4906-17-02 Project Summary and Facility Overview

(A) PROJECT SUMMARY AND OVERVIEW OF THE PROPOSED PROJECT

Applicant Heartland Wind, LLC (the Applicant), a limited liability company whose sole member and manager is Iberdrola Renewables, Inc. (IBR), is proposing to construct, own and operate up to 350 megawatts (MW) in nameplate capacity of wind-powered electric generation located in Van Wert and Paulding Counties, Ohio (the Blue Creek Wind Farm or the Facility[1]). The Facility would consist of the following:

- Up to 175 wind turbine generators[2];
- Electrical collection system using underground and aboveground 34.5 kilovolt (kV) collection lines and aboveground 115 kV collection lines;
- Three intra-project collection substations;
- One interconnection substation;
- Gravel access roads;
- A temporary staging and construction laydown area;
- Up to two permanent meteorological facilities consisting of up to two permanent meteorological towers (met towers) and a sonic detection and ranging (SODAR) facility;
- A temporary concrete batch plant[3]; and
- An operation and maintenance (O&M) building.

Electricity generated by the Facility would be integrated into the existing regional transmission system grid operated by PJM Interconnection (PJM).

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[1] According to OPSB regulations at OAC Rule 4906-17-01, the term Facility is defined as "all the turbines, collection lines, any associated substations, and all other associated equipment."

[2] The proposed Facility will have up to 175 turbines for a maximum potential output of 350 MW. Within this Application, specific locations for 167 turbines and other related Facility infrastructure are identified. An additional eight turbines will be located in an area along the eastern portion of the Project area boundary. The Applicant will provide the locations of the eight turbines in the shaded areas on an updated map (Updated Figure 2-1) by March 15, 2010 and appropriate site-specific information by April 1, 2010 in sufficient time for the OPSB Staff to consider the information in the Staff Report.

[3] As part of the Facility, the Applicant is evaluating the option of constructing a temporary concrete batch plant for producing concrete required during construction. This temporary batch plant would be located in the southern portion of the Project area, adjacent to the O&M building site.

Unlike traditional power plants that combust fossil fuel to generate electricity, the proposed Facility will not emit air pollutants, require water for cooling purposes, or require process wastewater to be discharged from the Facility. In addition, the Facility will not produce any solid combustion wastes as a by-product of its energy production process. Therefore, the Applicant's proposed Facility will avoid major impacts associated with decreased air quality, water consumption, thermal pollution and ash landfills.

IBR has experience in developing wind power facilities across the United States, including everything from site acquisition and wind measurement to facility construction and operation. IBR has proven expertise in getting projects online, on time, and on budget by working successfully with landowners, permitting agencies, communities, local governments, environmental agencies, customers, and financial institutions. IBR is the largest owner and operator of wind generating assets with more than 10,000 MW of wind power capacity in operation globally. In the United States, IBR owns and operates approximately 3,500 MW of wind facilities and employs more than 800 people. IBR's U.S. headquarters is located in Portland, Oregon. Additional information about the company can be found at www.iberdrolarenewables.us.

IBR currently operates wind farms in 20 states and constructed five new projects in 2009. The Applicant and its parent company, IBR, are well-capitalized and committed to providing the necessary financial resources to develop and build the Facility.

(1) General Purpose of the Facility

Power from the Facility would provide clean, renewable energy to utility customers through wholesale market sales or a contracted power sales agreement, often referred to as a power purchase agreement (PPA). A PPA is entered into between the owner of a generating facility and a Federal Energy Regulatory Commission (FERC)-licensed wholesale power purchaser, such as an energy company or an electric utility. Energy produced by the Facility could be sold to utilities inside the state of Ohio or across the PJM transmission grid, which supplies customers in Delaware, Indiana, Illinois, Kentucky, Maryland, Michigan, Maryland, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia, and the District of Columbia.

A wind farm is an electricity generator that uses the wind as its fuel. Because the wind is renewable and free, a wind farm has operating expenses that are very predictable. Therefore, wind farm owners are able to offer stable, predictable energy prices for long-term PPAs. This is a significant advantage over most other long-term PPAs from fuel-based generating facilities where the electricity price typically will vary significantly over time as the price of fuel changes. PPAs are typically entered into for 10- to 25-year periods, thereby ensuring the stability and longevity of the facility. The Applicant's Facility may also utilize short-term sales for a portion of the power, depending on market or customer demands.

Another advantage of the Facility is that it would assist Ohio in meeting alternative energy goals and help provide a more diverse national energy portfolio. The Ohio General Assembly recently enacted the Ohio alternative energy portfolio standard (AEPS) through Amended Substitute Senate Bill 221. The AEPS requires that by 2025, at least 25 percent of the electricity sold in Ohio be supplied by alternative energy resources. Of the 25 percent requirement, at least half must come from renewable energy sources, such as wind, and at least half of this amount must be generated in Ohio.

(2) Facility Description

The Facility is located within the approximately 40,500-acre Project area (the Project area[4]) in Benton, Blue Creek, and Latty townships in Paulding County, Ohio and Tully, Union, and Hoaglin townships in Van Wert County, Ohio. The Project area consists primarily of agricultural land situated amongst the communities of Van Wert, Scott, Cavett, Haviland, and Convoy, with approximately 140 participating landowners representing approximately 17,000 acres of leased land.

The Facility would consist of up to 175 wind turbine generators and associated infrastructure, including underground and aboveground collection lines, access roads, substations, a temporary staging and construction laydown area, a temporary concrete batch plant, a permanent met tower, a SODAR facility, and an O&M building. The wind

[4] As defined in the OPSB rules, "Project area means the total wind-powered electric generation facility, including all associated setbacks." See OAC Rule 4906-17-01(B)(1).

turbine model to be utilized at the Facility has not yet been selected; however, each turbine would have a nameplate capacity rating of 1.5 to 2.4 MW, which would result in a total generating capacity of up to 350 MW. The distance between turbines ranges from 764 feet to 2,986 feet.

The Facility would interconnect to the existing 345 kV transmission line that runs through the southern portion of the Project area. The 345 kV transmission line is owned by American Electric Power (AEP) and controlled by PJM, the large regional independent system operator. The PJM transmission system is one of the leading and most efficient regional transmission systems in the country.

Figure 2-1 shows the Project area and the 5-mile buffer around the Project area. Section 4906-17-03, *Project Description and Schedule*, provides a detailed description of the Facility components and the anticipated Facility schedule.

(3) Site Selection Process

The Project area was selected based primarily upon the wind resource; transmission line access; land availability; community support; site accessibility; and minimal risk associated with environmental, ecological, and agricultural impacts. The following provides an overview of the selection criteria:

(a) High Quality Wind Resource

The Project area was identified in 2006 as having the potential for a productive wind resource by studying state overview maps. The Applicant began scientifically studying the wind resource by erecting meteorological towers in September 2007 and additional towers in early 2009. Through the initial and more detailed wind resource assessments, the Applicant has determined the Project area is suitable for wind development.

(b) Suitable Transmission

Large-scale wind energy facilities must be located within a reasonable distance to an interconnection point on a transmission line with sufficient capacity to allow

for the economical delivery of power to customers on the transmission grid. With the nearby presence of two AEP transmission lines, the Facility has excellent transmission access, both in terms of proximity and availability. The Facility would connect to the grid through a new 345 kV Interconnection Substation along the existing 345 kV AEP transmission line. The Facility would include 78.6 miles of underground collection lines and 3.7 miles of aboveground collection lines (rated at 34.5 kV) that would tie into two smaller collector substations. Approximately 6.0 miles of 115 kV aboveground collection lines would connect the two collector substations to the 345 kV Interconnection Substation. The Applicant began through the interconnection queue process in January 2007 by filing interconnection queue position R60 with PJM. The ability to interconnect the Facility to an existing transmission line without great expense makes this site suitable for wind development.

(c) Available Land and Land Use Constraints

The Project area consists primarily of agricultural land situated amongst the communities of Van Wert, Scott, Cavett, Haviland, and Convoy. Once the Project area boundary was roughly defined, the process of obtaining landowner agreements began. Additional research on the Project area led to a continuous narrowing of the Project area for the Applicant. For example, an aeronautical study was performed and the Project area boundary was reduced in size to have no impacts on local airports. The Facility layout incorporates numerous setbacks to comply with Ohio Power Siting Board (OPSB) requirements and to minimize impacts on residents of the Project area.

(d) Ecological and Environmental Impacts

In 2008, the Applicant performed a due diligence study to assess potential environmental constraints, such as avian and bat, threatened and endangered species, environmentally sensitive habitats, aviation, and other features in the general Paulding and Van Wert County area. The results of the due diligence study were incorporated into Facility development decisions and the Project area

was further refined to avoid and minimize potential impacts to environmentally sensitive issues and features.

In early 2009, the Applicant began ecological and environmental studies in the Project area to further evaluate potential environmental issues. The studies performed were avian and bat, wildlife, aviation, wetlands and waterbodies, cultural resources (historic architecture and archaeology), noise, and visual (including shadow flicker) studies. According to United States Fish and Wildlife Service (USFWS), the Ohio Department of Natural Resources (ODNR), and the Ohio Environmental Protection Agency (OEPA), the Facility is expected to have minimal impact to ecological and environmental resources.

(e) Community Support

The Applicant initiated discussions about leases with private landowners in March 2007. In November 2008, the Applicant held a meeting with all engaged landowners and received a very favorable response to the Facility. In addition, the Applicant advertised for and hosted a public meeting in January 2009 to provide an overview of the Facility. To date, several other meetings and presentations have taken place within the community. Based on these meetings which involved hundreds of local residents, the community appears to support the Facility, as demonstrated by the success of the Applicant's leasing program, strong positive comments toward the Facility at many of the public meetings (especially the 2009 Van Wert County Fair), and the complete absence of negative comments towards the Facility.

(f) Site Accessibility

The site is accessible using an existing network of public roads and is near the confluence of U.S. Highways 30, 127, and 224. Active rail lines are also present near the Project area. Access roads required within the Project area would be designed and constructed to avoid to the extent possible deep drainage ditches. Studies have been undertaken to plan and avoid to the extent possible impacts to

waterways and bridges, and to maximize convenience for the Facility and landowners. The Applicant has coordinated with federal, state, and local permitting agencies, and will obtain the appropriate federal, state, and local permits.

(4) Principal Environmental and Socioeconomic Considerations

As part of the Facility development process, the Applicant conducted an analysis of potential environmental and socioeconomic impacts from construction and operation of the Facility. Section 4906-17-07, *Environmental Data,* of this Application, provides a detailed discussion of potential direct and indirect environmental impacts from construction and operation of the Facility, as well as potential mitigation measures for such impacts. Section 4906-17-08, *Social and Ecological Data*, provides a detailed discussion of the social and ecological impacts from the Facility. A brief summary of the major environmental and socioeconomic considerations, including ecological, land use and community development, socioeconomic, cultural resources, noise and visual impact, is provided below.

(a) Ecological

Numerous site visits were performed to characterize the habitat and identify wetlands and waterbodies in the Project area. No wetlands or waterbodies were delineated near any of the turbine locations; however, potential impacts to wetlands or waterbodies may occur during the installation of the electric collection systems and access roads. All of the potential impacts would be to wetlands that are considered Category 1 (lowest quality) wetlands according to OEPA's Ohio Rapid Assessment Method (ORAM) assessment. It is the intent of the Applicant to keep total wetland impacts to less than 0.5 acres so the Facility can be authorized by the United States Army Corps of Engineers (USACE) Nationwide permit program.

Desktop studies were also conducted for major species of biota, including those of commercial or recreational value, and those designated as threatened or

endangered. The Applicant is not anticipating impacts to occur to any threatened or endangered species or their habitat. The Applicant will continue correspondence with the ODNR in designing the Facility to avoid impacts to threatened or endangered species.

The Applicant has also conducted bat acoustic monitoring within the Project area. The bat acoustic monitoring was completed in mid-November 2009. A full report will be provided in early February 2010 once the analysis is completed.

Impacts due to the construction of the Facility are anticipated to be minimal and would likely be limited to incidental injury and mortality of sedentary or slow-moving species due to construction activity and increases in vehicular movement; habitat disturbance or loss associated with clearing and earth-moving activities; and displacement of wildlife due to increased noise and human activities. However, because most of the Facility is proposed to be sited in active agricultural land that provides limited wildlife habitat, and which currently (and historically) experiences frequent agricultural-related disturbances, incidental injury and mortality impacts are expected to be minor. In addition, soil disturbance and exposure would likely occur in areas previously subjected to regular plowing, tilling, and harvesting. The majority of the habitat and vegetation disturbance and loss would be temporary in nature.

The Applicant would mitigate short-term construction disturbance by restoring disturbed areas to similar vegetation types in accordance with an Erosion and Sediment Control Plan (E&SCP) that would be prepared for the Facility. The Applicant also plans to conduct post-construction monitoring for birds and bats in order to monitor and track impacts to these species. Based on Project area siting within ODNR's Minimal Risk Areas (MRAs), the potential for impacts are expected to be low.

(b) Land Use and Community Development

Agricultural uses are the predominant land use in both Paulding and Van Wert Counties. Land use surveys were conducted to verify land use within 5 miles of the Project area. These surveys confirmed the area as being predominately agricultural cropland. The Van Wert County comprehensive plan objectives directly involve agricultural land use and open space, including: continuing to develop a land use pattern that balances between rural and urban, encourages open space preservation, and conserves and protects and enhances areas of agriculture and open space. Paulding County currently lacks a comprehensive plan; however, they have developed a Comprehensive Economic Development Strategy (CEDS) that discusses specific goals related to economic development activities and other initiatives.

(c) Socioeconomic

The Facility would create employment opportunities during the three-year construction phase and during the 25-year operational phase. The construction work force is estimated at 250 onsite workers. If the Applicant's recent experience constructing a similarly sized project in Illinois is a guide, the Applicant could expect to obtain up to 75 percent of the construction workforce from the local/regional workforce. A construction payroll of approximately $20 million is anticipated during both phases of construction. It is anticipated that up to 10 full-time employees would be used during the first two years of operation during the equipment warranty period and up to 20 full-time employees subsequent to the expiration of the equipment warranties.

Discussions concerning an enterprise zone property tax abatement are ongoing between the Applicant and Van Wert and Paulding Counties. The Applicant's proposal to both Van Wert and Paulding Counties would provide approximately $8 million in combined new tax revenues over a period of 15 years.

The proposed Facility would benefit the rural economies of Van Wert and Paulding Counties by providing local jobs during construction and increasing activity at local commercial businesses and industries that can provide some of the needed materials and services for construction of the wind farm. Local fuel retailers would also benefit from increased purchases of gasoline and diesel purchases that would be required for construction vehicles and equipment. Hotels and restaurants would benefit as well, since a portion of the construction workforce would need to be obtained from non-local, highly specialized labor pools.

Lease payments to local landowners would also benefit the local economy because it is likely that a portion of the lease payments would be spent in the nearby communities within Van Wert and Paulding Counties. Lease payments would likely total approximately $1.6 million in the first year and approximately $53 million over the 25-year life of the Facility. All of this activity would result in a net inflow of millions of dollars into the local economy that will have a beneficial effect beyond that of the new employment that would be provided during construction and operation of the Facility.

(d) Cultural Resources

The Applicant performed cultural resources surveys for the Facility that entailed an archaeological survey and architectural survey. An archeological survey was undertaken within the areas of potential direct effects of the Facility. Additional survey activity is anticipated to take place in the spring of 2010 to supplement the current investigation and to reflect final Facility design. The results of the current investigation will be submitted to the Ohio Historic Preservation Office (OHPO), with a copy to OPSB Staff, in early February 2010. A summary of this investigation is presented in Section 4906-17-08(D), *Cultural Impact*.

Sites that were not found to be historic properties will not represent landmarks of cultural significance, as defined by OPSB regulations, and no avoidance or further archeological investigation will be necessary. For nine sites, avoidance is

planned. If avoidance is not possible, Phase II archeological evaluation will be undertaken assess whether the sites represent historic properties and therefore landmarks of cultural significance, as defined by OPSB regulations. During construction, an unanticipated finds plan would be implemented in accordance with OHPO requirements, and discussions with OPSB Staff.

A reconnaissance-level architectural survey was conducted within a 5-mile (8-km) radius of each wind turbine identified as of September 2009 (architectural reconnaissance survey area). The architectural reconnaissance survey area is identified and discussed in the architectural reconnaissance survey report (submitted to the OHPO on November 19, 2009 and summarized in Section 4906-17-08(D), *Cultural Impact*. Additional survey activity is anticipated to take place in the spring of 2010 to supplement the current investigation and to reflect final Facility design.

No direct impacts resulting from the physical removal or alteration of historic properties are anticipated. Visual impacts related to potential historic properties are anticipated in varying degrees within the architectural reconnaissance survey area. The Facility will introduce elements to the surrounding area that will affect the quality of setting, as defined by the National Register guidelines. It is anticipated that adverse visual impacts will be addressed through a formal mitigation plan designed to promote the preservation and continued meaningfulness of historic resources. Such a plan, developed in consultation with OHPO, the OPSB Staff, and interested parties, such as the Van Wert County Historical Society, may be formalized through the negotiation of a formal Memorandum of Agreement that specifies mitigation measures, responsibilities, and implementation schedules.

(e) Noise

No existing national, state, or local regulations limit noise levels at wind energy facilities. Potential noise from the Facility was evaluated for 167 Gamesa G-902.0 MW (G-90) wind turbines on 328-foot (100-meter) tall

towers and the associated electrical substations. The expected operational noise levels are anticipated to range between less than 30 decibels (A-weighted scale) (dBA) to 53 dBA. These noise levels are representative of Facility noise levels and an overall reduction in Facility noise levels is expected to be realized through the micro-siting process. Section 4907-17-03(A)(2), *Noise,* presents the findings of the noise assessment.

(f) Visual Impact

A Visual Impact Assessment (VIA) has been prepared for the Facility that describes the Facility location, viewpoint selection process, assessment methodology and results, proposed visual mitigation measures, and photosimulations for views from eight viewpoints.

To maximize the visual integration of the Facility into the overall pattern of the Project area landscape, the Applicant would incorporate best management practices (BMPs) related to Facility appearance. These measures are presented in more detail in the VIA and include use of turbines with uniform appearance, use of muted gray or white colors, and placement of as much of the Facility's electrical collection system underground, as practicable. These measures would be incorporated into Facility design to ensure an attractive appearance and good integration into its landscape setting. Section 4906-17-05(B)(3), *Photographic Interpretation or Artist's Pictorial Sketches*, provides more details on the visual impact assessment conducted for the Facility.

A shadow flicker analysis was performed for 167 G-90 wind turbines on 328-foot (100-meter) tall towers to evaluate the extent of potential shadow flicker experienced at each residence and primary transportation corridor in the Project area. There are currently no federal or state standards regulating frequency or duration of shadow flicker for wind turbines. International studies and guidelines from Europe and Australia have suggested 30 hours of shadow flicker per year as the threshold of significant impact, or the point at which shadow flicker can be considered a nuisance. The shadow flicker analysis resulted in predicted shadow

flicker effects over 30 hours per year at 39 residences in the Project area. The Applicant plans to use a number of mitigation measures to reduce projected shadow flicker impacts to these affected residences. Section 4906-17-08(A)(6), *Shadow Flicker*, provides more details on the Shadow Flicker study that was conducted for the Facility.

(5) Project Schedule

The Applicant began development of the Facility in Fall 2006. Due diligence of potential Facility environmental and regulatory constraints began in September 2008. Acquisition of land and land rights began in March 2007 and continued through November 2009. Wildlife surveys, including bird, bat, wetland, habitat, and vegetative surveys, began in February 2009 and continued into November 2009. The acoustic bat survey data report will be submitted in early February 2010. Site-specific geotechnical studies will be conducted from April to May 2010, with the final geotechnical report to be submitted in June 2010. Additional studies associated with eight additional turbines (and associated equipment) will be completed in early 2010 and submitted to the OPSB by April 1, 2010. The Facility schedule anticipates that the Certificate would be issued by late July 2010. The final design drawings for the Facility would be prepared beginning in June 2010. Phase I of Facility construction is anticipated to begin in September 2010 and extend through November 2011. Phase I of the Facility would be placed into service in December 2011. Phase II of Facility construction is anticipated to begin in September 2011 and extend through November 2012. Phase II of the Facility would be placed into service in December 2012. Figure 2-2 shows the anticipated Facility schedule.

FIGURE 2-2
Blue Creek Project Schedule