the state. Furthermore, there are no ground currents in the collection system, whether the system is operating at zero generation or maximum generation. Therefore, the grounding for the wind farm collection system has no current with which to create stray voltage.

4. The ALJ

The ALJ found that stray voltage is not associated with transmission lines, the only lines used by the Project. Because the wind farm has its own substations and transformers, the collection system functions separately, meaning there is no current in the ground wire to cause stray voltage. There is no evidence that any wind farm operation has ever caused stray voltage problems.³⁷ The Applicant did, however, agree to conduct pre and post construction stray voltage testing for three to five landowners who are participants in the Project.

The ALJ therefore concluded that there is good cause not to apply the stray voltage testing requirement to this Project.

5. Commission Analysis and Action

The Commission concurs with the ALJ that there is good cause not to require the Applicant to conduct preconstruction stray voltage testing. The County standard would require the Applicant to conduct testing to establish a baseline that would later be used to assess whether stray voltage has occurred or increased since construction of the Project. Requiring the Applicant to test for an adverse effect that does not apparently exist but could occur as a result of the Project appears premature. Furthermore, there are no reports of stray voltage occurring from other wind farms in the state. The Commission therefore finds good cause not to apply this standard.

³⁷ See Finding 151 of the ALJ's Report.

VII. Amendments to Draft Site Permit

A. Avian and Bat Protection

The Commission has received numerous comments on the wildlife studies conducted by the Applicant. Many of the comments came from residents of Goodhue County concerned about the effective protection of birds and bats in and near the Project area, particularly eagles and loggerhead shrike.

Residents' concerns arose as a result of survey work completed in 2010 and conducted by Westwood Professional Services on behalf of the Applicant. The survey identified three bald eagle nests. Subsequent to that study, the U.S. Fish and Wildlife Service confirmed residents' observation of additional bald eagle nesting in the area; two new nests were identified.³⁸

The EFP stated that it has worked with the Applicant to develop a draft site permit consistent with the guidelines recommended by the U.S. Fish and Wildlife Service and input from the DNR. In addition, the U.S. Fish and Wildlife Service has made recommendations for ongoing agency coordination with the Applicant, the DNR, and the EFP to continue to coordinate ongoing monitoring during the preparation of the avian and bat protection plan, which must be approved by the Commission prior to construction. The loggerhead shrike protection plan must also be approved by the Commission prior to construction.

The continuing work of the agencies, the Applicant, and the EFP to incorporate evolving information has been instrumental in establishing draft permit conditions that adhere to applicable federal and state regulations. And while the conditions in the draft site permit are aimed at protecting species such as the bald eagle, the loggerhead shrike, and the northern long-eared bat, there are additional steps the Commission will require to further these goals.

Condition 13.1 of the draft site permit will be changed to require the Applicant to submit the results of the summer, fall, and winter surveys, and any subsequent surveys, to the Commission within one month of completion of the surveys. The Applicant must also submit the results of the 2011 monitoring by December 15, 2011 and the 2012 monitoring by December 15, 2012. Each report must include an update on the status of the U.S. Fish and Wildlife Service's potential listing of the northern long-eared bat.

Further, the Applicant must avoid placement of turbines in areas identified as highly suitable or very highly suitable loggerhead shrike habitat and submit to the Commission and the DNR a loggerhead shrike protection plan for Commission approval. And finally, the Applicant, in condition 6.7 of the draft site permit will be required to prepare an avian and bat protection plan and submit it to the Commission for approval prior to the preconstruction meeting.

B. Other Changes to Draft Site Permit

The Commission will make changes to conditions 4.2 and 6.2 of the draft site permit regarding shadow flicker mitigation and use of a 6 RD setback, consistent with the decisions above. The second paragraph of condition 4.2 will be amended to require the Applicant to:

³⁸ In a letter to Westwood Professional Services dated June 2, 2011, the U.S. Fish and Wildlife Service confirmed two new eagles' nests based on an April 27, 2011 site visit to the Project.

make a good faith effort to meet the setback requirements of the Goodhue County Ordinance by attempting in good faith to negotiate waivers for those affected by the 10 RD setback but in no event shall wind turbines be located closer than 6 RD from the residences of non-participating residents without further review by the Commission.

Condition 6.2 of the draft site permit will be amended as follows:

The permittee shall make a good faith effort to mitigate shadow flicker including but not limited to timed suspension, trees as buffers, and shades. Additionally, at least ten (10) working days prior to the pre-construction meeting, the Permittee shall provide data on shadow flicker impacts on each residence of non-participating landowners and participating landowners. Information shall include the results of modeling used, assumptions made, and the anticipated duration of shadow flicker for each residence. The Permittee shall provide documentation on its efforts to avoid, minimize, and mitigate shadow flicker impacts.

VIII. Changes to EFP Findings and Conclusions

The Commission will also make the following technical corrections and changes to the EFP Findings and Conclusions.

The Commission will amend EFP Finding 97 as follows (this is a change to the last line on page 19 of the Findings):

Considering these assumptions, the maximum annual expected (cumulative) shadow flicker hours at any non-participating receptor is 33 hours, 11 minutes.

In addition, the Commission will remove the last two sentences of EFP Finding 100.

The Commission will amend the fourth sentence of EFP Finding 138 as follows:

AWA Goodhue then conducted a Loggerhead Shrike Habitat Survey and Pre-Construction Spring Migration Survey to observe avian ~~and bat~~ species present within the projected area.

And the Commission will amend the second sentence of EFP Finding 158 as follows:

By a combination of 1.5 MW and ~~4.5~~ 1.6 MW turbines in the Project, two fewer turbines are required, reducing siting needs for turbines and related facilities.

IX. Modifications to the ALJ's Report

The Commission will make the following technical corrections and modifications to the ALJ's Report, consistent with the decisions contained herein.

The Commission hereby makes the following modification to Finding 10 of the ALJ's Report:

The Applicant ~~owns~~ has contracted with National Wind, LLC, a development company headquartered in Minneapolis, to provide development services for the project.

The Commission rejects Findings 40-46 of the ALJ's Report, consistent with, and for the reasons, contained herein.

The Commission will modify Finding 60 of the ALJ's Report to read as follows:

The Commission's ~~general wind permit standards~~ General Wind Permit Standards Order requires that turbines must be set back at least 500 feet from all homes, plus whatever additional distance is necessary to meet state noise standards.

The Commission will modify the second sentence of Finding 71 of the ALJ's Report to read as follows:

In this case, because multiple turbines could potentially impact a residence, the Applicant conducted a sound modeling study in ~~June 2010~~ January 2011 to determine the maximum sound level from the cumulative effect of all proposed turbines.

The Commission will modify Finding 85 of the ALJ's Report, consistent with the decisions, and for the reasons, contained herein to read as follows:

Although the other parties have suggested that the Applicant could re-negotiate its leases and participation agreements to take advantage of the 750-foot setback allowed for participants, or could offer to pay more money to nonparticipants in order to obtain more land rights, the record is clear that application of the 10-RD setback to the project (as it has been developed to date) ~~will effectively~~ may preclude the entire project. ~~The assertion that the Applicant may be able to negotiate waivers of this requirement with those who have declined to participate in the past is speculation that is not founded in any evidence.~~

X. Conclusion

With the determinations described above, the Commission finds that the Project is compatible with environmental preservation, sustainable development, and the efficient use of resources under Minn. Stat. § 216F.03 and Minn. Rules, part 7854.1000. The Commission also finds that the Applicant has complied with Minn. Rules, Chapter 7854. A site permit will be issued in the form attached.

ORDER

1. The Commission hereby adopts the Report of the Administrative Law Judge with the following modifications:
 - a. The first sentence of Finding 10 of the ALJ's Report is modified to read as follows:

The Applicant ~~owns~~ has contracted with National Wind, LLC, a development company headquartered in Minneapolis, to provide development services for the project.
 - b. The Commission hereby rejects Findings 40-46 of the ALJ's Report.

- c. Finding 60 of the ALJ's Report is modified to read as follows:

The Commission's ~~general wind permit standards~~ General Wind Permit Standards Order requires that turbines must be set back at least 500 feet from all homes, plus whatever additional distance is necessary to meet state noise standards.

- d. Finding 85 of the ALJ's Report is modified to read as follows:

Although the other parties have suggested that the Applicant could re-negotiate its leases and participation agreements to take advantage of the 750-foot setback allowed for participants, or could offer to pay more money to nonparticipants in order to obtain more land rights, the record is clear that application of the 10-RD setback to the project (as it has been developed to date) ~~will effectively~~ may preclude the entire project. ~~The assertion that the Applicant may be able to negotiate waivers of this requirement with those who have declined to participate in the past is speculation that is not founded in any evidence.~~

2. The Commission hereby issues the site permit to AWA Goodhue with the following amendments:

- a. The second paragraph of section 4.2 of the draft site permit is deleted and the following language inserted:

The permittee shall make a good faith effort to meet the setback requirements of the Goodhue County Ordinance by attempting in good faith to negotiate waivers from those affected by the 10 RD setback but in no event shall wind turbines be located closer than 6 RD from the residences of non-participating residents without further review by the Commission.

- b. Section 6.2 of the draft site permit is amended to read as follows:

The permittee shall make a good faith effort to mitigate shadow flicker including but not limited to timed suspension, trees as buffers, and shades. Additionally, at least ten (10) working days prior to the pre-construction meeting, the Permittee shall provide data on shadow flicker impacts on each residence of non-participating landowners and participating landowners. Information shall include the results of modeling used, assumptions made, and the anticipated duration of shadow flicker for each residence. The Permittee shall provide documentation on its efforts to avoid, minimize, and mitigate shadow flicker impacts.

- c. The first sentence of section 6.7 of the draft site permit is amended to read as follows:

The Permittee shall, in consultation with the Commission and DNR, prepare an avian and bat protection plan and submit it to the Commission for approval ~~at least ten (10) working days~~ prior to the pre-construction meeting.

- d. The following sentence will be added to the end of Section 13.1.1 of the draft site permit is amended to read as follows:

The Permittee shall submit the results of the summer, fall, and winter surveys, and any subsequent surveys, to the Commission within one month of completion of the surveys.

- e. The following sentence will be added to the end of section 13.1.2 of the draft site permit:

The Permittee shall submit the results of the 2011 monitoring by December 15, 2011 and the 2012 monitoring by December 15, 2012. Each report shall include an update on the status of the U.S. Fish and Wildlife Service potential listing of the Northern long-eared bat.

- f. Section 13.1.3 of the draft site permit is amended to read as follows:

The Permittee shall ~~take steps to avoid~~ placement of turbines in areas identified as highly suitable or very highly suitable loggerhead shrike habitat. Alternate turbine sites are to be considered the primary avoidance strategy. If alternate sites cannot be utilized ~~as the primary mitigation strategy,~~ the Permittee shall provide the Commission and DNR with a Loggerhead Shrike Protection Plan for approval by the Commission detailing why avoidance is not possible, outlining strategies to minimize effects to Loggerhead Shrike, and providing mitigation measures for impacts. Permittee shall conduct two years of post-construction fatality monitoring to evaluate the impacts of wind turbines sited in loggerhead shrike habitat determined to be highly to very highly suitable.

- 3. The Commission hereby adopts the Findings and Conclusions of the EFP with the following changes:

- a. EFP Finding 97 is amended to read as follows:

Considering these assumptions, the maximum annual expected (cumulative) shadow flicker hours at any non-participating receptor is 33 hours, 11 minutes.

- b. The Commission strikes the last two sentences of EFP Finding 100.

- c. The fourth sentence of EFP Finding 138 is amended to read as follows:

AWA Goodhue then conducted a Loggerhead Shrike Habitat Survey and Pre-Construction Spring Migration Survey to observe avian ~~and bat~~ species present within the projected area.

- d. The second sentence of EFP Finding 158 is amended to read as follows:

By a combination of 1.5 MW and ~~4.5~~ 1.6 MW turbines in the Project, two fewer turbines are required, reducing siting needs for turbines and related facilities.

4. This Order shall become effective immediately.

BY ORDER OF THE COMMISSION

Burl W. Haar
Executive Secretary



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STATE OF MINNESOTA PUBLIC UTILITIES COMMISSION

**SITE PERMIT FOR A
LARGE WIND ENERGY CONVERSION SYSTEM**

IN GOODHUE COUNTY

**ISSUED TO
AWA GOODHUE, LLC**

PUC DOCKET NO. IP-6701/WS-08-1233

In accordance with Minnesota Statutes Section 216F.04, this Site Permit is hereby issued to:

AWA Goodhue, LLC

The Permittee is authorized to construct and operate up to a 78 Megawatt Large Wind Energy Conversion System on the site identified in this Site Permit and in compliance with the conditions contained in this Permit.

This Permit shall expire thirty (30) years from the date of this approval.

Approved and adopted this 23rd day of August, 2011

BY ORDER OF THE COMMISSION

BURL W. HAAR
Executive Secretary



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SITE PERMIT

This **SITE PERMIT** for a Large Wind Energy Conversion System (LWECS) authorizes AWA Goodhue Wind, LLC (Permittee) to construct and operate the Goodhue Wind Project (Project), a 78 Megawatt (MW) nameplate capacity LWECS and associated facilities in Goodhue County, on approximately 12,000 acres of land within the 32,684 acre site boundary in accordance with the conditions contained in this permit.

SECTION 1 PROJECT DESCRIPTION

The up to 78 MW nameplate capacity LWECS authorized to be constructed in this Permit (Goodhue Wind Project) will be developed and constructed by the Permittee. The Project will consist of up to 50 General Electric 1.5 MW xle and 1.6 MW xle wind turbine generators mounted on 262.5 foot (80 meter) towers having a combined nominal nameplate capacity of approximately 78 MW. The rotor diameter is 271 feet (82.5 meters). The overall height of the tower, nacelle and blade will be approximately 397 feet (121 meters).

Associated facilities will include a concrete and steel foundation for each tower, pad mounted step-up transformers for each wind turbine, access roads, an electrical collection and feeder system, and operations and maintenance building, two project substations, and two permanent meteorological towers. The project will also include an underground automated supervisory control and data acquisition system (SCADA) for communication purposes. The energy from the proposed 78 MW project will be delivered from the project substations to the electrical grid via two points of interconnection. The northern 39 MW of the Project will interconnect to an existing 69 kV transmission line adjacent to the existing Vasa Substation approximately three miles north of the project via a new 69 kV transmission line. The southern 39 MW will interconnect to an existing 69 kV transmission line near the existing Goodhue Substation.

SECTION 2 DESIGNATED SITE

2.1 PROJECT BOUNDARY

The Project boundary is shown on each of the three (3) maps in Attachment 1. The Goodhue Wind Project, except for the new 69 kV transmission line, will be located on lands within the Project boundary on which AWA Goodhue, LLC has lease and easement agreements. The project boundary encompasses approximately 32,684 acres and includes portions of Belle Creek (sections 1-5, 8-17, 20-29, 32-36); Goodhue (sections 17-19, 30 and 31); Minneola (sections 1-5, 8-17; Vasa (sections 35 and 36); and Zumbrota (sections 4-6, 7-9, 16-18) Townships.

2.2 TURBINE LAYOUT

The preliminary site layout for the wind turbines and associated facilities are shown in Attachment 1 (pages 1 - 3). The preliminary site layout represents the approximate location of wind turbines and associated facilities within the Project boundary and identifies a layout that minimizes the overall potential human and environmental impacts, which were evaluated in the

permitting process. The layout depicting the location of all turbines and associated facilities, except for the new 69 kV transmission line shall be located within the Project boundary. The Project boundary serves to provide the Permittee with the flexibility to do minor adjustments to the preliminary layout to accommodate landowner requests, unforeseen conditions encountered during the detailed engineering and design process, and federal and state agency requirements. Any modification of the location of a wind turbine and associated facility depicted in a preliminary layout shall be done in such manner to have comparable overall human and environmental impacts and shall be specifically identified in the site plan pursuant to Section 5.1. The Permittee shall submit the final site layout in the site plan pursuant to Section 5.1.

SECTION 3 APPLICATION COMPLIANCE

The Permittee shall comply with those practices set forth in its revised site permit application, dated October, 19, 2009, and the record of this proceeding unless this permit establishes a different requirement in which case this permit shall prevail.

Attachment 4 contains a summary of compliance filing, which is provided solely for the convenience of the Permittee. If this permit conflicts or is not consistent with Attachment 4, the conditions in this permit will control.

SECTION 4 SETBACKS AND SITE LAYOUT RESTRICTIONS

4.1 WIND ACCESS BUFFER

Wind turbine towers shall not be placed less than five (5) rotor diameters (RD) on prevailing wind directions and three (3) RD on non-prevailing wind directions from the perimeter of the property where the Permittee does not hold the wind rights, without the approval of the Commission. This section does not apply to public roads and trails.

4.2 RESIDENCES

Wind turbine towers shall not be located closer than 1,000 feet from the nearest participating residence unless a waiver has been signed by the property owners, or the distance required to comply with the noise standards pursuant to Minnesota Rule 7030.0040 established by the Minnesota Pollution Control Agency (PCA), whichever is greater.

The permittee shall make a good faith effort to meet the setback requirements of the Goodhue County Ordinance by attempting in good faith to negotiate waivers from those affected by the 10 RD setback but in no event shall wind turbines be located closer than 6 RD from the residences of non-participating residents without further review by the Commission.

4.3 NOISE

The wind turbines shall be placed such that the Permittee shall comply with noise standards established as of the date of this permit by the PCA at all times at all appropriate locations. The noise standards are found in Minnesota Rules Chapter 7030. Turbine operation shall be modified or turbines shall be removed from service if necessary to comply with these noise standards. The Permittee or its contractor may install and operate turbines, as close as the minimum setback required in this permit but in all cases shall comply with PCA noise standards. The Permittee shall be required to comply with this condition with respect to all homes or other receptors in place as of the time of turbine construction, but not with respect to such receptors built after construction of the towers.

4.4 ROADS

Wind turbine and meteorological towers shall not be located closer than 250 feet from the edge of the nearest public road right-of-way.

4.5 PUBLIC LANDS

Wind turbines and associated facilities including foundations, access roads, underground cable, and transformers, shall not be located in public lands, including Waterfowl Production Areas, State Wildlife Management Areas or Scientific and Natural Areas or in county parks, and wind turbine towers shall also comply with the setbacks of Section 4.1.

4.6 WETLANDS

Wind turbines and associated facilities including foundations, access roads, underground cable and transformers, shall not be placed in public waters wetlands, as defined in Minnesota Statutes section 103G.005, subpart 15a. However, electric collector or feeder lines may cross or be placed in public waters or public waters wetlands subject to permits and approvals by the Minnesota Department of Natural Resources (DNR) and the United States Army Corps of Engineers (USACE).

4.7 NATIVE PRAIRIE

The Permittee shall, in consultation with the Commission and DNR, prepare a Prairie Protection and Management Plan and submit it to the "Commission and DNR at least ten (10) working days prior to the pre-construction meeting if native prairie, as defined in Minnesota Statutes section 84.02, subdivision 5, is identified in any biological and natural resource inventories conducted pursuant to Section 6.1. The plan shall address steps to avoid impacts to native prairie and mitigation to unavoidable impacts to native prairie by restoration or management of other native prairie areas that are in degraded condition, by conveyance of conservation easements, or by other means agreed to by the Permittee and Commission. Wind turbines and associated facilities including foundations, access roads, collector and feeder lines, underground cable, and transformers shall not be impact unless addressed in a Prairie Protection and Management Plan Construction activities, as defined in Minnesota Statutes section 216E.01, shall not impact native prairie unless addressed in a Prairie Protection and Management Plan. Wind turbines and

associated facilities including foundations, access roads, collector and feeder lines, underground cable, and transformers shall not be located in areas enrolled in the Native Prairie Bank Program.

4.8 SAND AND GRAVEL OPERATIONS

Wind turbines and all associated facilities, including foundations, access roads, underground cable, and transformers shall not be located within active sand and gravel operations, unless otherwise negotiated with the landowner with notice given to the owner of the sand and gravel operation.

4.9 WIND TURBINE TOWERS

Structures for wind turbines shall be self-supporting tubular towers. The towers may be up to 80 meters (262.5 feet).

4.10 TURBINE SPACING

The turbine towers shall be constructed within the site boundary as shown in Attachment 1. The turbine towers shall be spaced no closer than three (3) RD on non-prevailing wind directions and five (5) RD on prevailing wind directions. If required during final micro siting of the turbine towers to account for topographic conditions, up to 20 percent of the towers may be sited closer than the above spacing but the Permittee shall minimize the need to site the turbine towers closer.

4.11 METEOROLOGICAL TOWERS

Permanent towers for meteorological equipment shall be free standing. Permanent meteorological towers shall not be placed less than 250 feet from the edge of the nearest public road right-of-way and from the boundary of the Permittee's site control, or in compliance with the county ordinance regulating meteorological towers in the county the tower is built, whichever is more restrictive. Meteorological towers shall be placed on property the Permittee holds the wind or other development rights.

Meteorological towers shall be marked as required by the Federal Aviation Administration (FAA). There shall be no lights on the meteorological towers other than what is required by the FAA. This restriction shall not apply to infrared heating devices used to protect the wind monitoring equipment.

4.12 AVIATION

The Permittee shall not place wind turbines or associated facilities in a location that could create an obstruction to navigable airspace of public and private airports (as defined in Minnesota Rule 8800.0100, subparts 24a and 24b) in Minnesota, adjacent states, or provinces. The Permittee shall apply the minimum obstruction clearance for private airports pursuant to Minnesota Rule 8800.1900, subpart 5. Setbacks or other limitations shall be followed in accordance with the Minnesota Department of Transportation (DOT), Department of Aviation, and the FAA. The Permittee shall notify owners of all known airports within six (6) miles of the Project prior to construction.

4.13 FOOTPRINT MINIMIZATION

The Permittee shall design and construct the LWECS so as to minimize the amount of land that is impacted by the LWECS. Associated facilities in the vicinity of turbines such as electrical/electronic boxes, step-up transformers and monitoring systems shall, to the greatest extent feasible, be mounted on the foundations used for turbine towers or inside the towers unless otherwise negotiated with the affected landowner(s).

4.14. COMMUNICATION CABLES

The Permittee shall place all supervisory control and data acquisition (SCADA) cables underground and within or immediately adjacent to the land necessary for the collection and feeder lines and turbine access roads unless otherwise negotiated with the affected landowner(s).

4.15 ELECTRICAL COLLECTOR AND FEEDER LINES

Collector and feeder lines comprise the electrical collection system. In accordance with the Permittee's site permit application, collector and feeder lines shall be buried. If feeder lines are located within public rights-of-way, the Permittee shall obtain approval from the governmental unit responsible for the affected right-of-way.

Collector and feeder lines shall be located in such a manner to minimize interference with agricultural operations, including, but not limited to, existing drainage patterns, drain tile, future tiling plans and ditches. The Permittee shall submit the site plan and engineering drawings of all collector and feeder lines in the site plan pursuant to Section 5.1.

The Permittee must fulfill, comply with, and satisfy all Institute of Electrical and Electronics Engineers, Inc. (IEEE) standards applicable to this Project, including but not limited to, IEEE 776 [Recommended Practice for Inductive Coordination of Electric Supply and Communication Lines], IEEE 519 [Harmonic Specifications], IEEE 367 [Recommended Practice for Determining the Electric Power Station Ground Potential Rise and Induced Voltage from a Power Fault], and IEEE 820 [Standard Telephone Loop Performance Characteristics] provided the telephone service provider(s) have complied with any obligations imposed on it pursuant to these standards. Upon request by the Commission, the Permittee shall report to the Commission on compliance with these standards.

SECTION 5 ADMINISTRATIVE COMPLIANCE PROCEDURES

The following administrative compliance procedures shall be executed in accordance with the Permit Compliance Filings at Attachments 3 and 4

5.1 SITE PLAN

At least ten (10) working days prior to the pre-construction meeting the Permittee shall submit to the Commission:

- (a) a site plan for all turbines, roads, electrical equipment, collector and feeder lines and other associated facilities to be constructed;
- (b) engineering drawings for site preparation, construction of the facilities; and
- (c) a plan for restoration of the site due to construction.

Construction is defined under Minnesota Statutes section 216E.01. The Permittee may submit a site plan and engineering drawings for only a portion of the Project if the Permittee is prepared to commence construction on certain parts of the Project before completing the site plan and engineering drawings for other parts of the Project. The Permittee shall document (through GIS mapping) compliance with the setbacks and site layout restrictions required by the permit. In the event that previously unidentified environmental conditions are discovered during construction which by law or pursuant to conditions outlined in this Permit would preclude the use of that site as a turbine site, the Permittee shall have the right to move or relocate the turbine site. The Permittee shall notify the Commission of any turbines that are to be relocated before the turbine is constructed on the new site and demonstrate compliance with the setbacks and site layout restrictions required by this permit.

5.2. NOTICE TO GOVERNMENTAL UNITS AND LOCAL RESIDENTS

Within ten (10) working days of issuance of this Permit, the Permittee shall, send a printed copy of this Permit to the office of the auditor of each county in which the site is located and to the clerk of each city and township within the site boundaries. If applicable, the Permittee shall, within ten (10) working days of permit issuance, send a printed copy of this permit to each regional development commission, local fire district, soil and water conservation district, watershed district, and watershed management district office with jurisdiction in the county where the site is located.

Within thirty (30) days of issuance of this Permit, the Permittee shall send a printed copy of this permit to each landowner within the site permit boundary. In no case shall the landowner receive this site permit and complaint procedure, developed pursuant to Section 5.8, less than five (5) days prior to the start of construction on their property.

5.3 NOTICE OF PERMIT CONDITIONS

Prior to the start of construction, the Permittee shall inform all employees, contractors, and other persons involved in the construction and ongoing operation of the Project of the terms and conditions of this permit.

5.4 FIELD REPRESENTATIVE

At least ten (10) working days prior to the pre-construction meeting and continuously throughout construction, including site restoration, the Permittee shall designate a field representative responsible for overseeing compliance with the conditions of this permit during the construction phase of this Project. This person (or a designee) shall be accessible by telephone during normal working hours. This person's address, email, phone number and emergency phone number shall be provided to the Commission, which may make the contact information available to local

residents and officials and other interested persons. The Permittee may change the field representative by notification to the Commission.

5.5 SITE MANAGER

The Permittee shall designate a site manager responsible for overseeing compliance with the conditions of this permit during the commercial operation and decommissioning phases of this Project. The Permittee shall provide the Commission with the name, address, email, phone number, and emergency phone number of the site manager prior to placing any turbine into commercial operation. This information shall be maintained current by informing the Commission of any changes, as they become effective.

5.6 PRE-CONSTRUCTION MEETING

Prior to the start of any construction, the Permittee shall conduct a pre-construction meeting with the Field Representative and the State Permit Manager designated by the Commission to coordinate field monitoring of construction activities.

5.7 PRE-OPERATIONS COMPLIANCE MEETING

At least ten (10) working days prior to commercial operation, the Permittee shall conduct a pre-operation compliance meeting with the Site Manager and the State Permit Manager designated by the Commission to coordinate field monitoring of operation activities.

5.8 COMPLAINTS

At least ten (10) working days prior to the pre-construction meeting, the Permittee shall submit to the Commission the company's procedures to be used to receive and respond to complaints. The Permittee shall report to the Commission all complaints received concerning any part of the Project in accordance with the procedures provided in Attachments 2 and 3 of this Permit.

SECTION 6 SURVEYS AND STUDIES

6.1 BIOLOGICAL AND NATURAL RESOURCE INVENTORIES

The Permittee, in consultation with the Commission and DNR and Commission, shall design and conduct pre-construction desktop and field inventories to identify potentially impacted native prairies, wetlands, and any other biologically sensitive areas within the site and assess the presence of state threatened, endangered, or species of special concern of federally listed species. The results of any surveys shall be submitted to the Commission and DNR at least ten (10) working days prior to the pre-construction meeting to confirm compliance of conditions in this permit.

The Permittee shall provide to the Commission any biological surveys or studies conducted on this Project, including those not required under this permit. Section 11.7 may apply to data provided pursuant to the section.

6.2 SHADOW FLICKER

The permittee shall make a good faith effort to mitigate shadow flicker including but not limited to timed suspension, trees as buffers, and shades. Additionally, at least ten (10) working days prior to the pre-construction meeting, the Permittee shall provide data on shadow flicker impacts on each residence of non-participating landowners and participating landowners. Information shall include the results of modeling used, assumptions made, and the anticipated duration of shadow flicker for each residence. The Permittee shall provide documentation on its efforts to avoid, minimize, and mitigate shadow flicker impacts.

6.3 ARCHAEOLOGICAL RESOURCES

The Permittee shall work with the State Historic Preservation Office (SHPO) and the State Archaeologist. The Permittee shall file a Phase 1 or 1A Archaeology survey for all proposed turbine locations, access roads, junction boxes and other areas of Project construction impact to determine whether additional archaeological work is necessary for any part of the proposed Project. The Permittee will contract with a qualified archaeologist to complete such surveys, and shall submit the results to the Commission, the SHPO and the State Archaeologist at least ten (10) working days prior to the pre-construction meeting.

The SHPO and the State Archaeologist will make recommendations for the treatment of any significant archaeological sites which are identified. Any issues in the implementation of these recommendations will be resolved by the Commission in consultation with SHPO and the State Archaeologist. The Permittee shall not excavate at such locations until so authorized by the Commission in consultation with the SHPO and State Archaeologist.

If human remains are encountered during construction, the Permittee shall immediately halt construction at that location and promptly notify local law enforcement authorities and the State Archaeologist. Construction at the human remains location shall not proceed until authorized by local law enforcement authorities or the State Archaeologist.

If any federal funding, permit or license is involved or required, the Permittee shall notify the SHPO as soon as possible in the planning process to coordinate section 106 (36 C.F.R. 800) review.

Prior to construction, construction workers shall be trained about the need to avoid cultural properties, how to identify cultural properties, and procedures to follow if undocumented cultural properties, including gravesites, are found during construction.

If any archaeological sites are found during construction, the Permittee shall immediately stop work at the site and shall mark and preserve the site and notify the Commission and the SHPO about the discovery. The Commission and the SHPO shall have three (3) working days from the time the agency is notified to conduct an inspection of the site if either agency shall choose to do so. On the fourth day after notification, the Permittee may begin work on the site unless the SHPO has directed that work shall cease. In such event, work shall not continue until the SHPO determines that construction can proceed.

6.4 INTERFERENCE

At least ten (10) working days prior to the pre-construction meeting, the Permittee shall submit to the Commission the results of an assessment of television and radio signal reception, microwave signal patterns, and telecommunications in the Project area. The assessment shall be designed to provide data that can be used in the future to determine whether the turbines and associated facilities are the cause of disruption or interference of television reception or radio, microwave patterns, or telecommunications in the event residents should complain about such disruption or interference after the turbines are installed or placed in operation. The Permittee shall be responsible for alleviating any disruption or interference of these services caused by the turbines or any associated facilities.

The Permittee shall not operate the Project so as to cause microwave, television, radio, telecommunications, or navigation interference in violation of Federal Communications Commission (FCC) regulations or other law. In the event the Project or its operations cause such interference, the Permittee shall take timely measures necessary to correct the problem.

6.5 WAKE LOSS STUDIES

At least ten (10) working days prior to the pre-construction meeting, the Permittee shall provide the Commission with a preconstruction micro-siting analysis leading to the final tower locations and an estimate of total Project wake losses. The Permittee shall provide to the Commission any operational wake loss studies conducted on this Project.

6.6 NOISE

The Permittee shall submit a proposal to the Commission at least ten (10) working days prior to the pre-operation compliance meeting for the conduct of a post-construction noise study. Upon the approval of the Commission, the Permittee shall carry out the study. The study shall be designed to determine the LWECs noise levels at different frequencies and at various distances from the turbines at various wind directions and speeds. The Permittee shall submit the study within eighteen (18) months after commercial operation.

6.7 AVIAN AND BAT PROTECTION PLAN

The Permittee shall, in consultation with the Commission and DNR, prepare an avian and bat protection plan and submit it to the Commission for approval prior to the pre-construction meeting. The plan shall address how results of pre-construction avian surveys informed micro-siting and steps to be taken to identify, avoid, minimize and mitigate impacts to avian and bat species during the construction and operation phases of the Project. The plan shall also address formal and informal monitoring, training, wildlife handling, documentation (e.g., photographs), and reporting protocols for each phase of the Project, and shall include specific eagle, bat and Loggerhead Shrike provisions and reporting as provided in Section 13.

The Permittee shall submit quarterly avian and bat fatality reports to the Commission. Quarterly reports are due by the 15th of each January, April, July, and October following commercial operation and terminating upon the expiration of this permit. Each report shall identify any dead or injured avian or bat species, location of find by turbine number and date of the find for the

reporting period in accordance with the reporting protocols. If a dead or injured avian or bat species is found, the report shall describe the potential cause of the occurrence and the steps taken to avoid future occurrences.

The Permittee shall notify the Commission, U.S. Fish and Wildlife Service, and DNR within twenty-four (24) hours of the discovery of any of the following:

- (a) five or more dead or injured non-protected avian or bat species within a reporting period;
- (b) one or more dead or injured migratory avian or bat species;
- (c) one or more dead or injured state threatened, endangered, or species of special concern;
or
- (d) one or more dead or injured federally listed species.

6.8 PROJECT ENERGY PRODUCTION

The Permittee shall submit a report no later than February 1st following each complete year of project operation. The report shall include:

- (a) The rated nameplate capacity of the permitted Project;
- (b) The total monthly energy generated by the Project in MW Hours;
- (c) The monthly capacity factor of the Project;
- (d) Yearly energy production and capacity factor for the Project;
- (e) The operational status of the Project and any major outages, major repairs, or turbine performance improvements occurring in the previous year; and
- (f) Any other information reasonably requested by the Commission.

This information will be considered public and must be submitted electronically.

6.9 WIND RESOURCE USE

The Permittee shall, upon the request of the Commission, report to the Commission on the monthly energy production of the Project and the average monthly wind speed collected at one permanent meteorological tower selected by the Commission during the preceding year or partial year of operation. Section 11.7 shall apply data provided pursuant to section.

6.10 EXTRAORDINARY EVENTS

Within twenty-four (24) hours of an occurrence, the Permittee shall notify the Commission of any extraordinary event. Extraordinary events include but shall not be limited to: fires, tower collapse, thrown blade, collector or feeder line failure, injured LWECS worker or private person.

The Permittee shall, within thirty (30) days of the occurrence, submit a report to the Commission describing the cause of the occurrence, conditions and the steps taken to avoid future occurrences.

SECTION 7 CONSTRUCTION AND OPERATION PRACTICES

7.1 SITE CLEARANCE

The Permittee shall disturb or clear the site only to the extent necessary to assure suitable access for construction, safe operation, and maintenance of the Project.

7.2 TOPSOIL PROTECTION

The Permittee shall implement measures to protect and segregate topsoil from subsoil in cultivated lands unless otherwise negotiated with the affected landowner(s).

7.3 SOIL COMPACTION

The Permittee shall implement measures to minimize soil compaction of all lands during all phases of the Project's life and shall confine compaction to as small an area as practicable.

7.4 LIVESTOCK PROTECTION

The Permittee shall take precautions to protect livestock during all phases of the Project's life.

7.5 FENCES

The Permittee shall promptly replace or repair all fences and gates removed or damaged during all phases of the Project's life unless otherwise negotiated with the affected landowner(s). When the Permittee installs a gate where electric fences are present, the Permittee shall provide for continuity in the electric fence circuit.

7.6 DRAINAGE TILES

The Permittee shall take into account the location of drainage tiles during Project layout and construction. The Permittee shall promptly repair or replace all drainage tiles broken or damaged during all phases of the Project's life unless otherwise negotiated with the affected landowner(s).

7.7 EQUIPMENT STORAGE

The Permittee shall not locate temporary equipment staging areas on lands under its control unless negotiated with affected landowner(s). Temporary staging areas shall not be located in wetlands or native prairie as defined in Sections 4.6 and 4.7.

7.8. ROADS

7.8.1 PUBLIC ROADS

At least ten (10) working days prior to the pre-construction meeting, the Permittee shall identify all state, county or township roads that will be used for the Project and shall notify the Commission and the state, county or township governing body having jurisdiction over the roads to determine if the governmental body needs to inspect the roads prior to use of these roads. Where practical, existing roadways shall be used for all activities associated with the Project. Where practical, all-weather roads shall be used to deliver cement, turbines, towers, assembled nacelles and all other heavy components to and from the turbine sites.

The Permittee shall, prior to the use of such roads, make satisfactory arrangements with the appropriate state, county or township governmental body having jurisdiction over roads to be used for construction of the Project for maintenance and repair of roads that will be subject to extra wear and tear due to transportation of equipment and Project components. Upon request of the Commission, the Permittee shall notify the Commission of such arrangements.

7.8.2 TURBINE ACCESS ROADS

The Permittee shall construct the least number of turbine access roads it can. Access roads shall be low profile roads so that farming equipment can cross them and shall be covered with Class 5 gravel or similar material. Access roads shall not be constructed across streams and drainage ways without required permits and approvals from the DNR, USFWS, and/or (USACOE. When access roads are constructed across streams and drainage ways, the access roads shall be designed in a manner so runoff from the upper portions of the watershed can readily flow to the lower portion of the watershed. Access roads shall also be constructed in accordance with all necessary township, county or state road requirements and permits.

7.8.3 PRIVATE ROADS

The Permittee shall promptly repair private roads or lanes damaged when moving equipment or when obtaining access to the site, unless otherwise negotiated with the affected landowner(s).

7.9 CLEANUP

The Permittee shall remove all waste and scrap that is the product of construction, operation, restoration and maintenance from the site and properly dispose of it upon completion of each task. Personal litter, bottles, and paper deposited by site personnel shall be removed on a daily basis.

7.10 TREE REMOVAL

The Permittee shall minimize the removal of trees and the Permittee shall not remove groves of trees or shelter belts without notification to the Commission and the approval of the affected landowner(s) or designee.

7.11 SOIL EROSION AND SEDIMENT CONTROL

The Permittee shall develop a Soil Erosion and Sediment Control Plan and submit the Plan to the Commission at least ten (10) working days prior to the pre-construction meeting. This Plan may be the same as the Storm Water Pollution Prevention Plan (SWPPP) submitted to the PCA as part of the National Pollutant Discharge Elimination System (NPDES) permit application.

The Soil Erosion and Sediment Control Plan shall address what types of erosion control measures will be implemented during each Project phase and shall at a minimum identify: plans for grading, construction and drainage of roads and turbine pads; necessary soil information; detailed design features to maintain downstream water quality; a comprehensive re-vegetation plan to maintain and ensure adequate erosion control and slope stability and to restore the site after temporary Project activities; and measures to minimize the area of surface disturbance. Other practices shall include containing excavated material, protecting exposed soil, and stabilizing restored material and removal of silt fences or barriers when the area is stabilized. The plan shall identify methods for disposal or storage of excavated material. Erosion and sedimentation control measures shall be implemented prior to construction and maintained throughout the Project's life.

The Permittee shall develop an invasive species prevention plan to prevent the introduction of invasive species on lands disturbed by project construction activities. This requirement may be included as an element of the Soil Erosion and Sediment Control Plan.

7.12 RESTORATION

The Permittee shall, as soon as practical following construction of each turbine, considering the weather and preferences of the landowner(s), restore the area affected by any Project activities to the condition that existed immediately before construction began, to the extent possible. The time period may be no longer than twelve (12) months after completion of construction of the turbine, unless otherwise negotiated with the affected landowner(s). Restoration shall be compatible with the safe operation, maintenance, and inspection of the Project.

7.13 HAZARDOUS WASTE

The Permittee shall be responsible for compliance with all laws applicable to the generation, storage, transportation, clean-up and disposal of hazardous wastes generated during any phase of the Project's life.

7.14 APPLICATION OF HERBICIDES

The Permittee shall restrict herbicide use to those herbicides and methods of application approved by the Minnesota Department of Agriculture and the U.S. Environmental Protection Agency. Selective foliage or basal application shall be used when practicable. The Permittee

shall contact the landowner(s) or designee to obtain approval for the use of herbicide prior to any application on their property. The landowner may request that there be no application of herbicides on any part of the site within the landowner's property. All herbicides shall be applied in a safe and cautious manner so as to not damage property, including crops, orchards, tree farms, or gardens. The Permittee shall also, at least ten (10) days prior to the application, notify beekeepers with an active apiary within one mile of the proposed application site of the day the Permittee intends to apply herbicide so that precautionary measures may be taken by the beekeeper(s).

7.15 PUBLIC SAFETY

The Permittee shall provide educational materials to landowners within the site boundary and, upon request, to interested persons, about the Project and any restrictions or dangers associated with the Project. The Permittee shall also provide any necessary safety measures, such as warning signs and gates for traffic control or to restrict public access. The Permittee shall submit the location of all underground facilities, as defined in Minnesota Statute 216D.01, Subdivision 11, to Gopher State One Call.

7.16 EMERGENCY RESPONSE

The Permittee shall prepare an emergency response plan (fire protection and medical emergency plan) in consultation with the emergency responders having jurisdiction over the area prior to Project construction. The Permittee shall submit a copy of the plan to the Commission at least ten (10) working days prior to the pre-construction meeting and a revised plan, if any, at least ten (10) working days prior to the pre-operation meeting. The Permittee shall also register the Project with the local governments' emergency 911 services.

7.17 TOWER IDENTIFICATION

All turbine towers shall be marked with a visible identification number.

7.18 FEDERAL AVIATION ADMINISTRATION LIGHTING

Tower shall be marked as required by the FAA. There shall be no lights on the towers other than what is required by the FAA. This restriction shall not apply to infrared heating devices used to protect the wind monitoring equipment.

SECTION 8 FINAL CONSTRUCTION

8.1 AS-BUILT PLANS AND SPECIFICATIONS

Within sixty (60) days after completion of construction, the Permittee shall submit to the Commission a copy of the as-built plans and specifications. The Permittee must also submit this data in a geographic information system compatible format so that the Commission can place it into the Minnesota Geospatial Information Office's geographic data clearinghouse located in the Department of Administration.

8.2 FINAL BOUNDARIES

After completion of construction, the Commission shall determine the need to adjust the final boundaries of the site required for this Project. If done, this Permit may be modified, after notice and opportunity for public hearing, to represent the actual site required by the Permittee to operate the Project authorized by this permit.

8.3 EXPANSION OF SITE BOUNDARIES

No expansion of the site boundaries described in this Permit shall be authorized without the approval of the Commission. The Permittee may submit to the Commission a request for a change in the boundaries of the site for the Project. The Commission will respond to the requested change in accordance with applicable statutes and rules.

SECTION 9 DECOMMISSIONING, RESTORATION, AND ABANDONMENT

9.1 DECOMMISSIONING PLAN

At least ten (10) working days prior to pre-operation compliance meeting, the Permittee shall submit to the Commission a Decommissioning Plan documenting the manner in which the Permittee anticipates decommissioning the Project in accordance with the requirements of Minnesota Rules part 7854.0500, subp.13. The Permittee shall ensure that it carries out its obligations to provide for the resources necessary to fulfill its requirements to properly decommission the Project at the appropriate time. The Commission may at any time request the Permittee to file a report with the Commission describing how the Permittee is fulfilling this obligation.

9.2 SITE RESTORATION

Upon expiration of this Permit, or upon earlier termination of operation of the Project, or any turbine within the Project, the Permittee shall have the obligation to dismantle and remove from the site all towers, turbine generators, transformers, overhead and underground cables, foundations, buildings and ancillary equipment to a depth of four feet. To the extent feasible the Permittee shall restore and reclaim the site to its pre-project topography and topsoil quality. All access roads shall be removed unless written approval is given by the affected landowner(s) or designees requesting that one or more roads, or portions thereof, be retained. Any agreement for removal to a lesser depth or no removal shall be recorded with the county and shall show the locations of all such foundations. All such agreements between the Permittee and the affected landowner(s) or designee shall be submitted to the Commission prior to completion of restoration activities. The site shall be restored in accordance with the requirements of this condition within eighteen (18) months after expiration of this Permit, or upon earlier termination of the Project, or any turbine within the Project.

9.3 ABANDONED TURBINES

The Permittee shall advise the Commission of any turbines that are abandoned prior to termination of operation of the Project. A Project, or any turbine within the Project, shall be

considered abandoned after one (1) year without energy production and the land restored pursuant to Section 9.2 unless a plan is developed and submitted to the Commission outlining the steps and schedule for returning the Project, or any turbine within the Project, to service.

SECTION 10 AUTHORITY TO CONSTRUCT LWECS

10.1 WIND RIGHTS

At least ten (10) working days prior to pre-construction meeting, the Permittee shall demonstrate that it has obtained the wind rights and any other rights necessary to construct and operate the Project within the site boundaries established by this Permit.

Nothing in this Permit shall be construed to preclude any other person from seeking a site permit to construct a wind energy conversion system in any area within the site boundaries established by this Permit if the Permittee does not hold exclusive wind rights for such areas.

10.2 POWER PURCHASE AGREEMENT

In the event the Permittee does not have a power purchase agreement or some other enforceable mechanism for the sale of the electricity to be generated by the Project at the time this permit is issued, the Permittee shall provide notice to the Commission when it obtains a commitment for the purchase of the power. This Permit does not authorize construction of the Project until the Permittee has obtained a power purchase agreement or some other enforceable mechanism for sale of the electricity to be generated by the Project. In the event the Permittee does not obtain a power purchase agreement or some other enforceable mechanism for sale of the electricity to be generated by the Project within two years of the issuance of this Permit, the Permittee must advise the PUC of the reason for not having such power purchase agreement or enforceable mechanism. In such event, the PUC may determine whether this Permit should be amended or revoked. No amendment or revocation of this Permit may be undertaken except in accordance with applicable statutes and rules, including Minnesota Rule 7854.1300.

10.3 FAILURE TO COMMENCE CONSTRUCTION

If the Permittee has not completed the pre-construction surveys required under this permit and has not commenced construction of the Project within two (2) years of the issuance of this Permit, the Permittee must advise the Commission of the reason(s) construction has not commenced. In such event, the Commission shall make a determination as to whether this Permit should be amended or revoked. No revocation of this Permit may be undertaken except in accordance with applicable statutes and rules, including Minnesota Rule 7854.1300.

10.4 PREEMPTION OF OTHER LAWS

Pursuant to Minnesota Statute 216F.07, this Site Permit shall be the only site approval required for the location of this Project, and this Permit shall supersede and preempt all zoning, building, and land use rules, regulations, and ordinances adopted by regional, county, local, and special purpose governments. Nothing in this Permit shall release the Permittee from any obligation imposed by law that is not superseded or preempted by law.

10.5 OTHER PERMITS

The Permittee shall be responsible for acquiring any other federal, state, or local permits or authorizations that may be required to construct and operate a LWECS within the authorized site, and that are not otherwise preempted or superseded by Minn. Stat. 216F.07. The Permittee shall submit a copy of such permits and authorizations to the Commission upon request.

10.5.1 COMPLIANCE WITH FEDERAL AND STATE AGENCY PERMITS

The Permittee shall comply with all terms and conditions of permits or licenses issued by Federal, State, or Tribal authorities including, but not limited to, the requirements of the PCA (Section 401 Water Quality Certification, National Pollutant Discharge Elimination System (NPDES/State Disposal System (SDS) stormwater permit for construction activity, and other site specific approvals), DNR (License to Cross Public Lands and Water, Public Waters Work Permit, and state protected species consultation); SHPO (Section 106 Historic Consultation Act); FAA determinations, and the DOT (Utility Access Permit, Highway Access Permit and Oversize and Overweight Permit, and Aeronautics Airspace Obstruction Permit).

10.5.2 COMPLIANCE WITH COUNTY, CITY OR MUNICIPAL PERMITS

The Permittee shall comply with all terms and conditions of permits or licenses issued by the counties, cities and municipalities affected by the project that do not conflict or are not preempted by federal or state permits and regulations.

SECTION 11 COMMISSION POST-ISSUANCE AUTHORITIES

11.1 PERIODIC REVIEW

The Commission shall initiate a review of this Permit and the applicable conditions at least once every five (5) years. The purpose of the periodic review is to allow the Commission, the Permittee, and other interested persons an opportunity to consider modifications in the conditions of the Permit. No modification may be made except in accordance with applicable statutes and rules.

11.2 MODIFICATION OF CONDITIONS

After notice and opportunity for hearing, this Permit may be modified or amended for cause, including but not limited to the following:

- (a) Violation of any condition in this Permit;
- (b) Endangerment of human health or the environment by operation of the facility; or
- (c) Existence of other grounds established by rule.

11.3 REVOCATION OR SUSPENSION OF THE PERMIT

The Commission may take action to suspend or revoke this permit upon the grounds that:

- (a) A false statement was knowingly made in the application or in accompanying statements or studies required of the Permittee, and a true statement would have warranted a change in the Commission's findings;
- (b) There has been a failure to comply with material conditions of this permit, or there has been a failure to maintain health and safety standards; or
- (c) There has been a material violation of a provision of an applicable statute, rule, or an order of the Commission.

In the event the Commission determines that it is appropriate to consider revocation or suspension of this permit, the Commission shall proceed in accordance with the requirements of Minnesota Rule 7854.1300 to determine the appropriate action. Upon a finding of any of the above, the Commission may require the Permittee to undertake corrective measures in lieu of having this permit suspended or revoked.

11.4 MORE STRINGENT RULES

The Commission's issuance of this Site Permit does not prevent the future adoption by the Commission of rules or orders more stringent than those now in existence and does not prevent the enforcement of these more stringent rules and orders against the Permittee.

11.5 TRANSFER OF PERMIT

The Permittee may not transfer this Permit without the approval of the Commission. If the Permittee desires to transfer this Permit, the holder shall advise the Commission in writing of such desire. The Permittee shall provide the Commission with such information about the transfer as the Commission requires to reach a decision. The Commission may impose additional conditions on any new Permittee as part of the approval of the transfer.

11.6 RIGHT OF ENTRY

Upon reasonable notice, presentation of credentials and at all times in compliance with the Permittee's site safety standards, the Permittee shall allow representatives of the Commission to perform the following:

- (a) To enter upon the facilities easement of the site property for the purpose of obtaining information, examining records, and conducting surveys or investigations;
- (b) To bring such equipment upon the facilities easement of the property as is necessary to conduct such surveys and investigations;
- (c) To sample and monitor upon the facilities easement of the property; and

- (d) To examine and copy any documents pertaining to compliance with the conditions of this permit.

11.7 PROPRIETARY INFORMATION

Certain information required to be submitted to the Commission under this Permit, including energy production and wake loss data, may constitute trade secret information or other type of proprietary information under the Data Practices Act or other law and is not to be made available by the Commission. The Permittee must satisfy requirements of applicable law and Commission procedures to obtain the protection afforded by the law.

SECTION 12 EXPIRATION DATE

This Permit shall expire thirty (30) years after final permit issuance.

SECTION 13 SPECIAL CONDITIONS

Special conditions shall take precedence over any of the other conditions of this Permit if there should be a conflict between the two.

13.1 AVIAN AND BAT PROTECTION PLAN SPECIAL PROVISION

The Avian and Bat Protection Plan in Section 6.7 shall include plans and protocols for pre- and post-construction surveys and protection measures for eagles, bats and Loggerhead Shrike. Annual reports of the results of these efforts, including results of the post-construction avian and bat surveys, shall to be submitted to the Commission, DNR, and U.S. Fish and Wildlife Service in accordance with other requirements of this permit. Based on those results, the Commission may modify conditions in this permit pursuant to Section 11.2.

13.1.1 Eagles

The permittee shall develop a plan for monitoring Bald and Golden Eagle nest sites near turbine locations and shall develop protocol to identify proposed point count locations, suggested count duration and number of survey visits. Point counts of 20-30 minutes shall be conducted to document eagle movements in these areas. Multiple point count visits shall be conducted to cover the remainder of the 2011 nesting season (eaglets are expected to fledge by mid-July). Additional point counts shall be conducted in the fall of 2011 and the winter of 2011-2012. Details of the plan shall be included in the Avian and Bat Protection Plan. Ongoing monitoring for eagles shall be conducted in accordance with the Avian and Bat Protection Plan and U.S. Fish and Wildlife Service requirements. The Permittee shall submit the results of the summer, fall, and winter surveys, and any subsequent surveys, to the Commission within one month of completion of the surveys.

13.1.2 Bats

The Permittee shall install a minimum of two Anabat detectors on each temporary or permanent meteorological tower. Data should be collected, at a minimum, from July 15 to November 15, 2011, and May 1 to November 15, 2012. One Anabat detector on each meteorological tower shall be mounted at 5 meters above ground, and one shall be mounted as close to the rotor-swept area as possible. Additional monitoring or mitigation measures may be imposed based on results obtained from bat surveys. The Permittee shall submit the results of the 2011 monitoring by December 15, 2011 and the 2012 monitoring by December 15, 2012. Each report shall include an update on the status of the U.S. Fish and Wildlife Service potential listing of the Northern long-eared bat.

13.1.3 Loggerhead Shrike

The Permittee shall avoid placement of turbines in areas identified as highly suitable or very highly suitable loggerhead shrike habitat. Alternate turbine sites are to be considered the primary avoidance strategy. If alternate sites cannot be utilized, the Permittee shall provide the Commission and DNR with a Loggerhead Shrike Protection Plan for approval by the Commission detailing why avoidance is not possible, outlining strategies to minimize effects to Loggerhead Shrike, and providing mitigation measures for impacts. Permittee shall conduct two years of post-construction fatality monitoring to evaluate the impacts of wind turbines sited in loggerhead shrike habitat determined to be highly to very highly suitable.

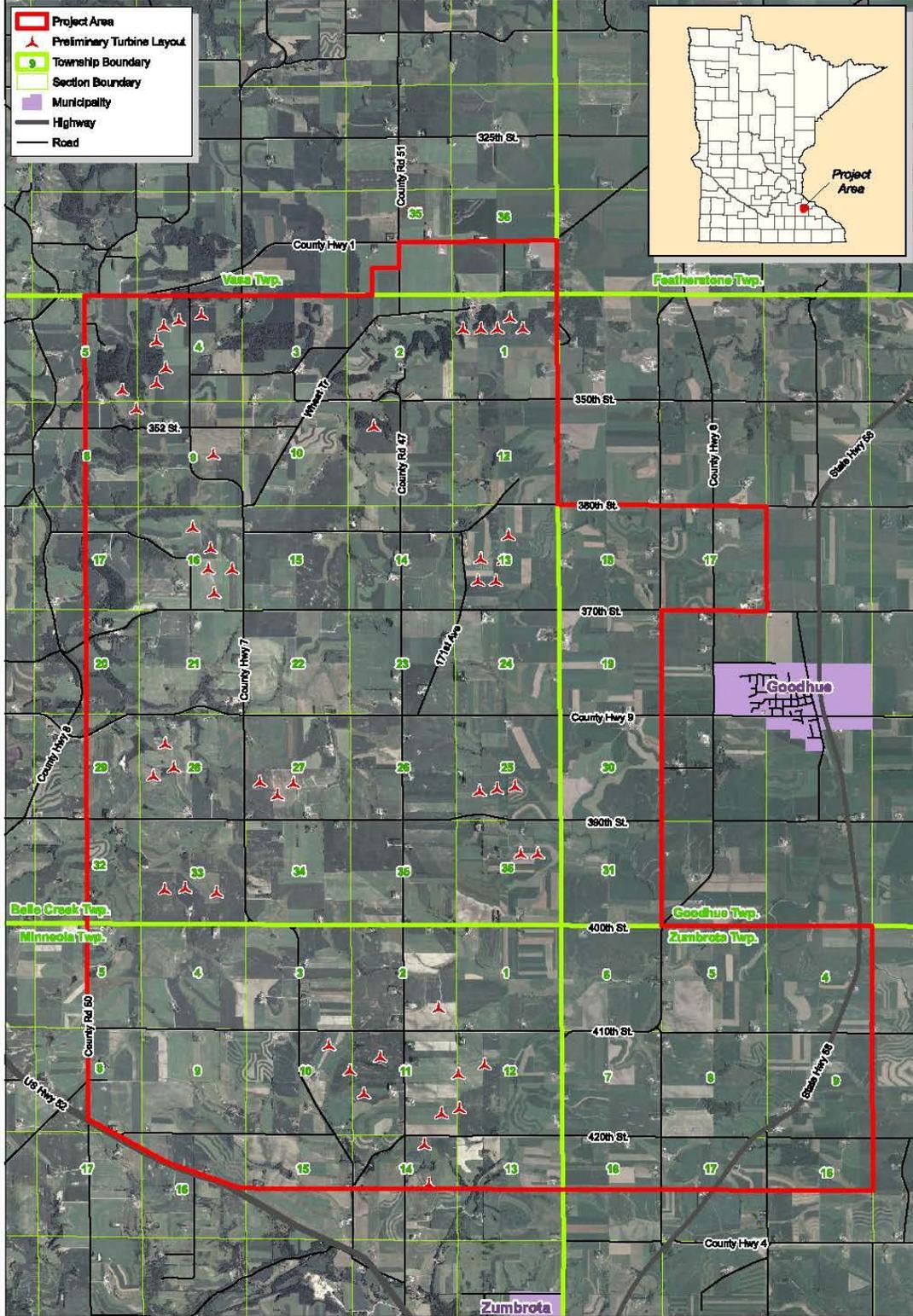
13.2 APPLICATION OF GOODHUE COUNTY STANDARDS

The Permittee shall site all wind turbines and associated facilities in accordance with the following provisions of Goodhue County's Wind Energy Conversion System Ordinance:

- (a) Section 3, Subd. 6 [Liability Insurance] The Project Owner must provide proof of liability insurance covering the towers/project covering the lifespan of the project from the initial construction to final decommissioning.
- (b) Section 5, Subd. 6 [Lighting] Lighting, including lighting intensity and frequency of strobe, shall adhere to but not exceed requirements established by Federal Aviation Administration. Red strobe lights are preferred and for night-time illumination to reduce impacts on migrating birds. Red pulsating incandescent lights should be avoided. Exceptions may be made for metrological towers, where concerns exist relative to aerial spray applicators.
- (c) Section 5, Subd. 8 [Feeder Line] All communication and feeder line, equal to or less than 34.5 kilovolts in capacity, installed as part of a WEC shall be buried where reasonably feasible. Feeder lines installed as part of a WECS shall not be considered an essential service. This standard applies to all feeder lines subject to Goodhue County Ordinances.
- (d) Section 5, Subd. 10 [Avoidance and mitigation of damages to Public Infrastructure] Items A – H, [Note: AWA Goodhue Wind, LLC has entered into a "Development Agreement" with Goodhue County. The conditions of the Development Agreement incorporate the requirements of Section 5, Subd. 10].

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10/28/25 - 8:20 AM

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Data Source(s): USDA APFO NAIP (2020), MARSX FLIR (2018), MxDOT Survey (2018), MxDOT Survey (2018), USGS NED (2016), MDS Public Records (2016), Westwood (2025).

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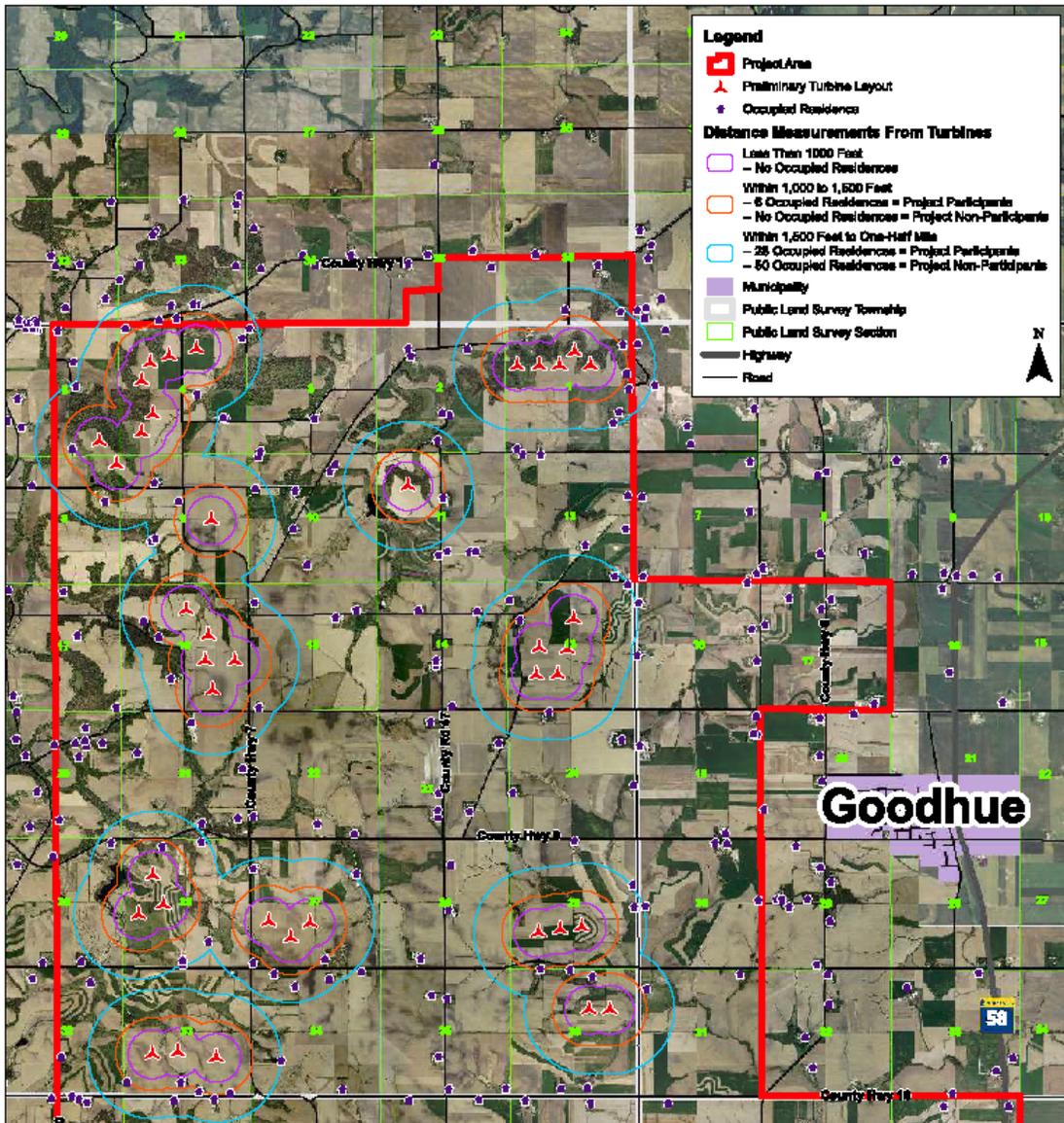
Goodhue Wind Project

Goodhue County, Minnesota

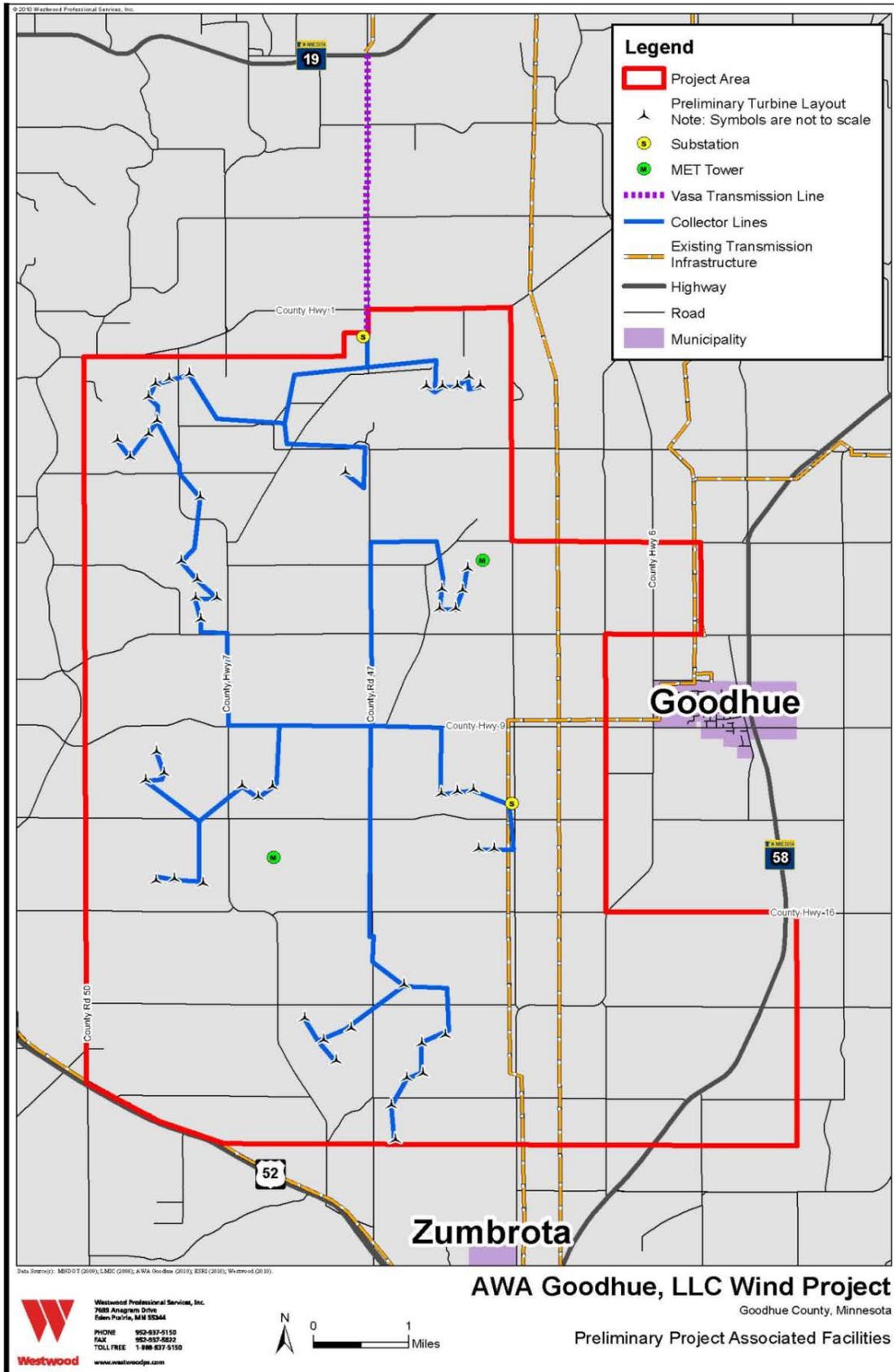
Site Map and Preliminary Turbine Locations

EXHIBIT A-1

SITE PERMIT MAP



SITE PERMIT MAP



**MINNESOTA PUBLIC UTILITIES COMMISSION
COMPLAINT HANDLING PROCEDURES
FOR
LARGE WIND ENERGY CONVERSION SYSTEMS**

A. Purpose:

To establish a uniform and timely method of reporting complaints received by the Permittee concerning Permit conditions for site preparation, construction, cleanup and restoration, operation and resolution of such complaints.

B. Scope:

This document describes Complaint reporting procedures and frequency.

C. Applicability:

The procedures shall be used for all complaints received by the Permittee and all complaints received by the Commission under Minn. Rule 7829.1500 or 7829.1700 relevant to this Permit.

D. Definitions:

Complaint: A verbal or written statement presented to the permittee by a person expressing dissatisfaction or concern regarding site preparation, cleanup or restoration or other LWECS and associated facilities site permit conditions. Complaints do not include requests, inquiries, questions or general comments.

Substantial Complaint: A written Complaint alleging a violation of a specific Site Permit condition that, if substantiated, could result in Permit modification or suspension pursuant to the applicable regulations.

Unresolved Complaint: A Complaint which, despite the good faith efforts of the permittee and a person(s), remains to both or one of the parties unresolved or unsatisfactorily resolved.

Person: An individual, partnership, joint venture, private or public corporation, association, firm, public service company, cooperative, political subdivision, municipal corporation, government agency, public utility district, or any other entity, public or private, however organized.

E. Complaint Documentation and Processing:

1. The Permittee shall document all Complaints by maintaining a record of all applicable information concerning the Complaint, including the following:

- a. Name of complainant, address, phone number, and e-mail address.
 - b. Precise property description or parcel number.
 - c. Name of Permittee representative receiving Complaint and date of receipt.
 - d. Nature of Complaint and the applicable Site Permit conditions(s).
 - e. Activities undertaken to resolve the Complaint.
 - f. Final disposition of the Complaint.
2. The Permittee shall designate an individual to summarize Complaints for the Commission. This person's name, phone number and e-mail address shall accompany all complaint submittals.
 3. A Person presenting the Complaint should to the extent possible, include the following information in their communications:
 - a. Name, address, phone number, and e-mail address.
 - b. Date
 - c. Tract or parcel
 - d. Whether the complaint relates to (1) a Site Permit matter, (2) a LWECS and associated facility issue, or (3) a compliance issue.

F. Reporting Requirements:

The Permittee shall report all complaints to the Commission according to the following schedule:

Immediate Reports: All substantial complaints shall be reported to the Commission the same day received, or on the following working day for complaints received after working hours. Such reports are to be directed to Wind Permit Compliance, 1-800-657-3794, or by e-mail to: DOC.energypermitcompliance@state.mn.us. Voice messages are acceptable.

Monthly Reports: By the 15th of each month, a summary of all complaints, including substantial complaints received or resolved during the preceding month, shall be Filed to Dr. Burl W. Haar, Executive Secretary, Public Utilities Commission, using the Minnesota Department of Commerce eDocket system (see eFiling instructions attached to this permit).

If no Complaints were received during the preceding month, the permittee shall submit (eFile) a summary indicating that no complaints were received.

G. Complaints Received by the Commission or Commerce:

Complaints received directly by the Commission from aggrieved persons regarding site preparation, construction, cleanup, restoration, operation and maintenance shall be promptly sent to the Permittee.

H. Commission Process for Unresolved Complaints:

Initial Screening: Commission staff shall perform an initial evaluation of unresolved Complaints submitted to the Commission. Complaints raising substantial LWECS Site Permit issues shall be processed and resolved by the Commission. Staff shall notify Permittee and appropriate person(s) if it determines that the Complaint is a Substantial Complaint. With respect to such Complaints, each party shall submit a written summary of its position to the Commission no later than ten (10) days after receipt of the Staff notification. Staff shall present Briefing Papers to the Commission, which shall resolve the Complaint within twenty days of submission of the Briefing Papers.

I. Permittee Contacts for Complaints:

Mailing Address: Complaints filed by mail shall be sent to one of the addresses below:

AWA Goodhue, LLC
706 2nd Avenue South, Suite 1200
Minneapolis, MN 55402

Tel: 612-746-6600

**MINNESOTA PUBLIC UTILITIES COMMISSION
COMPLIANCE FILING PROCEDURE
FOR PERMITTED ENERGY FACILITIES**

1. Purpose

To establish a uniform and timely method of submitting information required by the Commission energy facility permits.

2. Scope and Applicability

This procedure encompasses all compliance filings required by permit.

3. Definitions

Compliance Filing – A sending (filing) of information to the Commission, where the information is required by a Commission site or route permit.

4. Responsibilities

- A) The permittee shall eFile all compliance filings with Dr. Burl Haar, Executive Secretary, Public Utilities Commission, through the Department of Commerce (DOC) eDocket system. The system is located on the DOC website:
<https://www.edockets.state.mn.us/EFiling/home.jsp>

General instructions are provided on the website. Permittees must register on the website to eFile documents.

- B) All filings must have a cover sheet that includes:

- 1) Date
- 2) Name of submitter / permittee
- 3) Type of Permit (Site or Route)
- 4) Project Location
- 5) Project Docket Number
- 6) Permit Section Under Which the Filing is Made
- 7) Short Description of the Filing

- C) Filings that are graphic intensive (e.g., maps, plan and profile) must, in addition to being eFiled, be submitted as paper copies and on CD. Copies and CDs should be sent to: 1) Dr. Burl W. Haar, Executive Secretary, Minnesota Public Utilities Commission, 121 7th Place East, Suite 350, St. Paul, MN, 55101-2147, and 2) Department of Commerce, Energy Facility Permitting, 85 7th Place East, Suite 500, St. Paul, MN, 55101-2198. Additionally, the Commission may request a paper copy of any eFiled document.

PERMIT COMPLIANCE FILINGS¹

PERMITTEE: AWA Goodhue, LLC
PERMIT TYPE: LWECS Site Permit
PROJECT LOCATION: Goodhue County
COMMISSION DOCKET NUMBER: IP-6701/WS-08-1233

PRE-CONSTRUCTION MEETING

Permit Section	Description	Due Date	Notes	eDocket Doc. ID	Date Filed
4.7	Native Prairie Protection Plan	10 working days prior to pre-construction meeting, if required.	Develop in consultation with Commission and DNR.		
5.1	Site Plan	10 working days prior to pre-construction meeting.			
5.4	Field Representative	10 working days prior to pre-construction meeting.			
5.8	Complaint Reporting Procedures	10 working days prior to pre-construction meeting.			
6.1	Biological & Natural Resource Inventories	30 days prior to pre-construction Meeting.	Results may trigger need for a Native Prairie Protection Plan.		
6.2	Shadow Flicker Analysis	10 working days prior to pre-construction meeting.			
6.3	Archaeological Resources	10 working days prior to pre-construction meeting and as recommended by the State Historic Preservation Office.			
6.4	Interference	10 working days prior to pre-construction Meeting.			
6.5	Wake Loss	10 working days prior to pre-construction meeting.			

¹ This compilation of permit compliance filings is provided for the convenience of the permittee and the Commission. However, it is not a substitute for the permit; the language of the permit controls.

PRE-CONSTRUCTION MEETING (Continued)

Permit Section	Description	Due Date	Notes	eDocket Doc. ID	Date Filed
6.7	Avian and Bat Protection Plan	10 days prior to pre-construction meeting.	Develop in consultation with Commission and DNR.		
7.8	Road Identification	10 working days prior to pre-construction meeting.			
7.11	Soil Erosion & Sediment Control Plan	10 working days prior to pre-construction.	May be the same as NPDES SWPPP.		
7.16	Emergency Response	10 working days prior to pre-construction meeting. Must register in 911 Program.			
10.1	Wind Rights	10 working days prior to pre-construction meeting.			

PRE-OPERATION COMPLIANCE MEETING

Permit Section	Description	Due Date	Notes	eDocket Doc. ID	Date Filed
5.7	Pre-operation compliance meeting	10 working days prior to commercial operation.			
6.6	Noise Study Protocol	10 working days prior to pre-operation meeting.			
9.1 & 9.3	Decommissioning Plan	10 working days prior to commercial operation.			

OTHER REQUIREMENTS

Permit Section	Description	Due Date	Notes	eDocket Doc. ID	Date Filed
5.2	Notice to Government Units and Landowners	Units of Government within 10 working days of permit issuance. Landowners within 30 calendar days of permit issuance.			
5.5	Site Manager	10 working days prior to prior to commercial operation.	Update contact information as necessary.		
5.8	Complaints	Complaint submittals on the 15 th of each month or within 24 hours.	Must eFile report even if no complaints.		
6.6	Noise Study Results	Within 18 months of Commercial Operation.			
6.7 & 13.1	Avian and Bat Reporting Requirements	Quarterly reports due and within 24 hours of discovery of certain species.			
6.8	Project Energy Production	Due 2/1 each year.			
6.9	Wind Resource Use	Upon request of the Commission.			
6.10	Extraordinary Events	Within 24 hours and report on occurrence of event within 30 days.			
8.1	As Builts	Within 60 days of completion of construction.			
10.2	PPA or Enforceable Mechanism	Within 2 years of permit issuance.	If no PPA or other enforceable mechanism at time of permit issuance.		
10.3	Failure to Start Construction	Within 2 years of permit issuance.			

6-20-2011
STATE OF MINNESOTA
PUBLIC UTILITIES COMMISSION

Ellen Anderson
Phyllis Reha
J. Dennis O'Brien
David Boyd
Betsy Wergin

Chair
Vice Chair
Commissioner
Commissioner
Commissioner

In the Matter of the Application of
AWA Goodhue, LLC for a
a Site Permit for a 78 Megawatt
Large Wind Energy Conversion
System and Associated Facilities in
Goodhue County

ISSUE DATE: August 23, 2011

DOCKET NO. IP-6701/WS-08-1233

**FINDINGS OF FACT, CONCLUSIONS
OF LAW AND ORDER, ISSUING A
SITE PERMIT TO AWA GOODHUE
WIND, LLC FOR THE GOODHUE
WIND PROJECT**

The above-entitled matter came before the Minnesota Public Utilities Commission (Commission) pursuant to an application submitted by AWA Goodhue, LLC (AWA Goodhue or the Applicant) for a site permit to construct, operate, maintain and manage a 78 Megawatt (MW) nameplate capacity Large Wind Energy Conversion System (LWECS), including associated facilities, in Goodhue County.

A public hearing was held on July 21 and July 22, 2010, in Goodhue, Minnesota. The hearing was presided over by Judge Eric L. Lipman, Administrative Law Judge (ALJ) for the Minnesota Office of Administrative Hearings (OAH). The hearing continued until all persons who desired to speak had done so. The public hearing comment period closed on August 6, 2010. The OAH held an evidentiary hearing regarding the applicability of Goodhue County's Wind Energy Conversion System Ordinance presided over by ALJ Kathleen D. Sheehy on March 15-17, 2011, in St. Paul. Members of the public were allowed to question witnesses and offer testimony. The OAH evidentiary hearing record closed on April 8, 2011.

STATEMENT OF ISSUE

Should AWA Goodhue, LLC (AWA Goodhue) be granted a site permit under Minnesota Statutes section 216F.04 to construct a 78 MW Large Wind Energy Conversion System and associated facilities in Goodhue County?

Based upon the record created in this proceeding, the Public Utilities Commission makes the following findings:

FINDINGS OF FACT

Background and Procedure

1. On October 24, 2008, Goodhue Wind, LLC (Goodhue Wind) filed a site permit application with the Public Utilities Commission for up to 78 MWs of nameplate wind power generating capacity and associated facilities identified as the Goodhue Wind Project in Goodhue County. On October 19, 2009, Goodhue Wind filed a revised LWECS site permit application (Exhibit 1, p. 1).
2. Department of Commerce (DOC) Energy Facility Permitting (EFP) staff reviewed and determined that the October 19, 2009, application complied with the application requirements of Minnesota Rules 7854.0500. In its comments and recommendations to the Commission, dated November 12, 2009, EFP staff recommended that the Commission accept the application (Exhibit 2).
3. On November 30, 2009, the Commission issued its Order accepting the application for the Goodhue Wind Project and associated facilities (Exhibit 3).
4. On December 4, 2009, EFP staff issued a “Notice of Application Acceptance” to provide notice of the Commission’s acceptance of the application and to solicit comments on application completeness and issues that should be considered in developing a draft site permit for the project (Exhibit 4).
5. On December 10-11, 2009, Goodhue Wind distributed copies of the “Site Permit Application for the Goodhue Wind Project, Notice of Application Acceptance, and a Map of the Project Boundaries” to government agencies and to landowners within the project boundary (Exhibit 5). The notice and application distribution met the requirements of Minnesota Rules 7854.0600, subparts 2 and 3. (Exhibit 5).
6. Published notice of site permit application acceptance and opportunity to comment on the application completeness and issues to consider in the development of a Draft Site Permit appeared in the *Cannon Falls Beacon* on December 10, 2009, the *Red Wing Republican Eagle* on December 9, 2009, and the *Zumbrota New-Record* on December 9, 2009 (Exhibit 6). Notice also appeared on the Commission’s web site on December 18, 2009. The published notice meets the requirements of Minnesota Rule 7854.0600, subp. 2.
7. Public comments on the completeness of the site permit application were accepted until January 22, 2009. EFP staff received public comments on the site permit application from 10 citizens and four government agencies, and they are summarized in the EFP Comments and Recommendations presented to the Commission at its April 15, 2010, meeting in conjunction with the request for issuance of a Draft Site Permit for the Goodhue Wind Project (Exhibit 10).

8. On February 12, 2010, EFP staff issued a “Notice of Public Information and Scoping Meeting” to provide information about the proposed Project and to announce that a public meeting would be held on March 4, 2010, to take public comment and input on issues to be considered in the scope of the Environmental Report to be prepared for the Certificate of Need (Exhibit 7).
9. On February 16, 2010, AWA Goodhue representatives mailed copies of the “Notice of Public Information and Scoping Meeting” to residents and governmental agencies in the vicinity of the Project (Exhibit 8).
10. The “Notice of Public Information and Scoping Meeting” was published in the *Cannon Falls Beacon* on February 18, 2010, the *Red Wing Republican Eagle* on February 17, 2010, the *Zumbrota New-Record* on February 17, 2010, and the *EQB Monitor*, Vol.34. No.4. on February 22, 2010 (Exhibit 9).
11. The EFP staff held a public information and scoping meeting on March 4, 2010, at the Zumbrota-Mazeppa Middle School in Mazeppa, Minnesota, to provide an overview of the Commission permitting process and to receive comments on the scope of the Environmental Report. Approximately 200 people attended the meeting. Representatives from AWA Goodhue were also present, as was a representative of the Commission. EFP staff provided an overview of Certificate of Need (CON) and LWECs site permitting processes and responded to questions. EFP staff and AWA Goodhue responded to project specific questions and general questions about wind energy. The deadline for submitting comments regarding the scope of the Environmental Report was March 26, 2010.
12. Approximately 110 separate written comments were received during the comment period on the scope of the Environmental Report. Concerns raised at the public meeting and in written comments included: potential impacts to property values, aesthetics, public health and safety related issues, livestock, wildlife (birds, bats, game animals and other wildlife in the project area), wildlife habitat, TV and radio reception, internet connections, GPS interference, stray voltage, loss of productive agricultural land, radar facilities, the Prairie Island nuclear facility, private landing strips, Mayo One emergency medical helicopter service, aerial crop applications, population density, setbacks, shadow flicker, noise (audible and infrasound) as a result of turbine installation, quality of life issues, water quality, road damages and turbine lighting. Other comments raised concerns regarding the need for wind energy and suggested other fuel types, such as solar, nuclear, biomass, hydropower, and methane digesters and locating the proposed facilities elsewhere.
13. Goodhue Wind Truth filed a request for a contested case hearing in this matter on February 12, 2010. On April 15, 2010, the Commission considered whether to grant a contested case for this matter and whether to issue a draft site permit for the Project. On May 3, 2010, the Commission issued an Order Approving Distribution of the Draft Site Permit and Denying Contested Case but ordered that “the scope of the public hearing on the Applicant’s request for a Certificate of Need proceeding in Docket No. IP-6701/CN-09-1186 is hereby expanded to the extent feasible to include siting matters related to the

- Draft Site Permit issued in this Order.” (Exhibit 11). On May 6, 2010, the Commission issued an Erratum Notice attaching the Draft Site Permit which was inadvertently missing from the May 3, 2010, Order. (Exhibit 12).
14. On May 19, 2010, EFP staff issued a “Notice of Availability of Draft Site Permit.” This notice was posted on eDockets and the energy facilities permitting web site on May 20, 2010 (Exhibit 13). The published notice contained all of the information required by Minnesota Rules part 7854.0900, subp. 1.
 15. On May 20, 2010, AWA Goodhue representatives mailed copies of the “Notice of Availability of Draft Site Permit” to residents and governmental agencies in the vicinity of the Project. (Exhibit 14).
 16. The “Notice of Availability of Draft Site Permit” was published in the *Cannon Falls Beacon* on May 27, 2010, the *Red Wing Republican Eagle* on May 26, 2010, and the *Zumbrota News-Record* on May 26, 2010. (Exhibit 15). On May 31, 2010, the “Notice of Availability of Draft Site Permit” was published in the *EQB Monitor*, Volume 34, No. 11, pages 5-8.
 17. On June 30, 2010, EFP staff issued “Notice of Public Hearing, Notice of Availability of Environmental Report and Notice of Availability of Draft Site Permit.” (Exhibit 16). Representatives of AWA Goodhue mailed the notice to landowners and government officials on June 30, 2010. The notice was published in the *Cannon Falls Beacon* on July 8, 2010, the *Red Wing Republican Eagle* on July 7, 2010, and the *Zumbrota News-Record* on July 7, 2010. (Exhibit 17). The notice was also published in the *EQB Monitor*, Volume 34, No. 14, pages 5-9, on July 12, 2010.
 18. On July 21, 2010, and July 22, 2010, a public hearing was held at the Goodhue High School in Goodhue, Minnesota, to receive public testimony on need and siting matters. Approximately 200 persons attended the public hearings, which included one afternoon and one evening session each day, and 56 persons provided oral testimony. Public comments and exhibits were recorded and entered into the record, with additional written comments allowed to be submitted on or before August 6, 2010.
 19. Administrative Law Judge (ALJ) Eric L. Lipman presided over each session of the public hearing on July 21, 2010, and July 22, 2010. The ALJ’s Summary of Public Testimony was submitted to the Commission on September 7, 2010. (Exhibit 18).
 20. On October 5, 2010, Goodhue County enacted amendments to its Wind Energy Conversion System Ordinances (Exhibit 20).
 21. On October 21, 2010, the AWA Goodhue Wind Project dockets were presented to the Commission.
 22. In an order dated November 2, 2010, the Commission determined:

...that it cannot satisfactorily resolve, on the basis of the record before it, all

questions regarding the applicability of an ordinance adopted by the Goodhue County Board of Commissioners on October 5, 2010, including whether there is good cause for the Commission not to apply any standards adopted by the Goodhue County Board that are more stringent than the standards currently applied to LWECS by the Commission. The Commission will therefore refer the matter to the Office of Administrative Hearings for a contested case proceeding to develop the record and to receive the ALJ's recommendations on the issues identified below in Section III of this Notice and Order.

23. On April 29, 2011, Kathleen D. Sheehy, Administrative Law Judge, filed with the Commission the ALJ's *Findings of Fact, Conclusions and Recommendation* on the issues referred to hearing in the matter of the Application of AWA Goodhue Wind, LLC for a Large Wind Energy Conversion System Site Permit for the 78 MW Goodhue Wind Project in Goodhue County (Dockets OAH 3-2500-21662-2; PUC IP-6701/WS-08-1233). (Exhibit 21).

Permittee

24. Goodhue Wind, LLC, a Minnesota limited liability company, filed the initial and amended site permit applications for the proposed 78 MW Goodhue Wind Project in Goodhue County. On January 22, 2010, the Commission received notice that Goodhue Wind and its financier, American Wind Alliance, LLC, formed a new project Minnesota limited liability company, AWA Goodhue, LLC, to facilitate financing for the Goodhue Wind Project and that all project assets were transferred to that entity. The notice stated that, thereafter, AWA Goodhue, LLC would be the applicant for the project.
25. AWA Goodhue will own and operate the Goodhue Wind Project. Energy generated from the Project will be sold to Northern States Power Company d/b/a Xcel Energy (Xcel Energy) via two separate 39 MW power purchase agreements that were approved by the Commission on April 28, 2010. (See Commission Order dated April 28, 2010, in Docket Nos. E002/M-09-1349 and E002/M-09-1350). Xcel Energy will use power generated by the project to meet the renewable energy standards requirements pursuant to Minnesota Statute section 216B.1691. Energy will be delivered into the Midwest Independent Transmission System Operator (MISO) grid and used within the MISO footprint area.

Interconnection Agreement

26. The Goodhue Wind Project has two signed interconnection agreements (H061 and H062) with the Midwest Independent Transmission System Operator for two proposed 69 kV transmission line points of interconnection associated with the 78 MW Goodhue Wind Project. AWA Goodhue, LLC also has two signed Facility Construction Agreements, one with Northern States Power and the other with Great River Energy, for construction of the associated transmission network upgrades pursuant the signed interconnection agreements.

Project Description

27. The Goodhue Wind Project involves construction of a combination of up to 50 GE 1.5 MW xle and 1.6 MW xle wind turbines and associated facilities representing 78 MW of nameplate capacity.
28. The GE 1.5 MW xle and GE 1.6 MW xle wind turbines have the same physical characteristics. The wind turbine towers will be 80 meters (262.5 feet) in height. The blades are approximately 125 feet long. Turbine rotor diameter will be 82.5 meters (271 feet) across. The overall height of the tower, nacelle and blade will be approximately 121 meters (397 feet) when one blade is in the vertical position. The rotor swept area is 5,346 square meters (57,543 square feet). The rotor speed may vary from 9 to 22 revolutions per minute, corresponding to a maximum rotor tip speed of approximately 165.1 to 172.7 miles per hour (Exhibit 1, pages 12 through 14).
29. The GE 1.6 MW xle turbine has different operating parameters and specifications that allow the GE 1.6 MW wind turbines to produce increased electricity as compared to the GE 1.5 MW xle wind turbines.
30. The project will also include an underground automated supervisory control and data acquisition system (SCADA) for communication purposes. Up to two permanent meteorological towers will be used as part of the communication system. Other components of the project include a concrete and steel foundation for each tower, pad-mounted step-up transformers, an operation and maintenance building, gravel access roads, an underground energy collection system and two project substations. The southern project substation will interconnect to an existing 69 kV transmission line running through the project boundary. A separate 69 kV transmission line approximately 3 miles in length will connect the northern project substation to an existing 69 kV transmission line adjacent to the Vasa Substation located north of the project boundary. Goodhue County will be responsible for permitting the new 69 kV transmission line.
31. The GE 1.5 MW xle and 1.6 MW xle wind turbines are three bladed, upwind, active yaw, and active aerodynamic control regulated wind turbines. The turbines feature variable-speed control, active blade pitch control and Low Voltage Ride-Thru technology. Each turbine is equipped with a wind direction sensor. The wind direction sensor communicates with the computer system, which evaluates the measured wind parameters, and, within a specified time interval, activates the yaw drives to align the nacelle to the wind direction.
32. Each turbine is interconnected through an underground electrical collection system at 34.5 kV. The feeder lines from the project collection system feed the power to the independent breaker positions at the proposed project substations. The project substations step up the voltage from the 34.5 kV collection systems to the transmission system level. All of the proposed feeder lines would connect to the proposed project substations within the site permit boundaries.

33. The blades are made of fiberglass with a smooth layer of gel coat that provides ultraviolet protection. The blades will be either white or grey in color. The blades will be equipped with lightning protection. The entire turbine is also grounded and shielded to protect against lightning.
34. Each tower will be secured by a concrete foundation that will vary in size depending on the soil conditions. A control panel that houses communication and electronic circuitry is placed in each tower. In addition, a step-up, pad-mounted transformer is necessary for each turbine to collect the power from the turbine and transfer it to a 34.5 kV collection system via underground cables.
35. All turbines and up to two permanent meteorological towers will be interconnected with fiber optic communication cable that will be installed underground. The communication cables will run back to a central host computer which will be located either at the project substations or at the operation and maintenance facility where a supervisory control and data acquisition (SCADA) system will be located. Signals from the current and potential transformers at each of the delivery points will also be fed to the central SCADA host computer. The SCADA system will be able to give status indications of the individual wind turbines and the substations and allow for remote control of the wind turbines locally or from a remote computer. This computerized supervisory control and data acquisition network will provide detailed operating and performance information for each wind turbine. The Permittee will maintain a computer program and database for tracking each wind turbine's maintenance history and energy production.
36. Housed inside the fiberglass nacelle that sits on the top of the tower are the generator, brake system, yaw drive system and other miscellaneous components, and the breakers to disconnect the wind turbine generator are located at the control panel in the tower base.
37. Each turbine will be accessible by a low profile gravel road extending from the turbine base to a public road. The roads will be all weather gravel construction and approximately 15 to 20 feet wide. To facilitate crane movement and equipment delivery, additional temporary, gravel roadways will be installed on either side of the permanent roadway. Temporary roads will be approximately 40 to 45 feet wide (Exhibit 1, p. 15).

Site Location, Topography and Characteristics

38. The 78 MW Goodhue Wind Project will be located in Goodhue County, west of the city of Goodhue and north of the city of Zumbrota. The project boundary encompasses approximately 32,684 acres and includes portions of Belle Creek (sections 1-5, 8-17, 20-29, 32-36); Goodhue (sections 17-19, 30 and 31); Minneola (sections 1-5, 8-17); Vasa (sections 35 and 36), and Zumbrota (sections 4-6, 7-9, 16-18) Townships. The topography within the site is relatively flat, but includes hills and ridges associated with water drainage. Elevation varies from 929 to 1,243 feet above mean sea level. The project area is predominantly rural and is zoned agricultural. Crops include corn, soybeans, small grains and forages. Windbreaks are common around farmsteads; willows, grasses, and sedges are found near streams and ditches.

39. Construction of the turbine sites and access roads will involve temporary disturbances of farmland on participating parcels. In addition, turbine assembly will require a gravel crane pad area of approximately 40 by 120 feet extending from the access road to the turbine foundation, and component lay down and rotor assembly will require an approximately 260 to 335 foot area near each turbine foundation. The permanent displacement of farmland for turbine access roads, towers, transformers and areas around them is expected to be less than 50 acres (Exhibit 1, pages 17-18).
40. Wind turbine and road access will be sited to take into account the contours of the land and prime farmland locations to minimize impact. The project will be subject to the requirements of the National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) Construction Stormwater Permit. An erosion and sediment control plan and Storm Water Pollution Prevention Plan (SWPPP) will also be prepared for the project and the disturbed areas will be seeded after construction to stabilize the area.

Wind Resource Considerations

41. Based on wind data collected onsite and other available long-term data sources, AWA Goodhue's consultant, Garrad Hassan, estimates that the 80 meter annual average wind speeds in the project area range from 6.9 to 7.4 meters per second. Wind speeds are generally greater in the night and early morning hours and decline at midday during most seasons. In general, average wind speeds are higher during the winter and lower during the summer. Based on onsite wind data collected by the Applicant, the prevailing wind direction within the project boundary is out of the west/northwest and south to south southeast.
42. For this project, turbines will be sited in clusters so as to have good exposure to winds from all directions with emphasis on exposure to the prevailing wind directions. Turbine placement, aside from other resource features where setbacks or wind access buffers are required, will be designed to maximize exposure to prevailing winds and provide sufficient spacing between the turbines to minimize internal wake losses. Given the prevalence for wind from the northwest, the turbine spacing is widest in this direction. Greater or lesser spacing between the turbines or turbine strings may be used in areas where the terrain dictates the spacing. This is addressed in the permit at Section 4.10. Individual, isolated turbine sites may be necessary to minimize project impacts. Sufficient spacing between the turbines is utilized to minimize wake losses when the winds are blowing parallel to the turbines.
43. The net annual energy production from the project, assuming various losses aggregating to approximately 15 percent and assuming net capacity factors of 34 to 39 percent, will range from approximately 230,000,000 MWh to 270,000,000 MWh per year. The base energy calculation presented assumes a normal or average wind year.

Land Rights and Easement Agreements

44. In order to build a wind project, a developer needs to secure site leases and easements or option agreements to ensure access to the site for construction and operation of a proposed project. These lease or easement agreements also prohibit landowners from any activities that might interfere with the execution of the proposed project (Exhibit 1, p. 10).
45. AWA Goodhue has obtained easement agreements and wind rights with more than 200 landowners for approximately 100 parcels of land totaling more than 12,000 acres of land within the project site boundary necessary for installation of the components of the wind project. Land rights leases and wind easements will encompass the proposed wind farm and all associated facilities, including but not limited to wind and buffer easements, wind turbines, turbine access roads, step-up transformers, collector and feeder lines, and two permanent meteorological towers. The new 69 kV transmission line will be located on private lands or public rights-of-way (Exhibit 1, p. 10).

Site Considerations

46. Minnesota Statutes chapter 216F and Minnesota Rules chapter 7854 apply to the siting of Large Wind Energy Conversion Systems (LWECS). The rules require an applicant to provide a substantial amount of information to allow the Commission to determine the potential environmental and human impacts of the proposed project and whether the project is compatible with environmental preservation, sustainable development, and the efficient use of resources. Pursuant to Minnesota Statutes section 216F.02, certain sections in Minnesota Statutes chapter 216E (Minnesota Power Plant Siting Act) apply to siting LWECS, including 216E.03, subd. 7 [Considerations in designating site and routes]. The analysis of the environmental impacts required by Minnesota Rule 7854.0500, subpart 7, satisfies Minnesota's environmental review requirements. The following findings address the considerations relevant to a LWECS project.

Demographics and Human Settlement

47. The project will be located in southeastern Minnesota near the cities of Goodhue and Zumbrota, Minnesota, within a project area of approximately 32,684 acres. The townships of Belle Creek, Goodhue, Minneola, Vasa, and Zumbrota are partially located within the project boundary.
48. The 2009 population estimate for Goodhue County is 45,836 and the combined population for the five townships in the project area is 3,073, or roughly 7 percent of the total county population. There has been a slight increase in population in the county from 2000-2009, approximately 4 percent. Three of the townships within the project boundary have had slight population decreases of about 4 percent. Two townships (Belle Creek and Vasa) had population increases comparable to the county average of 4 percent. Red Wing is the largest urban area in the county and is where one third of the population (36.5 percent) resides.

49. The project area has a relatively low population density, with an estimated 17 persons per square mile. The city of Goodhue, near the eastern edge of the project area, has a population of approximately 800. The city of Zumbrota, near the southern edge of the project area, has a population of approximately 2,800. The largest city in Goodhue County, Red Wing, has a population of approximately 16,200, and is located approximately 15 miles northeast of the project area.
50. Goodhue's current site plan indicates that there are no residences within 1,000 feet of any turbine. There are 5 residences within 1,000 to 1,500 feet, and 81 residences within 1,500 feet to one-half mile. Of the 86 residences within a half mile of the turbines, 29 are project participants, 52 are non-participants. The site permit, sections 4.1, 4.2 and 4.4, has conditions for setbacks from residences, roads and non-participating landowner's property lines. The proposed wind turbine layout will meet or exceed those requirements. The proposed project is not expected to affect any water wells (used, unused or unsealed). (Exhibit 1, p. 26-28).
51. There will be no displacement of existing residences or structures in siting the wind turbines and associated facilities.

Land Use and Zoning

52. The Goodhue Wind Project will be located in an area that is zoned for agriculture. Agriculture is an important economic sector in Goodhue County. According to the 2009 Goodhue Agricultural Profile, Goodhue County ranks in the top 10 counties in Minnesota for dairy production, cattle, and sheep and lamb. It ranks 16th in total agricultural production, with 45 percent in crops and 55 percent in livestock.
53. The project is consistent with the Goodhue County Comprehensive Plan, adopted in 2004, specifically Element 1, goals 2-5, and Element 5, goal 1. Large wind energy conversion systems have been identified in the comprehensive plan as a compatible land use that complements and enhances existing agricultural infrastructure.
54. In Element 1, Land Use, Urban Expansion and Growth Zones, retention of agricultural land for agricultural uses is considered a high priority. The plan encourages cities to recognize the surrounding agricultural needs in their comprehensive plans. The county's policy regarding lands outside city growth zones stipulates they "will be considered rural and shall be managed to preserve the rural character and the continued operation of agricultural uses, their inherent activities, and lifestyle."
55. In Element 5, Economic Development goals, policies related to agricultural industry include ways to "preserve the land to support agricultural industry...and support the development of innovative industrial agricultural uses such as ethanol production, wind generation, buckwheat cleaning."
56. The project lies completely outside the city limits of any incorporated municipality and outside any Urban Fringe District identified in the 2004 Goodhue County Zoning Districts map.

57. The project also lies outside the Low Density Residential/Urban Fringe/Agriculture land use zone identified in the 2003 Future Land Use/Transportation Plan map developed as part of the *TH 52 Corridor Zumbrota Sub-area Land Use/Transportation Study*. The city of Zumbrota, Goodhue County and Minneola, Pine Island, Roscoe and Zumbrota townships participated with Mn/DOT – District 6 in the study. It was prepared and funded through the Mn/DOT Interregional Corridor Partnership Planning Studies grant program which was established to encourage state and local cooperation in ensuring the long-term performance of Minnesota’s Interregional corridor system.
58. The cities of Goodhue and Zumbrota have each requested that no turbines be placed within a two-mile buffer of each city’s municipal boundaries. Neither city has an adopted comprehensive plan relating to future growth or expansion out two miles.
59. In the proposed layout, no turbines will be sited within two miles of Goodhue; however, the proposed layout includes four turbines located on private land within two miles of Zumbrota. The closest turbine is approximately 1.50 miles from Zumbrota’s municipal boundary (Exhibit 21, citing AWA Ex. 3).
60. On June 14, 2010, Belle Creek Township enacted an interim ordinance establishing a one-year moratorium on siting wind energy conversion systems within its township while the Township Board considers adoption of an ordinance intended, presumably, to regulate wind energy conversion system development within the township. On May 25, 2011, Belle Creek Township extended its moratorium.
61. According to Minnesota Statutes section 216F.07, a site permit issued by the Commission “supersedes and preempts all zoning, building, or land use rules, regulations, or ordinances adopted by regional, county, local, and special purpose governments.” While Minnesota Statutes section 216F.081 requires the Commission to consider and apply more stringent standards adopted by a county unless it finds good cause not to, the Wind Siting Act does not contain a similar provision related to standards adopted by a township or municipalities.
62. On October 5, 2010, Goodhue County amended its Wind Energy Conversion System Ordinance with the intent of establishing more stringent standards for the Commission's consideration. Issues relating to application of the county's standards were thoroughly examined during the subsequent contested case proceeding conducted by Judge Sheehy of the Office of Administrative Hearings.
63. The Commission adopts the April 29, 2011, Administrative Law Judge's *Findings of Fact, Conclusions and Recommendations* regarding Goodhue County’s standards and whether there is good cause not to apply them for the AWA Goodhue Wind, LLC Large Wind Energy Conversion System Project related to OAH Docket No. 3-2500-21662-2 and PUC Docket No. IP-6701/WS-08-1233.

Property Values

64. A number of non-participating Goodhue County residents have expressed concern that the existence of wind turbines in the area would negatively affect their property values. (Exhibit 18, fn. 58). Impact to property values is often a concern to affected residents. However, residents have not offered any specific evidence which supports such a claim. The best evidence on the subject matter is the Lawrence Berkley National Laboratory study “The Impact of Wind Power Projects on Residential Property Values in the United States” (Dec. 2009) study. That report shows an absence of negative impacts to property values from wind farms within a project view shed. “A Study of Wind Energy Conversion System in Minnesota,” prepared by the Stearns county, Minnesota, Assessor’s Office (June 1, 2010) asked assessors from Dodge, Jackson, Lincoln, Martin, Mower and Murray counties “if they have seen any changes on properties hosting a wind energy conversion system and on properties adjacent to property with a tower located on it.” Their responses noted that there were “no changes,” but also indicated that “The collected data is insufficient to allow for a reasonable analysis of the effects of wind energy development on land values.” Moreover, because it is difficult to determine what effect the construction of the turbines will have on property values, some residents suggested that the Permittee be required to purchase property value guaranty insurance for non-participating property owners. (*See, e.g.*, Exhibit 18, p.12-13). The Commission has not required any other wind project in Minnesota to purchase such insurance and finds no rationale for doing so here.

Public Health and Safety Setbacks

65. Some non-participating landowners have requested that no turbines be located closer than one-half mile from a residence. (*See, e.g.*, Exhibit 18, fn. 45). The existing setback included in the Commission’s *Order Establishing General Wind Permit Standards* is 500 feet from the nearest residence, plus any distance necessary to comply with the Minnesota Pollution Control Agency noise standards (Minn. Rules, Chapter 7030).
66. A one-half mile setback from the nearest residence would essentially eliminate every proposed turbine site in the project. If adopted for other projects, a one-half mile setback would also eliminate significant portions of agricultural land elsewhere in Minnesota with viable wind resources, and thereby preclude landowners from developing wind energy on their property. This would not be the best balance between the rights of participating landowners and non-participating landowners and would not allow for the efficient use of wind resources in the area and elsewhere in Minnesota.
67. AWA Goodhue has agreed to site all turbines at least 1,500 feet away from the nearest non-participating residence and at least 1,000 feet from participating residences (site permit section 4.2). In addition, the Permittee will be required to site all turbines at distances sufficient to meet the Minnesota Noise Standard found in Minnesota Rules Chapter 7030 (site permit section 4.3).
68. In addition, the site permit will require AWA Goodhue to set back its turbines a minimum of five rotor diameters (1,355 feet) on prevailing wind directions from the

center of the wind turbine tower to the property boundary of all non-participating landowners and three rotor diameters (813 feet) on non-prevailing wind directions (site permit section 4.1). The site permit (section 4) also establishes other setback requirements from roads and other features.

Aviation and National Security

69. Although there are no public airports within the project boundary, there are several airports in Goodhue County that have been registered with the Federal Aviation Administration (FAA) and the Minnesota Department of Transportation (MN DOT). The nearest registered facilities are the two heliports for the Fairview Red Wing Medical Center and Hospital located approximately 11.3 and 11.6 miles north and northeast, respectively, of the project area. The next closest are the Stewart Farms Airport located approximately 12.7 miles northwest, and the Red Wing Falls Regional Airport (RGK) located approximately 14.7 miles northeast of the project area. The project does not impact the safety zones of any of these airports.
70. One recently-registered private use airstrip, the Stenlund airstrip, has also been identified in Belle Creek Township. Section 4.12 of the site permit requires the Applicant to avoid placing wind turbines or associated facilities in a location that could create an obstruction to navigable airspace of licensed private airports as defined in rule.
71. A few residents expressed concern that rotation of large numbers of turbine blades would interfere with radar for military aircraft and air-traffic control, and present a national security concern, particularly since the Prairie Island Nuclear Generating Facility is located in Goodhue County (Exhibit 18, fn. 28).
72. Wind turbines may impact radar systems, e.g., radar used for aviation, if they are in the radar line of sight. Impacts may include an impairment of the ability to detect and track aircraft. Impacts can be mitigated by avoiding the placement of wind farms in radar lines of sight. The U.S. Department of Defense is responsible for compatibility of wind farms with military radar installations; the FAA is responsible for compatibility with commercial aviation radar.
73. Prior to construction, the project must provide notice to and complete evaluation by the FAA and MN DOT. FAA review and evaluation also includes review on behalf of the Department of Defense with the Air Force taking the lead on behalf of the Army and Navy. Homeland Security review is another component of this review process. The project will comply with the FAA requirements with respect to siting and lighting (site permit sections 4.12 and 7.18).

Medical Helicopters and Emergency Response

74. Some concern was expressed about the ability of emergency medical helicopters, particularly those from the Mayo Clinic, to fly and land within the project area. (*See, e.g.* Exhibit 18, fn. 30). There is no reason to conclude that the project poses any more risk to medical helicopters than any other wind farm located in the state. Officials at Mayo Clinic in Rochester have noted that impacts on helicopter operations due to wind projects in the area have been insignificant. (Environmental Report, p. 43) (Exhibit 24).
75. Wind turbines constructed as part of the project will be registered with the Goodhue County emergency response management system, and AWA Goodhue will work with the county emergency response to develop appropriate response procedures for emergencies, natural hazards, hazardous materials incidents, manmade problems (e.g., fire) and related incidents possibly affecting the project. AWA Goodhue will also work with the County Planning and Zoning Office for assignment of 911 addresses for coordination of emergency response. Project construction and operation is expected to have little impact on the security and safety of local residents. As with any large construction project, however, there is some risk of worker or public injury during construction. AWA Goodhue and its construction representatives and workers will prepare and implement work plans and specifications in accordance with applicable worker safety requirements during project construction. AWA Goodhue will control public access to the project during construction and operations and will also provide security during project construction and operation, including fencing, warning signs, and locks on equipment and facilities. The Permittee will also provide landowners, interested persons and public officials and emergency responders with all applicable safety information (site permit sections 7.15 and 7.16).
76. Each turbine will be clearly labeled to identify each unit and a map of the site with the labeling system will be provided to local authorities as part of the fire protection plan (site permit section 7.17).

Ice Throw

77. A number of residents expressed concern if large chunks of ice were allowed to build up on turbine blades and were later thrown from the moving blades. (Exhibit 18, fn. 25). In winter months, ice may accumulate on the turbine blades when the turbines are stopped or operating very slowly. Furthermore, the anemometer may ice up at the same time, causing the turbine to shut down during any icing event. As weather conditions change, any ice will normally drop off the blades before the turbines resume operation. This is due to flexing of the blades and the blades' smooth surface. Although turbine icing is an infrequent event (2.5 days per year), it remains important that the turbines not be sited in areas where regular human activity is expected below the turbines during the winter months, and no turbines here are proposed in such areas. The setback requirements in section 4 of the site permit provide further assurance that the turbines will be placed an adequate distance from residences, roads and other areas of human activity.

78. The Department of Natural Resources suggested that the Permittee consult with the DNR during final micro-siting of the turbines to determine how close the turbines will be to existing snowmobile trails. While the record does not support the imposition of a setback requirement from snowmobile trails, it is appropriate to expect the Permittee to take the location of known snowmobile trails into account during the final siting of the turbines.

Stray Voltage and Electric and Magnetic Fields

79. A number of residents raised concern about the possible effect of stray voltage on their dairy operations. (Exhibit 18, fn. 41).
80. Stray voltage (neutral to earth voltage, or NEV) is an extraneous voltage that appears on grounded surfaces in buildings, barns and other structures. Stray voltage can be a problem for hospitals, manufacturing plants and farms. In hospitals and manufacturing plants, stray voltage may interfere with sensitive electronic equipment. On the farm, if this voltage reaches sufficient levels, animals coming into contact with grounded surfaces may receive a mild shock that can cause a behavioral response. In addition, stray voltage may result from a damaged, corroded, or poorly connected wiring or damaged insulation (contact voltage).
81. A great deal of research on the effects of stray voltage (NEV) on dairy cows has been conducted over the past 40 years. A comprehensive review of this research is presented in a report to the Ontario Energy Board (Literature Review and Synthesis of Research Findings on the Impact of Stray Voltage on Farm Operations, 2008, Prepared by Douglas J. Reinemann, Ph.D.).

Stray voltage (NEV) and its impact on dairy farms is normally an issue associated with electrical distribution lines and is a condition that can exist between the neutral wire of a service entrance and grounded objects in buildings. NEV is not associated with transmission lines. The source of stray voltage is a voltage that is developed on the grounded neutral wiring network of a farm and/or the electric power distribution system.

The direct effect of animal contact with electrical voltage and the resulting current flowing through their bodies can range from:

- Mild behavioral reactions indicative of sensation, to
- Involuntary muscle contraction (twitching), to
- Intense behavioral responses indicative of pain.

The level of response will depend on the amount of electrical current (milliamps) flowing through the animal's body, the pathway it takes and the sensitivity of the animal.

The indirect effects of these behaviors can vary considerably depending on the specifics of the contact location, level of current, pathway, frequency and other factors related to

the daily activities of the animals. There are several common scenarios of concern in the animal's environment:

- Animals avoiding certain exposure locations which may result in reduced water intake and reduced food intake,
- Difficulty of moving or handling animals in areas of annoying voltage/current exposure,
- The release of stress hormones produced by contact with painful stimuli.

The vast majority of behavioral response thresholds observed occurs between current levels of 3 milliamps to 8 milliamps. The severity of behavioral response has been shown to increase as the exposure (current) is increased above the first response threshold, with aversive behaviors occurring at levels about 1.5 to 1.6 times higher than the mild behavioral response threshold.

Controlled research clearly indicates that while it is possible to cause physiological changes in dairy cows as a result of electrical exposures, these responses occur at exposure levels well above those that produce behavioral changes. The extensive field data collected provides further confirmation of these experimental results.

Stray voltage (NEV) sources can be reduced in three fundamental ways:

- reduce the current flow on the neutral system,
- reduce the resistance of the neutral system, or
- improve the grounding of the neutral system.

The quality of the farm wiring system has the largest single influence on voltage exposure levels. Farm wiring has been shown to be a major contributor to voltage sources on farms; making good electrical connections and making sure that these connections are maintained by the proper choice of wiring materials for wet and corrosive locations will reduce the resistance of the grounded neutral system and thereby reduce neutral to earth voltage levels.

Additionally, the use of equipotential planes (A grid, sheet, mass, or masses of conducting material which, when bonded together, offers a negligible impedance to current flow) are part of the electrical code requirements in animal confinement areas. Equipotential planes reduce exposures from both on-farm and off-farm sources of voltage exposure.

82. The electrical collection system proposed for the Goodhue LWECS is designed to be “a separately derived system” as defined in the National Electric Code. The system will have no direct electrical connection (including grounded circuit conductors) to

conductors originating in another system. The wind farm collection system will have its own substation and transformers. (Exhibit 21, citing AWA 4).

83. Because of the type of transformers used at each turbine and the design of the collection system, there are no ground currents in the collection system, whether the system is operating at zero generation or maximum generation. Therefore, under normal operating conditions, the grounding for the wind farm collection system has no current with which to create stray voltage. (Exhibit 21, citing AWA 4).
84. Another form of stray voltage is induced or phantom voltages. Current flowing through a wire will create a magnetic field around the wire. This will induce a voltage in any electrically conductive material "within range" of that field. The closer the material is to the source of the field (i.e., the current-carrying wire), the higher the induced voltage will be. Transmission lines (alternate current or AC) can induce stray voltage on nearby conductive objects. When the electric-magnetic field of a transmission line extends to a nearby conductive object, a voltage is induced on the object. The magnitude of the voltage depends on the objects ability to collect an electric charge (capacitance), shape, size, orientation, location, object to ground resistance, and weather conditions. If a voltage is induced on an object insulated from the ground and a person touches the object, a small current would pass through their body to the ground. This current may produce a spark discharge or mild shock to the individual. This type of stray voltage (induced current) occurs most often on long fences and distribution lines built under transmission. Most shocks from induced current are considered more of a nuisance than a danger.
85. The Goodhue LWECs project does envision connection to the grid via two 69 kV lines, one existing and one new.
86. To insure public safety, the National Electric Safety Code (NESC) requires induced current of less than 5 milli Amperes (mA) for objects under transmission lines.

Noise

87. By its design and siting of turbines for the Goodhue Wind Project, AWA Goodhue has taken possible noise impacts to nearby rural residences and farmsteads into account. Based on monitoring conducted by the Permittee at five locations throughout the project area, the existing ambient noise levels in the area range from 33 dBA to 52 dBA on an hourly L_{A50} and between 34 dBA and 60 dBA on an hourly L_{A10} basis. (Exhibit 21, citing AWA Ex. 6). These background noise levels are typical of those in a rural setting, where existing nighttime levels are commonly in the low to mid-30 dBA. The dBA scale represents A-weighted decibels based on the range of human hearing. Higher levels of background sound exist near roads and other areas of human activity.
88. Wind turbines, when in motion, generate noise. The level of sound varies with the speed of the turbine, the distance of the listener or receptor from the turbine and surface characteristics of the site. Operation and maintenance of the wind turbines and associated facilities will create increased noise levels.

89. The increases in noise levels within the project area are expected to be minimal due to the noise levels produced by the wind itself and the siting considerations adopted by AWA Goodhue. Specifically, AWA Goodhue has incorporated a residence setback distance of 1,500 feet for non-participants and at least 1,000 feet for participants. Further, AWA Goodhue has sited the 1.5 MW machines in locations nearest to residents and the 1.6 MW machines, which are slightly louder, at farther distances. (Exhibit 21, citing AWA Ex. 6).
90. AWA Goodhue evaluated the sound power level information provided by the manufacturer of the GE 1.5 MW and 1.6 MW xle wind turbines to assess representative noise levels for the project. The highest sound power level of 104.0 dB for the GE 1.5 MW xle and 106.0 dB for the GE 1.6 MW xle were used to calculate the maximum expected noise levels and establish the setback distances required to meet the state's most stringent noise standard, the Minnesota Pollution Control Agency (MPCA) Nighttime L₅₀ limit of 50 dBA for NAC1.
91. An updated Wind Turbine Noise Assessment for the Goodhue Project, dated January 28, 2011, prepared by HDR, Inc., evaluated the project noise levels at 492 receptors within and near the site.
92. Several members of the public have contested the appropriateness of the Cadna-A model. The Commission finds, however, that the Cadna-A model is based on internationally accepted acoustical standards used to calculate outdoor noise and has been used to model a variety of wind projects throughout the world, including many in Minnesota.
93. Some commenter's also testified that the state MPCA noise standards are inadequate to protect public health. For example, a subcommittee of the Goodhue County Planning Advisory Commission advocated for an outdoor nighttime standard of 40 dBA. (Exhibit 18, fn. 13). The MPCA's noise standards, when enacted, were based on the present knowledge for the preservation of public health and welfare. The standards are consistent with speech, sleep, annoyance, and hearing conversation requirements for receivers within areas grouped according to land activities. Based on current science, there is no conclusive evidence that sound from wind turbines at levels consistent with or below MPCA noise standards pose any risk to human health.
94. The Applicant's modeling shows that, at the setback distances of 1,500 feet for non-participants and 1,000 feet for participants, the project complies with the MPCA's Nighttime L₅₀ limit of 50 dBA, its most stringent standard. Noise impacts to nearby residents and other receptors have been factored into the turbine micrositing process, and conditions in the site permit require the project to comply with the MPCA noise standards (site permit sections 4.3 and 6.6).

Shadow Flicker

95. Several residents have also raised concerns over the impacts of shadow flicker (Exhibit 18, fn. 22, 23). Shadow flicker is described as a moving shadow on the ground resulting in alternating changes in light intensity. Shadow flicker computer models simulate the path of the sun over the year and assess at regular time intervals the possible shadow flicker across a project area. The models are useful in the design phase of a wind farm. Shadow flicker usually occurs in the morning and evening hours when the sun is lower in the horizon and the shadows are elongated. Shadow flicker does not occur when the turbine rotor is oriented parallel to the receptor or when the turbine is not operating. In addition, shadow flicker does not occur when the sun is obscured by clouds or other obstacles already casting a shadow, such as buildings and trees.
96. Shadow intensity, or how “light” or “dark” a shadow appears at a specific receptor, will vary with the distance from the turbine. Closer to a turbine, the blades will block out a larger portion of the sun’s rays and shadows will be wider and darker. Receptors farther away from a turbine will experience much thinner and less distinct shadows since the blades will not block out as much sunlight. Shadow flicker will be greatly reduced or eliminated within a residence when buildings, trees, blinds or curtains are located between the turbine and receptor. Consultants generally agree that flicker is not noticeable beyond about 10 rotor diameters from a wind turbine. Evidence of health effects from shadow flicker is scant, suggesting that it is more of a nuisance issue. There are no published standards for shadow flicker and no examples of turbines causing photosensitivity related problems, including in Minnesota. A few jurisdictions in other countries have established guidelines for acceptable levels of shadow flicker based on certain assumptions. In Germany, 30 hours of shadow flicker per year is acceptable. The 30 hour number is based on the premise that the sun is shining, the building affected is occupied, the occupants are awake and the turbine is operating. The site permit does not contain shadow flicker limits.
97. AWA Goodhue considered the potential impact of shadow flicker when micro-siting the turbines in this project. Applicant Consultant HDR, Inc., prepared an updated wind turbine Shadow Flicker Assessment of the Goodhue Wind Project, dated January 2011, using the Wind Pro 2.6 software program. The assessment calculated shadow flicker exposure for the 289 potential receptors within the project vicinity. (Exhibit 21, citing AWA Ex. 7). The model calculated the “actual expected shadow” based on the following inputs: (1) location of the wind turbines and receptors; (2) the topography in the project area; (3) the type of turbine used for the project (GE 1.5 MW and 1.6 MW xle turbines); (4) sunshine probability statistics from the NOAA’s National Climatic Data Center; and (5) wind direction. The “actual expected shadow” model also includes several conservative assumptions, such as assuming the wind turbines operate 100 percent of the time and that all receptors live in a “greenhouse,” meaning that a receptor’s view is never obstructed from any direction by such things as walls, vegetation and other buildings. Considering these assumptions, the maximum annual expected (cumulative) shadow flicker hours at any non-participating receptor is 33 hours, 11 minutes, which is less than 1 percent of the total available annual sunlight hours. More than 96 percent of the 289

receptors are expected to experience fewer than 20 hours of shadow flicker per year. The Applicant has strived to minimize flicker through its micro-siting efforts and will be required to continue to do so. (site permit section 6.2.)

Visual Values

98. The placement of up to 50 turbines as part of the Goodhue Wind Project will affect the appearance of the area. The wind turbines will be mounted on 262.5 foot tubular towers. The rotor blades will have a 271 foot diameter. The turbine towers and rotor blades will be prominent features on the landscape. There will be intermittent views of the turbines to passing motorists on State Highway 52 and local roads. Motorists and drivers on local township and county roads may travel within 500 feet of some turbines.
99. The visual impact of the wind turbines will be reduced by the use of a neutral paint color. The only lights will be those required by the FAA. All site permits issued by the Commission require the use of tubular towers; therefore, the turbine towers will be uniform in appearance. Blades used in the proposed project will be white or grey. The wind turbines in this project, while prominent on the landscape, also blend in with the surrounding area. The project site will retain its rural character. The turbines and associated facilities necessary to harvest the wind for energy are not inconsistent with existing agricultural practices.
100. From one perspective, the proposed project might be perceived as a visual intrusion on the natural aesthetic value on the landscape, characterized by up to 50 tubular steel structures approximately 262.5 feet high, standing on formerly undisturbed high-ground, with 125 foot long blades, for an overall height of 397 feet or more when one blade is in the vertical position. Wind farms have their own aesthetic quality, distinguishing them from other non-agricultural uses. Existing wind farms have altered the landscape elsewhere in Minnesota from agricultural to wind farm/agricultural. This project will modify the visual character of the area.
101. Visually, the Goodhue Wind Project will be similar to other LWECs projects located in other parts of the state.

Recreational Resources

102. Goodhue County has a number of scenic areas and recreational opportunities available to the public. The county is rich in natural resources such as bluffs, streams and waterways, which draw visitors from across the state. Approximately one-third of the county consists of lands protected by state and federal agencies. Most of these lands exist within the northern third of the county, and provide recreational opportunities such as hiking, biking, boating, fishing, snowmobiling, golfing, cross-country skiing, hunting, and nature viewing.
103. Recreational resources identified within Goodhue County include the Mississippi River Valley, Frontenac State Park, and the Richard J. Dorer Memorial State Forest, all of which are outside the project area. Frontenac State Park is the nearest state park located

northeast of the project area along the southern edge of Lake Pepin and the Mississippi River. The Richard J. Dorer Memorial State Forest is located directly north of the project area, and occupies most of Welch, Vasa, Red Wing, Featherstone, Hay Creek, and Florence townships. This state forest offers recreational opportunities to visitors such as hiking and wildlife viewing.

104. There are four DNR Scientific and Natural Areas (SNAs) in Goodhue County: River Terrace Prairie SNA, North Fork Zumbro Woods SNA, Cannon River Turtle SNA, and Spring Creek Prairie SNA. Three of the four are located north of the site, and the fourth is located south and west of the site near Wanamingo. None of these SNAs is located within the project area. There are no DNR Wildlife Management Areas (WMAs), USFWS Waterfowl Production Areas (WPAs), State Parks, or State Forests within the project area.
105. There are no county parks or state parks within or near the project area. There are only two parks owned by the county and both are located on Lake Byllesby, more than 9 miles from the western project boundary. Lake Byllesby was artificially created by damming the Cannon River.
106. There are no natural lakes within Goodhue County, but there are numerous drainages, creeks and rivers. Drainages in the western half of the project area drain to Belle Creek (outside of the project area) which becomes a designated trout stream approximately four miles downstream. Hay Creek also becomes a designated trout stream approximately two miles downstream of the project boundary.
107. Goodhue County also has three existing regional recreational trails within its boundaries: the Cannon Valley Trail, the Goodhue Pioneer Trail, and the Douglas State Trail. None of these trails currently runs through the project boundary. The trail closest to any turbines is the Pioneer Trail. The Department of Natural Resources has determined that the turbines are appropriately sited, although the DNR has requested that the permit language in Section 4.5, Public Lands, be modified to provide a 3 rotor diameter (RD) by 5 RD buffer to ensure a proper setback from state trails. Based on information provided by the State Climatology Office, freezing rain or drizzle occurs about 2.5 days per year. Based on the low number freezing rain and drizzle days in Minnesota, coupled with the fact trails are unlikely to be used during inclement conditions, a 3 by 5 rotor diameter setback from trails is not warranted.
108. AWA Goodhue will design the project to avoid all direct impacts to recreational resources. No turbines will be located on public lands. The only impact will be visual, as users of the nearest recreational facilities will be able to see a small number of turbines from certain vantage points within a one to four-mile radius of the project area. Significant impacts are not anticipated.

Community Benefits

109. The Goodhue Wind Project will pay a Wind Energy Production Tax to the county and townships of several hundred thousand dollars per year. Landowners with turbine(s)

and/or wind or collection system easements on their property will also receive payments from the Permittee.

110. To the extent that local workers and local contractors are capable, qualified, and available, AWA Goodhue will seek to hire them to construct the proposed project. The hiring of local people will expand local employment opportunities. Once constructed, the project will be staffed with several full-time site technicians and an operations manager.
111. AWA Goodhue estimates the total construction economic benefit to be approximately \$2 million to local contractors and suppliers. The Permittee further estimate the annual benefit to area landowners and participants to be \$1 million per year of operations. (Exhibit 21, citing AWA Ex. 2).

Effects on Land-Based Economies

112. The proposed project will permanently impact up to 50 acres of crop and pasture land for siting the wind turbine structures, access roads and associated facilities. Construction activities associated with the project (e.g., grading, soil compaction, access roads, turn around areas and temporary construction staging areas) will also temporarily impact agricultural lands. Overall, impact to agricultural lands as a result of the project is anticipated to be short-term and is not expected to alter crop production. Once in operation, it may be occasionally necessary for AWA Goodhue to complete repairs or clear vegetation around a turbine or facility, which could result in additional temporary impacts to agricultural operations. These interruptions are expected to be infrequent and short term. (Exhibit 1, p. 54).
113. Soil compaction is a temporary impact. The construction equipment used in the erection of wind turbines, much like agricultural equipment, is designed with wide tires and tracks to distribute weight over a large area. This minimizes the degree of soil compaction resulting from construction. In areas with significant soil compaction, AWA Goodhue will work with the landowner and negotiate appropriate corrective measures such as tilling, chiseling or other methods.
114. Drain tiles may be damaged or cut as a result of installing underground cable and tower foundations. To minimize damage to drain tiles, drain tiles will be avoided where possible. AWA Goodhue will develop and implement a drain tile mitigation plan. The plan will address steps that will be taken to avoid, repair or replace drain tile that may be impacted by the project (Exhibit 1, p. 55).
115. Impacts on agricultural crops, livestock, native vegetation and landscaped areas are anticipated to be minimal. Landowners will be reimbursed for potential damage incurred to crops, livestock and property in a manner consistent with the terms of the wind lease and easement agreement. Once the project is completed, AWA Goodhue will restore vegetation within disturbed areas as close as practicable to its original condition. Sites used for temporary storage, material staging and access areas typically experience significant amounts of traffic; these sites will likely require tilling prior to seeding to loosen compacted soils (Exhibit 1, p. 55).

116. During the public hearing, Ms. Erin Logan inquired whether the project complied with the Prime Farmland Exception in Minnesota Rules 7850.4400, subp. 4. (Exhibit 18, fn. 56). While that section of Minnesota Rules chapter 7850 does not apply to siting LWECS (*See* Minnesota Statute section 216F.02), the project is not expected to have a significant impact on prime farmland. The wind turbines and access roads will be located so that the most productive farmland will be left as intact as possible. The project will permanently displace approximately 50 acres of agricultural land. The site permit at Sections 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 7.8.2, 7.9, 7.11, 7.12, 7.14 addresses mitigation measures for agricultural lands.
117. A township official questioned whether the project's use of aggregate from local suppliers would deplete the supply of aggregate available to local government agencies for repair of roads. In response, AWA Goodhue stated that the project will use less than one half of 1 percent of the supply available from one of the area's five aggregate suppliers. Based on this estimate, the proposed project does not adversely affect any sand or gravel operations.
118. The project does not adversely impact forestry or mining (Exhibit 1, p. 55).

Public Services and Infrastructure

119. There are two known underground pipelines that cross the project area. One carries petroleum and is owned by BP/Amoco and the other carries natural gas and is owned by Magellan Pipeline Company LP. (Exhibit 1, p. 31). AWA Goodhue has incorporated a setback of at least 150 feet from turbines to the center of the pipeline. AWA Goodhue will also enter into encroachment agreements with the owners of the pipelines to establish procedures and communications that minimize any potential impacts or safety concerns regarding the pipeline. (Exhibit 21, citing AWA Ex. 3). Therefore, the project is not expected to impact the pipelines.
120. There are currently three utility transmission lines within the project area. Great River Energy owns a 69 kV transmission line running across the southeast portion of the project area. In addition, Xcel Energy owns a 345 kV transmission line running north to south within the project area along the eastern boundary and a 69 kV transmission line running parallel to U.S. Highway 52 in the southwest corner of the project area. A map of the existing electric transmission lines is in the site permit application (Exhibit 1, Exhibit A-3). The project will interconnect to the existing 69 kV transmission system in and near the project area.
121. Homes and farmsteads within the project area typically utilize onsite water wells and septic systems for individual household and farming needs. (Exhibit 1, p. 31). The project is not expected to impact wells and septic systems.
122. Existing roadway infrastructure in and around the project area consists of state, county and township roads that generally follow section lines, with private unpaved farmstead driveways and farming access roads. The primary transportation arteries through the

project area include U.S. Highway 52, State Trunk Highway 58, County Roads 6, 9, 8 and 7 and local roads. According to MnDOT the average daily traffic (ADT) for U.S. Hwy 52 is 18,100 vehicles. The ADT for STH 58 is 3,150 vehicles. Other roads within the site average 375 to 1,750 vehicles per day (Exhibit 1, p. 32-33).

123. The project will require the use of public roads to deliver construction supplies and materials to the work site. Equipment and materials used in the erection of wind farms are extremely heavy and can cause road damage. Weight-related impacts to roads include physical damage to the structure of the road itself and/or damage to culverts and bridges (site permit section 4.4). Road damages will be addressed by a “Development Agreement” between AWA Goodhue and Goodhue County (Exhibit 21, citing AWA Ex. 1-B.)
124. AWA Goodhue will work with all parties involved to address concerns related to roadway use, and adhere to existing state, county and township requirements for transportation infrastructure. AWA Goodhue entered into a comprehensive Development Agreement, which includes a Road Use and Repair Agreement and addresses damage to roadways and drainage systems. The agreement specifies the commitments made by Goodhue County and the Permittee for the purpose of ensuring that the project is consistent with the existing policies and ordinances of Goodhue County and the participating townships to the extent they are not superseded or preempted by the LWECS Permit.
125. Prior to construction, AWA Goodhue will coordinate with the applicable local and state entities to ensure that the weights being introduced to area roads are acceptable. AWA Goodhue will work with the affected cities and townships, Goodhue County, and MnDOT regarding roadway concerns, right-of-way work (if any), setbacks and access, and permitting oversize loads during project construction. AWA Goodhue has worked closely with the landowners in determining the placement of access roads to minimize land-use disruptions during construction and operation of the project to the extent possible.
126. AWA Goodhue contracted with Comsearch to complete a microwave search interference study on existing non-federal government microwave telecommunication systems, including digital television broadcast systems. AWA Goodhue used the results of the study and additional field location verification to inform its micrositing process. AWA Goodhue has also filed a Form 7460-1 with the FAA for each turbine location. The FAA’s evaluation will consider impacts of the turbine locations against known communication towers and beam paths within the project area.
126. Prior to construction, Gopher State One Call will be contacted to locate underground facilities. To the extent project facilities cross or otherwise affect existing telephone lines or equipment, AWA Goodhue will make arrangements with applicable service providers to avoid interference with such facilities. At this time, no impacts are anticipated to microwave or radio transmissions. AWA Goodhue will not operate the wind farm so as to cause microwave, radio, telephone, television or navigation interference in violation of FCC regulations or other applicable law. If operation of the project causes such

interference, AWA Goodhue will take the steps necessary to correct the problem (Exhibit 1, p. 36). (site permit Section 6.4).

127. Individual turbines within the project will be connected through a system of underground electrical collector lines located on private property and within public rights-of-way. The electrical cables will be buried at a nominal 48 inches. SCADA cables will be placed in the same trench. AWA Goodhue will also place red safety warning tape in the trench at a depth of 18 or 24 inches. All underground installations will be registered with Gopher One Call. Placement of collector and feeder lines is addressed in the site permit at Section 4.15. The proposed collector system is expected to have a minimal effect on the existing infrastructure.
128. Sleepy Eye Telephone Company, a wholly owned subsidiary of Hector Communications, and the telephone service provider in the project area expressed concern about the potential for its telephone service being impacted by interference from overhead power lines paralleling public rights-of-way where their copper cables are located. Hector Communications asked the electrical noise and interference issue be addressed in the final order issued by the Commission. In an October 4, 2010, memorandum to Goodhue County staff, Goodhue Wind indicated that the GE 1.5 and 1.6 MW state-of-the art MW wind turbine generators have full AC/DC/AC converters to eliminate electrical noise and interference by electrically isolating the WTG from the grid. Goodhue Wind indicated that road crossings will be made as necessary to mitigate interference and also plans to install an optional electrostatic shield on the transformers between the high side/low side windings which will eliminate any coupling due to capacitor resonance as a good practice measure. Goodhue Wind also plans to be fully compliant with MISO/FERC/Xcel/GRE Good Electric Industry practice which includes IEEE 519 and 820 compliance standard and will also conduct a detailed harmonic analysis to eliminate any coupling due to harmonics above the 14th harmonic. Interference is also addressed in the site permit at Section 4.15.
129. Construction of the project requires the addition of approximately 15 miles of access roads that will be located on private property. Turbine access roads will be located in consultation with local landowners to minimize disturbance to agricultural activities where possible. Following construction, the typical access road will be approximately 16 feet in width and be covered in Class 5 gravel (or similar material). The access roads will be low profile roads to allow for the movement of agricultural equipment. This issue is addressed in the site permit at Section 7.8.2. During operation and maintenance of the wind plant, operation and maintenance crews, while inspecting and servicing the wind turbines, will use access roads. Periodic grading and maintenance activities will be used to maintain road integrity. The Permittee may do this work or contract it out.
130. If access roads are installed across streams or drainage ways, the Permittee in consultation with the DNR will design, shape and locate the road so as not to alter the original water flow or drainage patterns. Any work required below the ordinary high water line, such as road crossings or culvert installation, will require a DNR permit (site permit section 4.6).

Construction, operation, and maintenance of the proposed wind plant will comply with all of the required federal and state permit requirements (site permit section 10.5).

Archaeological and Historical Resources

131. A review of the Minnesota State Historic Preservation Office (SHPO) and Office of the State Archaeologist (OSA) computer database indicated that 12 archaeological sites and 73 historic architectural properties are located within the project area and a one-mile buffer surrounding the project area. A list of these documented cultural resource properties is included in Exhibit 1, p. 37-39.
132. In response to a recommendation from SHPO and in conformance with site permit (Section 6.3), AWA Goodhue completed a Phase I Archaeological Reconnaissance Survey to determine if previously unrecorded archaeological sites were located within the project area. The Phase I survey involved a pedestrian survey and shovel testing. A total of six archaeological sites were identified as a result of the investigation. (Ex. 1, p 37-41).
133. Of the six archaeological sites identified during the Phase I survey, four are historical artifact scatter with no structural evidence and two are prehistoric isolated find spots consisting of tertiary quartz flake. AWA Goodhue submitted the identified sites to SHPO, but none are expected to exhibit the integrity and significance necessary to be eligible for placement on the National Register of Historic Places (NRHP). If such sites are found to be eligible for the NRHP, appropriate mitigative measures will need to be developed in consultation with the SHPO, the OSA and Native American communities. The site permit (Section 6.3) also requires the Permittee to stop work and notify the Minnesota Historical Society and Commission if any unrecorded cultural resources are found during construction.

Air and Water Emissions

134. No harmful air or water emissions are expected from the construction and operation of the LWECS.

Animals and Wildlife

135. The majority of the project area (more than 72 percent) is used for agriculture. There are no DNR WMAs, SNAs, WPAs, State Parks or State Forests within the project area (Exhibit 1, p. 42). The project will have direct and indirect impacts on birds, bats, and other wildlife resources and their habitats. Direct impacts may include strike fatality from turbine blades, power lines, and related infrastructure. Indirect impacts may include displacement of birds and bats and other wildlife from their habitats, site avoidance, and behavioral modification (National Wind Coordinating Committee, spring 2010).
136. The United States Fish and Wildlife Service (USFWS) has developed Draft Guidelines for Wind Turbine Siting (2010) in collaboration with the Wind Turbine Guidelines Advisory Committee. The Guidelines are intended to provide wind developers and regulatory agencies with the information needed to identify, assess, and monitor the potentially adverse impacts of wind energy projects on wildlife and their habitats, particularly migratory birds and bats. The guidelines focus on a tiered approach to gathering information on a site and potential risks to wildlife and wildlife habitat. Depending on the results obtained from each tier, pre-and/or post-construction survey work is indicated along with associated mitigative measures.
137. Recent studies indicate a range in avian and bat fatalities across the United States as a result of wind development, with the highest fatalities occurring in the eastern United States. In the Midwest, post-construction studies completed in Iowa, Minnesota, and Wisconsin exhibit a wide range of fatality rates. The highest bird and bat fatalities were found at the 145 MW Blue Sky Green Field wind facility in Wisconsin, with bird fatalities at 12 birds/turbine/year and bat fatalities at 40 bats/turbine /year (Gruver et al. 2009). Fatalities range from 1 to 4 birds/turbine/year and from 1 to 8 bats/turbine/year across most of the upper Midwest. Avian and bat studies conducted at the Buffalo Ridge, Minnesota (Johnson et al 2000), found an average of 1-4 bird fatalities/turbine/year and 1-3 bat fatalities/turbine/yr. Projects in areas with similar habitat and cover types would likely have similar fatality rates, depending on migration patterns, known resting and foraging areas, and potential for bat hibernacula. However, as wind facilities and turbines increase and move into areas or landscapes where migration or use patterns are less understood, it becomes increasingly difficult to make landscape level comparisons between facilities and predict the impacts on avian and bat populations.
138. AWA Goodhue completed desktop avian and bat risk assessment to identify species of concern and assist in the development of field survey protocols focusing on those species. The assessment concluded that there are no federally listed birds or bats breeding records within Goodhue County. Goodhue County includes nine state-listed threatened, endangered or special concerns avian and bat species (Exhibit 1, p. 63-67). AWA Goodhue then conducted a Loggerhead Shrike Habitat Survey and Pre-Construction Spring Migration Survey to observe avian species present within the projected area. These assessments satisfy Tiers 1 and 2 and portions of Tier 3 of the USFWS Draft Guidelines for Wind Turbine Siting.
139. Some of the major findings from the 2010 Pre-Construction Spring Migration Survey are:

- a. Three bald eagle nests exist at distances of 0.25, 1.0 and 3.5 miles from the project area. No eagles' nests exist within the project area. No eagle flight paths were observed through the project area, and the project area contains little riparian habitat suitable for bald eagles.
- b. Passerines (songbirds) accounted for 88 percent of the individual birds observed. Most passerines were generalist species that are adapted to the agricultural landscape. Waterfowl and waterbirds were notably scarce in the avian community, presumably due to the lack of suitable migration stopover and breeding habitat.
- c. Eight active raptor nests of two different species, Red-tailed Hawk and Great Horned Owl, were recorded in the project area. Most turbines are sited more than 0.25 miles from raptor nests.
- d. The risk of avian fatality has been minimized through project design strategies that minimize effects on avian habitats such as woodland, grassland and pasture (Exhibit 25).

Eagles

140. On June 3, 2011, EFP requested additional information from the Applicant regarding bald and golden eagle activity in the project area. Citizen reports of 12 eagle nests were received on May 3 and June 1, 2011, by Applicants and state and federal agencies. Bald and Golden Eagles are protected under the federal Migratory Bird Treaty Act and afforded additional protection under the Bald and Golden Eagle Protection Act.
141. Westwood wildlife biologists, consultants for the applicant, investigated these locations on June 6 and June 8, 2011. Of the 12 nesting locations, five documented active bald eagle nests were observed; three were previously known and documented and two were new since 2010. The other reported nests were determined to be sites that were already documented, new nests since 2010 that have been abandoned, or were duplicate locations. The recent field verifications concluded an additional 22 hours of survey work.
142. On June 9, 2011, Applicants, USFWS, DNR and DOC Energy Facilities Siting staff held a conference call to determine the scope and duration of ongoing bald eagle monitoring activities. Future monitoring efforts will be shifted to turbine cluster locations near known nests to document eagle movements in these areas. Westwood is developing survey protocol that will identify proposed point count locations, suggested count duration and number of survey visits. Multiple point count visits would be conducted over the next month to cover the remainder of the 2011 nesting season (eaglets are expected to fledge by mid-July). Additional point counts would be conducted in the fall of 2011 and the winter of 2011-12. Details of this plan will be included in AWA Goodhue's Avian and Bat Protection Plan.
143. Citizen reports also suggested the presence of Golden Eagles in the project area. Westwood verified that two Golden eagles with radio transmitters were in Minnesota and Southwestern Wisconsin in the winter months. The movement of these birds is tracked by

the National Eagle Center and the Minnesota Audubon Society. One of the birds was found to have made forays into Goodhue County, but no nests or sightings were seen. Westwood will continue to monitor for the presence of Golden Eagles as part of the monitoring efforts for Bald Eagles (site permit section 13.1.1).

Bats

144. Applicants conducted a desktop avian and bat risk assessment and determined that (1) bats found in the project area are common species and (2) fatalities would likely range from 1-2 bats/turbine/year.
145. In a June 2, 2011, letter from the USFWS, it was noted that the Northern long-eared bat (*Myotis septentrionalis*) is under consideration for listing, thus affording the species protection under the Endangered Species Act. Northern-long eared bats have been documented within five miles of the project boundary. Due to the change in status of this species, the USFWS is recommending the installation of anabat detectors for collecting site specific data regarding bat activity and species composition within the project area. Monitoring of bats will be included in AWA Goodhue's Avian and Bat Protection Plan (site permit section 13.1.2).
146. AWA Goodhue's Avian and Bat Protection Plan will address strategies, based on the survey results, for mitigating impacts to bats (site permit section 6.7).

Loggerhead Shrike

147. Some of the major findings from the Loggerhead Shrike Habitat Survey are:
 - a. Nearly half of the project area is unsuitable for shrike breeding. Highly suitable and very highly suitable breeding habitat is widely dispersed through the project area.
 - b. Two separate loggerhead shrikes were observed in suitable habitat within the project area.
148. On August 5, 2010, the DNR sent a comment letter to Judge Lipmann suggesting, among other things, that the Permittee share the results of its Loggerhead Shrike Habitat Assessment and the Pre-Construction Avian Spring Migration Survey with DNR and USFWS and consult with the agencies regarding turbine placement based on the results of those surveys (site permit Section 6.7). (Exhibit 18, p.8).
149. Suitable habitat for the state-listed threatened Loggerhead Shrike occurs within the project area. Letters from DNR from October 2010 and June 2011, indicate a need to consider shrike habitat when siting turbines to avoid and minimize impacts.
150. Based on the preliminary turbine layout, five turbines are located in quarter sections identified by the Goodhue Wind Project Loggerhead Shrike Habitat Assessment (July 19, 2010) as Very Highly Suitable habitat for Loggerhead Shrike. Six alternate turbine locations in the preliminary turbine layout are in quarter sections ranked as Unsuitable, Slightly More Suitable, and Moderately Suitable habitat for Loggerhead Shrike.

151. Subsequent review of aerial photography and field visits conducted by AWA Goodhue, DNR and USFWS, revealed that three of the five turbine locations identified in the July 2010 Loggerhead Shrike Habitat Assessment as Highly Suitable or Very Highly Suitable were in fact not of concern because they were located in croplands or other less suitable habitat within the identified quarter sections. AWA Goodhue's Avian and Bat Protection Plan will address mitigation strategies at the two remaining sites (site permit section 6.7.3). (Exhibit 23).

Vegetation

152. No public waters, wetlands or forested land are expected to be adversely affected by the project. No groves of trees or shelterbelts will need to be removed to construct and operate the system. It is anticipated that native prairie will also be avoided. If native prairie cannot be avoided, the site permit, at section 4.7, provides for preparation of a prairie protection and management plan.

Soils

153. Construction of the wind turbines and access roads in farmland increases the potential for erosion during construction. The site permit (section 7.11) requires a soil erosion and sediment control plan. The project will also require a storm water run-off permit from the Minnesota Pollution Control Agency.

Surface Water and Wetlands

154. Access roads and utility lines will not be located in surface water or wetlands, unless authorized by the appropriate permitting agency (site permit section 4.6).

Future Development and Expansion

155. Current information suggests windy areas in this part of the state are large enough to accommodate more wind facilities. In the future, wind turbines used in Goodhue County and surrounding counties will consist of several types and sizes supplied by different vendors and installed at different times.
156. While large-scale projects have occurred elsewhere (Texas, Iowa and California), little systematic study of the cumulative impact has occurred. Research on the total impact of many different projects in one area has not occurred. EFP staff will continue to monitor for impacts and issues related to wind energy development.
157. The Commission anticipates more site permit applications under Minnesota Statutes section 216F.04 (a). The Commission is responsible for siting of LWECs "in an orderly manner compatible with environmental preservation, sustainable development, and the efficient use of resources." Minnesota Statutes section 216F.03.

158. Minnesota Statutes section 216E.03, subd 7 requires consideration of design options that might minimize adverse environmental impacts. By a combination of 1.5 MW and 1.6 MW turbines in the Project, two fewer turbines are required, reducing siting needs for turbines and related facilities. Turbines must also be designed to minimize noise and aesthetic impacts. Buffers between strings of turbines are designed to protect the turbines' production potential. The site permit (Section 4.1) also provides for buffers between adjacent wind generation projects to protect energy production potential.

Efficient Use of Wind Resources

159. The location and spacing of the turbines are critical to the issues of orderly development and the efficient use of wind resources. Turbines are likely to be located in the best winds, and spacing dictates, among other factors, how much land area the project occupies. There is strong public support for orderly development.
160. One efficiency issue is the loss of wind in the wake of turbines. When wind is converted to rotational energy by the blades of a wind turbine, energy is extracted from the wind. Consequently, the wind flow behind the turbine is not as fast and is more turbulent than the free-flowing wind. This condition persists for some distance behind the turbine as normal wind flow is gradually restored. If a turbine is spaced too close downwind of another, it produces less energy and is less cost-effective. This is the wake loss effect. If the spacing is too far, wind resources are wasted and the projects footprint on the land is unnecessarily large.
161. For this project, turbine spacing maximizes use of the available wind resources and minimizes wake and array losses within the topographical context of the site. Site topography, natural resource features, setbacks and wind resources played a key role in micrositing the turbines. The objective is to capture the most net energy possible from the best available wind resource. Allowing for setbacks from roads and residences and avoiding sensitive areas, AWA Goodhue arrived at a nominal turbine spacing of 3 rotor diameters in the non-prevailing wind directions and five or more rotor diameters in the prevailing wind directions, west-northwest direction, with respect to the predominant energy production directions. Given the prevalence for northwesterly winds, the spacing between turbines will be greater in that direction.
162. Other factors that lead to energy production discounts include turbine availability, blade soiling, icing, high wind hysteresis, cold weather shutdown, electrical efficiency and parasitic.

Maintenance

163. Maintenance of the turbines will be on a scheduled, rotating basis through the life of the project. Maintenance on the transformer and 69 kV transmission line will be scheduled for low wind periods. The project will be staffed with several wind technicians and an operations manager. An operations and maintenance facility will also be built within the project boundary.

Decommissioning and Restoration

164. AWA Goodhue expects that the life of the project will be no less than 25 years. AWA Goodhue reserves the right to re-apply for a LWECS site permit and continue operation of the project after the 30-year permit period expires. (Exhibit 1, p. 21).
165. Decommissioning activities will include removal of all above-ground facilities including towers, turbine generators, transformers, overhead cables, buildings, and ancillary equipment. Foundations and below ground facilities will be removed to a depth of four feet below grade. All access roads will be removed unless the affected landowner provides written notice that the road or portion of the road shall be retained. (Exhibit 1, pp. 22-23). The site permit (section 9.1) requires the Permittee to submit a Decommissioning Plan to the Commission prior to commercial operation. The site permit (section 9.2) addresses site restoration and section 9.3 addresses turbines abandoned prior to termination of operation of the LWECS.

Site Permit Conditions

167. All of the above findings pertain to the Applicant's requested permit for a 78 megawatt wind project.
168. Most of the conditions contained in this site permit were established as part of the site permit proceedings of other wind turbine projects permitted by the Environmental Quality Board and the Public Utilities Commission. Comments received by the Commission have been considered in development of the site permit. Permit language changes and additions that provide for clarification and supplemental conditions to the site permit conditions have been made consistent with these findings.
169. The site permit contains conditions that apply to site preparation, construction, cleanup, restoration, operation, maintenance, abandonment, decommissioning and all other aspects of the Goodhue Wind Project.

Based on the foregoing findings, the Minnesota Public Utilities Commission makes the following:

CONCLUSIONS OF LAW

1. Any of the foregoing findings, which more properly should be designated as conclusions are hereby adopted as such.
2. The Minnesota Public Utilities Commission has jurisdiction over this matter pursuant Minnesota Statute section 216F.04.
3. The Applicant has substantially complied with the procedural requirements of Minnesota Statutes chapter 216F and Minnesota Rules chapter 7854.

4. The Minnesota Public Utilities Commission has complied with all procedural requirements required by of Minnesota Statutes Chapter 216F and Minnesota Rules Chapter 7854.
5. The Minnesota Public Utilities Commission has considered all the pertinent factors relative to its determination of whether a site permit should be approved.
6. The AWA Goodhue Wind Project is compatible with the policy of the state to site LWECS in an orderly manner compatible with environmental preservation, sustainable development and the efficient use of resources under Minnesota Statutes section 216F.03.
7. The Minnesota Public Utilities Commission has the authority under Minnesota Statutes section 216F.04 to place conditions in a permit and may deny, modify, suspend or revoke a permit. The conditions in the site permit are reasonable and appropriate.

Based on the foregoing Findings of Fact and Conclusions of Law, the Minnesota Public Utilities Commission issues the following:

ORDER

A LWECS Site Permit is hereby issued to AWA Goodhue, LLC to construct and operate the 78 megawatt AWA Goodhue Wind Project and associated facilities in Goodhue County in accordance with the conditions contained in the site permit and in compliance with the requirements of Minnesota Statute 216F.04 and Minnesota Rules Chapter 7854 for PUC Docket No. IP-6701/WS-08-1233.

The site permit is attached hereto, with a map showing the approved site.

BY THE ORDER OF THE COMMISSION

Burl W. Haar
Executive Secretary



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