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September 28, 2018

Ms. Barcy F. McNeal, Secretary  
Public Utilities Commission of Ohio  
180 E. Broad St., 11th Floor  
Columbus, OH 43215-3793

Re: OPSB Case No. 18-1473-EL-BGA  
Application for a Sixth Amendment to the  
Scioto Ridge Project

Dear Ms. McNeal:

Accompanying this letter are hard and electronic copies of an application by Hardin Wind LLC for a Sixth Amendment to its Certificate of Environmental Compatibility and Public Need for the Scioto Ridge Wind Farm Project, issued in Case No. 13-1177-EL-BGN. This Sixth Amendment seeks to use two Acciona turbine models, AW125 (3.15 MW) and AW132 (3.465 MW). The original Application for a Sixth Amendment was electronically filed.

In accordance with Rule 4906-2-04 of the Ohio Administrative Code, we make the following declarations:

Name of the applicant:

Hardin Wind LLC  
1251 Waterfront Place, 3<sup>rd</sup> Floor  
Pittsburgh, PA 15222

Names and location of the facility:

Scioto Ridge Wind Farm  
Roundhead, McDonald, Lynn and Taylor Creek Townships, Hardin County, Ohio  
Richland and Rushcreek Townships, Logan County, Ohio

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September 28, 2018  
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Name of authorized representative:

Michael J. Settineri  
Vorys, Sater, Seymour and Pease LLP  
52 E. Gay Street  
Columbus, OH 43215  
614-464-5462  
[mjsettineri@vorys.com](mailto:mjsettineri@vorys.com)

Notarized Statement:

See attached Affidavit of Andrew Young

Hardin Wind LLC is requesting a waiver from the Ohio Power Siting Board Rule 4906-3-11(B)(2)(a)(iii) to allow for newspaper notice of this application.

Very truly yours,

/s/ Michael J. Settineri

Vorys, Sater, Seymour and Pease LLP  
Attorneys for Hardin Wind LLC

MJS  
Enclosure

BEFORE THE OHIO POWER SITING BOARD

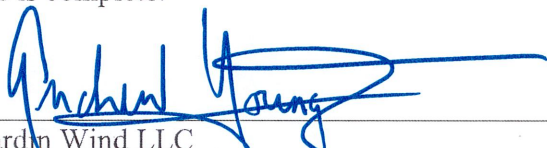
In the Matter of the Application of )  
Hardin Wind LLC for a Sixth )  
Amendment to its Certificate Issued in ) Case No. 18-1473-EL-BGA  
Case No. 13-1177-EL-BGN )

AUTHORIZED REPRESENTATIVE AFFIDAVIT

STATE OF PENNSYLVANIA )  
 ) SS:  
COUNTY OF ALLEGHENY )

Now comes Andrew Young, an Authorized Representative of Hardin Wind LLC, having been first duly sworn, declares and states as follows:

1. He is the highest ranking executive officer in charge of the Scioto Ridge Wind Farm project in the Townships of Roundhead, McDonald, Lynn and Taylor Creek in Hardin County, Ohio, and the Townships of Richland and Rushcreek in Logan County, Ohio.
2. He has reviewed the Application for a Sixth Amendment to the Certificate to Construct a Wind-Powered Electric Generating Facility in Hardin County and Logan County, Ohio that was issued in Case No. 13-1177-EL-BGN.
3. To the best of his knowledge, the information and statements contained in the Application for a Sixth Amendment to the Certificate are true and correct and the Application for a Sixth Amendment to the Certificate is complete.

  
Hardin Wind LLC

By: Andrew Young, Authorized Representative  
CEO, Innogy Renewables US LLC

Sworn to before me and signed in my presence this 27<sup>th</sup> day of September 2018.

COMMONWEALTH OF PENNSYLVANIA  
NOTARIAL SEAL  
Stephanie M. Ottey, Notary Public  
City of Pittsburgh, Allegheny County  
My Commission Expires Oct. 9, 2019  
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

  
Notary Public  
My Commission Expires 10/9/19

**BEFORE THE OHIO POWER SITING BOARD**

In the Matter of the Application	)	
of Hardin Wind LLC for a Sixth	)	Case No. 18-1473-EL-BGA
Amendment to its Certificate	)	
Issued in Case No. 13-1177-EL-BGN	)	

**Application for a Sixth Amendment**

**to the Hardin Wind LLC Certificate**

**Granted March 17, 2014 in Case No. 13-1177-EL-BGN**

***Addition of Available Turbine Models***

Hardin Wind LLC (hereinafter referred to as the “Applicant”) holds a certificate to construct a wind-powered electric generation facility (the Scioto Ridge Wind Farm) consisting of up to 105 wind-powered electric turbines, along with access roads, electrical interconnect, construction staging areas, operations and maintenance facilities, and a collection substation (collectively, the “Facility”) to be located in Lynn, McDonald, Roundhead, and Taylor Creek Townships (Hardin County) and Richland and Rushcreek Townships (Logan County).

The Ohio Power Siting Board (the “Board” or “OPSB”) issued an Opinion, Order and Certificate in Case No. 13-1177-EL-BGN on March 17, 2014 (the “Certificate”) approving the Facility for construction and operation. The Board approved an amendment to the Certificate on November 12, 2015 in Case No. 14-1557-EL-BGA consisting of minor changes to a meteorological tower, a collector substation, seven access roads and twelve collection lines. The Board approved a second amendment to the Certificate on May 19, 2016 in Case No. 16-0725-EL-BGA for a capacity rating increase from the previously approved 2.0 megawatt (“MW”) Gamesa G114 wind turbine model to 2.5 MW. The Board approved a third amendment to the Certificate on October 25, 2016 in Case No. 16-1717-EL-BGA to add the Vestas 110 model with a 2.2 MW nameplate capacity as an available turbine for the project. The Board approved a fourth amendment to the Certificate on July 6, 2017 in Case No. 17-0759-EL-BGA to add the Senvion (formerly Repower) M122 3.4 MW turbine and the Nordex N117 3.6 MW turbine model. Most recently the Board approved the Gamesa G114 2.625 and G132 3.465 MW turbine models in a fifth amendment on March 15, 2018 in Case No. 17-2108-EL-BGA.

The project was approved for up to 172 turbine sites with the final number of installed turbines dependent on the megawatt (“MW”) capacity of the final turbine model selected for the project. Since the original approval, the Applicant has provided notice to the Board of dropping 67 turbine sites, leaving only 105 approved turbine sites for this project. The turbine models currently approved for this project are the: REpower MM100 (2.05 MW); REpower M122 (3.0 MW; 3.4 MW); Nordex N117 (2.4 MW, 3.6 MW); Vestas V110 (2.0 MW and 2.2 MW); Vestas V117 (3.3 MW); Gamesa G97 (2.0 MW); Gamesa G114 (2.0 MW, 2.5 MW, 2.625 MW); Gamesa G132 (3.465 MW); General Electric GE100 (1.7 MW); Suzlon S111 (2.1 MW); and the GE103 (1.7 MW).

Through this application, the Applicant is proposing two new turbine models in the Nordex Group’s turbine fleet: the Acciona AW125 (3.15 MW) and the AW132 (3.465 MW). Acciona Windpower (AWP) officially merged with the Nordex Group in April 2016. The new company has collectively installed over 18 GW of sustainable energy worldwide and has significant experience in designing wind turbines. The two turbine models listed above are a part of the AW3000 platform, which has optimized performance and safety features. The proposed models also represent and include advances in technology and will be at or below the maximum height of the tallest turbine currently approved.

With respect to operational sound power output levels, both turbine models have slightly higher sound power output than the loudest turbine upon which operational sound modeling for the project was based. However, both turbine models are capable of being operated at a lower sound power output and at a level equal to the maximum sound power output level used for project operational sound modeling in the fifth amendment (the G114 2.625 MW model). Attached and part of this application as Appendix E is a letter from Nordex/Acciona stating that both turbine models can be operated at lower sound power output levels than 106.6 dBA., which was the maximum sound power output level used for project operational sound modeling in the fifth amendment (G114 2.625 MW).

The largest rotor diameter current approved for the project is 132 meters for the Gamesa G132 model. The AW125 has a smaller rotor diameter (125 meters) than the G132 model and the AW132 has the same rotor diameter as the G132 model. All have the same total height (150 meters). In response to Staff data requests for the fifth amendment, the previously approved G132 was modeled by the Applicant to indicate the number of nonparticipating residences that would experience greater than 30 hours of shadow flicker per year. Because the AW132 has the same dimensions as the previously approved G132 no further shadow flicker modeling is provided as a part of this application. The Applicant will operate the facility so that the facility shadow flicker contribution does not result in shadow flicker levels that exceed 30 hours per year for any non-participating sensitive receptor, as required under the Certificate (condition 14 of the January 21, 2014 Joint Stipulation). The Applicant will also comply with the condition's requirement to complete a shadow flicker analysis for all inhabited nonparticipating sensitive receptors that have already been modeled to be in excess of 30 hours per year of shadow flicker, regardless of the turbine model selected, at least 30 days prior to the preconstruction conference.

Importantly, no other aspects of the approved project will be modified through approval of this application. All 105 approved turbine sites remain unchanged as well as the location of the project's collector substation, access roads and collection lines. The only change is the addition of two turbine models. Of the currently approved turbines, the Nordex N117 has the highest nameplate capacity at 3.6 MW and if selected would result in an 84 turbine project. If the AW125 3.15 MW turbine is selected, it would result in an approximately 96 turbine project in order to maintain a similar installed capacity. If the AW132 3.465 MW turbine is selected, it would result in an approximately 87 turbine project in order to maintain the same installed capacity. The turbines with the lowest nameplate capacity are the GE 100 and GE 103 at 1.7 MW and if selected would result in a 105 turbine project.

The below information on the Nordex/Acciona AW125 3.15 MW turbine and the Nordex/Acciona AW132 3.465 MW turbine is being submitted in accordance with Board rule 4906-4-03. All other information regarding the project previously submitted to the Board remains unchanged.

### General Overview of the Nordex/Acciona AW125 3.15 MW and AW 132 3.465 MW Turbines

The Nordex/Acciona AW3000 platform, including both the AW125 and AW132 turbine models, represents the best in class in terms of optimized performance and safety in the Nordex/Acciona fleet of turbines. The benefit of the AW3000 platform is improved energy production, which will lower the cost of energy for the project and improve its competitiveness. Information about the AW3000 platform is attached as Appendix A.

### Technical Specifications of AW125 and AW132 Turbines

The technical specifications for the Nordex/Acciona AW125 3.15 MW and AW132 3.465 MW turbines are listed in the table below.

<b>Turbine Detail</b>	<b>AW125 3.15 MW Turbine</b>	<b>AW132 3.465 MW Turbine</b>
Rated power	3.15 MW	3.465 MW
Wind class	IEC IIb	IEC IIb
Rotor diameter	125 meters	132 meters
Swept area	12,305 m <sup>2</sup>	13,720 m <sup>2</sup>
Gearbox	3-stage	3-stage
Generator	Doubly-fed	Doubly-fed
Frequency	50/60 Hz	50/60 Hz
Hub Height	87.5 meters	84 meters

Additional technical information regarding the AW125 and AW132 turbines is attached as Appendix D, but given confidentiality requirements, is being submitted under seal. Importantly, because the AW125 and AW132 turbines have hub heights that are equal to or less than previously approved turbines, the maximum turbine height of 492 feet remains the same as in the original Application. Thus, the setback calculation for both proposed Gamesa turbine models remains the same to the nearest property line (541 feet). The setback calculation to non-participating residential structures would be the same (967 feet) or less than required for the previously approved G132 3.465 MW turbine. Note that the actual distance to the nearest non-participating residential structure is 1,270 feet, which is far in excess of the minimum required setback based on the G132 and AW132. The tallest hub height under consideration for the project remains at 328 feet (100 meters), found on the REpower MM100 and Gamesa G97 turbines. The maximum total turbine height (i.e., height at the highest blade tip position) of all the models under consideration remains 492 feet (150 meters), which is associated with the MM100, M122, N117, V110, V117, AW125, AW132, G114, and G132 models.

### Sound Power Output Comparison

The Nordex/Acciona AW132 3.465 MW wind turbine proposed for the Scioto Ridge Wind Farm project has a maximum sound power output of 109.0 dBA +/- 1.0 dBA. The Nordex/Acciona AW125 3.15 MW wind turbine has a maximum sound power output of 108.4 dBA +/- 1.0 dBA. The G97 2.0 MW turbine was modeled at 105.8 dBA +/- 2.0 dBA and the G114 2.625 MW turbine was modeled at 106.6 +/- 2.0 dBA. Both proposed Nordex/Acciona wind turbine models can also be operated in noise reduced modes and fitted with options such that noise output is at or below 106.6 dBA. Documentation of the Nordex/Acciona noise reduced modes/technologies for the AW125 turbine is being submitted as Appendix B and Appendix C under seal. A letter from Nordex/Acciona has also been submitted to confirm the ability of both the AW125 and the AW132 models to operate at a sound power output level equal to that of the previously approved G114 2.625 MW model. See Appendix E.

As required under the Certificate (condition 13 of the January 21, 2014 Joint Stipulation), the Applicant will operate the facility so that the facility noise contribution does not result in noise levels at the exterior of any currently existing non-participating sensitive receptor that exceed the project area ambient nighttime LEQ (42 dBA) by five dBA.

### Safety Features

The AW125 and AW132 have a number of safety features, including but not limited to independent activation of each blade, hydraulic pitch control, sensors that capture outside temperatures, wind speed and direction, and turbine operating parameters such as component temperatures, blade vibrations, overspeed and positioning. The proposed Nordex/Acciona turbine models will also have lightening protection and ice detection systems.

As required under the Certificate (condition 4 of the January 21, 2014 Joint Stipulation), the Applicant will submit the safety manual for the turbine selected for the project prior to construction. Representative safety manuals were provided in the project's initial application to the Board.



Additional questions about the proposed turbines models (Nordex/Acciona AW125 3.15 MW and Nordex/Acciona AW132 3.465) may be directed to the undersigned counsel or to Ashley Beal, Associate, Development, Scioto Ridge Wind Farm. Given that this application presents no changes to the facility design, the Applicant requests an expedited ruling.

Respectfully submitted,

s/ Michael J. Settineri  
Michael J. Settineri (0073369), Counsel of Record  
MacDonald W. Taylor (0086959)  
VORYS, SATER, SEYMOUR AND PEASE LLP  
52 East Gay Street  
P.O. Box 1008  
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*Attorneys for Hardin Wind LLC*

## APPENDIX A

### AW3000 PLATFORM INFORMATION

RISE ABOVE

# AW3000



**> The Nordex Group has seen explosive growth of orders for its AW3000 platform.** This success is due to a track record of reliability and product innovation coming from one of the most experienced wind energy companies in the world. The latest evolutions are the AW140 for light-wind locations in addition to uprating options to 3300 kW for certain configurations. Partner with the Nordex Group to make your projects rise above the competition.

## OPTIMIZED PERFORMANCE FOR ALL SITES

- Full suite of configuration options covering all wind conditions
- Steel and concrete tower options with hub heights from 80 to 137.5 meters
- Proven and bankable designs including double-bearing support on main shaft, glass fiber and epoxy blades and DFIG electrical generation

## BUILT BY OPERATORS FOR OPERATORS

- Based on a scaled design of our successful AW1500, the AW3000 provides more energy capture per wind turbine location
- Our track record of fleet wind turbine performance includes global average availability over 98% and extremely low failure rates of major components

## COMPATIBILITY & CONTROL

- Zero voltage ride-through beyond current regulatory requirements, in addition to grid integration and reactive power solutions to allow for maximum control for stringent grid codes
- Control software that allows intelligent automatic monitoring and operation

## SAFETY

- Hydraulic pitch control for safe and reliable blade pitching in all wind environments
- Two-person lift; hub access from inside the nacelle; and spacious, ergonomic nacelle design allow for operational efficiency

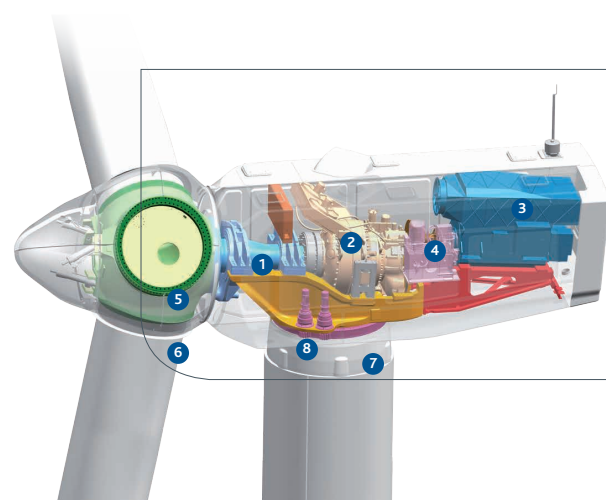
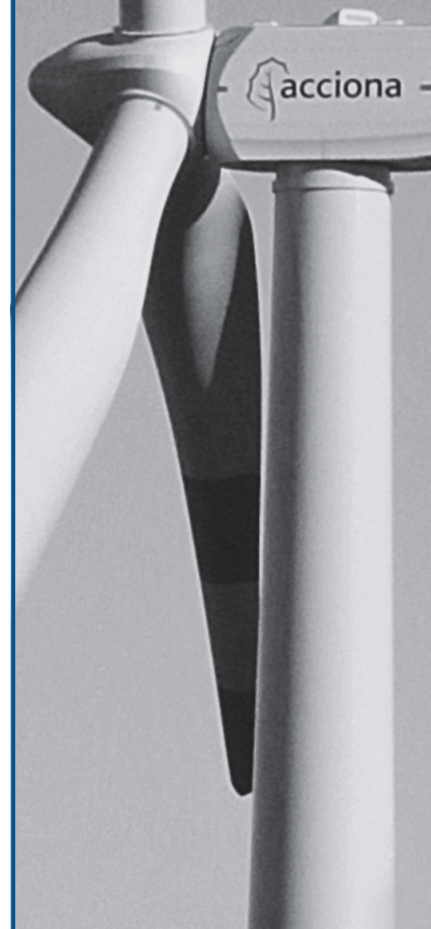
## 12 KV VERSUS 690 V

- This configuration, proven in our wind turbines, can remove the step-up transformer from the equation and is ideal for projects that are in close proximity to the substation
- The result is significant savings over the life of the project
- Up to 50% savings in collection system costs
- Average of 1% greater energy productions due to the avoidance of transformer electrical losses
- Avoidance of maintenance and potential failures of transformers

## AW3000 DESIGN ADVANTAGES

- 1) Double bearing-supported main shaft
- 2) Robust gearbox with HALT completed
- 3) 6 pole DFIG 12 kV generator
- 4) Elastic coupling
- 5) Cast hub with access from nacelle
- 6) Blades with structural shell design and proven materials including glass fiber and epoxy resin
- 7) Steel and concrete tower options from 80 m to 137.5 m hub heights
- 8) Yaw bearing and caliper brakes

AW 100 | AW 116 | AW 125 | AW 132 | AW 140  
**AW3000**



# AW3000

## TECHNICAL SPECIFICATIONS

MODEL	AW 100	AW 116	AW 125	AW 132	AW 140
Rotor diameter	100 m	116 m	125 m	132 m	140 m
Wind class	IEC Ia	IEC IIa	IEC IIb	IEC IIb	IEC S
Power	3000 kW	3000 kW	3000-3300 kW	3000-3300 kW	3000 kW
Turbine suitability	Strongest wind sites	Strong-wind and turbulent sites	Moderate to strong wind sites with low turbulence	Moderate wind sites with low turbulence	Light-wind sites

### OPERATING DATA

Cut-in wind speed	4 m/s	3.5 m/s	3.5 m/s	3 m/s	3 m/s
Cut-out wind speed	25 m/s	25 m/s	25 m/s	25 m/s	20 m/s
Cold Weather Operational Temperature range (Optional)	-30°C to +40°C				
Power factor range	+/- 0.93 (1,200 kVA) dynamic between +/- 5% p.u. voltage				
Zero voltage ride through	Meets or exceeds global requirements				

### ROTOR

Swept area	7,854 m <sup>2</sup>	10,568 m <sup>2</sup>	12,305 m <sup>2</sup>	13,720 m <sup>2</sup>	15,431 m <sup>2</sup>
Power regulation	Independent pitch regulated with variable speed				

### DRIVE TRAIN

Gearbox	3 stages: 2 planetary, 1 parallel (helical)				
Bearings	Double spherical roller bearings				
Lubrication	Pressure and splash with oil cooler/oil filter				

### PITCH SYSTEM

Actuation	Hydraulic cylinders				
Failsafes	Blade-independent piston accumulators on hub				

### YAW SYSTEM

Type	Four-point ball bearing, external gear				
Slewing ring	External				
Braking system	Disk+callipers, plus electro-mechanical brake per motor drive				

### GENERATOR

Type	6 poles, double feeding				
Frequency	50/60 Hz				
Nominal voltage	12,000 V (able to eliminate step-up transformers depending on wind farm layout)				

### TOWER

Steel hub height options (m)	-	92	87.5	84, 112.5	82 and custom
Steel tower number of sections	-	4	3, 4	4, 5	4
Concrete hub height options (m)	100	100, 120	80, 100, 120, 137.5	120, 137.5	120
Concrete tower number of sections	5	5, 6	4, 5, 6, 7	6, 7	6

### NACELLE

Weight (tons)	108 t (without hub)				
Dimensions	10.9 m (length) 4.09 m (width) 4.15 m (height)				
Transportability	Four options (split nacelle), and rail capable				

### LIFE AND HOIST CAPACITIES

Service lift capacity	250 kg				
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## APPENDIX B

### AW125 REDUCED SOUND POWER LEVEL INFORMATION

*Submitted Under Seal*

## APPENDIX C

### AW132 REDUCED SOUND POWER LEVEL INFORMATION

*Submitted Under Seal*

## APPENDIX D

### AW3000 PLATFORM TECHNICAL DESCRIPTION

*Submitted Under Seal*

APPENDIX E

MANUFACTURER CORRESPONDENCE



Oliver Kijas  
Innogy/EverPower  
1251 Waterfront Place, 3rd Floor  
Pittsburgh, PA 15222

RE: AW125/3150 & AW132/3300 Noise Reduced Operation

Dear Oliver,

Both AW125/3150 and AW132/3300 wind turbines can be operated in noise reduced modes and fitted with options such that noise output is at or below 106.6 dB(A). The AW132/3465 can also achieve this noise output using further adjustments.

Noise reduced operation is an integral design feature of Nordex-Acciona variable speed wind turbines. During normal operation, the turbine continuously optimizes rotor speed and blade pitch angle to maximize the power output. In noise reduced operation, this optimization for maximum power is subordinated to a control algorithm that maintains noise emission below a certain threshold level.

Noise reduced operation is implemented by limiting the rotor speed to a certain maximum value that is below the rotor speed required for maximum power output. In some cases, the blade pitch angle is also adjusted to a new setting that provides the best compromise between power output and noise emissions.

The change from normal operation to noise reduced operation can be programmed to occur as a function of the following parameters:

- Day of the week
- Time of day
- Wind direction
- Wind speed
- Several others

Should you require additional information or need further clarification please do not hesitate to contact us. We thank you for the opportunity to work with you.

Best regards,

*Alexander Potier*

Alex Potier  
Senior Manager, WTG Sales

Reviewed and approved by Emmanuel Itoiz  
Sr. Technical Commercial Manager

**This foregoing document was electronically filed with the Public Utilities**

**Commission of Ohio Docketing Information System on**

**9/28/2018 4:51:58 PM**

**in**

**Case No(s). 18-1473-EL-BGA**

Summary: Application for a Sixth Amendment to the Scioto Ridge Project electronically filed by Mr. MacDonald W Taylor on behalf of Hardin Wind LLC