

BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

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Phyllis Reha  
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Betsy Wergin

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SERVICE DATE: October 20, 2009

DOCKET NO. ET-6657/WS-08-573

In the Matter of the Application of Wisconsin Power and Light Company for a Site Permit for up to 400 MW of Wind Generation in Freeborn County

The above entitled matter has been considered by the Commission and the following disposition made:

**Adopted the amended Findings of Fact, Conclusions of Law and Order (copy attached) for the 400 MW Bent Tree Wind Project Phase I and Phase II in Freeborn County.**

**Issued the amended LWECS Site Permit (copy attached) for the 201.3 MW Bent Tree Wind Project Phase I to Wisconsin Power and Light.**

**Withheld issuance of a LWECS Site Permit for the Bent Tree Wind Project Phase II until such time as Wisconsin Power and Light Company or the entity purchasing the energy or owning the facility can satisfy the requirements of Minn. Stat. § 216B.243, subd. 2 and Minn. Rules, Part 7849. Upon satisfying those requirements the Commission will reconsider LWECS Site Permit Issuance for the Bent Tree Wind Project Phase II.**

The Commission agrees with and adopts the recommendations of the Office of Energy Security which are attached and hereby incorporated in the Order, except that the text of Finding of Fact 35 and Section M of the Site Permit are hereby amended and adopted as set forth in the attached Findings of Fact, Conclusions of Law and Order and Site Permit.

BY ORDER OF THE COMMISSION



Burl W. Haar  
Executive Secretary

(S E A L)

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**BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION**

**COMMENTS AND RECOMMENDATIONS OF THE  
MINNESOTA OFFICE OF ENERGY SECURITY  
ENERGY FACILITY PERMITTING STAFF**

**DOCKET NO. ET-6657/WS-08-573**

Meeting Date: October 1, 2009..... \* X Agenda Item # 6

Company: Wisconsin Power and Light Company (WPL)

Docket No. PUC Docket Number: ET-6657/WS-08-573

**In the Matter of the Application of Wisconsin Power and Light Company  
for a Site Permit for a 400-Megawatt Large Wind Energy Conversion  
System and Associated Facilities in Freeborn County.**

Issue(s): Should the Commission grant a site permit to Wisconsin Power and Light  
Company for the 400 MW Bent Tree Wind Project?

OES EFP Staff: Larry B. Hartman .....651-296-5089

**Relevant Documents**

- Site Permit Application for WPL.....August 22, 2008
- ALJ Summary of Public Testimony.....August 25, 2009
- Hearing Exhibit List.....August 25, 2009

The enclosed materials are work papers of the Office of Energy Security (OES) Energy Facility Permitting (EFP) Staff. They are intended for use by the Public Utilities Commission and are based on information already in the record unless otherwise noted. This document can be made available in alternative formats; i.e., large print or audio tape by calling (651) 201-2202 (Voice) or 1-800-627-3529 (TTY relay service).

**Documents Attached:**

1. WPL Bent Tree Project Site Map
2. Wind Schematic
3. Proposed Findings of Fact and Conclusions
4. OES EFP Staff Exhibit List
5. Proposed Site Permit

(Note: see eDockets (08-573) or the PUC Facilities Permitting website for additional documents: <http://energyfacilities.puc.state.mn.us/Docket.html?Id=19665>.)

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**Statement of the Issue**

Should the Commission grant a site permit to Wisconsin Power and Light Company for the 400 MW Bent Tree Wind Project?

**Introduction and Background**

Wisconsin Power and Light Company (WPL), applied for a site permit to the Commission on August 22, 2008, to develop the proposed 400-Megawatt Bent Tree Wind Project located in Freeborn County. The Project is proposed to be developed in two 200 MW phases. Phase I is scheduled for construction in 2010 with an expected in-service date of December 31, 2010. Plans for Phase II are unknown at this time.

***Project Location and Land Control***

The proposed Bent Tree Wind Project is located in northwestern Freeborn County, approximately four miles northwest of Albert Lea, as shown on the accompanying map. See Attachment 1 in Commissioner’s packet. The Project area includes portions of Hartland, Manchester, Bath and Bancroft townships. The proposed site, approximately 32,500 acres in size, is comprised primarily of agricultural lands (crops and pasture), and scattered woodlots. WPL controlled, at the time of its application, approximately 24,000 acres of land and wind rights within the proposed 32,500 acre Project Area.

WPL has options, leases or easements on the land and wind rights necessary within the site to build the Project. The Phase I portion of the Bent Tree Wind Project contains 294 parcels of land and owners of 195 parcels are Project participants. The Phase II portion of the Bent Tree Wind Project contains 168 parcels of land and owners of 118 parcels are Project participants. In total there are 462 parcels of land in the Project and owners of 313 parcels are Project participants. However, additional wind rights and buffers may need to be obtained to comply with site permit setback requirements. Land and wind rights will need to encompass the proposed wind farm and all associated facilities, including but not limited to wind and buffer easements, wind turbines, access roads, meteorological towers, electrical collection system and electric lines located on or along public road rights-of-way.

Additional land rights will need to be acquired for the 18 mile long 161 kV transmission line.

Site terrain is flat to undulating and has both long and short vistas due to the nature of the topography and landscape features. The Bent Tree Wind Project will temporarily disrupt up to several hundred acres of agricultural lands for roads and turbine components and other associated facilities during the construction phase. It is anticipated that the area of direct land use for the turbines, associated facilities and roads, excluding the substation and operations and maintenance building, will be approximately 180 acres for each phase of the Project.

### ***Bent Tree Wind Project***

The Bent Tree Wind Project (Phase I and Phase II) as proposed will use up to 242 Vestas V82 1.65 megawatt wind turbines. The Vestas turbines will be mounted on 80-meter (262 feet) high freestanding tubular steel towers. The blades on the Vestas wind turbines are 41 meters (134 feet) long. The rotor diameter is 82 meters (269 feet). The electrical collector system will consist of underground 34.5 kV collection and feeder lines. The electrical system and feeder lines will be located along public roads when possible.

Other project components include: all-weather class 5 access roads of gravel or similar materials, pad-mounted step-up transformers, concrete and steel tower foundations, an underground supervisory control and data acquisition system, up to two permanent reference meteorological towers, and a project substation (location undetermined within the site). The Project will also include an operations and maintenance building in Hartland. The O&M building will be permitted by the appropriate governmental unit.

Power from the Project substation will be delivered by a 161 kV transmission line approximately 18 miles long to the ITC owned Hayward Substation located on the east side of Albert Lea for delivery to the grid. Freeborn County is responsible for permitting the 161 kV transmission line and Project substation.

## **Regulatory Process and Procedures**

A Certificate of Need (CON) from the Commission is required for this project (Minn. Stat. §216B.243). On August 27, 2008 a Commission Order accepted the Certificate of Need Application from Wisconsin Power and Light for Phase I (approximately 200 Megawatts) of the proposed 400 MW Bent Tree Wind Project. (PUC Docket No. IP-6657/CN-07-1425). In its Order the Commission approved the use of an informal review process and requested that the Office of Administrative Hearings coordinate with Commission staff and hold at least one public hearing on the project.

A site permit from the PUC is required to construct a Large Wind Energy Conversion System (LWECS), which is any combination of wind turbines and associated facilities with the capacity to generate five megawatts or more of electricity (Minnesota Statute Chapter 216F). This requirement became law in 1995. The rules to implement the permitting requirement for LWECS are in Minnesota Rules Chapter 7854. In accordance with Minnesota Rule 7854.0500 Subp.2., a site permit may not be issued until the certificate of need or other commitment requirement has been satisfied.

***Site Permit Application, Preliminary Determination and Draft Site Permit***

On August 22, 2008, WPL filed a revised site permit application with the PUC. On September 11, 2008, the PUC considered acceptance of the Site Permit application and made a preliminary determination to issue a draft site permit. On September 19, 2008, an Order accepted the application and issued a draft site permit. Upon acceptance of the application OES EFP staff initiated the review and notice requirements of Minnesota Rules Chapter 7854. See Attachment 2 in the Commissioner's packet.

***Public Participation Process***

The rules provide opportunities for the public to participate in deliberations on the LWECS site permit application. The public was advised of the submission of the site permit application after the application was accepted. OES EFP staff held a public information and scoping meeting in Albert Lea and Hartland on October 21, 2008, to provide the public with an overview of the permitting process for LWECS and to receive comments from the public on the site permit application, draft site permit and issues to be addressed in the Environmental Report. The meeting also provided the public with an opportunity to ask questions of the applicant and express concerns or issues directly to WPL. About 70 people attended the two public meetings.

OES staff provided an overview of the requirements of the permitting process and the conditions in the draft site permit and responded to questions about the permitting process and conditions in the draft site permit. Representatives of the applicant were available to describe the project and answer questions. Comments made and questions asked covered a broad spectrum of topics relating to wind energy. These included many positions, statements and comments about the need for the project, who pays for it, how does it benefit Minnesota, transmission requirements, setbacks, taxes, effects on wildlife, noise, property values and stray voltage.

***Public Comments***

Twenty-eight written comments were received, including 25 in a form-letter format. These 25 letters questioned the adequacy of residential setbacks, requested a set back of one mile from non-participating landowner's property lines and requested, if necessary, a contested case hearing for the presentation of documents that substantiate this request.

The other three comment letters were from two state agencies (Department of Natural Resources and Minnesota Department of Transportation) and the applicant.

Generally, the 25 written comment letters followed a form-letter format which read as follows:

I, along with a group of concerned residents of Freeborn County, Minnesota, believe that the residential setback requirements for turbine placement, as proposed in the draft site permit, are inadequate and unsafe. I am supported in this view by numerous engineers, doctors, audiologists, health and safety organizations, and governments in both the United States and abroad.

The setback requirements contained in the current proposal will negatively impact the health and safety of my family and my neighbors. Because of this, I am demanding that should a permit be issued for this project, it must include a minimum of a 1 mile setback from non-participating landowner's property lines.

Should it be necessary to request a contested case hearing for the presentation of documents that substantiate this request, you may consider this letter as such. My neighbors and I would welcome any opportunities to present this information.

The letters from commenters stated that the proposed site permit conditions regarding some of the setbacks are "inadequate and unsafe and requested a minimum setback of one mile from non-participating landowner's property lines." The stated request for a contested case hearing, they say, would allow "for the presentation of documents that substantiate this request..."

On March 24, 2009, the Commission denied the request for a contested case hearing on WPL's site permit application; however, the Order required a public hearing on issues relating to siting and permitting to be held in conjunction with the public hearing that it had previously ordered for WPL's CON application.

A public hearing was held in Albert Lea on June 29, 2009. Administrative Law Judge (ALJ), Steve M. Mihalchick presided at the public hearing and was asked to prepare a summary of public testimony presented at the hearing. The ALJ's summary of public testimony and exhibit list was filed with the Commission on August 25, 2009 and filed with the eDocket system.

## **OES EFP Staff Comments and Analysis**

EFP staff has reviewed the "Summary of Public Testimony" and exhibits introduced into the record of this proceeding. The following EFP staff comments and analysis address several concerns or comments in the ALJ' Summary of Public Testimony.

### **Bernard Hagen**

Mr. Hagen indicated that he had developed tinnitus, or ringing in his ears while in the Army. Mr. Hagen stated that his doctor told him that living in close proximity to a wind turbine would aggravate his tinnitus and adversely affect his health and submitted a letter from his doctor.

*OES EFP Response:* WPL is not proposing to place any wind turbines on Mr. Hagen's property. According to a map provided by WPL the closest turbine to the Hagen property is more than 1,500 feet away from Mr. Hagen's property line and the second closest turbine is nearly 1,700 feet from the Hagen property. Other turbines in the area are further away.

**Shadow Flicker--Carol Overland, Kristine Johnson**

Ms. Overland questioned WPL about “shadow flicker” from wind turbines and sought assurances that if residences are in the “zone of impact” for flicker, that the company will consider alternative turbine locations. Ms. Overland seemed to indicate that shadow flicker is not noticeable beyond about ten rotor diameters.

*OES EFP Response:* 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 outputs of the model are useful in the design phase of a wind plant. Other than within approximately two rotor diameters from the base of a turbine, shadow flicker usually occurs in the morning and evening hours when the sun is low 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, no shadow flicker will be present when the sun seen from a receptor is obscured by clouds, fog, or other obstacles already casting a shadow such as buildings and trees.

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 located 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. Shadow flicker consultants generally agree that flicker is not noticeable beyond about 10 rotor diameters from a wind turbine. Evidence of flicker effects is hard to find, it is more of a nuisance issue. There are no published standards for shadow flicker and no examples of turbines causing photosensitivity related problems. 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 proposed site permit does not address shadow flicker limits. However, WPL has considered shadow flicker in its design layout.

**Health Effects—Katie Troe, Cheryl Hagen, Carol Overland, Amy Wasson, Jason Jacobusse, Kristine Johnson and others**

The persons identified above and others expressed concerns about sound or noise from the wind turbines, the potential for health effects from exposure to low frequency noise. Many of these questions were the basis of the request for a contested case hearing in this proceeding. A considerable portion of the ALJ’s Summary of Public Testimony is devoted to comments related to health effects and the reader should refer to that document for the ALJ’s summary of those issues.

*OES EFP Response:* During the time allowed for comments on the draft permit and scoping for the environmental report the public expressed numerous concerns about possible health effects of low frequency vibrations and sound from wind turbines. In late February 2009, OES requested a “white paper” from the Minnesota Department of Health (MDH) evaluating possible health effects associated with low frequency noise vibrations and sounds arising from large wind

energy conversion system (LWECS). A commenter on another wind project, the Lakeswind Wind Power Plant, in Clay, Becker and Ottertail counties (Docket No. IP6603/WS-08-1449), also wrote to the Commissioner of MDH to ask for an evaluation of health issues related to exposure to low frequency sound energy generated by wind turbines. In March 2009, MDH agreed to evaluate health impacts from wind turbine noise and low frequency vibrations. The MDH released its “white paper” on the “Public Health Impacts of Wind Turbines on May 22, 2009, and it was included in the Environmental Report (Appendix D), and submitted for the Certificate of Need (CON) proceeding for the Bent Tree Wind Project (Docket No. T-6657/CN-07-1425) (HE 4, Appendix D).

The summary of public testimony prepared by the ALJ captures the on-going concerns being expressed by some residents of the Project Area and their requests for turbine setbacks of one-half mile or more from homes.

In a letter to Mr. and Ms. Anderson, (OES Exhibit 12) dated August 13, 2009, MDH Commissioner, Sanne Magnan, M.D., Ph.D, responded to specific questions posed by Mr. Anderson as follows:

*Are current standards in Minnesota safe?* Regulatory standards protect health and safety, but whether for air, water or noise, regulators do not set “bright line” standards without also considering cost, technical difficulties, possible benefit and alternatives. No regulatory standard offers absolute safety. The Minnesota Department of Health can evaluate health impacts, but it is the purview of regulatory agencies to weigh these impacts against alternative and possible benefits.

*Are the proponents of wind turbine syndrome mistaken?* As noted in the “White Paper,” the evidence for wind turbine syndrome, a constellation of symptoms postulated as mediated by the vestibular system, is scant. Further, as also noted, there is evidence that the symptoms do not occur in the absence of perceived noise and vibration. The reported symptoms may or may not be caused by “discordant” stimulation of the vestibular system.

*Does more study of adverse effects need to be undertaken?* More study may answer questions about the actual prevalence of unpleasant symptoms and adverse effect under various conditions such as distance to wind turbines and distribution of economic benefit. However, there is at present enough information to determine the need for better assessment of wind turbine noise, especially at low frequencies. Such assessments will likely be beneficial for minimizing impacts when projects are sited and designed. Also, even without further research, there is evidence that community acceptance of projects, including agreement about

compensation of individuals within project areas, will result in fewer complaints. Therefore, more research would be useful, but the need will have to be balanced against other research needs.

WPL has evaluated both noise and shadow flicker during the planning stages of the Bent Tree Wind Project Phase I and II to make informed decisions about turbine placement. The permit (III.E.3.) requires the Permittee to comply with noise standards established by the Minnesota Pollution Control Agency.

The proposed site permit (III.F.2.) requires the Permittee to submit a proposal to the Commission for the conduct of a noise study.

### **Setbacks and Permit Conditions—Overland, Wasson, Jacobusse, Troe, Pfeffer, Johnson and Others**

Many of the above commenter's expressed the need for setbacks from homes and property lines of at least 1,500 feet or more to account for noise, shadow flicker, health concerns and other general concerns (visual, lower property values).

*OES EFP Response:* The LWECS site permit contains a number mitigation measures, setback requirements, preconstruction survey requirements, site layout restrictions and other numerous requirements that provide for environmental protection and public health and safety. In addition to the site permit, the Permittee must obtain a number of other permits from federal, state and local units of governments after the site permit issues. Those permits are identified in the site permit application. Typically, the LWECS site permit does not specify individual turbine locations, because of numerous other details that must be planned and coordinated, including working with downstream permitting authorities and landowners. At the pre-construction meeting or prior to, the Permittee must demonstrate compliance with the conditions in the site permit for setbacks and site layout restrictions. The site permit also establishes the parameters for project design and implementation. If for example, turbines or associated facilities are located in prairie, a native prairie mitigation plan is required. Environmental monitoring or studies may also be implemented or required if warranted, based on results of post-permit issuance detailed site evaluations of potential turbine locations. For example, a noise study is being recommended for this Project.

The turbines and associated facilities will be placed on the properties of persons who have leased their wind and land rights to the WPL for the proposed Bent Tree Wind Project Phase I and Phase II. Non-participants who have not leased land or wind rights to WPL will not have turbines or associated facilities on their properties. In addition the wind turbines will be set back from the property lines of non-participating by a minimum 1,345 feet on the prevailing wind axis and 807 feet on the non-prevailing wind axis. WPL has stipulated that all turbines will be 1,000 feet or more from homes. (HE 28, p. 7). WPL will also comply with Minnesota's noise standards.

In summary, there are numerous site permit requirements that protect natural resource features as well as public health and safety. Minnesota has close to two thousand megawatts of operating wind energy facilities in place. Prior to July of 2005 those facilities were permitted by the

Minnesota Environmental Quality Board. Since July 2005, LWECS have been permitted by the Minnesota Public Utilities Commission. Many of the permit conditions in this proposed site permit have been LWECS site permit conditions since 1995. In the past 14 years, wind farm participants in Minnesota have not filed any public health or safety concerns with the EQB or the Commission, the responsible governmental unit; nor have comprehensive avian and bat studies demonstrated significant fatality or mortality impacts.

### **Minnesota Department of Natural Resources Comment Letter**

On June 29, 2009, the DNR submitted letter to the ALJ recommending a two year post construction mortality study using DNR Protocols to monitor bird and bat mortality at Large Wind Energy Conversion Systems. (HE 2).

*OES EFP Response:* OES EFP staff does not believe that the record at this time supports monitoring requirements beyond those typically required for LWECS projects in Minnesota (Draft Permit at III.H.3, “Extraordinary Events”).

As a requirement of the first permit issued for an LWECS in 1995, Northern States Power Company (NSP) was required to conduct an avian study to determine the effect of the turbines on avian mortality. An additional two-year study was required to determine the effect of the turbines on bats. Wind developers were required to compensate NSP for these studies, allowing the financial burden to be split among potentially affected parties, rather than borne by one party. Since that permit, post-construction surveys have not been a requirement of any individual permit.

With the continuing growth of wind energy in Minnesota, particularly outside of the Buffalo Ridge region of Southwest Minnesota, OES EFP staff suggests taking the time necessary to make a broader assessment of proposals for the conduct of avian studies. DNR, PUC, and OES EFP staffs currently are reviewing and discussing this topic. OES EFP staff also believes a comprehensive approach to addressing avian issues may be more useful and beneficial than project specific studies.

### **Amy Wasson**

Amy Wasson (HE 21) offered specific suggestions to the language of the Conditions of the Site Permit as proposed in Section III of the Draft Permit.

*OES EFP Response:* The suggestions offered were reviewed by EFP staff and three of the suggestions or variations there of are incorporated into the proposed Site Permit (See Permit III.G.2., K.2., and F.2.) Others were reviewed and dismissed, either because they are already being done, such as placing compliance documents on eDockets, or they did not clarify existing permit language.

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The OES EFP staff believes the record in this matter is sufficiently robust to allow the Commission to make a decision on the permit application. OES EFP also believes the proposed site permit provides sufficient measures to provide necessary guidance regarding project design, construction, restoration, monitoring and operation of the proposed Bent Tree Wind Project Phase I and II.

## **Standard for Permit Issuance**

The test for issuing a site permit for a Large Wind Energy Conversion System is to determine whether a project is compatible with environmental preservation, sustainable development, and the efficient use of resources. Minnesota Statutes Chapter 216F. The wind statutes incorporate certain portions of the Power Plant Siting Act, including the environmental considerations. Minnesota Rule 7849.5900. Also, the law allows the PUC to place conditions in LWECS permits. Minnesota Statutes 216F.04 (d).

Based on the record of this proceeding, DOC EFP staff concludes that the Bent Tree Wind Project Phase I and Phase II meets the procedural requirements and the criteria and standards for issuance of a site permit identified in Minnesota Statutes and Rules. The site permit application has been reviewed pursuant to the requirement of Minnesota Rules Chapter 7854 (Wind Siting Rules).

In accordance with Minnesota Rule 7854.0500 Subp.2, the Commission may not issue a site permit for an LWECS, for which a certificate of need is required, until an applicant obtains such a certificate from the Commission. WPL has applied to the Commission for a certificate of need for Phase I of the Bent Tree Wind Project (CN-07-1425). WPL has not, to date, sought a certificate of need for Phase II of the project. Accordingly, OES, EFP staff recommends adoption of findings of fact and conclusion of law for the project (Phase I and II), issuance of a site permit for Phase I of the project, and withholding a site permit for Phase II of the project until such time as WPL obtains a certificate of need for Phase II.

OES EFP staff has prepared for Commission consideration proposed Findings of Fact, Conclusions and Order, Exhibit List for the Bent Tree Wind Project Phase I and II, and a proposed Site Permit for the Bent Tree Wind Project Phase I, for 201.3 MW of the 400 MW Bent Tree Wind Project.

The site criteria addressed in the Findings of Fact (such as human settlement, public health and safety, noise, recreational resources, community benefits, effects on land based economies, archaeological and historical resources, animals and wildlife and surface water) track the factors described in the PUC's rules for other types of power plants that are pertinent to wind projects. The conditions in this proposed Site Permit are essentially the same as conditions included in other LWECS site permits issued by the Environmental Quality Board and the Commission.

A number of issues were identified during the course of this proceeding and they were summarized above in "*Public Comments*" and the ALJ's "Summary of Public Testimony" submitted on August 25, 2009 and discussed in "*OES EFP Staff Comments and Analysis*."

### ***Proposed Findings of Fact***

The proposed Findings (see Attachment 3 in the Commissioner's packet) address the procedural aspects the process followed, describe the project, and address the environmental and other considerations of the project. The proposed Findings of Fact reflect some findings that were also made for other LWECS projects. The following outline identifies the categories of the Findings of Fact.

<b>Category</b>	<b>Findings</b>
Background and Procedure	1 – 13
The Permittee	14
Project Description	15 – 23
Site Location and Characteristics	24 – 27
Wind Resource Considerations	28 – 30
Land Rights and Easement Agreements	31 – 33
Site Criteria	34 – 86
Site Permit Conditions	87 – 89

***Exhibit List***

OES EFP staff has prepared an exhibit list of documents that are part of the record in this permit proceeding, but not covered by the ALJ’s Hearing Exhibit List; it is included as Attachment 4 in Commissioner’s packet. OES EFP exhibits are listed by “OES Exhibit,” followed by a number. ALJ Hearing Exhibits are listed as “HE,” followed by a number (i.e. HE 1) and listed as a relevant document.

***Proposed Site Permit***

The OES EFP Staff has prepared a site permit for the Commission’s consideration. See Attachment 5 in the Commissioner’s packet.

**Commission Decision Options**

**A. Bent Tree Wind Project Findings of Fact and Conclusions**

1. Adopt the attached Findings of Fact, Conclusions of Law and Order prepared for the 400 MW Bent Tree Wind Project Phase I and Phase II in Freeborn County.
2. Amend the Findings of Fact and Conclusions of Law as deemed appropriate.
3. Make some other decision deemed more appropriate.

**B. LWECS Site Permit for the 201.3 MW (Phase 1) Bent Tree Wind Project**

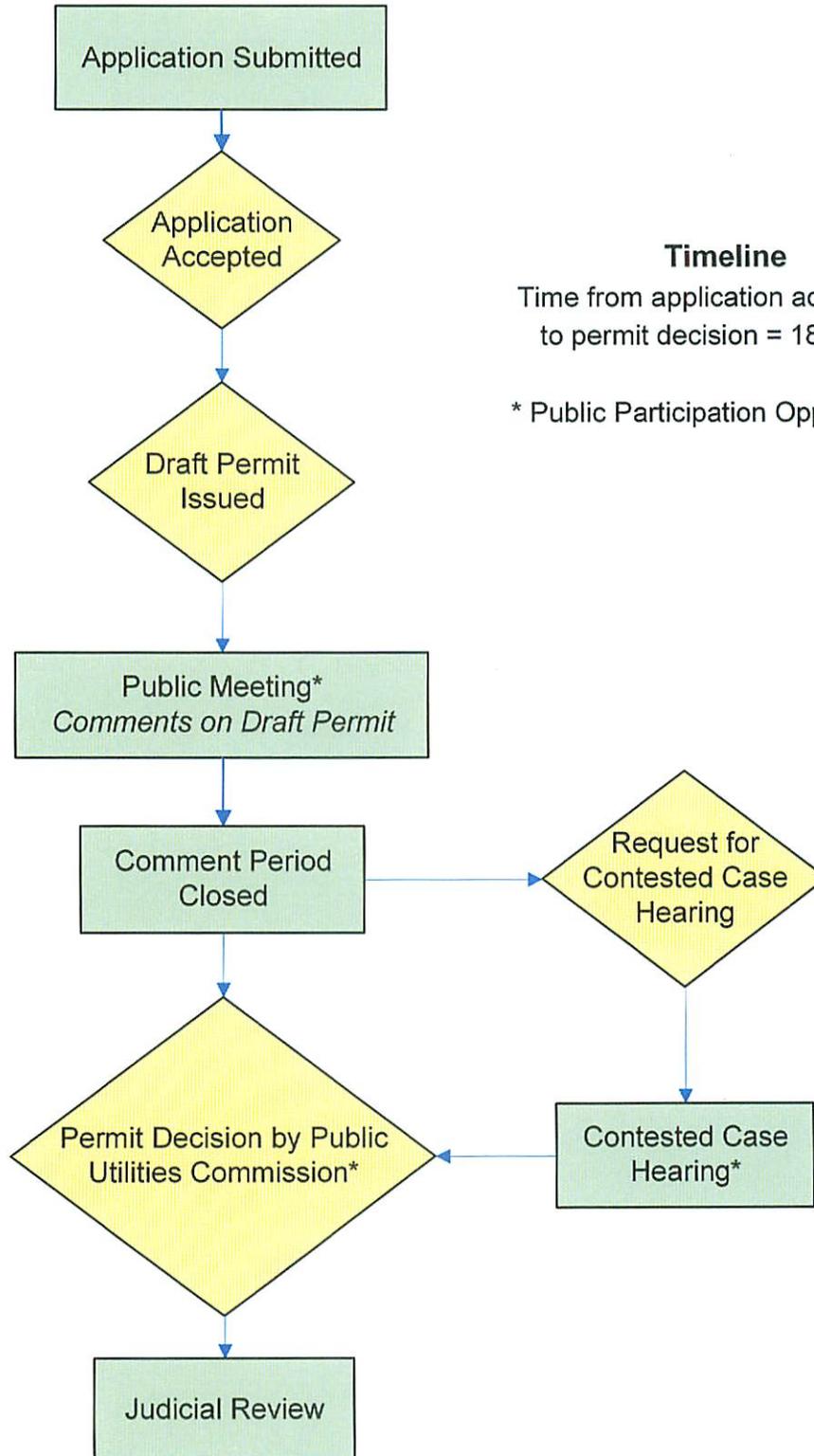
1. Issue the proposed LWECS Site Permit for the 201.3 MW Bent Tree Wind Project Phase I to Wisconsin Power and Light Company.
2. Amend the proposed LWECS Site Permit as deemed appropriate.
3. Deny the LWECS Site Permit.
4. Make some other decision deemed more appropriate.

**C. LWECS Site Permit for the Bent Tree Wind Project Phase II**

1. Withhold issuance of a LWECS Site Permit for the Bent Tree Wind Project Phase II until such time as Wisconsin Power and Light Company or the entity purchasing the energy or owning the facility can satisfy the requirements of Minnesota Statutes 216B.243, subd 2 and Minnesota Rules 7849. Upon satisfying those requirements the Commission will reconsider LWECS Site Permit Issuance for the Bent Tree Wind Project Phase II.
2. Require the applicant to re-file its application pursuant to the requirements of Minnesota Rules 7854.
3. Make some other decision deemed more appropriate.

**OES EFP Staff Recommendation:** The staff recommends Options A1, B1 and C1.





### Timeline

Time from application acceptance to permit decision = 180 days.

\* Public Participation Opportunities

**STATE OF MINNESOTA  
PUBLIC UTILITIES COMMISSION**

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In the Matter of the Application of  
Wisconsin Power and Light Company  
for a Site Permit for a 400-Megawatt  
Large Wind Energy Conversion  
System and Associated Facilities in  
Freeborn County

**ISSUE DATE: October 20, 2009**

**DOCKET NO. ET6657/WS-08-573**

**FINDINGS OF FACT, CONCLUSIONS  
OF LAW AND ORDER, ISSUING A  
SITE PERMIT TO WISCONSIN  
POWER AND LIGHT COMPANY ,  
FOR THE BENT TREE WIND  
PROJECT**

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The above-entitled matter came before the Minnesota Public Utilities Commission (Commission) pursuant to an application submitted by Wisconsin Power and Light Company (WPL) for a site permit to construct, operate, maintain and manage a 400-Megawatt (MW) nameplate capacity Large Wind Energy Conversion System (LWECS) to be built in two phases and associated facilities in Freeborn County.

All of the proposed wind turbines and associated facilities will be located in Freeborn County. Associated facilities will include pad mounted step-up transformers for each wind turbine, access roads, an electrical collection and feeder system, project substation, and up to two permanent meteorological towers. The energy from the proposed 400 MW project will be delivered from the project substation to the electrical grid at the existing Hayward ITC-Midwest substation located east of Albert Lea.

**STATEMENT OF ISSUE**

Should Wisconsin Power and Light Company (WPL) be granted a site permit under Minnesota Statutes section 216F.04 to construct a 400 MW Large Wind Energy Conversion System in Freeborn County?

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

## FINDINGS OF FACT

### Background and Procedure

1. On June 20, 2008, WPL filed an application with the Public Utilities Commission for up to 400 megawatts of nameplate wind power generating capacity, to be built in two 200 MW phases, identified as the Bent Tree Wind Project in Freeborn County. On August 22, 2008, WPL filed a revised LWECs site permit application. (Hearing Exhibit "HE" 6).
2. Office of Energy Security (OES) Energy Facility Permitting (EFP) staff reviewed and determined that the August 22, 2008, application complied with the application requirements of Minnesota Rules, part 7854.0500. In its comments and recommendations to the Commission, dated September 11, 2008, OES EFP staff recommended that the Commission accept the application and issue a draft site permit (OES Exhibit 1).
3. On September 16, 2008, a Commission Order accepted the application for the Bent Tree Wind Project and associated facilities and also issued a draft site permit for review and comment (OES Exhibit 2).
4. On October 2, 2008, OES EFP staff issued a "Notice of Application Acceptance, Public Information and Scoping Meeting" to receive comments on the permit application, the draft site permit, and the scope of the environmental report for the certificate of need proceeding. (OES Exhibit 3).
5. On October 2, 2008, WPL distributed copies of the "Site Permit Application for the Bent Tree Wind Facility, Draft Site Permit and Notice of Application Acceptance, Public Information and Scoping Meeting" to government agencies and residences. (OES Exhibit 5)
6. Published notice of site permit application acceptance, the OES public information and scoping meeting and opportunity to comment on the permit application and the draft site permit appeared in the *Alden Advance*, on October 9, 2009, and *The Albert Lea Tribune*, on October 10, 2009. (OES Exhibit 4). The published notice provided: a) location and date of the public information meeting(s); b) description of the proposed project; c) deadline for public comments on the application and draft site permit; d) description of the Commission site permit review process; and e) identification of the public advisor. The notice published meets the requirements of Minnesota Rules, Part 7854. 0900 subp2.
7. On October 6, 2008, OES EFP staff published in the *EQB Monitor* notice of the October 21, 2008, application acceptance, public information meeting, and opportunity to comment on the permit application and the draft site permit, Volume 32, No. 20, October 6, 2008. (Exhibit 6, pages 9-13). The published notice contained all of the information required by Minnesota Rules part 7836.0900 subp. 1. Notice also appeared on the Commission web site on October 3, 2008.

8. The OES EFP staff held two public information meetings on October 21, 2008, (in Albert Lea at the Freeborn County Government Center in the afternoon, and at the Hartland Community Center in the evening meeting) to provide an overview of the Commission permitting process and to receive comments on the site permit application, draft site permit and scope of the environmental report. Approximately 70 people attended the two meetings. Representatives from the WPL were also present as was a representative of the Commission. OES EFP staff provided an overview of Certificate of Need (CON) and LWECs site permitting processes and responded to questions. OES EFP staff and WPL responded to project specific questions and general questions about wind energy. Questions were asked about the need for the project, transmission requirements, project timing, project phasing, taxes and avian impacts. There were general site permit questions, but nothing specific regarding setbacks in the draft site permit. Following the public meetings, OES staff received several calls and questions from people who attended the meeting and from people who wanted to attend but were unable to do so. The deadline for submitting comments on the site permit application, draft site permit and alternatives (scoping comments) to be included in the Environmental Report was December 3, 2008.
9. Twenty-eight written comments were received, including 25 in a form letter format. These letters questioned the adequacy of residential setbacks, requested a set back of one mile from non-participating landowner's property lines and requested, if necessary, a contested case hearing for the presentation of documents substantiating their request. The three other comment letters were from two state agencies (Department of Natural Resources and Minnesota Department of Transportation) and the applicant. The December 3, 2008, letter from the Minnesota Department of Natural Resource and the October 20, 2008, letter from the Minnesota Department of Transportation did not raise any questions or issues. (OES Exhibit 7).
10. On March 19, 2009, the request for a contested case hearing came before the Commission. (OES Exhibit 8). On March 24, 2009, a Commission Order denied the request for a contested case hearing; but "ordered a public hearing to include issues relating to the siting and permitting, following the release of the Minnesota Department of Health's report on the health effects of wind turbines." (OES Exhibit 9). The Order noted that the public hearing could be held in conjunction with the public hearing for the Certificate of Need proceeding (Docket No. IP-6657/CN-07-1425) for the Bent Tree Wind Project Phase I.
11. On June 18, 2009, the Commission issued Notice of the June 29, 2009, Public Hearing in Albert Lea. The notice was published in Freeborn County in *The Albert Lea Tribune* on June 19, 2009, and in *The Alden Advance* on June 25, 2009. (OES Exhibits 10 & 11 and HE 15).
12. On June 29, 2009, a public hearing was held in Albert Lea, Minnesota, to receive public testimony on need and siting matters. Public comments and exhibits were recorded and entered into the record, with additional comments allowed to be submitted on or before July 14, 2009.

13. Administrative Law Judge (ALJ) Steve M. Mihalchick presided over the public hearing the afternoon and evening on June 29, 2009. The ALJ's Summary of Public Testimony was submitted to the PUC on August 25, 2009. (OES Exhibit 13).

### **Permittee**

14. Wisconsin Power and Light Company (WPL) filed a site permit application for the proposed 400 megawatt (MW) Bent Tree Wind Project Phase I and II in Freeborn County. WPL is proposing to build the Project in two 200 MW phases "Bent Tree Wind Project Phase I and Phase II." WPL is an affiliate of Alliant Energy, and is a regulated, investor owned utility serving customers in portions of the state of Wisconsin. WPL will own and operate the Bent Tree Wind Project. Energy generated from the Project will be used to meet WPL's renewable portfolio standards requirements pursuant to Wisconsin statute and to meet the energy demand of WPL's retail and wholesale customers. Energy will be delivered into the Midwest Independent Transmission System Operator (MISO) grid and used within the MISO footprint area.

### **Project Description**

15. Phase I comprised of 201.3 MW of the 400 MW Bent Tree Wind Project will consist of up to 122 Vestas V82 1.65 MW wind turbine generators mounted on freestanding tubular towers and associated facilities. A turbine model for the Bent Tree Project Phase II has not been selected at this time.
16. The towers will be 80 to 100 meters in (262 to 328 feet) in height. The blades on the Vestas V82 1.65 MW wind turbine are approximately 40 meters (133 feet) long. Turbine rotor diameter for the Vestas V82 will be 82 meters (269 feet) across. The overall height of the tower, nacelle and blade will be approximately 118.5 meters (397 feet) when one blade is in the vertical position. The rotor swept area is 5,281 meters squared (56,844 square feet). The rotor speed will be about 14.4 revolutions per minute corresponding to a maximum rotor tip speed of 138 miles per hour.
17. 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, all weather class 5 roads of gravel or similar material, and an underground energy collection system and a project substation. A separate 161 kV transmission line approximately 18 miles in length will connect the Project substation to the ITC owned Hayward Substation located east of Albert Lea. The 161 kV transmission line is being permitted by Freeborn County.
18. The Vestas V82 1.65 MW wind turbine is a three bladed, upwind, active yaw, and active aerodynamic control regulated wind turbine with power/torque control capabilities. The rotor utilizes blade pitch regulation and variable speed operation to achieve optimum power output at all wind speeds. The variable speed operation minimizes power and torque spike delivered from the rotor to the drive train resulting in improved long-term

reliability. 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.

19. 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 substation. The project substation steps 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 substation within the site permit boundaries.
20. 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.
21. 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.
22. All turbines and up to 2 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 substation or at the operations 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 substation and allow for remote control of the wind turbines locally or from a remote computer. This computerized supervisory control and data acquisition network will provide detailed operating and performance information for each wind turbine. The Permittee will maintain a computer program and database for tracking each wind turbine's maintenance history and energy production.
23. 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.

### **Site Location and Characteristics**

24. The 400 MW Bent Tree Wind Project, will be located in northwest Freeborn County, approximately four miles northwest of Albert Lea. The Project site includes portions of Hartland, Manchester, Bath and Bancroft townships. These townships are zoned agricultural, except for incorporated towns in Hartland and Manchester. The topography within the site varies from flat to rolling and undulating. Elevation varies from 1,250 to 1,320 feet above mean sea level. The dominant land use is agricultural, comprised of

corn and soybeans. Alfalfa, small grains and pasture are other crops located within the site permit boundary. There are also numerous woodlots and windbreaks within the proposed site boundaries. The Project boundary encompasses approximately 32,500 acres.

25. Construction of the turbines sites and access roads will involve temporarily disturbing at the most approximately five to ten acres of land per turbine or approximately 600 to 1,200 acres for each phase of the Project for contractor staging areas, foundation construction, underground power lines, and tower and turbine assembly. Permanent roads are expected to be about 16 feet wide. The permanent displacement for turbine access roads and for towers and transformers and areas around them is about 180 acres for each phase of the Bent Tree Wind Project.
26. 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.
27. According to WPL's application, the highest elevations in the site is about 1,320 feet. Slopes in this area commonly range from nearly level to gently rolling.

### **Wind Resource Considerations**

28. WindLogics estimates that the 80 meter wind speeds in the Project Area average from 7.7 to 8.1 meters per second (mean average annual). Wind speeds are generally greater in the night and early morning hours and decline at midday. Regionally, the prevailing wind directions are generally southeast and northwest. Of the annual energy budget, a higher percentage results from southerly winds, which are most frequent in the warmer weather months. The north and northwest winds typically occur in winter.
29. For this project, turbines will be sited in strings and clusters along hilltops and ridgelines within the site boundaries. The wind turbines are sited so as to have good exposure to winds from all directions with emphasis on exposure to the prevailing southerly and northwesterly wind directions. The turbine spacing, according to WPL's application, maximizes use of the available wind and minimizes wake and array losses within the topographical context of the site. The turbines are typically oriented west-southwest to north-northeast, which is roughly perpendicular to the prevailing southerly and northwest winds. Turbine placement, aside from other resource features where setbacks or wind access buffers are required, will be designed to provide sufficient spacing between the turbines to minimize internal wake losses. Given the prevalence for southerly and northerly winds, the spacing is widest in the north-south 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 III.E.5. 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.

30. Assuming net capacity factors of 37 to 39 percent, projected average annual output will range from approximately 1,296,500 MWh to 1,366,600 MWh per year. The net annual energy output per turbine is estimated to be approximately 5,357 to 5,647 MWh (megawatt hours) per year. The base energy calculation presented assumes a normal or average wind year. The maximum variation in energy is within +/- 15 percent. Based on the data, one would expect the annual variation in energy at the project site to be within 10 percent of the mean during most years.

### **Land Rights and Easement Agreements**

31. In order to build a wind plant, a developer needs to secure site leases and easement 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.
32. WPL has obtained lease and easement option agreements and/or rights to such agreements with landowners for land within the project site boundary necessary for installation of the components of the wind farm. These rights and easements will be used to site the turbines and all associated facilities and provide the necessary wind access buffers and setbacks.
33. WPL has options, leases or easement on the land and wind rights necessary within the site to build the Project. The Phase I, portion of the Bent Tree Wind Project contains 294 parcels of land and owners of 195 parcels are Project participants. The Phase II, portion of the Bent Tree Wind Project contains 168 parcel of land and owners of 118 parcels are Project participants. In total there are 462 parcels of land in the Project and owners of 313 are Project participants. However, additional wind rights and buffers may need to be obtained to comply with draft site permit setback requirements. Land and wind rights will need to encompass the proposed wind farm and all associated facilities, including but not limited to wind and buffer easements, wind turbines, access roads, meteorological towers, electrical collection system and electric lines located on or along public road rights-of-way.

### **Site Criteria**

34. Minnesota Rules chapter 7854 applies to the siting of Large Wind Energy Conversion Systems. The rules require an applicant to provide a substantial amount of information to allow the PUC 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. Minn. Rules Parts 7854.0500 through 7854.0600. The following analysis addresses the relevant criteria that are to be applied to a LWECs project.

## **Human Settlement, Public Health and Safety**

35. The site is in an area of relatively low population density, characteristic of rural areas throughout southeastern Minnesota. WPL has committed to provide and will be required, by a Special Condition of its Site Permit (Part M,1) to provide a minimum setback of 1,000 feet to any resident, irrespective of whether that landowner is a participating or a nonparticipating landowner. WPL will also be required to set back its turbines a minimum of five rotor diameters (1,345 feet) on the prevailing wind axis from non-participating landowners property lines and three rotor diameters on the non-prevailing wind axis. (H.E. 28, page 7). Wind turbines will not be located within the boundaries of cities of Hartland or Manchester. WPL's proposed project design will comply with the Minnesota Pollution Control Agency (PCA) noise standards. As a result, the impact of the proposed LWECS on human settlement, public health and safety will be minimal. The site permit, at part III.C has conditions for setbacks from residences and roads. In this case, consistent with the Applicant's set back commitment, the Site Permit for Phase I includes Part M. Special Condition, I an additional requirement which supersedes Part III.C of the site permit and requires the Applicant to provide a minimum setback of 1,000 feet to any resident, irrespective of whether that landowner is a participating or a nonparticipating landowner. 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) or any rural water system that services the area.
36. There will be no displacement of existing residences or structures in siting the wind turbines and associated facilities.
37. WPL has worked with the city of Albert Lea, Albert Lea Municipal Airport and the Federal Aviation Administration (FAA) to identify and address any potential air hazards that may be created by the Project. As a result, the FAA issued a "No-Hazard Determination" for this Project. (HE 6, Appendix E-2). The project will comply with the Federal Aviation Administration requirements with respect to lighting. See site permit condition III.E.4.
38. The Permittee will provide security during construction and operation of the project, including fencing, warning signs, and locks on equipment and facilities. The Permittee will also provide landowners and interested persons with safety information about the project and its facilities. See site permit condition III.B.15.
40. In winter months ice may accumulate on the wind 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 in relatively small pieces 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, it remains important that the turbines are not sited in areas where regular human activity is expected below the turbines during the winter months.

41. 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. See permit condition III.B.17.

## Noise

42. Background noise levels in the Project Area are typical of those in a rural setting, where existing nighttime noise 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 exist near roads and other areas of human activity. Wind conditions in the Project Area tend to increase ambient noise levels compared to other rural areas. An assessment of noise levels at residences (i.e. receivers) across the Project Area was performed (HE 6, Appendix A, Exhibit A-4). Noise levels were calculated using the Windfarmer program and a representative wind turbine for the site. The program assumes all turbines in the Project Area are operating simultaneously and winds speed of 8 m/s (17.9 mph) are occurring and represents the wind speed when maximum noise levels are expected.
43. Noise levels predicted by Windfarmer were compared to the Minnesota Pollution Control Agency Daytime and Nighttime L10 and L50 Limits as stated in Minn. Rule 7030.0040. These standards describe the limiting levels of sound established on the basis of present knowledge for the preservation of public health and welfare. These standards are consistent with speech, sleep, annoyance, and hearing conversation requirements for receivers within areas grouped according to land activities by the Noise Area Classification (NAC) system established in Minn. Rule. 7030.0050. The NAC-1 was chosen for receivers in the Project Area since this classification includes farm houses as household units. Daytime and nighttime limits for this classification are (1) L50 limit of 60 dBA and L10 limit of 65 dBA in daytime, and (2) L50 limit of 50 dBA and L10 limit of 55 dBA at nighttime. The nighttime L50 limit of 50 dBA is the most stringent limit.
44. Wind turbines, when in motion, do generate sound or noise. The level of sound (noise) varies with the speed of the turbine and the distance of the listener or receptor from the turbine. On relatively wind days, the turbines create more noise; however, the ambient or natural wind noise levels tend to override the turbine noise as distance from the turbine increases.
45. Noise impacts to nearby residents and other potentially affected parties will be factored into the turbine micro-siting process. WPL must ensure compliance with PCA noise standards. See permit condition III.E.3.
46. During the comment period the public expressed numerous concerns about possible health effects of low frequency vibrations and sound from wind turbines. In late February 2009, OES requested a "white paper" from the Minnesota Department of Health (MDH) evaluating possible health effects associated with low frequency noise vibrations and sounds arising from large wind energy conversion system (LWECS). A commenter on another wind project, the Lakeswind Wind Power Plant, in Clay, Becker and Ottertail counties, also wrote to the Commissioner of MDH to ask for an evaluation of health issues related to exposure to low frequency sound energy generated by wind turbines. In

March 2009, MDH agreed to evaluate health impacts from wind turbine noise and low frequency vibrations. The MDH released its “white paper” on the “Public Health Impacts of Wind Turbines on May 22, 2009, and it was included as Appendix D in the Environmental Report submitted for the Certificate of Need (CON) proceeding for the Bent Tree Wind Project (Docket No. T-6657/CN-07-1425) (HE 4, Appendix D).

47. The summary of public testimony prepared by the ALJ captures the on-going concerns being expressed by some residents of the Project Area and their requests for turbine setbacks of one-half mile or more from homes.
48. In a letter to Mr. and Ms. Anderson, (OES Exhibit 12) dated August 13, 2009, MDH Commissioner, Sanne Magnan, M.D., Ph.D, responded to specific questions posed by Mr. Anderson as follows:

*Are current standards in Minnesota safe?* Regulatory standards protect health and safety, but whether for air, water or noise, regulators do not set “bright line” standards without also considering cost, technical difficulties, possible benefit and alternatives. No regulatory standard offers absolute safety. The Minnesota Department of Health can evaluate health impacts, but it is the purview of regulatory agencies to weigh these impacts against alternative and possible benefits.

*Are the proponents of wind turbine syndrome mistaken?* As noted in the “White Paper,” the evidence for wind turbine syndrome, a constellation of symptoms postulated as mediated by the vestibular system, is scant. Further, as also noted, there is evidence that the symptoms do not occur in the absence of perceived noise and vibration. The reported symptoms may or may not be caused by “discordant” stimulation of the vestibular system.

*Does more study of adverse effects need to be undertaken?* More study may answer questions about the actual prevalence of unpleasant symptoms and adverse effect under various conditions such as distance to wind turbines and distribution of economic benefit. However, there is at present enough information to determine the need for better assessment of wind turbine noise, especially at low frequencies. Such assessments will likely be beneficial for minimizing impacts when projects are sited and designed. Also, even without further research, there is evidence that community acceptance of projects, including agreement about compensation of within project areas, will result in fewer complaints. Therefore, more research would be useful, but the need will have to be balanced against other research needs.

49. WPL has evaluated both noise and shadow flicker during the planning stages of the Bent Tree Wind Project to make informed decisions about turbine placement. The site permit

(III.F.2.) requires the Permittee to submit a proposal to the Commission for the conduct of a noise study.

### **Visual Values**

50. The placement of up to 242 turbines for the Bent Tree Wind Project Phase I and II, will affect the appearance of the area. The wind turbines will be mounted on tubular towers that are between 262 and 328 feet tall. The rotor blades will have a diameter of 269 feet. The turbine towers and rotor blades will be prominent features on the landscape. There will be intermittent, expansive views of the turbines to passing motorists on highways 135, 190, State Highway 13 and local roads. Motorists and drivers on local township and county roads may travel within 300 feet of some turbines.
51. 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 Federal Aviation Administration. 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.
52. 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 242 tubular steel structures approximately 262 feet high, standing on formerly undisturbed high-ground, with 133 foot long blades, for an overall height of 398 feet or more when one blade is in the vertical position. Wind plants have their own aesthetic quality, distinguishing them from other non-agricultural uses. Existing wind plants have altered the landscape elsewhere in Minnesota from agricultural to wind plant/agricultural. This project will modify the visual character of the area. Because wind generation development is likely to continue in Freeborn County, this visual presence will continue to increase as wind development occurs. To date, the presence of the wind turbines in other parts of Minnesota has been well accepted by the people who live and work in those areas.
53. Visually, the Bent Tree Wind Project Phase I and II will be similar to other LWECS projects located on Buffalo Ridge and southeastern Minnesota.

### **Recreational Resources**

54. Recreational opportunities in Freeborn County include hiking, biking, boating, fishing, camping, swimming, horseback riding, skiing, hunting, and nature viewing. The Manchester Wildlife Management Area (WMA) is the only WMA in close proximity to the Project site. Hunting is permitted in designated Minnesota Department of Natural Resources (MnDNR) WMAs, unless otherwise posted. WMAs are also managed to provide wildlife habitat and improve wildlife production. These MnDNR lands were acquired and developed primarily with hunting license fees. WMAs are closed to all-terrain vehicles and horses because of detrimental effects on wildlife habitat.

55. The Manchester WMA is located just inside the east-central boundary of the Project Area.
56. The turbines will be noticeable to persons using the Manchester WMA. Turbines will be at least five rotor diameters (RD) on the prevailing wind axis and at least 3 RD on the non-prevailing wind from WMAs or local parks. See permit condition III.C.4. Turbine operations are not expected to directly affect the natural areas in any material way and no adverse impact on wildlife management areas or practices is expected.

### **Public Services and Infrastructure**

57. The primary transportation arteries through the project Area include State Highway 13 which runs north-south from the westerly portion of the Project Area through the south central portion. County roads 25, 29 and 35 also traverse the Project Area. One active railroad, the Chicago and Northwestern Rail Line, crosses through the western portion of the Project Area.
58. The Minnesota Department of Transportation (MnDOT) is upgrading the 911 system throughout state. MnDOT has finished its siting and permitting work in Freeborn County. Microwave beam path analysis work will avoid conflicts with the Fresnel zones. WPL will also place towers so as to avoid interfering with land mobile facilities. (HE 6, page 31).

The proposed project will have approximately 70 miles of underground cables for the collector lines on private property within the wind farm. The underground cables will be installed in a trench that is at least 48 inches in depth. Most of the underground electric circuits will parallel existing turbine maintenance roads or public road rights-of-way. However, some of these underground circuits will cross private rights-of-way. WPL's application indicates that the underground cable layout will be completed in a manner that meets affected landowner requirements, minimizes impact to the environment and achieves required economics. (H.E. 6, p17.) Above ground cable vaults measuring 48 inches by 60 inches will be installed where underground cable circuits intersect. The vaults will be installed in a manner to minimize visual impact, avoid interference with intended land use, and ensure the public is protected. Where appropriate, posts will be installed adjacent to the underground cable vaults to minimize damage by farm equipment or vehicles. Cable circuits will be installed underneath public rights-of-way in compliance with road permits received from appropriate public authorities. Placement of collector and feeder lines is addressed in the site permit at III.E.7 and 8. The proposed wind farm is expected to have a minimal effect on the existing infrastructure.

59. The project will require the use of public roads to deliver construction supplies and materials to the work site. Site permit condition III.B.8. addresses this topic. Township road authorities have given their authority to the Freeborn County Highway Engineer to act on their behalf. Wear and tear on roads will occur as a result of the transport of heavy equipment and other materials. The site permit at III.B.8, addresses road damages. Construction of the project requires the addition of access roads that will be located on

private property. The access roads will be routed along the wind turbine strings, fence lines, and field edges to minimize disturbance to agricultural activities. The typical access road will be 15 to 20 feet in width and covered in Class 5 gravel (or similar material). The access roads will be low profile roads to allow for the movement of agricultural equipment. The site permit at III.B. 8 (b) addresses this topic. 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.

60. If access roads are installed across streams or drainage ways, the Permittee in consultation with the Minnesota Department of Natural Resources 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 permit from the Minnesota Department of Natural Resources. See site permit at III.K.7.
61. The proposed wind farm will not affect water supplies, railroads, telecommunication facilities, and radio reception. The presence or operation of the wind plant could potentially impact the quality of television reception in the area. Previous work on television reception issues indicates that in some cases new antennas or relocation of existing antennas can restore television signal strength reception. The Permittee will address the concerns of residents in the area of the project site before and after project construction to document and mitigate any television reception impacts that might occur. This is addressed in the site permit at III.D.3.
62. Construction, operation, and maintenance of the proposed wind plant will comply with all of the required federal and state permit requirements. See site permit at III.K.7.

### **Community Benefits**

63. The Bent Tree Wind Project Phase I and Phase II 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 easements on their property will also receive payments from the Permittee.
64. To the extent that local workers and local contractors are capable, qualified, and available, WPL will seek to hire them to construct the proposed project. The hiring of local people will expand employment opportunities in this area of the state and keep money in the local economy. Once constructed, the project will be staffed with several site technicians and a wind plant supervisor.

### **Effects on Land-Based Economies**

65. The wind turbines and access roads will be located so that the most productive farmland will be left as intact as possible. However, each project phase will displace approximately 180 acres of agricultural land. The site permit at III.B. 2., 3., 4., 5., 6., 7.,

8(c), 9., and 10. addresses mitigation measures for agricultural lands. The proposed project does not adversely affect any sand or gravel operations.

### **Archaeological and Historical Resources**

66. A review of the Minnesota State Historic Preservation Office (SHPO) computer database review indicates that five structures of historic significance and six archaeological sites are present within the Project Area. The historical structures are located near the town of Manchester and also scattered across Bath, Hartland and Manchester townships. The proposed turbine layout will not directly impact these facilities or sites. The National Register of Historic Places indicated the presence of eight listings for Freeborn County in the cities of Albert Lea, Clarks Grove, and Hayward. However the registered sites are not located in or near the Project Area.
67. An archaeology survey is recommended for all the proposed turbine locations, access roads, junction boxes and areas of construction impact for the transmission line to document any previously unrecorded archaeological sites within the project site. The site permit at III. D.2. requires the Permittee to conduct an archaeological reconnaissance survey (Phase I) archaeology survey consists of the following tasks: consultation, documentation, and identification. A Phase I survey provides enough information to allow consideration of avoidance if a site is to be impacted by an undertaking and to gather enough information to allow for reasonable recommendations for more detailed work should it be necessary.
68. If any archaeological sites are found during the Phase I survey, their integrity and significance should be addressed in terms of the site's potential eligibility 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 Minnesota State Historic Preservation Officer (SHPO), the State Archaeologist, and consulting American Indian communities. The site permit (III.D.2.) 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**

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

### **Animals and Wildlife**

70. With proper planning neither construction nor operation of the Project is expected to have a significant impact on wildlife. Based on studies of existing wind power projects in the United States and Europe, the only impact of concern to wildlife would primarily be to avian and bat populations. The final report on avian monitoring studies at Buffalo Ridge, Minnesota "Final Report-Avian Monitoring Studies at the Buffalo Ridge, Minnesota Resource Area: Results of a 4-Year Study" (September 2000) identified the following impacts:

- 70a. Following construction of the wind turbines, there is a reduction in the use of the area within 100 meters of the turbines by seven of 22 species of grassland breeding birds. It was hypothesized that lower avian use may be associated with avoidance of turbine noise, maintenance activities, and less available habitat. The researchers stated “on a large scale basis, reduced use by birds associated with wind power development appears to be relatively minor and would not likely have any population consequences on a regional level.” (p. 44)
- 70b. Avian mortality appears to be low on Buffalo Ridge, compared to other wind facilities in the United States, and is primarily related to nocturnal migrants. Resident bird mortality is very low and involves common species. The researchers stated that “based on the estimated number of birds that migrate through Buffalo Ridge each year, the number of wind plant related avian fatalities at Buffalo Ridge is likely inconsequential from a population standpoint.” (p. iv)
- 70c. Bat mortality was also studied at Buffalo Ridge, instigated by bat collision victims found during the avian monitoring studies. The bat study was conducted in 2001 and 2002. (“Bat Interactions with Wind Turbines at the Buffalo Ridge, Minnesota Wind Resource Area,” November 2003). The overall conclusion is that bat activity at turbines and the numbers of bat fatalities do not share a statistical relationship. Bat collisions were found to be very rare, given the amount of bat activity documented at the turbines. Most fatalities involving migrating or dispersing bats occur in the fall. Fatality estimates at Buffalo Ridge indicate that the population of bats susceptible to turbine collisions is large, and that the observed number of fatalities “is possibly not sufficient to cause significant, large-scale population declines.” (p. 6-1)
71. Mitigation measures are prescribed in the site permit and include but are not limited to: a) a pre-construction inventory of existing biological resources, native prairie, state listed and threatened species and wetlands in the project area (Site Permit III.D.1); b) turbines and associated facilities will not be constructed in wildlife management areas, recreation and state scientific and natural areas or parks (Site Permit III.C.4) and a 5 by 3 rotor diameter setback is provided (Site Permit III.C1). In its permit application (HE 6, pages 49-54), WPL outlined practices it will take to implement and minimize impacts to federal and state-listed species and rare or sensitive habitat in the Project Area during micrositing of the turbines and access roads and the subsequent development and operation of the Project. The site permit has requirements to implement sound water and soil conservation practices during construction and operation of the project throughout the Project’s life in order to protect topsoil and adjacent resources and to minimize soil erosion (Site Permit III.B.9). This also applies to any work in proximity to watercourses (Site Permit III.C.5).
72. On June 29, 2009, the DNR submitted a letter to the ALJ recommending a two year post construction mortality study using DNR Protocols to monitor bird and bat mortality at Large Wind Energy Conversion Systems. (HE 2). However, DNR provided no reasons or

basis as to the need for such a study using its recommended protocols. Therefore, OES is not recommending implementation of any study requirements until PUC and OES staff and DNR staff determine what types of studies may necessary or appropriate.

### **Vegetation**

73. 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. Native prairie will also be avoided. If native prairie cannot be avoided, the site permit, at III. C.6., provides for preparation of a prairie protection and management plan.

### **Soils**

74. Construction of the wind turbines and access roads in farmland increases the potential for erosion during construction. The site permit at III. B. 9. 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**

75. Access roads or utility lines will not be located in surface water or wetlands, unless authorized by the appropriate permitting agency. See site permit at III.C.5.

### **Future Development and Expansion**

76. 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 Freeborn and surrounding counties will consist of several types and sizes supplied by different vendors and installed at different times.
77. 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. OES EFP staff will continue to monitor for impacts and issues related to wind energy development.
78. 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.
79. Minnesota Statutes section 216E.03, subd. 7 requires consideration of design options that might minimize adverse environmental impacts. By using larger turbines, 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 also provides for buffers between adjacent wind generation projects to protect production potential. See site permit at III.C.1.

80. 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 the spacing dictates, among other factors, how much land area the project occupies. There is strong public support for orderly development.
81. 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.
82. 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 and wind resources did lead to a layout involving long strips of turbines running parallel to each other and perpendicular to the prevailing wind. In some places, it is expected that the site will use shorter strings or clusters of and possibly isolated turbines locations within the site. 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, Wisconsin Power and Light Company 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, northwest-southerly direction, with respect to the predominant energy production directions. Given the prevalence for southerly winds, the spacing between turbines will be greater in the prevailing winds in the northwest-southerly direction for the Bent Tree Wind Project. WPL does not expect significant wake loss.
83. Other factors that lead to energy production discounts include turbine availability, blade soiling, icing, high wind hysteresis, cold weather shutdown, electrical efficiency and parasitic. Total losses typically range from 13 to 16 percent.

### **Maintenance**

84. Maintenance of the turbines will be on a scheduled, rotating basis with one or more units normally off for maintenance each day, if necessary. Maintenance on the interconnection points will be scheduled for low wind periods. The Bent Tree Wind Project will be staffed with several wind technicians and a wind plant supervisor. An operations and maintenance facility will also be built near Hartland. The operation and maintenance facility will be permitted by the local unit of government.

## **Decommissioning and Restoration**

85. WPL expects that the life of the Project will be no less than 25 years and reserves the right to re-apply for a LWECS site permit and continue operation of the Project. LWECS site permit renewal may be under a new long-term power purchase agreement (PPA), merchant operation of the Project, or replacement and re-powering of the Project. (HE 6, pages 22-23).
86. Decommissioning activities will include (1) removal of all wind turbine components and towers; (2) removal of all pad mounted transformers; (3) removal of all above-ground distribution facilities; (4) removal of foundations; and (5) removal of surface road material and restoration of the roads and turbine sites to previous conditions to the extent feasible. (HE 6, pages 22-23). The Permit (III.G.1.) requires the Permittee to submit a Decommissioning Plan to the PUC prior to commercial operation. The Permit (III.G.2.) addresses site restoration and paragraph (III.G.3.) addresses turbines abandoned prior to termination of operation of the LWECS.

## **Site Permit Conditions**

87. All of the above findings pertain to the Applicant's requested permit for a 400 megawatt wind project.
88. 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. Minor changes and additions that provide for clarifications of the draft site permit conditions have been made.
89. The site permit contains conditions that apply to site preparation, construction, cleanup, restoration, operation, maintenance, abandonment, decommissioning and all other aspects of the 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 under Minnesota Statute 216F.04 over the site permit applied for by Wisconsin Power and Light Company for the 400 megawatt Bent Tree Wind Project.

3. The Wisconsin Power and Light Company application for a site permit was properly filed and noticed as required by Minnesota Statutes 216F.04 and Minnesota Rules 7854.0600 subp 2 and 7854.0900 subp 2.
4. The Minnesota Public Utilities Commission has afforded all interested persons an opportunity to participate in the development of the site permit and has complied with all applicable procedural requirements of Minnesota Statutes Chapter 216F and Minnesota Rules Chapter 7854.
5. A request for a contested case hearing was filed prior to the close of the comment period. The request for a contested case has been addressed by the Commission in a separate action from the site permit decision.
6. The Minnesota Public Utilities Commission is the agency directed to carry out the legislative mandate to site LWECS in an orderly manner compatible with environmental preservation, sustainable development and the efficient use of resources. The proposed 400 megawatt LWECS Bent Tree Wind Project will not create significant human or environmental impacts and is compatible with environmental preservation, sustainable development, and the efficient use of resources.
7. The Minnesota Public Utilities Commission has the authority under Minnesota Statutes section 216F.04 to establish conditions in site permits relating to site layout, construction and operation and maintenance of an LWECS. The conditions contained in the site permit issued to Wisconsin Power and Light Company for the Bent Tree Wind Project are appropriate and necessary and within the Minnesota Public Utilities Commission's authority.
8. In accordance with Minnesota Rule 7854.0500 Subp.2., a site permit may not be issued until the certificate of need or other commitment requirement has been satisfied.

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

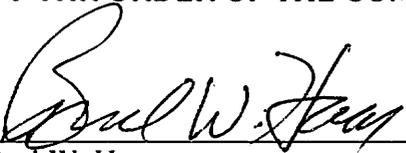
**ORDER**

A LWECS Site Permit is hereby issued to Wisconsin Power and Light Company, to construct and operate the 201.3 megawatt Bent Tree Wind Project Phase I in Freeborn 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. ET-6657/WS-08-573.

The Commission withholds issuance of a LWECS Site Permit for the Bent Tree Wind Project Phase II until such time as Wisconsin Power and Light Company or the entity purchasing the energy or owning the facility can satisfy the requirements of Minnesota Statutes 216B.243, subd 2 and Minnesota Rules 7849. Upon satisfying those requirements the Commission will reconsider LWECS Site Permit Issuance for the Bent Tree Wind Project Phase II.

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 )

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**STATE OF MINNESOTA PUBLIC UTILITIES COMMISSION**

**LARGE WIND ENERGY CONVERSION SYSTEM**

**SITE PERMIT**

**FOR THE**

**BENT TREE WIND PROJECT PHASE I**

**IN**

**FREEBORN COUNTY  
ISSUED TO**

**WISCONSIN POWER AND LIGHT COMPANY**

**PUC DOCKET NO. ET-6657/WS-08-573**

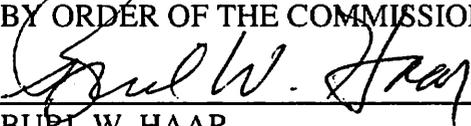
In accordance with Minnesota Statutes Section 216F.04, this Site Permit is hereby issued to:

**WISCONSIN POWER AND LIGHT COMPANY**

Wisconsin Power and Light Company, is authorized to construct and operate up to a 201.3 Megawatt Large Wind Energy Conversion System on the site identified in this Site Permit and in compliance with the conditions contained in this Permit.

This Permit shall expire on December 31, 2039.

Approved and adopted this 20<sup>th</sup> day of October, 2009  
BY ORDER OF THE COMMISSION



---

BURL W. HAAR  
Executive Secretary

(S E A L)

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## **I. SITE PERMIT**

This Site Permit for a Large Wind Energy Conversion System (LWECS) authorizes Wisconsin Power and Light Company (WPL), (hereinafter "Permittee") to construct the Bent Tree Wind Project Phase 1, a 201.3 Megawatt (MW) nameplate capacity LWECS and associated facilities in Freeborn County, on a site of approximately 32,500 acres in accordance with the conditions contained in this Permit. The site boundary is shown on the map that is attached hereto as Attachment 1 and identifies where each permitted Phase will be located.

## **II. PROJECT DESCRIPTION**

The 201.3 MW nameplate capacity LWECS authorized to be constructed in this Permit (Bent Tree Wind Project Phase I) will be owned and operated by Wisconsin Power and Light Company. The Project will consist of up to 122 Vestas V82-1.65 MW wind turbine generators having a combined nominal nameplate capacity of approximately 201.3 MW. Associated facilities will include wind turbine access roads, underground collection lines, SCADA wiring, feeder lines, pad mounted turbine transformers, and up to two permanent meteorological towers. Turbines are interconnected by communication and underground electrical power collection facilities within the wind farm that will deliver wind-generated power to the project substation. Power will ultimately be delivered from the Project substation to Hayward substation located in Freeborn County. The Project substation and 161 kV transmission line are being permitted by Freeborn County under separate permitting authority.

## **III. CONDITIONS**

The following conditions shall apply to site preparation, construction, cleanup, restoration, operation, maintenance, abandonment, decommissioning and all other phases of the LWECS. The Commission preserves all available remedies for violation of any of these Permit conditions, including revocation or modification of the Permit.

### **A. GENERAL CONSTRUCTION CONDITIONS**

#### **1. SITE PLAN**

Prior to commencing construction, the Permittee shall submit to the Commission a site plan for all turbines, roads, electrical equipment, collector and feeder lines and other associated facilities to be constructed and engineering drawings for site preparation, construction of the facilities, and a plan for restoration of the site due to construction. The Permittee shall document compliance with the setbacks and site layout restrictions required by the permit. The Permittee may submit a site plan and engineering drawings for only a portion of the LWECS if the Permittee is prepared to commence construction on certain parts of the Project before completing the site plan and engineering drawings for other parts of the LWECS. In the event that previously unidentified environmental conditions are discovered during construction which by law or pursuant to conditions outlined in this Permit would preclude the use of that site as a turbine site, the Permittee shall have the right to move or relocate turbine sites. The Permittee shall notify the

Commission of any turbines that are to be relocated before the turbine is constructed on the new site and demonstrate compliance with the setbacks and site layout restrictions required by the permit.

## 2. FIELD REPRESENTATIVE

Prior to the start of construction and continuously throughout construction and site restoration, the Permittee shall designate a field representative responsible for overseeing compliance with the conditions of this Permit. This person (or a designee) shall be accessible by telephone during normal business hours. This person's address, phone number and emergency phone number shall be provided to the Commission, who may make the number available to local residents and officials and other interested persons. The Permittee may change the field representative by notification to the PUC.

## 3. PRECONSTRUCTION MEETING

Prior to the start of any construction, the Permittee shall conduct a preconstruction meeting with the person designated by the Commission to coordinate field monitoring of construction activities.

## 4. NOTICE OF PERMIT CONDITIONS

The Permittee shall inform all employees, contractors, and other persons involved in the construction and ongoing operation of the LWECS of the terms and conditions of this Permit.

# B. MITIGATION MEASURES

## 1. SITE CLEARANCE

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

## 2. TOPSOIL PROTECTION

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

## 3. SOIL COMPACTION

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

## 4. LIVESTOCK PROTECTION

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

## 5. FENCES

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

## 6. DRAINAGE TILES

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

## 7. EQUIPMENT STORAGE

The Permittee shall not locate temporary equipment staging areas on lands under its control unless negotiated with landowner. Temporary staging areas shall not be located in wetlands or native prairie.

## 8. ROADS

### (a) Public Roads

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

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

### (b) Turbine Access Roads

The Permittee shall construct the smallest number of turbine access roads it can. Access roads shall be low profile roads so that farming equipment can cross them and shall be covered with Class 5 gravel or similar material. Access roads shall not be constructed across streams and drainage ways without required permits and approvals from the Minnesota Department of Natural Resources (DNR), United States Fish and Wildlife Services (USFWS), and/or United States Army Corps of Engineers (USACOE). When access roads are constructed across streams and drainage ways, the access roads shall be designed in a manner so runoff from the upper

portions of the watershed can readily flow to the lower portion of the watershed. Access roads shall also be constructed in accordance with all necessary township, county or state road requirements and permits.

(c) Private Roads

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

9. SOIL EROSION AND SEDIMENT CONTROL

The Permittee shall develop a Soil Erosion and Sediment Control Plan prior to construction and submit the Plan to the PUC. This Plan may be the same as the Storm Water Pollution Prevention Plan (SWPP) submitted to the Minnesota Pollution Control Agency (MPCA) as part of the National Pollutant Discharge Elimination System (NPDES) permit application. A goal of the Soil Erosion and Sediment Control Plan is to minimize soil erosion, to revegetate non-cropland and range areas disturbed by construction with wildlife conservation species, and, wherever possible, to plant appropriate native species in cooperation with landowners.

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

10. CLEANUP

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

11. TREE REMOVAL

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

## 12. RESTORATION

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

## 13. HAZARDOUS WASTE

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

## 14. APPLICATION OF HERBICIDES

The Permittee shall restrict herbicide use to those herbicides and methods of application approved by the Minnesota Department of Agriculture and the U.S. Environmental Protection Agency. Selective foliage or basal application shall be used when practicable. The Permittee shall contact the landowner or his designee to obtain approval for the use of herbicide prior to any application on their property. The landowner may request that there be no application of herbicides on any part of the site within the landowner's property. All herbicides shall be applied in a safe and cautious manner so as to not damage crops, orchards, tree farms, or gardens. The Permittee shall also, at least ten days prior to the application, notify beekeepers with an active apiary within one mile of the proposed application site of the day the company intends to apply herbicide so that precautionary measures may be taken by the beekeeper.

## 15. PUBLIC SAFETY

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

## 16. FIRE PROTECTION

The Permittee shall prepare a fire protection and medical emergency plan in consultation with the fire department having jurisdiction over the area prior to LWECS construction. The Permittee shall submit a copy of the plan to the Commission upon request. The Permittee shall also register the LWECS with the local governments' emergency 911 services.

## 17. TOWER IDENTIFICATION

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

## **C. SETBACKS**

### **1. WIND ACCESS BUFFER**

Wind turbine towers shall not be placed less than 5 rotor diameters (RD) on the prevailing wind directions and 3 RD on the non-prevailing wind directions from the perimeter of the lands where the Permittee does not hold the wind rights, without the approval of the PUC.

### **2. RESIDENCES**

Wind turbine towers shall not be located closer than 500 feet from the nearest residence, or the distance required to comply with the noise standards for Noise Area Classification 1, established by the MPCA (paragraph III.E.3), whichever is greater.

### **3. ROADS**

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

### **4. WILDLIFE MANAGEMENT AREAS**

Wind turbines and associated facilities including foundations, access roads, underground cable, and transformers, shall not be located in Waterfowl Production Areas, State Wildlife Management Areas or Scientific and Natural Areas or in county parks and shall also comply with the setbacks of III.C.1.

### **5. WETLANDS**

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

### **6. NATIVE PRAIRIE**

Upon request of the Commission, the Permittee shall, with the advice of the DNR and any others selected by the Permittee, prepare a prairie protection and management plan and submit it to the Commission and DNR Commissioner 60 days prior to the start of Project construction. The plan shall address steps to be taken to identify native prairie within the Project area, measures to avoid impacts to native prairie, and measures to mitigate for impacts if unavoidable. Wind turbines and all associated facilities, including foundations, access roads, underground cable and transformers, shall not be placed in native prairie unless addressed in the prairie protection and management plan. Unavoidable impacts to native prairie shall be mitigated by restoration or management of other native prairie areas that are in degraded condition, or by conveyance of conservation easements, or by other means agreed to by the Permittee and Commission.

## 7. SAND AND GRAVEL OPERATIONS

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

### D. PRECONSTRUCTION SURVEYS

#### 1. BIOLOGICAL PRESERVATION SURVEY

The Permittee, in consultation with DNR and other interested parties, shall conduct a pre-construction inventory of existing wildlife management areas, scientific and natural areas, recreation areas, native prairies and forests, wetlands, and any other biologically sensitive areas within the site and assess the presence of state- or federally-listed or threatened species. The results of the survey shall be submitted to the Commission and DNR prior to the commencement of construction.

#### 2. ARCHAEOLOGICAL RESOURCES

The Permittee shall work with the State Historic Preservation Office (SHPO) at the Minnesota Historical Society and the State Archaeologist. The Permittee shall carry out a Phase 1 or 1A Archaeology survey for all proposed turbine locations, access roads, junction boxes and other areas of project construction impact to determine whether additional archaeological work is necessary for any part of the proposed Project. The Permittee will contract with a qualified archaeologist to complete such surveys, and will submit the results to the Commission, the SHPO and the State Archaeologist.

The SHPO and the State Archaeologist will make recommendations for the treatment of any significant archaeological sites which are identified. Any issues in the implementation of these recommendations will be resolved by the Commission in consultation with SHPO and the State Archaeologist. In addition, the Permittee shall mark and preserve any previously unrecorded archaeological sites that are found during construction and shall promptly notify the SHPO, the State Archaeologist, and the Commission of such discovery. The Permittee shall not excavate at such locations until so authorized by the Commission in consultation with the SHPO and the State Archaeologist.

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

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

Prior to construction, construction workers shall be trained about the need to avoid cultural properties, how to identify cultural properties, and procedures to follow if undocumented cultural properties, including gravesites, are found during construction. If any archaeological sites are found during construction, the Permittee shall immediately stop work at the site and shall mark and preserve the site and notify the Commission and the MHS about the discovery. The Commission and the MHS shall have three working days from the time the agency is notified to conduct an inspection of the site if either agency shall choose to do so. On the fourth day after notification, the Permittee may begin work on the site unless the MHS has directed that work shall cease. In such event, work shall not continue until the MHS determines that construction can proceed.

### **3. INTERFERENCE**

Prior to beginning construction, the Permittee shall submit a plan to the Commission for conducting an assessment of television signal reception and microwave signal patterns in the Project area prior to commencement of construction of the Project. The assessment shall be designed to provide data that can be used in the future to determine whether the turbines and associated facilities are the cause of disruption or interference of television reception or microwave patterns in the event residents should complain about such disruption or interference after the turbines are placed in operation. The assessment shall be completed prior to installation of the turbines. The Permittee shall be responsible for alleviating any disruption or interference of these services caused by the turbines or any associated facilities.

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

### **E. SITE LAYOUT RESTRICTIONS**

#### **1. WIND TURBINE TOWERS**

Structures for wind turbines shall be self-supporting tubular towers. The towers may be up to 100 meters (328 feet) above grade measured at the hub.

#### **2. METEOROLOGICAL TOWERS**

Permanent towers for meteorological equipment shall be free standing. Temporary meteorological towers, which are those that will be removed no more than one year after the Project in-service date, may be guyed if the landowner has given written permission and the guys are properly marked with safety shields.

Up to two permanent meteorological towers are authorized to be constructed for the Project by this Permit. New temporary and permanent meteorological towers shall not be placed less than 250 feet from the edge of the nearest public road right-of-way and from the boundary of the

Permittee's site control, or in compliance with the county ordinance regulating meteorological towers in the county the tower is built, whichever is more restrictive. Meteorological towers shall be placed on lands the Permittee holds the wind or other development rights.

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

### 3. NOISE

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

### 4. FEDERAL AVIATION ADMINISTRATION

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

### 5. TURBINE SPACING

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

### 6. FOOTPRINT MINIMIZATION

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

## **7. ELECTRICAL CABLES**

The Permittee shall place electrical lines, known as collectors, and communication cables underground when located on private property. Collectors and cables shall also be placed within or adjacent to the land necessary for turbine access roads unless otherwise negotiated with the affected landowner. This paragraph does not apply to feeder lines.

## **8. FEEDER LINES**

The Permittee shall place overhead or underground electric lines, known as feeders, within public rights-of-way or on private land immediately adjacent to public rights-of-way if a public right-of-way exists, except as necessary to avoid or minimize human, agricultural, or environmental impacts. A change in feeder line locations may be made as long as feeders remain on public rights-of-way and approval has been obtained from the governmental unit responsible for the affected right-of-way. When placing feeders on private property, the Permittee shall place the feeder in accordance with easements negotiated with the affected landowner. In all cases, the Permittee shall avoid routing feeder lines in locations which may interfere with agricultural operations. Notwithstanding any of the requirements in paragraph III.D. to conduct surveys before any construction can commence, the Permittee may begin immediately upon issuance of this permit to construct the feeder lines that will be required as part of this Project. The Permittee shall submit the site plan and engineering drawings required under paragraph III.A.1. for the feeder lines before commencing construction. Any guy wires on the structures for feeder lines shall be marked with safety shields.

The Permittee must fulfill, comply with, and satisfy all Institute of Electrical and Electronics Engineers, Inc. (IEEE) standards applicable to this Project, including but not limited to IEEE 776, IEEE 519, and IEEE 367, provided the telephone service provider(s) have complied with any obligations imposed on it pursuant to these standards. Upon request by the Commission, the Permittee shall report to the Commission on compliance with these standards.

## **F. STUDIES**

### **1. WAKE LOSS STUDIES**

The Permittee shall provide to the Commission with the site plan required by paragraph III.A.1. the preconstruction micro siting analysis leading to the final tower locations and an estimate of total Project wake losses. The Permittee shall provide to the Commission any operational wake loss studies conducted on this Project.

### **2. NOISE**

The Permittee shall submit a proposal to the Commission for the conduct of a noise study. Upon the approval of the Commission, the Permittee shall carryout the study. The study shall be designed to determine the noise levels at different frequencies and at various distances from the turbines at various wind directions and speeds.

## **G. DECOMMISSIONING/RESTORATION/ABANDONMENT**

### **1. DECOMMISSIONING PLAN**

Prior to commercial operation, the Permittee shall submit to the Commission a Decommissioning Plan documenting the manner in which the Permittee anticipates decommissioning the Project in accordance with the requirements of Minnesota Rules part 7836.0500, subp.13. The Permittee shall ensure that it carries out its obligations to provide for the resources necessary to fulfill its requirements to properly decommission the Project at the appropriate time. The Commission may at any time request the Permittee to file a report with the Commission describing how the Permittee is fulfilling this obligation.

### **2. SITE RESTORATION**

Upon expiration of this Permit, or upon earlier termination of operation of the LWECS, the Permittee shall have the obligation to dismantle and remove from the site all towers, turbine generators, transformers, overhead and underground cables, foundations, buildings and ancillary equipment to a depth of four feet. A LWECS shall be considered a discontinued use after one year without energy production, unless a plan is developed and submitted to the Commission outlining the steps and schedule for returning the LWECS to service. To the extent possible the Permittee shall restore and reclaim the site to its pre-project topography and topsoil quality. All access roads shall be removed unless written approval is given by the affected landowner requesting that one or more roads, or portions thereof, be retained. Any agreement for removal to a lesser depth or for no removal shall be recorded with the county and shall show the locations of all such foundations. All such agreements between the Permittee and the affected landowner shall be submitted to the Commission prior to completion of restoration activities. The site shall be restored in accordance with the requirements of this condition within 18 months after expiration.

### **3. ABANDONED TURBINES**

The Permittee shall advise the Commission of any turbines that are abandoned prior to termination of operation of the LWECS. The Commission may require the Permittee to decommission any abandoned turbine.

## **H. REPORTING**

### **1. PROJECT ENERGY PRODUCTION**

The Permittee shall, by July 15 of each year, report to the Commission on the monthly energy production of the Project and the average monthly wind speed collected at one permanent meteorological tower selected by the Commission during the preceding year or partial year of operation. The report shall include copies of any project production reports filed with the Midwest Independent System Operator (MISO), Midwest Area Power Pool (MAPP), the Federal Energy Regulatory Commission (FERC), or any other public regulatory agency. The Permittee shall describe the operational status and availability of the Project and any major outages, major repairs, or turbine performance improvements occurring in the previous year.

## 2. WIND RESOURCE USE

Beginning the first full quarter following the commercial operation of the wind farm, the Permittee shall file a quarterly report (due January 15, April 15, July 15, and October 15) with the Commission with the following average hourly data for each hour of commercial operation in printed format or electronic format capable of computerized analysis as specified by the Commission. That data entails:

- (a) The power output of each turbine;
- (b) The wind speed and direction measured at all monitored heights at any temporary and permanent meteorological towers, connected to the SCADA system, owned or operated by the Permittee, in or within three miles of the Project site boundary; and
- (c) Temperature and any other meteorological parameters recorded at one permanent meteorological tower selected by the Commission.

After two years of commercial operation, the PUC may reduce or eliminate the requirements of this condition. The provisions of paragraph III.K.5 shall apply to the Commission's review of this data.

## 3. EXTRAORDINARY EVENTS

Within 24 hours of an occurrence, the Permittee shall notify the Commission of any extraordinary event. Extraordinary events include but shall not be limited to: fires, tower collapse, thrown blade, collector or feeder line failure, injured LWECS worker or private person, kills of migratory, threatened or endangered species, or discovery of a large number dead birds or bats of any variety on site. In the event of avian mortality the DNR shall also be notified within 24 hours. The Permittee shall, within 30 days of the occurrence, submit a report to the Commission describing the cause of the occurrence and the steps taken to avoid future occurrences.

## 4. COMPLAINTS

Prior to the start of construction, the Permittee shall submit to the Commission the company's procedures to be used to receive and respond to complaints. The Permittee shall report to the Commission all complaints received concerning any part of the LWECS in accordance with the procedures provided in Attachments 2 and 3 of this Permit.

## I. FINAL CONSTRUCTION

### 1. AS-BUILT PLANS AND SPECIFICATIONS

Within 60 days after completion of construction, the Permittee shall submit to the Commission a copy of the as-built plans and specifications. The Permittee must also submit this data in a geographic information system (GIS) compatible format so that the Commission can place it into

the Minnesota Geospatial Information Office's (MnGEO) geographic data clearinghouse located in the Department of Administration.

## **2. FINAL BOUNDARIES**

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

## **3. EXPANSION OF SITE BOUNDARIES**

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

## **J. AUTHORITY TO CONSTRUCT LWECS**

### **1. WIND RIGHTS.**

The Permittee shall advise the Commission of the obtaining of exclusive wind rights within the boundaries of the LWECS authorized by this Permit within 30 days of receiving such wind rights. The Permittee shall submit documentation of such exclusive wind rights if requested by the Commission.

### **2. OTHER PERMIT APPLICATIONS.**

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

### **3. PREEMPTION OF OTHER LAWS**

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

### **4. POWER PURCHASE AGREEMENT**

WPL will use the energy. Therefore, a Power Purchase Agreement is not required; however, this Permit does not authorize construction of the Project until the Permittee has obtained Certificate of Need.

## **5. COMPLIANCE WITH FEDERAL AND STATE AGENCY PERMITS**

The Permittee shall comply with all terms and conditions of permits or licenses issued by any Federal, State or Tribal authorities including but not limited to the requirements of the Minnesota Pollution Control Agency (Section 401 Water Quality Certification, SDS Discharge/Construction Storm Water, Site Specific Discharge Approvals; Department of Natural Resources (License to Cross Public Water, Water Appropriation Permits, State Protected Species Consultation); Historical Society (Section 106 Historic Act Consultation).

The Permittee shall develop project construction specifications for site sediment control, as required by the Minnesota Pollution Control Agency NPDES Construction Permit program.

The Permittee shall develop project construction specifications for all crossing of public water and wetlands and adjacent sensitive areas as required by the Minnesota Department of Natural Resources. The Permittee shall comply with all federal and state safety requirements.

## **6. COMPLIANCE WITH COUNTY, CITY OR MUNICIPAL PERMITS**

The Permittee shall comply with all terms and conditions of permits or licenses issued by the Counties, Cities and Municipalities that are required by the project that do not conflict or are not preempted by Federal or State permits and regulations.

## **7. COOPERATION WITH ENTITIES HAVING EXISTING EASEMENTS OR INFRASTRUCTURE WITHIN THE SITE PERMIT BOUNDARY**

The Permittee shall cooperate with all entities that have existing easements or infrastructure within the site that are affected by wind turbine construction activities to ensure minimal disturbance to existing or planned infrastructure.

## **K. MISCELLANEOUS**

### **1. PERIODIC REVIEW**

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

### **2. FAILURE TO COMMENCE CONSTRUCTION**

If the Permittee has not completed the pre-construction surveys required in paragraph III.D and commenced construction of the LW ECS within two years of the issuance of this Permit, the Permittee must advise the PUC of the reason construction has not commenced. In such event, the Commission shall make a determination as whether this Permit should be amended or revoked. No revocation of this Permit may be undertaken except in accordance with applicable statutes and rules, including Minnesota Statute 216F.05 and Minnesota Rule 7854.1300.

### 3. MODIFICATION OF CONDITIONS

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

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

### 4. REVOCATION OR SUSPENSION OF THE PERMIT

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

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

In the event the Commission shall determine that it is appropriate to consider revocation or suspension of this Permit, the Commission shall proceed in accordance with the requirements of Minnesota Statute 216F.05 to determine the appropriate action. Upon a finding of any of the above, the PUC may require the Permittee to undertake corrective measures in lieu of having the Permit suspended or revoked.

### 5. PROPRIETARY INFORMATION

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

### 6. TRANSFER OF PERMIT

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

## 7. OTHER PERMITS

The Permittee shall be responsible for acquiring any other federal, state, or local permits or authorizations that may be required to construct and operate a LWECS within the authorized site. The Permittee shall submit a copy of such permits and authorizations to the Commission upon request.

## 8. SITE MANAGER

The Permittee shall designate a site manager who shall be the contact person for the Commission to contact with questions about the LWECS. The Permittee shall provide the Commission with the name, address, and phone numbers of the site manager prior to placing any turbine into operation. This information shall be maintained current by informing the Commission of any changes, as they become effective.

## 9. NOTICE TO LOCAL RESIDENTS

The Permittee shall, within ten working days of receipt of this Permit, send a copy of the Permit to the office of the auditor of each county in which the site is located and to the clerk of each city and township within the site boundaries. If applicable, the Permittee shall also, within 10 working days of issuance, send a copy of this Permit to each regional development commission, local fire district, soil and water conservation district, watershed district, and watershed management district office with jurisdiction in the county where the site is located. Within 30 days of issuance of this Permit, the Permittee shall send a copy of the Permit to each affected landowner within the site. In no case shall the affected landowner receive the site permit and complaint procedure less than five days prior to the start of construction on their property.

## 10. RIGHT OF ENTRY

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

- (a) To enter upon the facilities easement of the site property for the purpose of obtaining information, examining records, and conducting surveys or investigations.
- (b) To bring such equipment upon the facilities easement of the property as is necessary to conduct such surveys and investigations.
- (c) To sample and monitor upon the facilities easement of the property; and
- (d) To examine and copy any documents pertaining to compliance with the conditions of this Permit.

## 11. MORE STRINGENT RULES

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

## 12. PERMIT COMPLIANCE MEETING

Prior to the start of commercial operation, the Permittee shall conduct a permit compliance meeting with the person designated by the Commission to coordinate permit compliance activities.

### L. EXPIRATION DATE

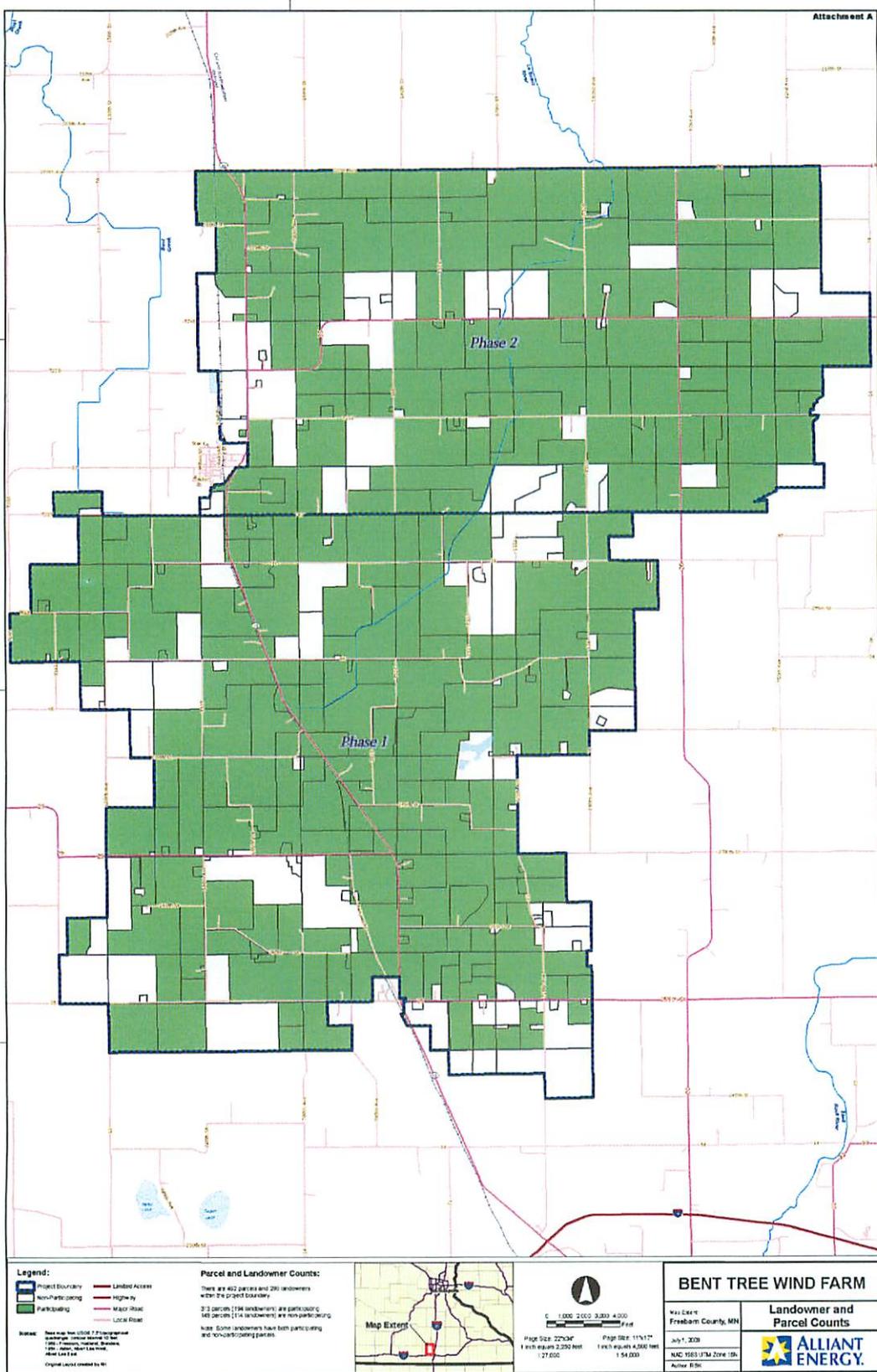
This Permit shall expire on December 31, 2039.

### M. SPECIAL CONDITIONS

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

1. The Applicant shall fulfill its commitment to provide a minimum setback of 1,000 feet for all turbine towers to any resident, irrespective of whether that landowner is a participating or a non-participating landowner. Adoption of this special condition is based on facts unique to this case and provides no precedent or foreshadowing regarding the size of set back that the Commission may deem appropriate and reasonable to require in future dockets.
2. The Applicant shall report data from its shadow flicker modeling at the time it submits the final site plan and profile for Phase I.

# ATTACHMENT 1: SITE PERMIT MAP



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

**A. Purpose:**

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

**B. Scope:**

This document describes Complaint reporting procedures and frequency.

**C. Applicability:**

The procedures shall be used for all complaints received by the Permittee.

**D. Definitions:**

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

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

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

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

**E. Complaint Documentation and Processing:**

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

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

**F. Reporting Requirements:**

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

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

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

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

**G. Complaints Received by the Commission or OES:**

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

**H. Commission Process for Unresolved Complaints:**

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

**I. Permittee Contacts for Complaints:**

**Mailing Address:** Complaints filed by mail shall be sent to:

ATTN: Bent Tree Wind Project  
Alliant Energy  
490 Shakerag Street  
Mineral Point, WI 53565-1000

**Tel:** 608-458-4247

**Email Address:** David.Engels@alliantenergy.com

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

**1. Purpose**

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

**2. Scope and Applicability**

This procedure encompasses all compliance filings required by permit.

**3. Definitions**

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

**4. Responsibilities**

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

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

- B) All filings must have a cover sheet that includes:
- 1) Date
  - 2) Name of submitter / permittee
  - 3) Type of Permit (Site or Route)
  - 4) Project Location
  - 5) Project Docket Number
  - 6) Permit Section Under Which the Filing is Made
  - 7) Short Description of the Filing
- C) Filings that are graphic intensive (e.g., maps, plan and profile) must, in addition to being eFiled, be submitted as paper copies and on CD. Copies and CDs should be sent to: 1) Dr. Burl W. Haar, Executive Secretary, Minnesota Public Utilities Commission, 121 7<sup>th</sup> Place East, Suite 350, St. Paul, MN, 55101-2147, and 2) Department of Commerce, Energy Facility Permitting, 85 7<sup>th</sup> Place East, Suite 500, St. Paul, MN, 55101-2198. Additionally, the Commission may request a paper copy of any eFiled document.

**PERMIT COMPLIANCE FILINGS<sup>1</sup>**

**PERMITTEE:** Wisconsin Power and Light Company  
**PERMIT TYPE:** LWECS Site Permit  
**PROJECT LOCATION:** Freeborn County  
**PUC DOCKET NUMBER:** ET-6657/WS-08-573

<b>Filing Number</b>	<b>Condition</b>	<b>Description</b>	<b>Due Date</b>	<b>Notes</b>
<b>1</b>	A.1.	Site Plan	Prior to starting construction	
<b>2</b>	A.2.	Field Representative	Prior to and throughout construction	
<b>3</b>	B.8.	Roads	Identify access roads and obtain road damage agreements before starting construction	
<b>4</b>	B.9.	Soil Erosion and Sediment Control Plan	NDPES Stormwater Runoff Control Permit	
<b>5</b>	B.15	Educational Materials	Submit Upon Request	
<b>6</b>	B.16	Fire Protection Plan	Submit Upon Request. Must Register in 911 Program	
<b>7</b>	C.6.	Native Prairie Protection Plan	60 days prior to the start of construction, if required	
<b>8</b>	D.1.	Biological Survey	Pre-construction Meeting	
<b>9</b>	D.2	Archaeological Resources	Pre-construction Meeting and as Recommended by the State Historic Preservation Office	
<b>10</b>	D.3.	Electromagnetic Interference	Pre-construction Meeting	

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

<b>Filing Number</b>	<b>Condition</b>	<b>Description</b>	<b>Due Date</b>	<b>Notes</b>
<b>11</b>	F.1	Wake Loss	Include with site plan or operation studies if performed	
<b>12</b>	F.2	Noise Study	Prior to commercial operation	
<b>13</b>	G.1.	Decommissioning Study	Prior to commercial operation	
<b>14</b>	H.1	Project Energy Production	Due 7/15 each year or quarterly	
<b>15</b>	H.2	Wind Resource Use	Within 3 months after Operation or SCADA Access	
<b>16</b>	I.1.	As Builts	Within 60 days of Completions of Construction	
<b>17</b>	J.1.	Wind Rights	Within 30 days of Acquiring. Upon Request.	
<b>18</b>	K.2.	Failure to Start Construction	Within 2 years of Permit Issuance	
<b>19</b>	K.8	Site Manager	Prior to Operation	
<b>20</b>	Complaints	Report	Due Each Month or within 24 hours	

STATE OF MINNESOTA)  
COUNTY OF RAMSEY )SS

AFFIDAVIT OF SERVICE

I, Robin Benson, being first duly sworn, deposes and says:

That on the 20th day of October, 2009 she served the attached  
ORDER.

MNPUC Docket Number: ET-6657/WS-08-573

- XX By depositing in the United States Mail at the City of St. Paul, a true and correct copy thereof, properly enveloped with postage prepaid
- XX By personal service
- XX By inter-office mail

to all persons at the addresses indicated below or on the attached list:

Tricia DeBleeckere  
Docketing - OES  
Julia Anderson - OAG  
John Lindell- OAG

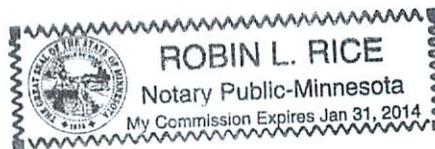
Robin Benson

Subscribed and sworn to before me,

a notary public, this 20th day of

October, 2009

Robin L. Rice  
Notary Public



Service List Name	First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret
OFF_SL_8-573_1	Arshia	Javaherian	arshiajavaherian@alliantenergy.com	Interstate Power and Light	PO Box 351 Cedar Rapids, IA 524060351	Paper Service	No
OFF_SL_8-573_1	Burl W.	Haar	burl.haar@state.mn.us	MN Public Utilities Commission	Suite 350 121 7th Place East St. Paul, MN 551012147	Electronic Service	Yes
OFF_SL_8-573_1	Jeffrey M.	Gray	JeffreyGray@allientenergy.com	Interstate Power and Light Company	P.O. Box 77007 4902 North Bitmore Lane Madison, WI 537071007	Paper Service	No
OFF_SL_8-573_1	Jim	Lepinski	jim.lepinski@psc.state.wi.us	Public Service Commission of Wisconsin	610 North Whitney Way PO Box 7854 Madison, WI 537077854	Paper Service	No
OFF_SL_8-573_1	John	Lindell	agorud.ecf@state.mn.us	OAG-RUD	900 BRM Tower 445 Minnesota St St. Paul, MN 551012130	Electronic Service	Yes
OFF_SL_8-573_1	Julia	Anderson	Julia.Anderson@state.mn.us	MN Office Of The Attorney General	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012131	Electronic Service	Yes
OFF_SL_8-573_1	Katie	Troe	N/A	Safe Wind in Freeborn County	27510 - 775th Avenue Clarks Grove, MN 56016	Paper Service	No
OFF_SL_8-573_1	Robyn	Woeste	robynwoeste@alliantenergy.com	Interstate Power and Light Company	P.O. Box 351 200 First St SE Cedar Rapids, IA 524060351	Paper Service	No
OFF_SL_8-573_1	Ronald M.	Giteck	ron.giteck@state.mn.us	Office Of Attorney General	Residential Utilities Division 445 Minnesota Street, 900 BRM Tower St. Paul, MN 55101	Paper Service	Yes
OFF_SL_8-573_1	Sharon	Ferguson	sharon.ferguson@state.mn.us	MN Department Of Commerce	85 7th Place E Ste 500 Saint Paul, MN 551012198	Electronic Service	Yes

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