



**BEFORE THE MINNESOTA PUBLIC UTILITIES  
COMMISSION**

**COMMENTS AND RECOMMENDATIONS OF THE  
MINNESOTA DEPARTMENT OF COMMERCE  
ENERGY FACILITY PERMITTING STAFF**

DOCKET No. E,G999/M-07-1102

Meeting Date: December 20, 2007

Agenda Item # 8

Company: All Wind Developers and Minnesota Counties

Docket No. E,G999/M-07-1102

In the Matter of Establishment of General Permit Standards for the Siting  
of Wind Generation Projects Less than 25 Megawatts

Issue(s): Should the Commission establish general wind permit standards  
recommended by the Department and required by Minnesota Session  
Laws 2007, Chapter 136, Section 13?

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651-296-2096

**Relevant Documents** (in Commission Packet)

PUC Letter Requesting the Department's Recommendations	September 20, 2007
DOC Notice of Public Comment Period	September 28, 2007
Comments of Wadena County	October 3, 2007
Comments of Southwest Regional Development Commission	October 12, 2007
Comments of the Lyon County Board of Commissioners	October 22, 2007
Comments of Dakota County	October 30, 2007
Comments of Paul Jacobs	October 6, 2007

**Relevant Documents continued on next page**

Comments of 17 “CBED Participants and Advocates	Various Dates
Comments of Lyon County Public Works	October 31, 2007
Comments of the Minnesota Department of Natural Resources	October 31, 2007
Comments of PPM Energy	October 31, 2007
Comments of Scott Riddlemoser	October 31, 2007
Comments of The Minnesota Project	October 31, 2007
Supplemental Comments of the DNR	October 31, 2007

The enclosed materials are work papers of the Department of Commerce Energy Facility Permitting Staff. They are intended for use by the Public Utilities Commission and are based on information already in the record unless otherwise noted.

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**Documents Attached**

1. 2007 Amendments to Minnesota Statutes Chapter 216F
2. Proposed General Wind Turbine Permit Setbacks and Standards for LWECS Facilities Permitted by Counties

(Note: Relevant documents and additional information can be found on eDockets (07-1102) or the PUC Facilities Permitting website: <http://energyfacilities.puc.state.mn.us>)

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**Statement of the Issues**

Should the Commission establish general wind permit standards recommended by the Department and required by Minnesota Session Laws 2007, Chapter 136, Section 13?

**INTRODUCTION AND BACKGROUND**

In 1995, the Minnesota Legislature enacted the Minnesota Wind Siting Act (Minnesota Statutes Chapter 216F) which established jurisdictional thresholds and procedures to implement the state’s authority to issue site permits for large wind energy conversion systems (LWECS). Permanent rules to implement the Wind Siting Act were adopted by the Minnesota Environmental Quality Board (EQB) in February 2002 (Minnesota Rules Chapter 7836). In 2005, the Legislature transferred the site permitting for LWECS to the Minnesota Public Utilities Commission (PUC or Commission).

To date, the Wind Siting Act has established that site permits for wind facilities with a combined nameplate capacity of 5 megawatts (MW) or more are subject to the PUC’s review and permitting process under Minnesota Statutes Chapter 216F and Minnesota Rules Chapter 7836. Site permitting for wind facilities with a combined nameplate capacity of less than 5 MW, also called small wind energy conversion systems (SWECS) are permitted by local units of governments.

During the 2007 legislative session, amendments to the Wind Siting Act were enacted; they are attached to these comments and recommendations (see attachment 1, Minnesota Session Laws 2007, Chapter 136, Sections 12-14). In summary, the amendments:

1. Establish definitions and procedures requiring the Commissioner of the Department of Commerce to make LWECS project size determinations for LWECS permit applications submitted to counties. The amendment states that an application to a county for an LWECS permit is not complete without a project size determination from the Commissioner.
2. Provide the option for counties to “assume the responsibility for processing applications for permits required” by the Wind Siting Act for LWECS facilities less than 25 MW in total nameplate capacity beginning in January 15, 2008. In providing this option, the Legislature recognized that there was a need for some standardization of siting parameters that would support consistent and orderly development of Minnesota’s wind resource. It tasked the Commission with establishing general permit standards by January 15, 2008.
3. Allow the PUC and counties to grant variances to the PUC general permit standards and allows counties to adopt ordinance standards more restrictive than the PUC’s general permit standards.

## **PROCESS AND PROCEDURES**

At the Commission’s August 23, 2007, agenda meeting, the Commission requested that the Department of Commerce (DOC) Energy Facilities Permitting (EFP) staff consult with stakeholders and prepare for the Commission’s consideration general permit standards and setback recommendations to satisfy the legislative requirement.

### ***Public Notice***

On September 28, 2007, the DOC EFP staff mailed a notice of comment period to all Minnesota county planning and zoning administrators, to the Power Plant Siting Act general mailing list and to persons on recent wind project mailing lists. The notice provided background information, provided links to additional detailed information and established a comment period ending October 31, 2007.

### ***Additional Public Outreach***

The DOC EFP staff gave presentations about this proceeding at the Association of Minnesota Counties (AMC) environment policy committee meeting in St. Cloud, at AMC district meetings in Winona and Fergus Falls, at the Rural Minnesota Energy Board, at the Minnesota Association of Counties Planning and Zoning Administrators (MACPZA) District E and F meeting, and to a coalition of wind developers based in Pope County.

The DOC EFP staff has had many informal conversations with county planning and zoning officials, wind developers, state agency staff, and other interested persons about

the PUC's general permit standards, about county options for taking on greater responsibility for processing applications for LWCES site permits, and about wind facility siting in general. While these conversations are not reflected in the official record, they have been constructive, have clarified certain issues, and helped establish and improve working relationships, especially between state and county permitting officials.

### ***Public Comments***

Twenty-six written comment letters (17 of which were a single form letter) were received during the public comment period. Comments focus on specific areas of concern and requests that the PUC modify certain historic LWCES permit setbacks or conditions for the general permit standard.

### ***Next Steps***

The Wind Siting Act amendments also call for the PUC and DOC to provide assistance to counties with respect to processing LWCES permit applications and for DOC to provide forms and assistance to project developers to make a size determination request. Following PUC adoption of a general permit standards and setback recommendations, DOC EFP will develop guidance materials about the standards and permitting process and conduct information and training sessions for counties and project developers.

## **COMMENTS AND ANALYSIS**

Written comments in the record and oral comments made by numerous stakeholders to DOC EFP staff have indicated that most stakeholders generally agree that the state wind site permitting process, standards and setbacks provide public safety protections, protect the wind rights of landowners and require permittees to conduct due diligence to avoid unforeseen impacts, all resulting in orderly wind development. Several recommended that the general wind permitting standards and setbacks should require that wind projects permitted by Minnesota counties be subject to the same level of pre-construction studies, due diligence, and wind access buffer setbacks as LWCES projects permitted by the PUC.

Some stakeholders did suggest changes to some of the PUC's historic standards and setbacks. The most significant issues raised and changes requested by stakeholders in the record are summarized below sorted by issue, together with DOC EFP staff responds to and comments on them.

### ***Permit Application Processing Procedures***

The Wadena County planning and zoning administrator and the Southwest Regional Development Commission (SWRDC) submitted comments requesting clarification on what steps a county is required to take if it chose to assume responsibility for permitting LWCES less than 25 MW in nameplate capacity.

Both Lyon County and Wadena County requested clarification about how county wind ordinances would be considered by the PUC if it was reviewing a LWCES proposal in

the county. Lyon County indicates that its ordinances governing small wind energy conversion systems (SWECS) are more restrictive than the PUC's historic minimum standards and that it might strengthen its current standards to require greater setbacks.

**Staff analysis and comment:**

The 2007 amendments to Minnesota Statutes Chapter 216F state that counties wishing to assume responsibility for processing applications, must do so by passing a resolution of the county board and upon written notice to the Commission. EFP staff will cover this issue in guidance documents and training.

In addition, Minnesota Statutes 216F.081, allows counties to adopt more restrictive ordinances than the PUC's general permit standards. It also directs the PUC to take those more restrictive standards into consideration when permitting LWECS within such counties. DOC EFP staff routinely review county ordinances when analyzing LWECS permit applications and local governments are given the opportunity to comment during the PUC permitting process.

***Wetland Setbacks***

Minnesota Department of Natural Resources (DNR) recommended that "based on existing shoreland districts and general environmental issues" the PUC should establish a 1,000 foot turbine setback from all wetlands, streams, rivers and lakes listed in the state Public Waters Inventory (PWI) and those listed on the National Wetlands Inventory (NWI). The DNR's proposed wetland setback would not apply to Minnesota Wetlands Conservation Act "exempt" wetlands, which are often called "farmed wetlands."

**Staff analysis and comment:**

This 1,000 foot setback from all wetlands listed in the PWI and NWI inventories, except those wetlands listed as Wetland Conservation Act "exempt" wetlands, is the largest, most significant proposed change to the PUC's historic standards. If adopted, it would exclude vast amounts of lands from future wind development.

DNR provides no research in support of such a wetland setback in its comments other than stating that it is "based on existing shoreland districts and general environmental issues." DOC EFP staff has discussed the proposed setback with a number of DNR staff and has encouraged them to provide research, evidence and rationale for such a setback. In a letter received on December 7, 2007, the DNR supports deferring action on the wetland setback to provide time for the DNR and other stakeholders to further explore the issue.

The proposed setback would have a large impact, especially when applied to the small wetlands. As an example, DOC EFP staff calculates that a 1,000 foot setback from a square, 1 acre wetland would exclude wind development on approximately 112 acres land. A 1,000 foot setback from a square, 10 acre wetland would exclude approximately 162 acres of land from wind development. Finally, the same setback from a square, 100 acre wetland excludes a total of 383 acres from wind development.

PUC's historic practice is to prohibit placement of wind turbines in wetlands, but require no setback from wetlands. This practice could be retained as an interim standard, while DOC EFP staff further investigates wetland issues with the DNR and other stakeholders. PUC could modify the standard at a future date, based on the record developed as a result of those investigations. Staff also notes that changes suggested below for setbacks from public conservation lands may address some of DNR's concerns regarding wetlands.

***Wind Access Buffer Setback***

Seventeen persons, self identified as participants and advocates for Community Based Energy Development (CBED) projects, submitted an identical form letter to the DOC EFP staff commenting setback issues. The CBED advocates indicate that the wind access buffer setback historically applied by the PUC to protect the wind rights of landowners adjacent to, but not participating in, the permitted project is overly conservative and does not economically or efficiently utilize state wind resources. They request a reduction of the wind access buffer from 3 rotor diameters (RD) on the crosswind (typically east-west) axis and 5 RD on the predominant (typically north-south) axis to a distance of 2 RD east-west and 4 RD north-south. No evidence is provided to support this request. The CBED advocates indicate that wind developers should not be required to obtain wind rights nor apply the wind access buffer setback from non-participating landowners owning parcels less than 15 acres in size. The CBED advocates indicate that the PUC should not require this setback from publicly owned conservation lands, such as state wildlife management areas.

The DNR's comments request that the PUC require the same 3 RD by 5 RD wind access buffer setback be applied to publicly owned conservation lands, such as state wildlife management areas. In essence, the DNR's comment requests that the wind rights above public lands be given the same treatment and setbacks as wind rights above private lands not controlled by the permittee.

PPM Energy indicated that the current wind access buffer setback is appropriate given the prevailing wind directions in Minnesota and the wake effects (turbulence) between wind turbines. PPM Energy provided a specific example of a case where the company's wind rights had been negatively affected by inadequate wind rights setback requirements in a Minnesota county. PPM Energy stated that it believes that the Minnesota state permitting process is thorough, open to the public, and protects the wind-rights interests of participating and non-participating landowners.

**Staff analysis and comment:**

The wind access buffer setback is an external setback from lands and wind rights outside of the Applicant's or permittee's site control. The purpose of the wind access buffer setback is to protect the wind and property rights of persons outside the permitted project boundary and persons within the project boundary who are not participating the project. The setback prevents wind developers from "taking"

the wind rights and future wind development potential from adjacent landowners without consent.

The wind access buffer requires wind turbines to be setback from the boundary of the lands and wind rights the permittee controls a distance of 5 rotor diameters (RD) (approximately 1280 – 1640 ft) on the predominant wind axis or downwind (typically north-south), 3 RD (approximately 760 – 985 ft) on the secondary axis or crosswind (typically east-west) if wind rose shows lesser winds from secondary or crosswind direction. This setback would result in a 6 RD by 10 RD setback between turbines in cases where two PUC permitted wind projects were built adjacent to one another. The lands and wind rights site control area for projects reviewed and permitted by the PUC typically consist of thousands of acres (mostly contiguous) and dozens of individually owned parcels. The wind access buffer setback is measured from the outer boundary of a permittee's site control area; it does not apply to each interior property line.

Turbulence (also called wake effects), whether naturally occurring or caused by nearby wind turbines, can have significant negative impacts on the amount of energy a wind turbine can produce, can significantly increase maintenance costs, and can lead to premature failure of turbine components. Turbulence is an economic and reliability issue for owner of the wind facility and the utility purchasing energy output from the facility. Turbulence generated by a wind facility can affect lands and wind rights controlled by other parties and impact future wind development opportunities, if the intensity of the turbulence is high turbulence.

DOC EFP staff experience and information from experts and practitioners in the field of wind turbine siting have consistently affirmed that wind turbines be spaced, depending on site characteristics, at least 4 RD and up to 12 RD apart on the predominant wind axis to reduce or minimize, but not completely eliminate, the effects that wind turbine induced turbulence on turbines downwind.

DOC EFP staff concur with PPM Energy's comments that the wind access buffer setback at 3 RD on the secondary wind axis (typically east-west) by 5 RD on the predominant wind (typically north-south) axis provides a tested, conservative permitting approach that protects wind rights and future development options of adjacent rights owners.

**Setbacks from Public Lands.** The DNR's request to apply the wind access buffer setback to publicly owned conservation lands is reasonable and supported by DOC EFP staff and should be extended to all public lands not controlled by the permittee. The wind development rights to public lands should be treated just the same as the wind rights over privately owned lands. The state, or any other owner of public land, could choose to develop the wind resource above its lands, or allow a wind developer to do so through easements and development agreements.

**Setback from Small Parcels.** DOC EFP staff finds no basis to support the CBED advocates request to eliminate the wind access buffer setback from non-participating property owners with parcels less than 15 acres in size. As described earlier, all of the wind projects reviewed and permitted by the PUC (and EQB prior to July 2005) have been comprised of dozens of individual parcels of land and wind rights, totaling thousands of acres of land for each LWECS project. Permittees have successfully developed projects while applying the wind access setbacks from small, non-participating landowners for many years.

Applying the wind access buffer setback to small parcels not controlled by a wind developer can complicate site layout, can result in a large setbacks, and may require the developer to obtain additional wind rights. However, DOC EFP staff finds no rationale in statute or rule to treat one person's wind rights differently from another person's.

### ***Internal Turbine Spacing***

The CBED advocates' comments indicate that the PUC should not regulate turbine spacing within a LWECS facility, nor require wake loss analyses prior to construction, as both are simply a snapshot of expected performance of the facility.

#### **Staff analysis and comment:**

As discussed above, as the wind moves through the blades of wind turbines, turbulence (also called wind wake) is created and travels downwind for long distances. The purpose of the internal turbine spacing setback and requirement that wake loss studies be submitted is to ensure that LWECS projects permitted by the PUC are designed and sited in a manner which ensures efficient use of the wind resources, long term energy production, and reliability (Minn. Stat. 216F.03 and Minn. Rules 7836.0200 call for PUC to "site LWECS in an orderly manner compatible with environmental preservation, sustainable development and the efficient use of resources"). Spacing turbines too close together, especially on the predominant wind axis, will result in lower energy production, may increase maintenance costs, and could subject downwind turbines to turbulence intensity levels higher than the turbulence levels for which they were designed.

DOC EFP staff review of research and discussions with experts in the field affirm that internal turbine spacing closer than 3x5 RD is aggressive, may create high production losses, and reduces turbine reliability depending on site characteristics, wind resources, and site layout. DOC EFP staff concludes that maintaining the PUC's 3x5 RD internal turbine spacing setback and requirement to submit wind wake loss studies is a reasonable approach to ensuring that LWECS sited make the best use of wind resources, prevents unnecessary production losses, and promotes reliability.

### ***Setback from Public Road Rights-of-Way and Trails***

The DNR and Dakota County suggest increasing setbacks from public road rights-of-way to total turbine height or slightly more (approximately 425 feet to slightly more than 500

feet); DNR further suggests applying the same setback from state trails and other recreational trails. Dakota County also proposes establishing new, unspecified setbacks where high volume roads are present or to accommodate planned transportation expansion projects.

**Staff analysis and comment:**

**Setback from Roads.** The PUC has historically required wind turbines to be setback a minimum of 250 feet from the edge of public road rights-of-way. The purpose of the setback is to prevent ice from shedding off wind turbines onto public roads. When ice collects on turbine blades, they lose ability to effectively transfer wind into mechanical energy, much like an airplane losing lift when ice forms on its wings. A wind turbine will detect and shut down in icing conditions. As the ice accumulated on turbines melts, it will generally drop from turbines onto lands immediately below the blades. Despite asking a number of wind developers, maintenance technicians, and local government officials about the subject over the past several years, the DOC EFP staff has never received a report of ice shed from turbines being deposited on public roads. DOC EFP staff is aware that several maintenance vehicles parked immediately adjacent to wind turbines have been damaged by falling ice.

As amended, Minnesota Statutes 216F.081, allows counties to adopt more restrictive public road setback ordinances than the PUC's general permit standards. It also directs the PUC to take those more restrictive standards into consideration when permitting LWECs within such counties. In addition, the PUC or a county may require larger road setbacks on a case-by-case basis in situations where a greater setback is justified.

This same case-by-case approach can also be used to address setbacks from high volume roads that may be widened in future transportation expansion projects.

DOC EFP staff concludes that maintaining the minimum 250 foot turbine setback from the edge of public road rights-of-ways continues to be reasonable.

**Setbacks from Recreational Trails.** State trails, which are generally multi-use recreational trails often on inactive railroad rights-of-way, traverse a variety of terrains and landscapes across the state, including forested areas in the northeast and agricultural areas in the southwest. Setbacks are primarily to enhance the aesthetic enjoyment of the trail user; however, the desires of the owner of the property through which the trail runs also should be considered. Due to this variability, DOC EFP staff concludes that setbacks should be developed and applied to state trails on a case-by-case basis. Setbacks from other recreational trails also can and should be considered on a case-by-case basis in recognition that there are many types of permanent and temporary recreational trails across the state; some may have routes that are subject to change on an annual basis, such as snowmobile club trails on agricultural lands.

***Setbacks from Specific Land Use Zoning Districts***

Dakota County's comments propose establishing new, unspecified setbacks from DNR shoreland districts, from the Mississippi River National River and Recreation Area, from commercial and other urban land use zoning districts. The county's comments indicate that the PUC's historic standards and setbacks appear to be most applicable in primarily agricultural areas, not urbanizing areas such as portions of Dakota County. The county indicated that the PUC general permit standards ensure that LWECS are sited in a manner which will not interfere with future urban development, including taking into consideration local comprehensive plans when reviewing LWECS site permits.

**Staff analysis and comment:**

DOC EFP staff agrees that designated urban, suburban, residential and bluff-land protection districts are important to consider when siting and permitting LWECS. DOC EFP staff routinely review county land use zoning districts when analyzing LWECS permit applications and the PUC or counties can take the need for setbacks from such districts under consideration during the process.

***Decommissioning and Facility Retrofit or Expansion***

Mr. Scott Riddlemoser, a resident of Balaton, Minn., submitted comments raising concerns about and recommendations on decommissioning issues and urging review of permits if a permittee seeks to retrofit or otherwise modify the permitted facility. SWRDC also requested clarification on decommissioning plans raise questions about phased and projects seeking to expand.

**Staff analysis and comment:**

The Wind Siting Rules and PUC issued LWECS permits have always required decommissioning plans virtually identical to the language recommended by Mr. Riddlemoser. The PUC or counties have the ability to revisit and amend requirements for decommissioning plans as necessary throughout the full life of the LWECS facility permitted. Likewise, a facility retrofit or expansion would require PUC siting process review and site permit action, as per Minnesota Rules Chapter 7836. These comments support the need to retain these requirements in the general wind permit standards.

***Road Use and Transportation Issues***

SWRDC offered several points and considerations on transportation issues related to transporting wind project equipment to the site, bridge and weight restrictions, local road permits required and construction related road damages.

**Staff analysis and comment:**

DOC EFP staff has discussed transportation issues and concerns with SWRDC and several county road engineers, and understand their concerns. Road engineers have indicated that efforts are being initiated at the county level to standardize and formalize aspects of local road use, damage, and access related to and planning related to wind turbine transportation, construction, and ongoing maintenance. These issues have always been and will continue to be handled by

the governmental bodies controlling each road and road right-of-way, as noted in PUC wind permit conditions. These comments support the need to retain those conditions in the general wind permit standards.

***Determining Project Size and Related Issues***

The SWRDC requested clarification on determining a LWECS project's size in situations where a wind developer is proposing a phased project and where developers propose "aggregated" projects made up of numerous separate corporate owners sharing a single site. SWRDC commented on issues related to determining permitting jurisdiction when a project straddles multiple county or state boundaries.

**Staff analysis and comment:**

This issue is addressed in Minnesota Statute 216F.011, which provides a process and standards for the Commissioner of the Department of Commerce to use in making LWECS project size determinations. In addition, the amendment states that an application to a county for an LWECS permit is not complete without a project size determination from the Commissioner. DOC EFP will cover this issue in its guidance materials and training sessions.

***Permit Cost***

CBED advocates request that permit costs for the site permit and any additional studies required by the PUC or other state agencies be capped at a cost of \$1,000. They state that "since CBED participants are state residents and pay for these services through taxes, no state agency requested permit or study should cost more than \$1,000."

**Staff analysis and comment:**

The costs associated with site permit processing by the PUC are governed by Minnesota Rule 7836.1500, which establishes that permit applicants shall pay the actual costs in processing an application.

The DOC EFP staff has prepared the attached proposed "General Wind Turbine Permit Setbacks and Standards for LWECS Facilities Permitted by Counties Pursuant to Minnesota Statute 216F.08." The proposed standards and setbacks maintain nearly all of the PUC historic LWECS permit standards and setbacks, which have been applied to wind turbine site permits over the past 12 years. As discussed above, there are good reasons to slightly modify specific permit setbacks related to public lands and to institute a case-by-case review of setbacks from trails and high volume roads. Overall, these proposed changes to historic standards and setbacks could be characterized as minor. The proposed setbacks and standards incorporate these changes. The need for and appropriate size of setback from wetlands cannot be determined at this time and requires more analysis.

## **COMMISSION DECISION OPTIONS**

### **A. General Wind Turbine Permit Setbacks and Standards**

1. Adopt the DOC EFP staff recommended Large Wind Energy Conversion System (LWECS) General Wind Turbine Permit Setbacks and Standards. The general permit standards adopted by Commission shall the apply to large wind energy conversion system site permits issued by counties pursuant to Minnesota Statue 216F.08 and to permits issued by the commission for LWECS with a combined nameplate capacity of less than 25,000 kilowatts.
2. Adopt the DOC EFP staff recommended Large Wind Energy Conversion System (LWECS) General Wind Turbine Permit Setbacks and Standards with amendments. The general permit standards adopted by Commission shall the apply to large wind energy conversion system site permits issued by counties pursuant to Minnesota Statue 216F.08 and to permits issued by the commission for LWECS with a combined nameplate capacity of less than 25,000 kilowatts.
3. Make some other decision deemed more appropriate.

### **B. Setback from Wetlands**

1. Request that the DOC EFP staff further investigate wetland setback issues with stakeholders and develop recommendations for PUC consideration.
2. Retain PUC's historic practice of prohibiting placement of wind turbines in wetlands, but requiring no setback from them.
3. Make some other decision deemed more appropriate.

**DOC EFP Staff Recommendation:** Staff recommends Option A. 1. and B 1.

## Minnesota Session Laws 2007 - Chapter 136

### Sec. 12. [216F.011] SIZE DETERMINATION.

(a) The total size of a combination of wind energy conversion systems for the purpose of determining what jurisdiction has siting authority under this chapter must be determined according to this section. The nameplate capacity of one wind energy conversion system must be combined with the nameplate capacity of any other wind energy conversion system that:

- (1) is located within five miles of the wind energy conversion system;
- (2) is constructed within the same 12-month period as the wind energy conversion system; and
- (3) exhibits characteristics of being a single development, including, but not limited to, ownership structure, an umbrella sales arrangement, shared interconnection, revenue sharing arrangements, and common debt or equity financing.

(b) The commissioner shall provide forms and assistance for project developers to make a request for a size determination. Upon written request of a project developer, the commissioner of commerce shall provide a written size determination within 30 days of receipt of the request and of any information requested by the commissioner. In the case of a dispute, the chair of the Public Utilities Commission shall make the final size determination.

(c) An application to a county for a permit under this chapter for a wind energy conversion system is not complete without a size determination made under this section. **EFFECTIVE DATE.** This section is effective January 15, 2008.

### Sec. 13. [216F.08] PERMIT AUTHORITY; ASSUMPTION BY COUNTIES.

(a) A county board may, by resolution and upon written notice to the Public Utilities Commission, assume responsibility for processing applications for permits required under this chapter for LWECS with a combined nameplate capacity of less than 25,000 kilowatts. The responsibility for permit application processing, if assumed by a county, may be delegated by the county board to an appropriate county officer or employee. Processing by a county shall be done in accordance with procedures and processes established under chapter 394.

(b) A county board that exercises its option under paragraph (a) may issue, deny, modify, impose conditions upon, or revoke permits pursuant to this section. The action of the county board about a permit application is final, subject to appeal as provided in section 394.27.

(c) The commission shall, by order, establish general permit standards, including appropriate property line set-backs, governing site permits for LWECS under this section. The order must consider existing and historic commission standards for wind permits issued by the commission. The general permit standards shall apply to permits issued by counties and to permits issued by the commission for LWECS with a combined nameplate capacity of less than 25,000 kilowatts. The commission or a county may grant a variance from a general permit standard if the variance is found to be in the public interest.

(d) The commission and the commissioner of commerce shall provide technical assistance to a county with respect to the processing of LWECS site permit applications. **EFFECTIVE DATE.** This section is effective January 15, 2008.

### Sec. 14. [216F.081] APPLICATION OF COUNTY STANDARDS.

A county may adopt by ordinance standards for LWECS that are more stringent than standards in commission rules or in the commission's permit standards. The commission, in considering a permit application for LWECS in a county that has adopted more stringent standards, shall consider and apply those more stringent standards, unless the commission finds good cause not to apply the standards.

**PROPOSED**  
**Minnesota Public Utilities Commission**  
**General Wind Turbine Permit Setbacks and Standards for Large Wind**  
**Energy Conversion System (LWECS) Permitted Pursuant to Minnesota**  
**Statute 216F.08**

<b>Resource Category</b>	<b>General Permit Setback</b>	<b>Minimum Setback</b>
<b>Wind Access Buffer (setback from lands and/or wind rights not under permittee's control)</b>	Wind turbine towers shall not be placed less than 5 rotor diameters (RD) from all boundaries of developer's site control area (wind and land rights) on the predominant wind axis (typically north-south axis) and 3 rotor diameters (RD) on the secondary wind axis (typically east-west axis), without the approval of the permitting authority. This setback applies to all parcels for which the permittee does not control land and wind rights, including all public lands.	3 RD (760 – 985 ft) on east-west axis and 5 RD (1280 – 1640 ft) on north-south using turbines with 78 – 100 meter rotor diameters.
<b>Internal Turbine Spacing</b>	The turbine towers shall be spaced no closer than 3 rotor diameters (RD) for crosswind spacing (distance between towers) and 5 RD downwind spacing (distance between strings of towers). 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.	5 rotor diameters downwind spacing 3 rotor diameters apart for crosswind spacing
<b>Noise Standard</b>	Project must meet Minnesota Noise Standards, Minnesota Rules Chapter 7030, at all residential receivers (homes). Residential noise standard NAC 1, L50 50 dBA during overnight hours. Setback distance calculated based on site layout and turbine for each residential receiver.	Typically 750 – 1500 ft is required to meet noise standards depending on turbine model, layout, site specific conditions.
<b>Homes</b>	At least 500 ft <u>and</u> sufficient distance to meet state noise standard.	500 feet + distance required to meet state noise standard.
<b>Public Roads and Recreational Trails</b>	The turbine towers shall be placed no closer than 250 feet from the edge of public road rights-of-way. Setbacks from state trails and other recreational trails shall be considered on a case-by-case basis.	Minimum 250 ft
<b>Meteorological Towers</b>	Meteorological towers shall be placed no closer than 250 foot from the edge of road rights-of-way and from the boundaries of developer's site control (wind and land rights). Setbacks from state trails and other recreational trails shall be considered on a case-by-case basis.	Minimum 250 ft
<b>Wetlands</b>	No turbines, towers or associated facilities shall be located in public waters wetlands. However, electric collector and feeder lines may cross or be placed in public waters or public water wetlands subject to DNR, FWS and/or USACOE permits.	No setback required pending further PUC action.
<b>Native Prairie</b>	Turbines and associated facilities shall not be placed in native prairie unless approved in native prairie protection plan (see native prairie standard below).	No setback required.

	Native prairie protection plan shall be submitted if native prairie is present.	
<b>Sand and Gravel Operations</b>	No turbines, towers or associated facilities in active sand and gravel operations, unless negotiated with the landowner.	
<b>Aviation (public and private airports)</b>	No turbines, towers or associated facilities shall be located so as to create an obstruction to navigable airspace of public and private airports in Minnesota or adjacent states and/or providences.	Setbacks or other limitations determined in accordance with MNDOT Department of Aviation and Federal Aviation Administration requirements.

### **Additional General Permit Standards**

**Pre-Application Project Size Determination.**

Pursuant to Minnesota Statute 216F.011, applications to a county for a LW ECS permit are not complete without a project size determination provided by the Commissioner of the Minnesota Department of Commerce. Requests for size determination shall be submitted on forms provided by the Department of Commerce. Upon written request of a project developer and receipt of any supplemental information requested by the commissioner, the commissioner of commerce shall provide a written size determination within 30 days. In the case of a dispute, the chair of the Public Utilities Commission shall make the final size determination.

Pursuant to Minnesota Statute 216F.011, the total size of a combination of wind energy conversion systems for the purpose of determining what jurisdiction has siting authority must be determined according to the criteria below:

The nameplate capacity of one wind energy conversion system must be combined with the nameplate capacity of any other wind energy conversion system that:

- (1) is located within five miles of the wind energy conversion system;
- (2) is constructed within the same 12-month period as the wind energy conversion system; and
- (3) exhibits characteristics of being a single development, including, but not limited to, ownership structure, an umbrella sales arrangement, shared interconnection, revenue sharing arrangements, and common debt or equity financing.

**Wind Turbines Design Standards.** All turbines shall be commercially available, utility scale, not prototype turbines. Turbines shall be installed on tubular, monopole design towers, and have a uniform white/off white color. All turbine towers shall be marked with a visible identification number.

**Underground and Overhead Electric Collection and Feeder Lines.** The permittee shall place electrical lines, known as collectors, communication cables, and associated electrical equipment such as junction boxes 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.

The permittee shall place overhead or underground 34.5 kV 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. Feeder lines may be placed on public rights-of-way only if approval or the required permits have been obtained from the governmental unit responsible for the affected right-of-way. In all cases, the permittee shall avoid placement of feeder lines in locations that may interfere with agricultural operations. Notwithstanding any of the requirements to conduct surveys before any construction can commence, the permittee may begin immediately upon issuance of a LWECS site permit to construct the 34.5 kV feeder lines that will be required as part of the project.

Any guy wires on the structures for feeder lines shall be marked with safety shields.

**Topsoil and Compaction.** The permittee must protect and segregate topsoil from subsoil on all lands unless otherwise negotiated with affected landowner. Must minimize soil compaction of all lands during all phases and confine soil compaction to as small area as possible.

**Fences.** The permittee shall promptly repair or replace all fences and gates removed or damaged during project life and provide continuity of electric fence circuits.

**Drainage Tile.** The permittee shall take into account, avoid, promptly repair or replace all drainage tiles broken or damaged during all phases of project life unless otherwise negotiated with affected landowner.

**Equipment Storage.** The permittee shall negotiate with landowners to locate sites for temporary equipment staging areas.

**Public Roads.** The permittee shall identify all state, county or township roads that will be used for the LWECS Project and shall notify the permitting authority (PUC or county) and the state, county or township governing body having jurisdiction over the roads to determine if the governmental body needs to inspect the roads or issue any road permits 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.

Prior to construction, the permittee shall make satisfactory arrangements (including obtaining permits) for road use, access road intersections, maintenance and repair of damages with governmental jurisdiction with authority over each road. The permittee shall notify the permitting authority (PUC or county) of such arrangements upon request.

**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. 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.

**Private Roads.** The permittee shall promptly repair private roads, driveways or lanes damaged unless otherwise negotiated with landowner.

**Soil Erosion and Sediment Control.** Prior to commencing construction, the Permittee shall submit its National Pollution Discharge Elimination System (NPDES) construction permit issued by the Minnesota Pollution Control Agency (MPCA) to the permitting authority (PUC or county).

**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.

**Tree Removal.** The permittee shall minimize the removal of trees and shall not remove groves of trees or shelter belts without the approval of the affected landowner.

**Site 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 eight 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.

**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.

**Application of Herbicides.** Restrict use to those herbicides and methods approved by the Minnesota Department of Agriculture. The permittee must contact landowner prior to application.

**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 to turbine access roads, substations and wind turbines.

**Fire Protection.** Prior to construction, 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 register the LWECS in the local government's emergency 911 system.

**Native Prairie.** Native prairie plan must be submitted if native prairie is present and will be impacted by the project. 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 county

and DNR Commissioner 60 days prior to the start of 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, DNR and PUC or county.

**Electromagnetic Interference.** Prior to beginning construction, the permittee shall submit a plan 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 operation 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.

**Turbine Lighting.** 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.

**Pre-Construction Biological Preservation Survey:** The permittee, in consultation with DNR and other interested parties, shall request a DNR Natural Heritage Information Service Database search for the project site, 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 permitting authority (PUC or county) and DNR prior to the commencement of construction.

**Archeological Resource Survey and Consultation:** The permittee shall work with the State Historic Preservation Office (SHPO) at the Minnesota Historical Society and the State Archaeologist as early as possible in the planning process to determine whether an archaeological survey is recommended 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 permitting authority (PUC or county), 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 permitting authority (PUC or county) 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 permitting authority (PUC or county) of such discovery. The permittee shall not excavate at such locations until so authorized by the permitting authority (PUC or county) 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 permitting authority (PUC or county) and the MHS about the discovery. The permitting authority (PUC or county) 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.

**Project Energy Production:** The permittee shall, by July 15 of each year, report to the PUC on the monthly energy production of the Project and the average monthly wind speed collected at one permanent meteorological tower selected by the PUC during the preceding year or partial year of operation.

**Site Plan:** Prior to commencing construction, the permittee shall submit to the permitting authority (PUC or county) 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 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. The permittee shall have the right to move or relocate turbine sites due to the discovery of environmental conditions during construction, not previously identified, which by law or pursuant to this Permit would prevent such use. The permittee shall notify the permitting authority (PUC or county) of any turbines that are to be relocated before the turbine is constructed on the new site.

**Pre-construction Meeting:** Prior to the start of any construction, the permittee shall conduct a preconstruction meeting with the person designated by the permitting authority (PUC or county) to coordinate field monitoring of construction activities.

**Extraordinary Events:** Within 24 hours of an occurrence, the permittee shall notify the permitting authority (PUC or county) 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 of dead birds or bats of any variety on site. In the event of extraordinary 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 permitting authority (PUC or county) describing the cause of the occurrence and the steps taken to avoid future occurrences.

**Complaints:** Prior to the start of construction, the permittee shall submit to the permitting authority (PUC or county) the company's procedures to be used to receive and respond to complaints. The permittee shall report to the permitting authority (PUC or county) all complaints received concerning any part of the LWECS in accordance with the procedures provided in permit.

**As-Built Plans and Specifications:** Within 60 days after completion of construction, the permittee shall submit to the county and PUC a copy of the as-built plans and specifications. The permittee must also submit this data in a geographic information system (GIS) format for use in a statewide wind turbine database.

**Decommissioning Plan.** As part of its permit application, the permittee must submit a decommissioning plan describing the manner the permittee plans on meeting requirements of Minnesota Rule 7836.0500, subpart 13.

**Special Conditions:** Pursuant to Minnesota Statute 216F.04 and Minnesota Rule 7836.1000, the permitting authority (PUC or county) may adopt special permit conditions to LWECS site permits to address specific issues on a case-by-case basis.