



APPLICATION FILING REQUIREMENTS FOR WIND ENERGY PROJECTS IN WISCONSIN

**Version 4.5
August 2008**

**Public Service Commission of Wisconsin
Wisconsin Department of Natural Resources
Department of Agriculture, Trade, and Consumer Protection
Department of Transportation**



APPLICATION FILING REQUIREMENTS FOR CONSTRUCTION OF WIND FARM PROJECTS

Version 4.4

General Instructions

This Application Filing Requirement (AFR) applies to all wind energy power plant projects that require either a Certificate of Authority (CA) under Wis. Stat. § 196.49 or a Certificate of Public Convenience and Necessity (CPCN) under Wis. Stat. § 196.491 from the Public Service Commission of Wisconsin (PSC) as well as any Department of Natural Resources (DNR) permits necessary for the construction of such a project.¹ In addition, the Department of Agriculture, Trade, and Consumer Protection (DATCP) will use the applicant's responses to this AFR in preparing an Agricultural Impact Statement (AIS), should one be required.

Participating State Agencies:

The application filing requirements in this document list the basic information and format required by the PSC and DNR for applications to construct wind powered electric generation facilities in Wisconsin. The information will be used by the PSC and DNR in the preparation of either an Environmental Impact Statement (EIS) or an Environmental Assessment (EA) and to support applications for DNR permits.

Pre-application Consultation Process:

Pre-application consultation is required by law under Wis. Stat. § 30.025 (1m). The purpose of pre-application consultation is to help applicants refine the project application, and facilitate efficient regulatory review. Applicants should schedule pre-application consultation meetings with agency staffs well in advance of filing an application with the PSC. Consultation is also strongly recommended for projects not subject to permits under Wis. Stat. § 30.025. The filing requirements in this document will apply to most wind energy generation construction projects. However, the state recognizes that all projects are not alike and that the information needed for one project may not necessarily be appropriate for another. For this reason pre-application consultation with the agencies is extremely important. Early in the consultation process, agency staff will identify staff contacts, clarify which information requirements apply to the specific project application, and explain important elements of the state's review process.

Other Required Facilities:

The operation of a new wind powered generation plant will also require construction of ancillary facilities such as overhead and/or underground collector circuits, new substations, interconnections to the existing distribution or transmission grid, O&M buildings, access roads,

¹ The data required in this Application Filing Requirement are needed in order for the Commission to meet its obligations under Wis. Stat. §§ 1.11, 1.12, 30.025, 182.017, 196.025, 196.377, 196.49, and 196.491 and Wis. Admin. Code chs. PSC 4, 111, and 112.

and materials handling facilities. During the pre-application consultation phase, all ancillary facilities required for the project to operate at full capacity must be identified. At that time Commission and DNR staff will assist the applicant to determine what information on ancillary facilities will be required for a complete power plant application. Because the Commission must review and take final action on a CPCN application within 180 days of finding an application complete, it is critical that the applicant clearly understands what information will be necessary for the review of the project. All the information required for a complete application will be identified during the pre-application consultation process.

Biological Surveys:

Plant and/or animal surveys may be required for wind energy projects. The need for surveys will depend on the potential for impact to important natural resources that include, but are not limited to, high quality natural habitats and rare plant or animal populations.

Because there is a concern about the potential for bird and bat displacement and mortality, pre-construction bird and/or bat surveys may also be required for a project. Consultation with the DNR regarding pre-construction bird and bat surveys should be completed in advance of submitting a construction application to the Commission. Applicants should consult with the DNR early in the project development and site selection process and before designing any surveys. Pre-application consultation allows the Department to do a project-area screening to determine the need for and scope of surveys.

Pre-application consultations with the Department for the purposes of determining the need for biological surveys is a prerequisite for a complete construction case application with the PSC. Applicants should contact the DNR Office of Energy to arrange for a consultation and determination of survey need and scope. (Refer also to Section 5.4, page 23.)

Application Completeness:

The regulatory review process for CPCN projects starts when the state receives a complete application. PSC and DNR staff will examine the application during the 30-day completeness review period required under Wis. Stats. §196.491(3)(a)(2). The PSC will notify applicants by letter whether an application is or is not complete. For incomplete applications, the letter will provide a list of information items that must be provided in order to have a complete application.

In practice, most applications require significant modification before they can be determined complete. For incomplete applications, applicants will be required to provide additional information and/or analyses, as outlined in the determination of completeness letter. In cases where serious incompleteness issues exist, separate responses to incompleteness items can result in a confusing array of application documents that contain both modified and outdated information, often created under separate covers and organized in a variety of formats. In cases where incompleteness responses are numerous, applicants will be required to resubmit their applications after fully integrating all responses to staff's completeness questions. This is necessary in order to provide complete, accurate, and well organized applications for PSC and

DNR staff, the PSC Commissioners, and the public. Subsequent 30-day completeness review periods will begin after the responses to all completeness items are received.

The PSC must review and take final action on complete applications within 180 days of the date the application is judged complete. The PSC may petition the Circuit Court for an additional 180 days for project review and decision making.

Applicants should be aware that complete applications rarely answer all the questions that the state agencies must address. It is likely that applicants will be asked to provide additional information and data to the state. These information and data needs are often critical to agency review and the decision making process. Applicants must respond to all staff inquiries made subsequent to a determination of completeness in a timely, complete, and accurate manner.

DOT Permits and Reviews:

Wisconsin DOT OSOW (Oversize and Overweight) permits will be required for transporting wind turbine components to turbine construction sites. In addition, a review for high structure permits issued by the DOT's Bureau of Aeronautics may also be required (See Section 8.5). It is important for applicants to contact the Wisconsin DOT at an early stage in project development and before submitting an application to the PSC. For information on how to coordinate permitting efforts with DOT contact Dennis Leong, (608) 266-9910, email: dennis.leong@dot.state.wi.us or Ethan Johnson, (608) 261-6292, email: ethan.Johnson@dot.wi.us.

DNR Permits and Reviews:

DNR construction site erosion control and storm water management plans, wetland and waterway permits, and incidental take permits for endangered species may be required for a project. Depending on the location of the project and ancillary facilities being proposed, other DNR permits and approvals may be required. These may include permissions and easements to place facilities on state-owned lands under DNR management.

The results of an endangered resources (ER) review, based on a search of the Natural Heritage Inventory database (NHI) and input from DNR biologists, is required for project applications (See Section 5.9). For instructions on how to request an ER review refer to the following DNR website <http://www.dnr.state.wi.us/org/es/science/energy/ER> or contact the DNR Office of Energy conservation biologist, Shari Koslowsky at 608/261-4382 or by e-mail shari.koslowsky@wisconsin.gov. All ER review materials and reports are CONFIDENTIAL and may not be distributed to the general public. An application's ER review and all supporting materials should be filed as a confidential document under the PSC ERF system (see below).

By following Application Filing Requirements (AFR) and by participating in the pre-filing collaborative process the application will provide most of the information required to issue DNR permits. It is important to understand that even though an application is deemed complete for CPCN or CA purposes, additional information and modifications to project plans may be needed in order to complete the review process.

Independent Power Producers (IPPs) and Utilities:

In several sections of this AFR, IPPs proposing merchant plants and utilities are treated differently because of differences in the PSC's statutory authority. In those sections, such as Section 1.3, items that pertain only to utilities or to both utilities and IPPs are marked. In all other sections of this AFR where differences in treatment are not noted those sections apply to BOTH utilities and IPPs.

Electronic Filing System:

CPCN and CA applications must be filed electronically using the PSC's Electronic Regulatory Filing (ERF) system. Detailed project plans required under Wis. Stat. §196.491(3)(a)(3) must be filed with the DNR. Do not file a copy of the detailed project plan submitted to the DNR using ERF. Instead file a letter confirming that the project plan has been filed with the DNR. Include the date the detailed project plan was filed.

Instructions for filing under the ERF can be found at the following web site:

http://psc.wi.gov/apps/erf_public/default.aspx.

Applicants must also provide PSC and DNR staff with an electronic copy of the application in the latest version of Microsoft Word. If tables have been created in Microsoft Excel, then applicants must also provide digital copies of the Excel spreadsheets. In addition, provide a copy of the application and supporting maps and diagrams on CD or DVD, with the documents in *.PDF format. Copies of this CD/DVD will be provided to members of the public upon request. The files on the CD/DVD should be well organized, such that a person not familiar with PSC filings can easily locate desired information.

Paper copies, of the entire CPCN application must be received by the Commission before the state's 30-day completeness review period begins. Provide 25 copies² of the CPCN application for Commission use, three copies to the DNR's Office of Energy, plus one copy for each clerk and library as required by Wis. Stats. § 196.491(3)(a)1. Paper and digital copies of CA applications are also required. Applicants should contact the PSC case coordinator assigned to the project to verify the number of paper copies required for PSC use. Applicants must also provide three copies to the DNR Office of Energy. The DATCP will require one paper and one digital copy of the application as well as a digital copy of all GIS data submit for the project. Submit copies of the application to DATCP, Ag Impact Program, Ag Resource Management Division (PO Box 8911, 2811 Agriculture Drive Madison, WI 53708).

In addition to paper copies of the application, paper and digital copies of all maps, engineering diagrams, facility layouts, and aerial photographs must also be provided to PSC and DNR staff.

² Twenty-five copies are required in large part because the Commissioner's Office (CO) and the Office of General Council (OGC) must receive copies of the application in addition to project staff. Multiple copies of the application are needed in the CO since each Commissioner and Executive Assistant must be supplied with paper copies of the application. In addition, the OGC typically requires a copy for the General Council and one each for the attorneys assigned to the case. Members of the division's Core Management Team must also receive copies.

Questions about the number and format of maps, photos, and diagrams can be answered during the pre-application consultation meetings or by contacting the PSC case coordinator.

Reduction of Paper:

Applicants are required to minimize the physical size of their applications by eliminating superfluous information and bulk information not material to the case. The following examples should be used as a guide:

- When submitting required information such as local ordinances, land use plans or other local and county planning documents only submit those pages relevant to the information requirement, i.e. pages specific to land use controls, safety, or noise. If PSC staff is interested in having the entire document for context, staff will request the applicant to file one copy under a separate cover.
- Minimize duplicative information. For example, if certain information, such as a Developer's Agreement, is applicable to more than one section of the CPCN application, include the entire document as an Appendix and reference it in the application text.
- When submitting correspondence between the applicant and state, local, and federal government permitting, planning, and land management agencies, submit only copies of "official" correspondence, i.e. letters from the applicant to an agency and the agency response to the applicant. PSC staff needs to review this correspondence to verify that the applicant has applied for the necessary permits and to ascertain the status of the permit review. Do not include unofficial minutes of meetings or records of telephone conversations between the applicant/applicant's consultant and permitting agencies as these documents represent hearsay and are not considered factual information.
- Submit applications on double-sided printed pages. This includes the text of the application as well as copies of supporting documentation submitted in the application. Exceptions to this requirement are large maps and figures (sized larger than 8 1/2 x 11 inches).

Important notes on digital forms of graphics:

- All required drawings and maps identified in sections 1.1.11 and 1.2 must be supplied in both hard copy and digital formats.
 - Digital GIS map formats:
 - Provide map files in .mxd (ESRI ArcMap – v. 9x) format for all GIS maps in the application.

- Provide published map files in .pmf format for all GIS maps in the application.
- CAD may be used for scale drawings of proposed substation facilities, for example, AutoCad *.dwg format or *.dxf format is acceptable (check with PSC staff for the appropriate AutoCAD release). The preference is *.dwg.
- Geographic Information Systems (GIS) data files must be submitted in Shapefile format (ESRI ArcGIS 9x). All GIS data submitted must be projected to Wisconsin Transverse Mercator (WTM), a projection system unique to Wisconsin and used by Wisconsin state agencies. The WTM uses North American Datum (NAD) 83/91. The projection parameters for WTM are:

Projection	Transverse Mercator
Spheroid	GRS80
Scale Factor at Central Meridian	0.9996
Longitude of Central Meridian	90° W (-90°)
Latitude of Origin	0°
False Easting	520,000
False Northing	-4,480,000
Unit	meter

- Photographic renderings of proposed facilities on the existing landscape must be submitted in a high-resolution uncompressed *.tif format (preferred) or high-resolution *.jpg format.
- Digital versions of aerial photographic images of the existing landscape at the proposed plant site/sites **MUST** be suitable for use on the PSC’s GIS platform. **DO NOT** obscure any portion of the aerial photographic images provided in the application. Digital aerial photographic images must be properly georeferenced. All digital aerial photographic images **MUST** be accompanied by the geographic coordinate and projection system to which they have been georeferenced.
- Scanned maps and diagrams which cannot be submitted in any other format must be submitted in *.gif format at a depth of 256 colors or less.
- When providing maps, note facility locations but do not obscure map details.

Direct questions concerning these information requirements to William A. Fannucchi of the PSC staff, at (608) 267-3594, e-mail William.Fannucchi@psc.state.wi.us.

Application Filing Requirements (AFR) for Construction of a Wind Powered Electric Generation Facility Requiring either a CPCN or CA

A generation facility of 100 MW or greater requires an application for a Certificate of Public Convenience and Necessity (CPCN). A complete CPCN application will contain the information listed in this document. Exceptions will be documented during the pre-application consultation process. Information that an applicant believes does not apply to the proposed project may not be omitted without a showing as to why the information is not applicable. Applications must follow the organization and format of the AFR.

A Certificate of Authority (CA) will be required for any Wisconsin utility proposing to build a generation facility rated at less than 100 MW, where the cost exceeds the thresholds established in Wis. Admin. Code § PSC 112.05(3). These filing requirements also apply to CA projects. Consult with Commission staff prior to submitting an application.

PROJECT AREA AND TURBINE SITE ALTERNATIVES

Under Wis. Stat. §§ 1.11, 196.025, and 196.491, and Wis. Admin. Code ch. PSC 4, the Commission decision for CPCN and CA projects must include an evaluation of alternatives.

CPCN *(Applies to both Utilities and IPPs)*

For projects requiring a CPCN, under Wis. Stat. § 196.491(3), Commission review must include an evaluation of reasonable alternatives that include alternative locations and, in the case of utilities, alternative sources of supply (Wis. Stat. § 196.491(3)(d)3 and Wis. Admin. Code § PSC 4.70(2)(b)1). Applications must include:

1. Alternate project areas. For this analysis the application must describe the method and factors used to evaluate and eliminate competing project areas and why the proposed project site is the best possible option.
2. Alternate turbine sites. The applicant must provide alternate turbine sites for the Commission to consider. As a standard, an application should have a total number of viable turbine sites that is at least 25% greater than the minimum number of sites needed to achieve the rated output of the project. For example, for a 120 MW wind turbine project using 2 MW turbines, the application must identify and fully describe 75 turbine sites (60 sites + 15 alternate sites).
3. Alternate methods of supply. Describe the alternate methods of supply considered in the course of developing the proposed project including a no-build option. Alternate forms of supply can include other forms of renewable energy such as solar, biomass, fuel cells etc. For a utility project, an alternative source of supply could also be a purchase power

contract. This requirement that alternate methods of supply must be described does not apply to a CPCN application for a wholesale merchant plant, as defined in Wis. Stat. § 196.491(1)(w).

CA *(Applies to Utilities only)*

For projects under 100 MW requiring a CA under Wis. Stat. § 196.49 and Wis. Admin. Code ch. 112.05(3), the Commission must consider alternatives pursuant to Wis. Stat. § 1.11(2)(c)3 and Wis. Admin. Code chs. PSC 4.20(2)(e) and 4.70(2)(b)1. The application must include a description of reasonable alternatives that include, at a minimum, all project sites considered and a no-build alternative. The application must also describe the method and factors used to evaluate and eliminate competing project sites and why the proposed site is the best possible option.

It is not acceptable to break a single project into two or more smaller projects in order to avoid the regulatory review process under Wis. Stat. § 196.491 (3) or to avoid the regulatory review process under Wis. Stat. §196.49 (Wis. Admin. Code § PSC 112.)

1.0 PROJECT DESCRIPTION AND OVERVIEW

1.1 General Project Location and Description

- 1.1.1. Project location – Counties and townships of the project area.
- 1.1.2. General map showing project location, nearest community, and major roads. Include an inset map showing where the project is located in the state.
- 1.1.3. Provide the following information about the project:
 - 1.1.3.1. Size of project area in acres.
 - 1.1.3.2. Size (rated capacity), in megawatts, of the proposed project. *(If an actual turbine model is not yet under contract, the applicant must provide information on at least two turbine models that are being considered. Those turbines must represent the maximum and minimum megawatt size under consideration for purchase for the project.)*
 - 1.1.3.3. Number of turbine sites identified for the project. If the project is designed for 100MW or greater, identify how many sites will be considered as alternate sites.

1.2 Ownership

Identify the corporate entity or entities that would own and/or operate the plant.

1.3 **Project Need/Purpose**

Sections 1.3.1 through 1.3.5 apply to Utilities only.
IPPs (merchant plants) skip to Section 1.3.6.

Utilities Only - To comply with Wis. Stat. § 196.374 Renewable Portfolio Standard (RPS) provide the following:

- 1.3.1. The utility's renewable baseline percentage and baseline requirement for 2001-2003 and the amount of renewables needed in the future.
- 1.3.2. Amount of renewable energy currently owned and operated by the utility as defined by the RPS requirements for additional renewable energy.
 - 1.3.2.1. Total existing renewable generation capacity.
 - 1.3.2.2. Total energy produced by renewable assets in previous calendar year separated by generation type (Hydro, biomass, methane, wind etc.).
 - 1.3.2.3. Amount of renewable energy acquired through purchase power agreements (separated by type (hydro, biomass, wind etc.).
 - 1.3.2.4. Amount of RPC credits purchased.
- 1.3.3. **Utilities Only** - Expected annual energy output for the project.
- 1.3.4. **Utilities Only - Other Need Not Covered in Section 1.3.1**
 - 1.3.4.1. Monthly demand and energy forecast for peak and off peak periods over the next 20-25 years.
 - 1.3.4.2. Describe how the availability of purchase power was analyzed.
 - 1.3.4.3. Identify plant retirements forecast over the next 20-25 years.
 - 1.3.4.4. Describe how the existing and expected applications for generation from Independent Power Producers (IPPs) have been factored into your forecast.
 - 1.3.4.5. Describe how the proposed project meets the requirements the Energy Priorities Law, Wis. Stats. §§ 1.12 and 196.025(1).
 - 1.3.4.6. Briefly describe utility's compliance under Wis. Stat. § 196.374 for energy efficiency.
- 1.3.5. **Utilities Only - EGEAS Modeling**
 - 1.3.5.1. Describe the 25-year optimal generation expansion plan for all of the entities that are part of the generation plan.
 - 1.3.5.2. The EGEAS modeling should include a 30-year extension period.
 - 1.3.5.3. The wind resource should be modeled as non-dispatchable, using an hourly wind profile.
- 1.3.6. **IPPs Only - Energy Agreements**
 - 1.3.6.1. Identify all Wisconsin utilities under contract for delivery of energy from the proposed project.
 - 1.3.6.2. For each utility under contract or with which an agreement in principle for delivery of energy is in place provide the following, by utility:

- 1.3.6.2.1. Rated capacity under contract.
- 1.3.6.2.2. Annual energy to be delivered under contract or expected to be delivered.

1.4 **Alternatives**

Section 1.4.1 applies to Utilities only.

Section 1.4.2 applies to both Utilities and IPPs.

1.4.1. **Utilities Only - Supply Alternatives:** Describe the supply alternatives to this proposal that were considered (including a “no-build” option) and present the justification for the choice of the proposed option(s).

1.4.1.1. Describe any alternate renewable fuel options considered and why those options were not selected.

- 1.4.1.1.1. Solar
- 1.4.1.1.2. Biomass
- 1.4.1.1.3. Hydro
- 1.4.1.1.4. Landfill Gas
- 1.4.1.1.5. Fuel Cell

1.4.1.2. Describe Purchase Power Agreements (PPAs) considered or explain why a PPA was not considered for this project.

1.4.1.3. No-Build Option.

1.4.2. **Utilities and IPPs - Project Area Selection**

1.4.2.1. **Alternative Project Areas** - Describe the project area screening and selection process used to select the proposed project area. Provide the following:

- 1.4.2.1.1. List individual factors or site characteristics used in project area selection.
- 1.4.2.1.2. Explain how individual factors and project area characteristics were weighted for your analysis and why specific weights were chosen.
- 1.4.2.1.3. Provide a list of all project areas reviewed with weighted scores for each siting factor or characteristic used in the analysis.

1.4.2.2. Provide a narrative describing why the proposed project area was chosen.

1.5 **Utilities and IPPs - Turbine Site Selection**

1.5.1. List the individual factors or characteristics used to select turbine sites.

1.5.2. Provide information on how turbine site characteristics and type of turbines chosen factored into the selection of final turbine sites.

1.5.3. **Turbine setback distances**

- 1.5.3.1. Minimum setback from residences and/or property lines.
- 1.5.3.2. Minimum setback, if any, from other buildings (e.g. animal barns, storage sheds).
- 1.5.3.3. Minimum setback from roads.

- 1.5.3.4. Identify any sites where setback waivers are needed or have been executed.

1.6 Utilities Only - Cost

- 1.6.1. Provide capital cost of the completed facility organized by Plant Account Codes (PAC) found in the PSC's Uniform System of Accounts for Private Electric Utilities – 1/1/90. Provide a breakdown within each PAC and a subtotal. Include, at least, the following PACs:
 - 1.6.1.1. PAC 340 – Land and Land Rights.
 - 1.6.1.2. PAC 341 – Structures and improvements (O&M buildings, access roads).
 - 1.6.1.3. PAC 344 – Generators (turbines towers, foundations, engineering, procurement, construction management, erection).
 - 1.6.1.4. PAC 345 – Accessory Electrical Equipment (substation, meteorological towers, collector circuit system, SCADA).
- 1.6.2. Provide the complete terms and conditions of all lease arrangements.
 - 1.6.2.1. Turbine site lease
 - 1.6.2.2. Setback waivers
 - 1.6.2.3. Neighbor agreements
 - 1.6.2.4. Provide a statement demonstrating how conditions of Wis. Stat. § 196.52(9)(a)3(b) have been met.
- 1.6.3. Discuss and provide the comparative costs of the alternatives identified and evaluated in Section 1.4.
- 1.6.4. Describe the effect of the proposed project on wholesale market competition. Include a description of how, at the time of this filing, the proposed facility will be treated as an intermittent resource in the MISO market.
- 1.6.5. Provide an estimate of the expected life span for the power plant.
- 1.6.6. Describe how the facility will be decommissioned at the end of the project's life.
 - 1.6.6.1. Provide an estimate of the cost of and source of funding for decommissioning.

1.7 IPPs Only – MISO and Project Life Span

- 1.7.1. MISO Market - Describe how, at the time of this filing, the proposed facility will be treated as an intermittent resource in the MISO market.
- 1.7.2. Provide an estimate of the expected life span for the power plant.
- 1.7.3. Describe how the facility will be decommissioned at the end of its life span.

1.8 Utilities and IPPs - Required Permits and Approvals

1.8.1. **Approvals and Permits** - Provide a list of required approvals/permits from the following regulatory agencies listing the approvals/permits required, the status of each application, application filing date, regulatory agency, and agency contact name and telephone number:

1.8.1.1. Federal

1.8.1.1.1. Federal Aviation Administration (FAA)

1.8.1.1.2. US Army Corps of Engineers (USACE)

1.8.1.1.3. US Fish and Wildlife Service (USFWS)

1.8.1.1.4. Other federal agencies not listed above

1.8.1.2. State

1.8.1.2.1. Department of Transportation (DOT)

1.8.1.2.2. Wisconsin Department of Natural Resources (DNR)

1.8.1.2.3. Other state agencies not listed above

1.8.1.3. Local Permits – including county, town, city, and village

1.8.2. **Correspondence with Permitting Agencies** - Provide copies of correspondence to and from state and federal agencies that relate to permit approval, compliance approval, or project planning and siting. Provide copies of any correspondence to or from local governments. This should continue after submittal of the application.

2.0 TECHNICAL DESCRIPTION OF TURBINES AND TURBINE SITES

2.1 Estimated Wind Speeds and Projected Energy Production

Provide a complete wind speed and energy production assessment for the project. This report should include, at a minimum:

2.1.1. Wind speeds and source of wind speed data used in analysis

2.1.2. Wind roses (monthly and annual)

2.1.3. Gross and net capacity factor (explain the method used to calculate the capacity factors and provide the data used)

2.1.4. Estimated energy production of project

2.1.4.1. Estimated production losses

2.1.4.2. Estimated net energy production

2.2 Turbine Type and Turbine Characteristics

2.2.1. Identify the manufacturer and model of turbine generator to be used. (If no Turbine Purchase Agreement has been signed, applicants should identify the turbine or turbines being considered. It is acceptable to identify a range by providing information on the largest and smallest turbine being considered, however, consult with Commission staff prior to preparing the application.)

2.2.2. Turbine Delivery Date – Indicate whether or not this date is firm.

- 2.2.3. Total number of turbines required for project.
- 2.2.4. Technical Characteristics of Turbines
 - 2.2.4.1. Hub Height
 - 2.2.4.2. Blade length
 - 2.2.4.3. Swept Area
 - 2.2.4.4. Total Height
 - 2.2.4.5. Cut-in Speed
 - 2.2.4.6. Cut-out Speed
 - 2.2.4.7. Fixed or Variable Speed – include rpm
 - 2.2.4.8. Rated Wind Speed
 - 2.2.4.9. Turbine Power Curve (provide actual data – wind speed and rated output needed to create the curve)
- 2.2.5. Technical Characteristics of Turbine Towers
 - 2.2.5.1. Type of tower and material used
 - 2.2.5.2. Tower dimensions and number of sections required
- 2.2.6. Scale drawings of turbines including turbine pad and transformer box.

2.3 Construction Equipment and Delivery Vehicles

Provide a description of the types of construction equipment needed to build the project and the types of delivery vehicles that would be used to deliver turbines, towers, and blades to tower sites. For large equipment and vehicles include:

- 2.3.1. Types of construction equipment and delivery vehicles
- 2.3.2. Gross vehicle weight (loaded and unloaded) for all vehicles using local roads
- 2.3.3. For vehicles used for turbine/tower/blade/crane delivery (diagrams or drawings of vehicles are acceptable). Include:
 - 2.3.3.1. Overall vehicle length
 - 2.3.3.2. Turning radius
 - 2.3.3.3. Minimum ground clearance
 - 2.3.3.4. Maximum slope tolerance
- 2.3.4. **Cranes** - Describe types of cranes to be used and for what purpose. Include:
 - 2.3.4.1. Weight of crane
 - 2.3.4.2. Crane lift rating
 - 2.3.4.3. If assembly of crane is required at work site answer the following
 - 2.3.4.3.1. Time required to assemble crane
 - 2.3.4.3.2. If the crane must be disassembled and reassembled during construction explain why.
- 2.3.5. **Roads and Infrastructure** - Estimate the potential impacts of construction vehicles on the local roads. Provide the following:
 - 2.3.5.1. Describe methods to be used to handle heavy or large loads on local roads.

- 2.3.5.2. Probable routes for delivery of heavy and oversized equipment and materials.
- 2.3.5.3. Potential for road damage and any compensation for such damage.
- 2.3.5.4. Probable locations where local roads would need to be modified, expanded, or reinforced in order to accommodate delivery of turbines, blades, or towers.
- 2.3.5.5. Include an estimate of whether or not trees near or in road ROW might need to be removed.
- 2.3.5.6. Provide an estimate of likely locations where local electric distribution lines will need to be disconnected in order to allow passage of equipment and materials
 - 2.3.5.6.1. Describe how residents will be notified before local power would be cut.
 - 2.3.5.6.2. Estimate the typical duration of a power outage resulting from equipment or materials delivery.
- 2.3.6. **Construction Traffic** - Anticipated traffic congestion and how congestion will be managed, minimized or mitigated. Include:
 - 2.3.6.1. List of roads most likely to be affected by construction and materials delivery.
 - 2.3.6.2. Duration of typical traffic disturbance and the time of day disturbances are most likely to occur.

2.4 **Other Project Facilities**

- 2.4.1. **Turbine Site Foundation** - Describe the type of foundation or foundations to be used. If more than one type of foundation may be needed describe each and identify under what circumstances each foundation type would be used. Include the following:
 - 2.4.1.1. Dimensions, surface area and depth required for each foundation.
 - 2.4.1.2. Amount of soil excavated for each foundation type.
 - 2.4.1.3. Describe how excavated soils will be handled including disposal of excess soil.
 - 2.4.1.4. Materials to be used for the foundation. Include:
 - 2.4.1.4.1. Approximate quantity and type of concrete required for typical foundation.
 - 2.4.1.4.2. Materials required for reinforcement.
 - 2.4.1.4.3. Description of the tower mounting system
 - 2.4.1.5. Provide technical drawings of each foundation type to be used showing foundation dimensions.
- 2.4.2. **Turbine Site Construction Area** - Describe turbine site construction area. Include location and dimensions for:
 - 2.4.2.1. Crane pads.
 - 2.4.2.2. Lay-down areas.
 - 2.4.2.3. Parking area.

- 2.4.2.4. Provide a scale drawing showing the general construction setup for turbine sites.
- 2.4.3. **Access Roads**
 - 2.4.3.1. Provide the total number of miles required for turbine access roads.
 - 2.4.3.2. Describe materials to be used and methods for construction of access roads including road bed depth.
 - 2.4.3.3. Specify the required width of access roads. Fully describe any differences between final road size and that required during construction. (e.g. if access roads would be used for temporary crane paths).
 - 2.4.3.4. Describe any site access control – fences or gates and show locations.
 - 2.4.3.5. Provide a map showing the location of all access roads. In addition provide a GIS shapefile of access road locations (see page 5 for instructions on GIS format).
- 2.4.4. **Crane Paths** – Provide the following if cross-country crane paths would be needed to move construction cranes between turbine sites:
 - 2.4.4.1. Discussion of why existing roads and access cannot be used and why cross-country crane paths are required
 - 2.4.4.2. Description of materials to be used and methods for construction of crane paths.
 - 2.4.4.3. Crane path widths and depths.
 - 2.4.4.4. Discuss when and how crane paths would be removed and land recovered.
 - 2.4.4.5. Provide a map or maps showing the location of all crane paths and provide this information in a GIS shapefile.
- 2.4.5. **General Construction Areas**
 - 2.4.5.1. Identify size and location of lay-down areas outside of those found at the turbine sites and any other areas used for material storage.
 - 2.4.5.2. Identify size and location of construction parking areas.
 - 2.4.5.3. Describe the expected use of these areas after project completion.
 - 2.4.5.4. Provide a list of all hazardous chemicals to be used on site during construction and operation (including liquid fuel).
 - 2.4.5.5. Discuss spill containment and cleanup measures including the Spill Prevention, Control, and Countermeasures (SPCC) and Risk Management planning for the chemicals proposed.
- 2.4.6. **Transmission Interconnection**
 - 2.4.6.1. Describe any transmission grid interconnection requirement.
 - 2.4.6.2. Describe all communications and agreements, official or otherwise, with the transmission owner.
 - 2.4.6.3. Indicate where the project is in the MISO Queue and provide copies of the latest draft or final MISO report for the project interconnect. During the PSC review process applicant must continue to supply the latest reports from MISO.

2.4.7. Collector Circuits

2.4.7.1. Total number of miles of collector circuits required – separated by circuit type (overhead vs. underground).

2.4.7.2. Specify the collector circuit voltage to be used.

2.4.7.3. Transformer type, location, and physical size of transformer pad at each turbine site.

2.4.7.4. Provide a map and GIS data showing the proposed location of all underground and overhead collector circuits.

2.4.7.5. Underground Collector Circuits

2.4.7.5.1. Conductor to be used

2.4.7.5.2. Burial depth and width of trench

2.4.7.5.3. Describe trench and how lines would be laid (direct buried, conduit etc.) Provide scale drawing of underground circuit.

2.4.7.6. Overhead Collector Circuits

2.4.7.6.1. Size of pole to be used.

2.4.7.6.2. Engineering drawing of structure to be used.

2.4.8. Construction Site Lighting

2.4.8.1. Describe the site lighting plan during project construction.

2.4.8.2. Provide copies of any local ordinances relating to lighting that could apply.

2.5 Substation

If the project includes the construction of a substation or modifications to an existing substation, provide the following information:

2.5.1. Drawing or diagram showing the location, dimensions (in feet and acres), and layout of any new substation or proposed additions to an existing substation. Provide recent digital aerial photos of the substation site, suitable for use on the PSC's GIS platform. (See Important notes on digital forms of maps and diagrams Page 5)

2.5.2. Plat and topographic maps showing the location of the substation.

2.5.3. Size (in acres) of the land purchase required and orientation of the substation within the purchase parcel.

2.5.4. Indicate current land ownership and whether applicant has control of property or whether or not an option to buy has been signed.

2.5.5. Provide a complete electrical description of required substation facilities including a list of transformers, busses, and any interconnection facilities required.

2.5.6. New Substation

2.5.6.1. Show the location of all power lines entering and leaving the substation.

2.5.6.2. Show details on any turning structures that might impact adjacent land owners (size, type of structure, guying, etc.).

2.5.6.3. Show the location of the access road.

2.5.7. Modifications to Existing Substations

2.5.7.1. Show the location of all new power lines and reconfigured lines.

2.5.7.2. Show details on any turning structures that might impact adjacent land owners (size, type of structure, guying, etc.).

2.5.7.3. Provide details on changes to access roads that may be required (width, length, location, etc.).

2.5.8. Describe construction procedures (in sequence as they will occur) including erosion control practices (see Section 3.1).

2.6 Operations and Maintenance Building

2.6.1. Describe the purpose and use of the proposed O&M building

2.6.2. Number of full-time employees that would be working at the facility.

2.6.3. Size of property needed (provide physical dimensions and acres).

2.6.4. Building and Building Footprint

2.6.4.1. Provide a drawing or diagram of the O&M building with dimensions including square feet.

2.6.4.2. Describe the type of building to be constructed (metal, frame, etc.)

2.6.4.3. Map (including a GIS shapefile) showing the location of the O&M building(s).

2.6.5. Lighting and Security Plan for O&M Property

2.6.5.1. Describe how the building property will be lit and how the lighting plan minimizes disturbance to nearby residences.

2.6.5.2. Describe any security plans for the property (fences etc.).

2.6.6. Describe any other facilities needed, including:

2.6.6.1. Parking lots.

2.6.6.2. Sheds or storage buildings.

2.6.6.3. Supplies of water.

2.6.6.4. Sewer requirements.

3.0 CONSTRUCTION PROCESS SEQUENCE AND IMPACT ON INFRASTRUCTURE

3.1 Construction Sequence

3.1.1. Provide the construction schedule for the proposed project. Include a timeline showing construction activities from beginning of construction to in-service. Identify all **critical path** items.

- 3.1.2. Provide a description of the staging and construction sequence required for building the proposed project at a typical turbine site. Include the delivery of materials.
- 3.1.3. Estimate of time required to complete construction at a typical turbine site.

3.2 Workforce

- 3.2.1. Provide information on the workforce size and skills required for plant construction and operation.
- 3.2.2. Estimate how much of the expected workforce will come from local sources.

4.0 PROJECT MAPS AND PHOTO SIMULATIONS

Aerial Photographs: Recent aerial photos are required for every project. Aerial photographs submitted with an application should be no older than three years – more recent in rapidly developing areas. Aerial photos are typically used as a base for most maps and should be provided at a scale of at least 1:4800. **Actual aerial photographs are not acceptable. Rectified orthophotos created using GIS are required – reduced size photos are not adequate.** The standard GIS platform for Wisconsin state agencies is ESRI ArcGIS v. 9x.

In addition to providing the maps listed below, all GIS data used to create those maps must also be submitted with the application. See Page 7 of this AFR for instructions on GIS map projections. The extent of the aerial photography must be inclusive enough to show the landscape context within which the proposed facilities would be placed. Typically, this requires extending the map extent to at least 10 miles beyond any project boundary.

Provide the following maps both as hard copy and digital versions.

4.1 General Project Maps

4.1.1. Project Area Maps

Provide a project area map with a recent (within the last 3 years) aerial photograph as a base. Clearly show the boundaries of the project area, the location of all proposed turbine sites, the location of any new substation facilities or existing substation expansion, location of collector circuits, access roads, and any cross-country crane paths that may be needed. **The extent of this map should extend at least 10 miles beyond the project area boundary.** Maps should include local infrastructure including roads, existing utility facilities (electric transmission and distribution, pipelines etc.), and the location of sensitive sites including all residences, day-care centers, hospitals or other health care facilities, cemeteries, airports and private air strips, municipalities, recreational lands, major rivers and lakes. **If new residences, subdivisions, commercial or industrial facilities have been built since the date of the aerial photo base map, note those features accurately on the project area map and provide a separate GIS Shapefile with these additions.**

4.1.2. Topographic Maps

Provide topographic maps at 1:24,000 or larger scale showing all turbine sites, substation facilities, collector circuits, and access roads. The topographic extent should extend no less than 2 miles out from the project boundary.

4.1.3. Natural Resources and Land Use/Ownership Maps

All the following maps should be the most recent version available.

4.1.3.1. Wetland Maps

4.1.3.1.1. Wisconsin Wetland Inventory (WWI) Maps (Out to 2 miles from the project boundary)

Provide maps showing WWI wetlands within and around the project area boundary. Maps should show each turbine site and all connecting facilities (roads, collector circuits etc.) without obscuring map details. If available, provide digital versions of the WWI.

4.1.3.1.2. Delineated Wetlands Maps(Within the project boundary)

Provide maps (hard copy and digital) showing all field delineated wetlands and/or wetlands delineated using aerial photography found within the project area.

4.1.3.2. Land Ownership Maps (Out to 0.5 miles from the project boundary)

4.1.3.2.1. Provide maps (hard copy and digital) showing parcel boundaries with ownership, roads, and municipal boundaries. Parcel boundary maps should show the project boundary, owner of property, the location of all turbine sites, access roads, collector circuits, and crane paths. Parcel maps should be based on the most recent data available and include corrections so that land ownership is accurate.

4.1.3.2.2. Provide digital data of all parcel boundaries and ownership.

4.1.3.3. Public Lands - Map of all publicly owned lands inside the project boundary and within 2 miles of the project area (parks, trails national/county/state forests, etc).

4.1.3.4. Flood Insurance Rate Maps (FIRMs) (Within the project boundary) - Provide flood insurance maps if the site is within one-half mile of a floodplain.

4.1.3.5. Soil Survey Maps (within the project boundary)

4.1.3.6. Bedrock Maps (within the project boundary)- Map showing depth to bedrock for the entire project area.

4.2 Community Maps

- 4.2.1. **Zoning Maps** - Provide a map or maps of the project area showing existing zoning (e.g. agriculture, recreation, forest, residential, commercial etc.) Map should show existing zoning out to 0.5 miles beyond the boundaries of the project area.
- 4.2.2. **Sensitive Sites** - Additional map (if necessary) showing proximity to schools, day care centers, hospitals, and nursing homes up to 0.5 miles from the site.

4.3 Photo Simulations

Photo simulations are required. Simulations should seek to provide an accurate representation of what the project area would most likely look like after the project is completed. *In order to be certain that any photo simulations provided in an application will be useful, **please consult with PSC staff before preparing and submitting photos.***

5.0 NATURAL AND COMMUNITY RESOURCES, DESCRIPTION AND POTENTIAL IMPACTS

5.1 Site Geology

- 5.1.1. Describe the geology of the project area.
- 5.1.2. Geotechnical Report on Soil Conditions
 - 5.1.2.1. Provide a summary of conclusions from any geotechnical report or evaluation of soils in the project area including:
 - 5.1.2.1.1. Results of soil borings including a review of soil bearing capacity and soil settlement potential.
 - 5.1.2.1.2. Identify any soil conditions related to site geology that might create circumstances requiring special methods or management during construction.
 - 5.1.2.2. Depth to Bedrock
 - 5.1.2.2.1. Identify any turbine sites where foundation construction must be modified because of the presence of bedrock.
 - 5.1.2.2.2. Describe construction methods and foundation issues associated with situations where bedrock formations are near the surface.
 - 5.1.2.2.3. Discuss the likelihood or potential that construction on bedrock formations may negatively impact private wells within two miles of turbine sites.

5.2 Topography

- 5.2.1. Describe the general topography of the project area.
- 5.2.2. Describe expected changes to site topography due to grading activities.

5.3 Land Cover

5.3.1. Vegetative Communities in the Project Area.

List and identify the dominant plants in the following community categories:
Provide a GIS map showing the location of each community.

5.3.1.1. Agricultural

- 5.3.1.1.1. Row crops.
- 5.3.1.1.2. Hay/pasture/old fields.
- 5.3.1.1.3. Other.

5.3.1.2. Non-Agricultural Upland

- 5.3.1.2.1. Prairie/Grasslands.
- 5.3.1.2.2. Upland Woods.

5.3.1.3. Wetlands

- 5.3.1.3.1. Wooded Wetlands.
- 5.3.1.3.2. Marshes.
- 5.3.1.3.3. Bogs.
- 5.3.1.3.4. Fens.

5.3.2. Acres of Land Cover Categories in Project Area

Estimate of the number of acres within each land cover category listed below.
Provide this information in table format and explain what method was used to calculate the areas reported.

5.3.2.1. Agricultural

- 5.3.2.1.1. Row crops.
- 5.3.2.1.2. Hay/pasture/old field.
- 5.3.2.1.3. Other.

5.3.2.2. Non-Agricultural Upland

- 5.3.2.2.1. Prairie/Grasslands.
- 5.3.2.2.2. Upland Woods.

5.3.2.3. Wetlands

- 5.3.2.3.1. Wooded Wetlands.
- 5.3.2.3.2. Marshes.
- 5.3.2.3.3. Bogs.
- 5.3.2.3.4. Fens.

5.3.2.4. Developed Land

- 5.3.2.4.1. Residential.
- 5.3.2.4.2. Commercial/Industrial.

5.3.3. Land Cover Impacts

In table format, estimate the number of acres, in each land cover type identified in Section 5.3.3, that will be affected by project construction and or facilities.
Breakdown impacts into temporary vs. permanent impacts for the following categories³.

³ Temporary impacts are those that are typically recovered after construction is completed. Examples of temporary impacts

- 5.3.3.1. Turbine Pads.
- 5.3.3.2. Collector Circuits.
For collector circuits in wooded areas, disclose whether or not a ROW around the cables would be maintained in an open (no tree) condition.
- 5.3.3.3. Access Roads.
- 5.3.3.4. Crane Paths.
- 5.3.3.5. Substation.
- 5.3.3.6. O&M Building.

5.4 Wildlife

- 5.4.1. Describe existing wildlife resources and estimate expected impacts to plant and animal habitats and populations.
- 5.4.2. Avian and bat pre-construction surveys
 - 5.4.2.1. Provide a summary of pre-application consultation meetings held with DNR for the purposes of determining whether or not pre-construction bird and bat studies would be required for the project (see Page 3 – Biological Studies).
 - 5.4.2.2. If, after consultation with the DNR, avian and/or bat preconstruction studies are required, provide the following information.
 - 5.4.2.2.1. Description of DNR approved survey methodology and any data collected for pre-construction avian studies (data should be provided using a format acceptable to DNR and PSC staff.)
 - 5.4.2.2.2. Description of DNR approved survey methodology and any data collected for pre-construction bat studies (data should be provided using a format acceptable to DNR and PSC staff.)

5.5 Public Lands - List public properties within 10 miles of the project area.

- 5.5.1. **State Properties, including:**
 - 5.5.1.1. Wildlife Areas.
 - 5.5.1.2. Fisheries Areas.
 - 5.5.1.3. State Parks.
- 5.5.2. **Federal Properties, including:**
 - 5.5.2.1. Wildlife Refuges.
 - 5.5.2.2. Parks.
 - 5.5.2.3. Scenic Riverways.
- 5.5.3. **County Parks.**

5.6 Local Zoning

- 5.6.1. Provide copies of any zoning ordinances affecting the project area and within two miles of the project boundary. Provide only the page(s) directly citing ordinance language.
- 5.6.2. Describe any zoning changes needed for the project.

include parking lots, lay-down area, crane paths and pads and collector circuits located in farm fields. Permanent impacts are associated with access roads, turbine pads, collector circuits in forested areas where a cleared ROW is maintained, and substations.

- 5.6.3. Describe zoning changes that the applicant has requested of local government for the proposed project. Include:
 - 5.6.3.1. The name of the entity responsible for zoning changes.
 - 5.6.3.2. Description of the process required to make the zoning change.
 - 5.6.3.3. The outcome or expected outcome for requested zoning changes.

5.7 Land Use Plans - Provide a copy of all land-use plans adopted by local governments that pertain to the project area, extending out two miles from the project boundary. (See Reduction of Paper section on Page 4, first bullet point.) Include not only general land-use plans, but also other relevant planning documents such as:

- 5.7.1. County Recreation Plans.
- 5.7.2. Farmland Preservation Plans.
- 5.7.3. Highway Development Plans.
- 5.7.4. Sewer Service Area Plans.

5.8 Archeological and Historic Resources - If after consultation with the Wisconsin Historical Society (WHS) and PSC staff, the work of a qualified archeologist is required, reference the archeologist's report in the application.

- 5.8.1. Provide a list of all historic and archeological sites potentially affected by the proposed project.⁴
- 5.8.2. For each proposed site, list the county, town, range, section and ¼, ¼ section in which construction would occur.
- 5.8.3. For each archeological or historical resource identified, describe how the proposed project might affect the resource and how the project could be modified to reduce or eliminate any potential effect on the resource. Modifications to the proposed project could include site modification, route changes (for connecting facilities – transmission lines and pipelines), and construction practices.

5.9 ER Review - Endangered, Threatened, and Special Concern Species and Communities

- 5.9.1. Provide a copy of the DNR approved ER review and all supporting materials (see DNR Permits and Reviews – Page 5.).
- 5.9.2. Include a map showing the location of endangered, threatened and special concern species and/or their habitat, and natural communities identified on the ER Review that occur within a minimum of 1-mile of the proposed project area or as agreed to by the DNR.

ER Reviews, supporting materials, and maps should be filed as confidential

⁴ This information is available from the WHS, Wisconsin Historic Preservation database (WHPD), which may require a fee or subscription. Qualified archeologists generally have access to the WHPD database.

documents (See Page 5).

6.0 WATERWAY/WETLAND PERMITTING ACTIVITIES

Section 6.0 covers information required by DNR for waterway, wetland, and erosion control permits. Questions about this section should be directed to the DNR, Office of Energy.

6.1 Waterway Permitting Activities

For each access road, collector circuit, crane path, or other facility directly affecting waterways; identify and number all waterway activities, based on Table 1 (Supplement to DNR Form 3500-53). For each stream or waterbody provide site photos, the width at the top of the bank, and the slope of the banks at the proposed activity location. For each stream affected by activities occurring below the ordinary high water mark, note the water and sediment quality and the potential for either to be contaminated. For each activity, note if the waterway is defined as an Area of Special Natural Resource Interest (ASNRI) under the provisions of Ch. NR 1 Wis. Admin. Code. If a temporary bridge is required for construction, identify the type of structure to be used. Use Table 1 as the format for completing this information request. See Figure 1 for information on River Basin location and abbreviations

6.2 Wetlands

For each access road, collector circuit, crane path, or any other facility directly affecting wetlands; identify and number all wetland crossings. Insert this information in Table 1 as discussed above in directional order with the waterways.

6.2.1. Identify all wetlands on a map using data from the Wisconsin Wetland Inventory (WWI) and identify any other wetlands or changes to WWI boundaries based on delineations using all forms and information required by and in accordance with the January 1987 Technical Report Y-87-1 entitled, "Corps of Engineers Wetland Delineation Manual," including relevant guidance documents. Wetland delineation reports should be submitted to the DNR as a hardcopy with the application. Electronic copies of wetland delineation reports (in MS Word format, or similar) may be submitted on a CD.

6.2.2. Wetland Crossings

6.2.2.1. Describe the length of each wetland crossing.

6.2.2.2. For each crossing, identify wetland type using the WWI classification, and wetland type as identified by plant community type (floodplain forest, hardwood swamp, coniferous bog, coniferous swamp, open bog, calcareous fen, shrub swamp, alder thicket, shrub-carr, sedge meadow, shallow marsh, deep marsh, wet to wet-mesic prairie, fresh (wet) meadow, shallow open water communities, seasonally flooded basin).

6.2.2.3. Based on discussions with DNR staff during pre-application consultations, document the presence and percent cover of key wetland

invasive species at each wetland crossing.

6.2.3. Sensitive Wetlands

Determine if any wetlands affected are considered sensitive including any wetlands in or adjacent to an area of special natural resource interest (NR 103.04, Wis. Adm. Code) including:

- 6.2.3.1. Cold Water Community as defined in § NR 102.04(3)(a), Wis. Adm. Code, including trout streams, their tributaries, and trout lakes
- 6.2.3.2. Lakes Michigan and Superior and the Mississippi River.
- 6.2.3.3. State- or federally-designated Wild and Scenic River.
- 6.2.3.4. State-designated riverway.
- 6.2.3.5. State-designated scenic urban waterway.
- 6.2.3.6. Environmentally sensitive area or environmental corridor identified in an area-wide water quality management plan, special area management plan, special wetland inventory study, or an advanced delineation and identification study.
- 6.2.3.7. Calcareous fen.
- 6.2.3.8. State park, forest, trail or recreation area.
- 6.2.3.9. State and federal fish and wildlife refuges and fish and wildlife management area.
- 6.2.3.10. State- or federally-designated wilderness area.
- 6.2.3.11. State-designated or dedicated natural area (SNA).
- 6.2.3.12. Wild rice water listed in § NR 19.09, Wis. Adm. Code.
- 6.2.3.13. Surface water identified as outstanding or exceptional resource water in ch. NR 102, Wis. Adm. Code.
- 6.2.3.14. Other sensitive wetlands are deep marsh, northern or southern sedge meadow not dominated by reed canary grass, wet or wet-mesic prairie not dominated by reed canary grass, fresh wet meadows not dominated by reed canary grass, coastal marsh, interdunal or ridge and swale complex, wild rice-dominated emergent aquatic, open bog, bog relict, muskeg, floodplain forest, and ephemeral ponds in wooded settings.

6.3 Mapping Wetland and Waterway Crossings

For each facility (access road, crane path, collector circuit etc) in or adjacent to wetlands or waterways, provide three (3) maps, as described in Subsections 6.3.1 – 6.3.3, for each location on 11x17 inch paper, each with the same scale.

- 6.3.1. Recent air photo showing only the proposed facility (access road, crane path, collector circuit, substation etc.) crossing or adjacent to wetlands or waterways.
- 6.3.2. Topographic map showing the facility (road, crane path, collector circuit etc.) crossing or adjacent to wetlands or waterways.
- 6.3.3. Recent air photos showing the locations of the following items:
 - 6.3.3.1. Facility crossing or adjacent to wetland or waterway.
 - 6.3.3.2. Waterways.
 - 6.3.3.3. WWI (as a transparent layer).
 - 6.3.3.4. Delineated Wetlands (clearly marked).

- 6.3.3.5. Hydric soils- (as a transpicuous layer) indicated faintly to be used as secondary review, if needed.
- 6.3.3.6. Proposed temporary bridge locations (labeled to correlate with Table 1).
- 6.3.3.7. Locations for other Chapter 30 activities such as grading or riprap (labeled to correlate with Table 1).

6.4 Waterway/Wetland Construction Methods

6.4.1. Waterway Crossings – Construction Methods

- 6.4.1.1. Describe specific methods to be used for crossings of any streams marked as perennial or intermittent on USGS topographic maps, including location and methods of construction for:
 - 6.4.1.1.1. Access Roads
 - 6.4.1.1.2. Crane Paths.
 - 6.4.1.1.3. Collector Circuits
- 6.4.1.2. Describe the method of crossing including structure type if applicable.
- 6.4.1.3. Describe cleaning of machinery to prevent spread of invasive species.
- 6.4.1.4. Describe the proposed area of land clearance and disturbance at waterway crossings and the types of equipment proposed for the work.
- 6.4.1.5. In the case of underground construction for collector circuits, describe the proposed method for crossing the stream or river. For boring operations, provide the size, depth and location of boring pits and the estimated amount of excavated materials that will result.
 - 6.4.1.5.1. Describe methods for de-watering of boring pit or structure foundations. Include a discussion of discharge locations and suspended solids standards for discharge water.
 - 6.4.1.5.2. Identify contingency plans for bore refusal and frac-outs if directional boring is proposed. Provide scaled pre and post-project diagrams for all crossings including top view and cross section or side views.

6.4.2. Wetland Crossings – Construction Methods

- 6.4.2.1. Describe specific methods to be used for wetland crossings including location and methods of construction for:
 - 6.4.2.1.1. Access Roads.
 - 6.4.2.1.2. Crane Paths.
 - 6.4.2.1.3. Collector Circuits.
- 6.4.2.2. Describe cleaning of machinery to prevent spread of invasive species.
- 6.4.2.3. Describe the proposed area of land clearance and disturbance at wetland crossings and the types of equipment proposed for the work.
- 6.4.2.4. Describe methods and discharge locations for site de-watering, and locations for stockpile of fill materials.

6.5 Erosion Control and Storm Water Management Plan

Describe erosion control and storm water management measures to be utilized, as appropriate. If the project will involve land disturbance in excess of 1 acre, the applicant's request for permits must include coverage under the Construction Site Storm Water Runoff Permit from DNR under Wis. Admin. Code § NR 216. The applicant will be required to submit a Construction Project Consolidated Permit Application (i.e., Notice of Intent or NOI) to the DNR to request permit coverage after developing an Erosion Control and Storm Water Management Plan describing the best management practices that will be used on-site for erosion control and post-construction storm water management. The plan, by design, must meet the applicable non-agricultural performance standards of Chapter NR 151. The DNR-approved erosion and sediment control and post-construction technical standards and NOI Form are available on the DNR Storm Water Program web-site at: <http://dnr.wi.gov/org/water/wm/nps/stormwater/constrforms.htm>

The following checklist serves as guidance in the completion of an Erosion Control and Storm Water Management Plan necessary to meet the requirements of the Chapter 30 and NR 216 permits, and the non-agricultural performance standards of NR 151.. The Erosion Control and Storm Water Management Plan should contain the following components:

6.5.1. Erosion Control Methods and Materials

Describe the types of erosion control methods that will be used during project construction to protect disturbed areas. Include where applicable:

- 6.5.1.1. Soil and slope stabilization.
- 6.5.1.2. Seeding and mulching.
- 6.5.1.3. Matting, tracking pads, silt fences, stockpile protection.
- 6.5.1.4. Dewatering-related erosion and sediment control.
- 6.5.1.5. Channel protection.
- 6.5.1.6. Any other appropriate erosion control measures.
- 6.5.1.7. Details and typical section drawings of all the erosion control methods utilized.

6.5.2. Erosion Control Measure Site Plan

Include a site plan view and drawings illustrating: (some typical drawings may be appropriate after consultation with the DNR)

- 6.5.2.1. Construction site boundary.
- 6.5.2.2. The location of all erosion control measures.
- 6.5.2.3. Location of stockpiled soil.
- 6.5.2.4. Vehicle and equipment access sites.
- 6.5.2.5. Areas of disturbance.
- 6.5.2.6. The drainage area configuration.
- 6.5.2.7. Surface water diversion measures.
- 6.5.2.8. Topography.
- 6.5.2.9. Existing floodplains and wetlands.
- 6.5.2.10. Location of trees and unique vegetation.

6.5.3. Sequence of Erosion Control Measures

List and give a detailed description of the sequence of erosion control measures that will occur (i.e. placed, relocated, and replaced) during all phases of construction including:

- 6.5.3.1. Clearing and grubbing.
- 6.5.3.2. Material installation.
- 6.5.3.3. Channel construction.
- 6.5.3.4. Revegetation processes.
- 6.5.3.5. Seeding and mulching/matting.

6.5.4. Off-Site Diversion Methods

- 6.5.4.1. Identify off-site contributions of water affecting project construction sites.
- 6.5.4.2. Methods of controlling off-site water contributions.
- 6.5.4.3. Site plan indicating:
 - 6.5.4.3.1. Where the off-site water is originating from.
 - 6.5.4.3.2. Locations of diversion measures on-site.

6.5.5. Provisions for Inspection and Maintenance

Document the provisions for:

- 6.5.5.1. The regular inspection of all erosion control efforts per the requirements of Wis. Admin. Code § NR 216.
 - 6.5.5.1.1. Identify who will perform the inspections.
 - 6.5.5.1.2. Specify when the inspections will occur.
 - 6.5.5.1.3. Any special circumstances initiating an inspection.
- 6.5.5.2. The regular maintenance of all erosion control efforts.
 - 6.5.5.2.1. Identify who is responsible for the maintenance.
 - 6.5.5.2.2. Specify corrective actions, if site is not maintained according to provisions.

6.5.6. Post Construction Storm Water Management

- 6.5.6.1. Develop a storm water management plan per the requirements of § NR 216.47, Wis. Admin. Code
 - 6.5.6.1.1. Where applicable, describe and provide details on the best management practices that will be used to meet the performance standards of s. NR 151.12, Wis. Admin. Code

6.6 Materials Management Plan

Describe materials management methodology. Applicants may opt to refer to the company's standard Materials Management Plan to meet most of these requirements, though some form of supplemental information on project-specific elements may be required. The following checklist serves as guidance in the completion of a Materials Management Plan necessary to meet the requirements of the Chapter 30 and NR 216 Permits. The Materials Management Plan should contain information on all of the following components, where applicable.

6.6.1. Haul Routes

6.6.1.1. Indicate how and where hauled materials will be routed, including:

- 6.6.1.1.1. Inbound materials
- 6.6.1.1.2. Outbound materials
- 6.6.1.1.3. Clean fill materials
- 6.6.1.1.4. Contaminated materials
- 6.6.1.1.5. Others

6.6.1.2. Alternate locations if necessary.

6.6.1.3. Include a haul route diagram indicating haul route locations.

6.6.2. Stockpile Areas

6.6.2.1. List and describe:

- 6.6.2.1.1. Material to be stockpiled.
- 6.6.2.1.2. Where will material be stockpiled on-site.
- 6.6.2.1.3. Measures to protect stockpiled areas, if applicable.

6.6.2.2. Provide a plan view diagram indicating stockpile area locations.

6.6.3. Equipment Staging Areas

6.6.3.1. Where equipment will be stored on-site

6.6.3.2. Include a plan view of equipment storage areas on-site

6.6.3.3. Spill control and kits on-site

6.6.4. Field Screening Protocol for Contaminant Testing

If contaminated materials (i.e. soil) are encountered on-site, indicate:

- 6.6.4.1. How will the materials be screened.
- 6.6.4.2. Where will the materials be tested.
- 6.6.4.3. What protocols will be followed.
- 6.6.4.4. How work will be impacted.

6.6.5. Estimated Types, Concentrations and Volumes of Contaminated Materials

If contaminated materials are known to exist on-site, list and describe:

- 6.6.5.1. The type of contaminant.
- 6.6.5.2. Where the contaminant is located on-site.
- 6.6.5.3. Media in which the contaminant is located within (i.e. soil, water, etc.).
- 6.6.5.4. The estimated concentration of the contaminant.
- 6.6.5.5. The estimated volumes of the contaminant.

6.6.6. Methods for Dewatering of Excavated Materials

If free water is found present in excavated materials, list and describe:

- 6.6.6.1. What methods will be used to correct the situation (i.e. how will water be removed).
- 6.6.6.2. Where these methods will take place on-site.

6.6.7. Estimated Volumes of In-channel and Upland Excavated Materials

6.6.7.1. Volume of Dredged Materials (cubic yards)

- 6.6.7.1.1. Excavation from bed and bank of waterway.

- 6.6.7.1.2. Excavation from wetland.
- 6.6.7.2. Volume of Upland Materials (cubic yards)
 - 6.6.7.2.1. Excavation from areas outside of waterway and wetlands.

6.6.8. Estimated Volumes and Location of Re-used In-Channel and Upland Excavated Materials

- 6.6.8.1. Reuse of Dredged Materials
 - 6.6.8.1.1. Provide the total volume of reused dredged materials in cubic yards.
 - 6.6.8.1.2. Provide the location either on project plans or provide off-site address, property owner, and site map drawn to scale.
 - 6.6.8.1.3. Provide the purpose of the dredged material usage (i.e. grading, trench backfill, etc.).
- 6.6.8.2. Reuse of Upland Materials
 - 6.6.8.2.1. Provide the total volume of reused upland materials in cubic yards.
 - 6.6.8.2.2. Provide the location either on project plans or provide off-site address, property owner, and site map drawn to scale.
 - 6.6.8.2.3. Provide the purpose of the upland material usage.

6.6.9. Off-site Disposal Plans for Contaminated Materials and Non-contaminated Materials

- 6.6.9.1. Disposal of Dredged Materials
 - 6.6.9.1.1. Total volume of disposed materials (cubic yards).
 - 6.6.9.1.2. Disposal site location.
 - 6.6.9.1.3. Type of disposal Site (i.e. confined disposal facility, landfill, etc.).
 - 6.6.9.1.4. Disposal site name and address.
- 6.6.9.2. Disposal of Upland Materials
 - 6.6.9.2.1. Total volume of disposed materials (cubic yards).
 - 6.6.9.2.2. Disposal site location.
 - 6.6.9.2.3. Type of disposal site (i.e. confined disposal facility, landfill, etc.).
 - 6.6.9.2.4. Disposal site name and address.

6.7 Dewatering Plan

Provide details for pit/trench dewatering for collectors and for dewatering excavation for structure foundations. The following checklist serves as guidance in the completion of the Dewatering Plan necessary to meet the requirements of the Chapter 30 and NR 216 permits. Consider the following items in the Dewatering Plan.

- 6.7.1. **Dewatering/Diversion of Flow** - Provide detailed plans for the dewatering/diversion of flow/standing water removal consistent with DNR Technical Standard 1061 for dewatering. Include typical dewatering/diversion measure plans with:

- 6.7.1.1. Specifications for the dewatering/diversion of flow/standing water removal.

- 6.7.1.2. Methods employed to dewater/divert flow/treat water, if applicable.
- 6.7.1.3. Details of how methods will be employed.
- 6.7.1.4. Details of where methods will be employed.
- 6.7.1.5. Capacities and capabilities.

- 6.7.2. **Downstream Impact Minimization** - List and describe methods of minimizing downstream impacts during high flow conditions.

- 6.7.3. **Analysis of Possible System Overload Scenarios** - Provide the following information if the stream is overloaded:
 - 6.7.3.1. Estimated volume of system overload (i.e. what rainfall overloads the system).
 - 6.7.3.2. Estimated frequency of system overload (i.e. how often will the system be overloaded).
 - 6.7.3.3. Actions taken if stream is to be overloaded.

- 6.7.4. **Impacts of System Overload on Construction Activities and Water Quality** - List and describe:
 - 6.7.4.1. Anticipated number of lost work days.
 - 6.7.4.2. Possible water quality impacts.
 - 6.7.4.3. Methods of deterring adverse changes in water quality.

- 6.7.5. **Water Discharge Locations** - Provide the following:
 - 6.7.5.1. Where water will be discharged.
 - 6.7.5.2. How water will be discharged.
 - 6.7.5.3. A site map indicating discharge locations.

- 6.7.6. **Details of a Back-up System** - If a back-up system becomes necessary indicate:
 - 6.7.6.1. What type of back-up system will be used (include backup and standby equipment/power supply).
 - 6.7.6.2. Conditions when the system will be needed.
 - 6.7.6.3. How the back-up system will operate.
 - 6.7.6.4. Where the back-up system will be located.

- 6.7.7. **High Flow Plan** - When flooding is likely to occur, list and describe the following:
 - 6.7.7.1. How the water will be removed from the site.
 - 6.7.7.2. Methods of water removal (e.g. pumping).
 - 6.7.7.3. Methods of minimizing water contamination (e.g. treatment methods).
 - 6.7.7.4. Protocol for evacuating materials from the flood conveyance channel including:
 - 6.7.7.4.1. List of materials that would require evacuation during high flow periods.
 - 6.7.7.4.2. How will the materials be evacuated from the flood conveyance channel.
 - 6.7.7.4.3. Where will the materials be temporarily placed on-site.

- 6.7.7.4.4. How will the materials be transported.
- 6.7.7.4.5. Methods of protecting the materials.
- 6.7.7.4.6. Include a site map indicating the location of temporary placement.
- 6.7.7.5. Protocol for evacuating machinery from the flood conveyance channel including
 - 6.7.7.5.1. Type of machinery that would require evacuation during high flow periods.
 - 6.7.7.5.2. How will the machinery be evacuated from the flood conveyance channel.
 - 6.7.7.5.3. Where will the machinery be temporarily placed on-site.
 - 6.7.7.5.4. Include site map indicating possible locations of temporary machinery placement.
- 6.7.8. **Contaminated Water** - List and describe what measures will be taken if contaminated water is found on site including:
 - 6.7.8.1. Methods of isolating the contaminated water.
 - 6.7.8.2. Methods of analyzing the contaminated water.
 - 6.7.8.3. Where the water will be tested.
 - 6.7.8.4. Methods of removing contaminated water from site.
 - 6.7.8.5. How the water will be treated and disposed.

*******THIS COMPLETES THE DNR PERMIT SECTION*******

7.0 AGRICULTURAL IMPACTS

- 7.1 Provide information on any ongoing farming activities on the proposed turbine sites where construction activities will occur.
 - 7.1.1. Identify current cropping patterns.
 - 7.1.2. Identify the location of drainage tile or irrigation systems on the proposed sites.
 - 7.1.3. Provide information on any farmland preservation agreements for the proposed sites.
 - 7.1.4. Provide the location of any Conservation Reserve Program (CRP) lands inside the project boundary and out to a distance of two miles surrounding the project area boundary. Also provide a GIS shapefile showing the locations of these properties.

8.0 AIRPORTS AND LANDING STRIPS

8.1 Public Airports

- 8.1.1. Identify all public airports inside the proposed project boundary.
- 8.1.2. Identify all public airports within 10 miles of the project boundary and list the distance to the nearest proposed turbine from the end of the runway.
 - 8.1.2.1. Identify separately all public airports within:
 - 8.1.2.1.1. 10,000 feet of the nearest turbine.

8.1.2.1.2. 20,000 feet of the nearest turbine.

8.1.3. Provide a shapefile showing the location and runway/s orientation for all public airports inside and within 10 miles of the proposed project boundary.

8.2 Private Airports/Grass Landing Strips

8.2.1. Identify all private airports/landing strips within the proposed project boundary.

8.2.2. Identify all private airports/landing strips within two miles of the project boundary.

8.2.3. Provide the distance from each private airport/landing strip (ends of runway) to the nearest turbines.

8.2.4. Provide a GIS shapefile showing the location and runway/s orientation for all private airports/landing strips inside and within two mile of the proposed project boundary.

8.3 Commercial Aviation

Identify all commercial air services operating within the project boundaries (i.e. aerial applications for agricultural purposes, state programs for control of forest diseases and pests (i.e. Gypsy moth control).

8.4 Federal Aviation Administration – FAA

8.4.1. Provide copies of all correspondence with the FAA.

8.4.2. Provide copies of all FAA determinations of hazard/no hazard.

8.4.3. Provide a summary of the status of all FAA determinations with details on how any unresolved problems with aircraft safety are being addressed.

8.4.4. Provide a detailed description of any obstruction marking and lighting that will be required by the FAA.

8.5 Wisconsin Department of Transportation – Bureau of Aeronautics – High Structure Permits

8.5.1. Provide a list of all turbine sites requiring DOT high structure permits.

8.5.2. List the permit status and conditions for each turbine site requiring high structure permits.

9.0 EMF

9.1 Provide an estimate of the magnetic profile created by collector circuits. Estimates should be made using the following criteria:

9.1.1. Show a separate profile for the typical buried collector circuits. If some trenches would support more than one buried circuit, provide a separate estimate for each bundled configuration.

9.1.2. Show a separate profile for any overhead collector circuits.

9.1.3. Assume all turbines are working and project is producing at maximum capacity.

9.1.4. Show EMF profile at 0ft., 25ft., 50ft. and 100ft. from the centerline of each circuit type modeled.

10.0 LINE-OF-SIGHT AND BROADCAST COMMUNICATIONS

10.1 Microwave Communications:

- 10.1.1. Provide a line of site analysis showing that turbines, installed at all of the proposed (and alternate) wind turbine sites, will not interfere with microwave communications.
- 10.1.2. Identify radio towers on a map and show the results of the line of site analysis. Include towers within a 50 mile radius of the project area.

10.2 Television interference:

- 10.2.1. Provide an analysis of the potential for television interference within and adjacent to (within 1 mile) of the project boundary.
- 10.2.2. Discuss how television interference will be eliminated or mitigated for the project.

10.3 Other Communications Systems:

- 10.3.1. Provide an analysis or supportive data to predict whether or not any aspect of the proposed project will interfere with:
 - 10.3.1.1. Cell phone communications
 - 10.3.1.2. Radio broadcasts
 - 10.3.1.3. Internet (WiFi)

11.0 NOISE (Pre and Post construction noise studies are required for all turbine projects. Noise measurement studies must be approved by PSC staff.)

- 11.1 Provide existing (ambient) noise measurements and projected noise impacts from the project using the PSC's Noise Measurement Protocol. The PSC Noise Measurement Protocol can be found on the PSC website at:
<http://psc.wi.gov/utilityinfo/electric/construction/PowerPlantRequirements.htm>

- 11.2 Provide copies of any local noise ordinance

- 11.3 Provide turbine manufacturer's description of noise attenuating methods and materials used in the construction of proposed turbines.

12.0 SHADOW FLICKER

- 12.1 Provide an analysis showing the potential for shadow flicker in the area of a typical wind turbine site. Include contours for 100, 50, and 25 hours per year of potential shadow flicker. (The analysis should list the basic assumptions used and the methodology/software used for creating the shadow flicker analysis.)
- 12.2 Describe mitigation available to reduce shadow flicker

12.3 In the event of an inquiry or complaint by a resident in or near the project area, describe what modeling or other analysis would be used to evaluate the possibility of shadow flicker at the residence. If the likelihood were high that the resident would experience shadow flicker, describe what measures would be used to reduce the impacts on the resident.

13.0 LOCAL GOVERNMENT IMPACTS

13.1 Joint Development and other agreements

- 13.1.1. Provide a copy of all agreements with local communities (e.g. Joint Development Agreements (JDA))
- 13.1.2. Provide a summary of major agreement items agreed upon in any JDA or other type of agreement including:
 - 13.1.2.1. All services to be provided by the city, town, and/or county during construction and when the plant is in operation (e.g. water, fire, EMS, police, security measures, and traffic control).
 - 13.1.2.2. Specifically, address community and facility readiness for incidents such as fires, boiler implosions/explosions, coal dust explosions and critical piping failures.

13.2 Infrastructure and Service Improvements

- 13.2.1. Identify any local government infrastructure and facility improvements required (e.g. sewer, water lines, railroad, police, and fire).
- 13.2.2. Describe the effects of the proposed project on city, village, town and/or county budgets for these items.
- 13.2.3. For each site provide an estimate of any revenue to the local community (i.e. city, village, town, county) resulting from the project in terms of taxes, shared revenue, or payments in lieu of taxes.
- 13.2.4. Describe any other benefits to the community (e.g. employment, reduced production costs, goodwill gestures).

14.0 LANDOWNERS AFFECTED AND PUBLIC OUTREACH

- 14.1** Provide a separate alphabetized list (names and addresses) in Microsoft excel for each of the groups described below:
 - 14.1.1. Property owners and residents within the project boundary and a separate list of property owners and residents from the project boundary out to distance of 0.5 miles. It is strongly recommended that applicants consult with PSC staff in order to ensure that the format and coverage are appropriate considering the project type, surrounding land use, etc.
 - 14.1.2. Public property, such as schools or other government land.
 - 14.1.3. Clerks of cities, villages, townships, counties, and Regional Planning Commissions (RPC) directly affected.
- 14.2** List and describe all attempts made to communicate with and provide information to the public. Describe efforts to date and any planned public information activities. Provide copies of public outreach mailings.

- 14.3** Describe plans and schedules for maintaining communication with the public (e.g. public advisory board, open houses, suggestion boxes, and newsletters).
- 14.4** Identify all local media that have been informed about the project. The list of local media should include at least one print and one broadcast.