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STATE OF MINNESOTA
PUBLIC UTILITIES COMMISSION

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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:** **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 l9, 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 turbines 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 L_{50} 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 L_{50} 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 micrositing 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 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. The visual presence of wind farms will likely expand in Goodhue County as wind generation is likely to continue. To date, the presence of the wind turbines in other parts of Minnesota has been generally well accepted by the people who live and work in those areas.

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 southwester 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 and bat species present within the project area. (Exhibit 25). 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 1.5 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

(S E A L)

This document can be made available in alternative formats (i.e., large print or audio tape) by calling 651.297.0391 (Voice). Persons with hearing or speech disabilities may call us through Minnesota Relay at 1.800.627.3529 or by dialing 711.