

Pre-Application Notice  
Badger Hollow Wind Farm LLC  
Iowa and Grant Counties, Wisconsin

Kristy Nieto, Administrator  
Public Service Commission of Wisconsin  
Division of Energy Regulation and Analysis  
North Tower, 6<sup>th</sup> Floor  
Hill Farms State Office Building  
4822 Madison Yards Way  
Madison, Wisconsin 53705

Dear Ms. Nieto,

Pursuant to PSC 128.105(1m), this Pre-Application Notice provides that Badger Hollow Wind Farm LLC (“**Badger Hollow Wind**”) intends to file a Certificate of Public Convenience and Necessity (“**CPCN**”) application for the Badger Hollow Wind Energy Center (“**Project**”) including the use of wind turbines with tip heights exceeding 600 feet above ground level in Iowa and Grant Counties, Wisconsin. Accordingly, Badger Hollow Wind will file a CPCN application no sooner than 180 days from the date of this notice.

This notice reflects preliminary information about the Project that is subject to change. Further details will be provided to the Public Service Commission (“**PSC**”) and Department of Natural Resources (“**DNR**”) in an Engineering Plan pursuant to Wis. Stat. § 196.491(3)(a)3 and CPCN application pursuant to Wis. Stat. § 196.491(3)(a)1.

Please contact Brandon Davis or Cooper Johnson with any questions regarding the Project or this Pre-Application Notice.

Sincerely,

Brandon Davis  
Senior Analyst, Renewable Development  
248-238-7262  
bdavis@invenergy.com

Mira Ranai  
Analyst, Renewable Development

Cooper Johnson  
Director, Renewable Development  
312-429-2595  
cjohnson@invenergy.com

Aidan O’Connor  
Manager, Renewable Development

# 1. A complete description of the wind energy system, including the number and size of the planned wind turbines.

## 1.1 Project Overview

The Project is located in Iowa and Grant Counties, Wisconsin. A map of the general Project area and preliminary Project layout is provided in **Exhibit 1**. The Project is expected to feature approximately 17 to 19 turbines ranging from 3.8 to 6.2 MW in nameplate capacity each. The nameplate capacity of the Project is expected to be approximately 100 megawatts (“MW”) and may vary slightly depending on the final number and nameplate capacity of the turbine models installed. Final turbine model determinations will be made during final engineering and will account for various factors, including some factors that are beyond Badger Hollow Wind’s ability to control. Such factors include, among others, turbine availability and permitting timelines.

## 1.2 Turbine Dimensions

**Table 1.2** below provides turbine dimensions for models currently under consideration for the Project.

<b>Table 1.2 Turbine Dimensions</b>						
<b>Turbine Model</b>	<b>Hub Height</b>		<b>Rotor Diameter</b>		<b>Tip Height</b>	
	<b>Feet</b>	<b>Meters</b>	<b>Feet</b>	<b>Meters</b>	<b>Feet</b>	<b>Meters</b>
GE 3.8 - 154	321.5	98	505.2	154	574.1	175
GE 6.1 - 158	331.4	101	518.4	158	590.6	180
V 163 - 4.5	321.5	98	534.8	163	588.9	179.5
V 166 - 4.5	321.5	98	544.6	166	593.8	181
V 162 - 6.2	390.4	119	531.2	162	656	200

## 1.3 Project Components

The Project will include the following key elements:

- Turbines
- An electrical collection system
- A 345 kilovolt (“kV”) collector substation (“**Collector Substation**”)
- A 345 kV generator transmission tie line (“**Gen-Tie Line**”)
- The existing Hill Valley 345 kV Substation (“**Interconnection Switchyard**”)
- An operation and maintenance area (“**O&M Area**”)
- Access roads
- Temporary and permanent meteorological towers
- Temporary construction laydown yard(s).

### 1.3.1 Turbine Foundations

Turbine foundations will be constructed from concrete and rebar to support the turbine structure. Each turbine foundation will be designed based on the subsurface conditions present at each turbine location.

### **1.3.2 Turbine Towers**

Turbine towers will be self-supporting, tubular steel towers connected to the turbine foundations by anchor bolts. The towers will remain in their non-reflective white factory finish. Access to the turbines will be through a lockable steel door at the base of each tower.

### **1.3.3 Turbine Nacelles**

Turbine nacelles will house the main mechanical components that transform the wind's kinetic energy into electricity. The nacelles will consist of a machine base frame mounted on a roller bearing sliding yaw ring attached to the tower that allows it to rotate to keep the turbine pointed into the wind to maximize electricity production. The main components inside the nacelles are the main shaft, gearbox, and generator. A wind vane and anemometer will be externally mounted at the rear of the nacelle to provide wind speed and direction information to the controller. Access to the nacelle is provided by a ladder and climb assist within the tower. In accordance with Federal Aviation Administration ("FAA") marking and lighting standards to promote aviation safety, turbine nacelles will be equipped with FAA L-864 aviation red lights to provide nighttime visibility to pilots. Daytime lighting of turbines is not required.

### **1.3.4 Turbine Hubs**

Turbine hubs will connect the three rotor blades to the main shaft. The hubs will be mounted directly to the main shaft and house three electrically actuated hydraulic blade pitch systems. The pitch systems act as the main braking system for the turbines. Braking under normal operating conditions is accomplished by feathering the blades out of the wind. The turbines will also be equipped with a mechanical brake located at the output shaft of the gearbox. The braking system is designed to be fail-safe, allowing the rotor to be brought to a halt under all foreseeable conditions.

### **1.3.5 Turbine Rotor Blades**

Turbine rotor blades will be connected to the hub and capture the kinetic energy from the wind. The rotor blades will be non-metallic and equipped with a sophisticated lightning protection system designed to conduct lightning from the receptors at the tip of each blade, down through the blade, hub, tower, and then finally dissipated via the earthing insulation system incorporated into the foundation.

### **1.3.6 Turbine Transformers**

Electricity created by the generators will be routed to a transformer which will step-up the voltage to 34.5 kV. The electricity will then be fed into the electrical collection system.

### **1.3.7 Electrical Collection System**

Electricity will be routed from the turbine transformers to the Collector Substation through underground collection lines that electrically connect groups of turbines together. Collection system trenches will also include fiber optic cable for communication and control. Junction

boxes will house the connection of collection cables that are split in two or more directions. The collection lines will terminate at the Collector Substation.

### **1.3.8 Collector Substation**

The Collector Substation will transform electricity from the electrical collection system to the 345 kV interconnection voltage. The Collector Substation will include a main power transformer, a transformer containment area, control enclosure, overhead bus and associated structures, circuit breakers, disconnect switches, relay panels, surge arresters, battery banks, grounding system, and relaying, metering, and communication equipment.

### **1.3.9 Gen-Tie Line**

The 345 kV Gen-Tie Line will transmit electricity from the Collector Substation to the Interconnection Switchyard. The Gen-Tie Line will be an overhead transmission line of a single-circuit, monopole design. The type of pole material will be determined during final engineering but will likely be weathered steel. The conductor will be sized to carry the electricity of the Project, and to meet any thermal stability, vibration resistance, or other specific technical criteria required. The Gen-Tie Line will terminate at the Interconnection Switchyard.

### **1.3.10 Interconnection Switchyard**

The existing Hill Valley 345 kV Interconnection Switchyard owned by American Transmission Company (“ATC”) will transmit electricity generated by the Project onto the ATC transmission system.

### **1.3.11 Operation and Maintenance Area**

The O&M Area will include an operation and maintenance building, parking area, storage area, and other associated facilities such as a drinking water well, aboveground water storage tanks, septic system, controlled access gates, electronic security systems, lighting, and signage.

### **1.3.12 Access Roads**

Access roads will be installed to provide access to the Project from public roads. Access roads will be gravel-surfaced and provide access for emergency vehicles under emergency circumstances.

### **1.3.13 Meteorological Towers**

Badger Hollow Wind previously installed three temporary meteorological towers, of which two are currently operational. Up to two additional temporary and/or permanent meteorological towers may be installed for data collection during operations.

Each temporary meteorological tower would be a guyed steel lattice tower that matches the hub height of the installed turbines. Data collected from these tower(s) would be compared to the energy production of the selected turbines to verify that the turbines are performing to the manufacturer’s specifications. Power performance testing generally lasts for 3 to 6 months

beginning when the Project is commissioned. Upon completion of power performance testing, the tower(s) would be removed.

Any additional permanent meteorological tower(s) would be used for initial power performance testing, as well as long-term operations testing and data collection. Data collected would be used to assess turbine performance and generate power forecasts. Each permanent meteorological tower would be self-supporting, with a more substantial foundation than a temporary meteorological tower and powered by the nearest turbine.

### **1.3.14 Temporary Construction Laydown Yard**

The Project construction contractor will develop a temporary construction laydown yard that will include construction trailers with administrative offices, employee parking, a concrete batch plant, water service, power service, tool sheds, storage containers, and a laydown area for equipment and material delivery and storage. After completion of construction, the temporary construction laydown yard and all associated buildings will be removed, and the land will be returned to a farmable condition.

## **2. A map showing the planned location of all wind energy system facilities.**

A preliminary Project layout map is provided in **Exhibit 1**.

## **3. Contact information for the owner.**

Badger Hollow Wind Farm LLC  
Attn: Brandon Davis, Cooper Johnson  
One South Wacker Drive, Suite 1800  
Chicago, IL 60606

Brandon Davis  
Senior Analyst, Renewable Development  
312-582-1428  
bdavis@invenergy.com

Cooper Johnson  
Director, Renewable Development  
312-429-2595  
cjohnson@invenergy.com

## **4. A list of all potential permits or approvals the owner anticipates may be necessary for construction of the wind energy system.**

All potentially required federal- and state-level permits and consultations that may be necessary for the construction of the Project are identified in **Table 4** below. Permits to be applied for will be determined based on Badger Hollow Wind's final engineering following issuance of a Final Decision in the CPCN proceeding. In addition to the permits identified in **Table 4**, Badger Hollow Wind may apply for local permits to facilitate cooperation with local governments. In the event local permits are withheld or delayed, installation and utilization of the facility may nevertheless proceed under Wisconsin Statute § 196.491(3)(i).

**Table 4 Preliminary Permits and Consultations**

<b>Agency</b>	<b>Permit/Consultation</b>	<b>Notes</b>
<b>Federal</b>		
Federal Aviation Administration	Notice of Proposed Construction or Alteration (Form 7460-1)	Required for any proposed construction over 200 feet above ground level.
Federal Aviation Administration	Notice of Actual Construction or Alteration (Form 7460-2)	If advised by the FAA, required to be submitted within 48 hours prior to construction or within 5 days of structure reaching its greatest height.
U.S. Department of Defense	Military Aviation and Installation Assurance Siting Clearinghouse Review	U.S. DoD reviews Projects filed with the FAA to evaluate for determinations of no hazard.
U.S. Department of Commerce – National Telecommunications and Information Administration	NTIA Communication Study	No interference with federal communication systems anticipated.
National Oceanic and Atmospheric Administration	NexRAD Notification	Project is outside of required noticing area.
U.S. Army Corps of Engineers	Section 404 Wetland Permit	Impacts to jurisdictional water resources will be avoided and minimized to the extent practicable. Field delineations within the final Project footprint will be performed to determine the presence and extent of wetland resources, quantify potential impacts, and determine the appropriate authorization for unavoidable impacts.
U.S. Army Corps of Engineers	Section 10 Waterway Permit	Impacts to jurisdictional water resources will be avoided and minimized to the extent practicable. Field delineations within the final Project footprint will be performed to determine the presence and extent of water resources, quantify potential impacts and determine the appropriate authorization for unavoidable impacts.
U.S. Fish and Wildlife Service	Endangered Species Act Review	Consultation is required if the Project has a federal nexus or otherwise may impact federally listed species or designated critical habitats. Initial screening

**Table 4 Preliminary Permits and Consultations**

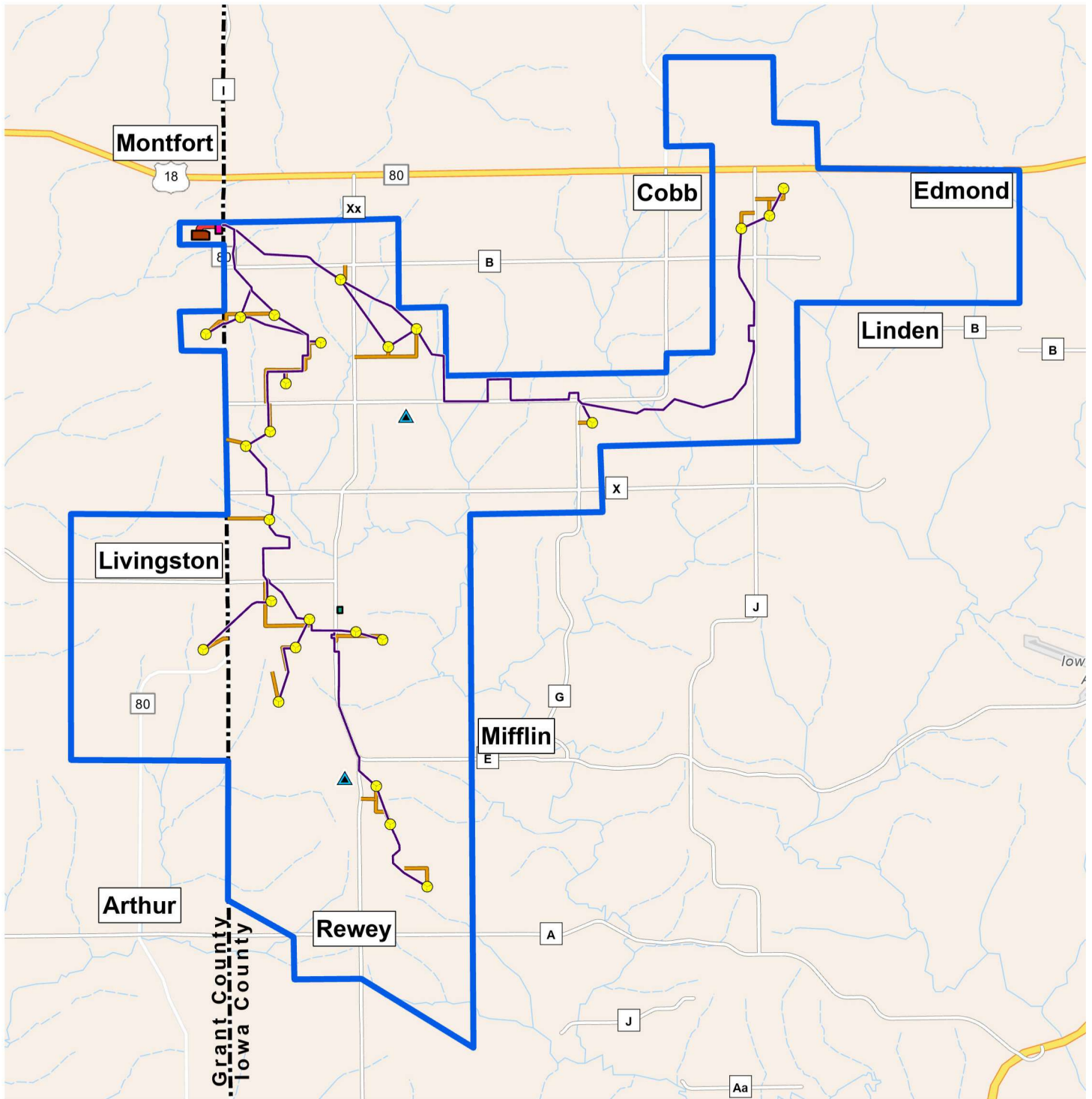
Agency	Permit/Consultation	Notes
		completed through Information for Planning and Consultation (IPaC) tool.
U.S. Environmental Protection Agency	Spill Prevention, Containment, and Countermeasures Plan	Required if aggregate above-ground oil storage capacity exceeds 1,320 gallons or buried storage capacity exceeds 42,000 gallons.
<b>State</b>		
Public Service Commission of Wisconsin	Certificate of Public Convenience and Necessity	Required for construction of a large electric generating facility.
Wisconsin Department of Natural Resources	Engineering Plan	Required prior to submittal of an application for Certificate of Public Convenience and Necessity for a large electric generating facility.
Wisconsin Department of Natural Resources	Endangered Resource Review	Impacts to state-listed species endangered resources will be avoided and minimized to the extent practicable through consultation with WDNR.
Wisconsin Department of Natural Resources	Incidental Take of Threatened or Endangered Resource (Wis. Stat. Ch. 29)	Impacts to state-listed species endangered resources will be avoided and minimized to the extent practicable through consultation with WDNR.
Wisconsin Department of Natural Resources	Wisconsin Pollutant Discharge Elimination System Construction Stormwater General Operating Permit (Wis. Stat. Ch. 283, Wis. Admin. Code Ch. NR 216 & NR 151)	Required for land disturbance or construction activities that disturb one or more acres.
Wisconsin Department of Natural Resources	Wisconsin Pollutant Discharge Elimination System Pit/Trench De-Watering (Wis. Stat. Ch. 283)	Required for point-source discharge of any pollutants into the waters of the State.
Wisconsin Department of Natural Resources	Wetland Fill Permit (Wis. Stat. Ch. 281)	Impacts to wetland resources will be avoided and minimized to the extent practicable. Field delineations within the final Project footprint will be performed to determine the presence and extent of wetland resources, quantify potential impacts, and determine the appropriate authorization for unavoidable impacts.

<b>Table 4 Preliminary Permits and Consultations</b>		
<b>Agency</b>	<b>Permit/Consultation</b>	<b>Notes</b>
Wisconsin Department of Natural Resources	Construction Affecting Navigable Waterways (Wis. Stat. Ch. 30)	Impacts to waterways will be avoided and minimized to the extent practicable. Field delineations within the final Project footprint will be performed to determine the presence and extent of water resources, determine navigability, quantify potential impacts, and determine the appropriate authorization for unavoidable impacts.
Wisconsin Department of Natural Resources	Private Well Notification Number	Required for construction of a private well.
Wisconsin Department of Transportation	Oversize-Overweight Vehicle Permit	Required for any vehicles exceeding posted limits on state roads.
Wisconsin Department of Transportation	Connection Permit	Required for construction of driveway or public/private road on property abutting a state highway.
Wisconsin Department of Transportation	Utility Permit	Required for construction or maintenance of a utility facility in state highway right-of-way.
Wisconsin Department of Transportation	High Structure Permit	Required for construction of a structure greater than 500 feet above ground level.
Wisconsin Department of Safety and Professional Services	Commercial Building Plan Review	Required for installation of electrical, plumbing, and certain mechanical systems in a commercial building.

**5. Whether the owner is requesting a joint application review process under s. PSC 128.30 (7) and the name of each political subdivision that may participate in the joint review process.**

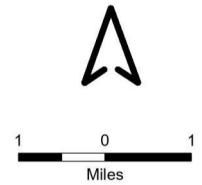
As the Project requires a CPCN, a joint application review process is not applicable. Badger Hollow Wind Farm LLC is not requesting joint application review under Wis. Admin. Code § 128.30 (7).





**Legend**

- Turbine
- ▲ Meteorological Tower
- Electrical Collection System
- Access Road
- Gen-Tie Line
- Collector Substation
- Interconnection Switchyard
- O&M Area
- Project Area
- County Boundary



**Exhibit 1: Preliminary Project Layout Map**

Badger Hollow Wind Energy Center | Grant and Iowa Counties, Wisconsin