

BEFORE THE POWER SITING BOARD OF THE STATE OF OHIO

**In the Matter of the Applications of Paulding Wind Farm)
LLC and Paulding Wind Farm III, LLC for)
Amendments to their Certificates to Install and Operate) 15-2030-EL-BGA
Wind-Powered Electric Generation Facilities in Paulding) 15-2031-EL-BGA
County, Ohio.)**

Members of the Board:

Chairman, Public Utilities Commission	Ohio House of Representatives
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Director, Department of Agriculture	
Director, Environmental Protection Agency	
Director, Department of Natural Resources	
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To the Honorable Power Siting Board:

Please review the attached Staff Report of Investigation, which has been filed in accordance with Ohio Power Siting Board rules. The applications in these cases are subject to an approval process as required by Section 4906.03 of the Ohio Revised Code.



Sincerely,

Patrick Donlon
Director, Rates and Analysis
Public Utilities Commission of Ohio

OPSB STAFF REPORT OF INVESTIGATION

Case Numbers:	15-2030-EL-BGA and 15-2031-EL-BGA (amending 10-0369-EL-BGN, 10-3128-EL-BGA, and 09-0980-EL-BGN)
Project Names:	Timber Road I Wind Farm and Timber Road III Wind Farm
Project Location:	Paulding County
Applicants:	Paulding Wind Farm, LLC and Paulding Wind Farm III, LLC
Application Filing Date:	December 9, 2015
Inspection Dates:	January 6, 2015, February 26, 2016, and March 3, 2016
Report Date:	March 23, 2016
Applicants' Waiver Requests:	none
Staff Assigned:	G. Zeto, M. Bellamy, A. Conway, J. Cross

Application Descriptions

On December 9, 2015, Paulding Wind Farm, LLC and Paulding Wind Farm III, LLC (Applicants) filed joint applications to amend the Timber Road I Wind Farm (09-0980-EL-BGN) and Timber Road III Wind Farm (10-0369-EL-BGN, as amended in 10-3128-EL-BGA), respectively. The two project areas partially overlap and are both located entirely in Paulding County. On February 17, 2016, the Applicants supplemented their filings to modify the layout of several collection lines and access roads.

On December 9, 2015, the Applicants also filed a joint application, in case number 09-0980-EL-BGN, to assign Paulding Wind Farm, LLC's certificate for the Timber Road I Wind Farm to Paulding Wind Farm III, LLC. On February 22, 2016, the Ohio Power Siting Board (Board) approved this assignment application. As a result, the certificates in both of these amendment cases (15-2030-EL-BGA and 15-2031-EL-BGA) would be assigned to Paulding Wind Farm III, LLC, upon Board approval.

Project Background

On August 23, 2010, in case number 09-0980-EL-BGN, the Board authorized Paulding Wind Farm, LLC to construct a wind-powered electric generating facility, the Timber Road I Wind Farm, consisting of up to 35 turbine sites with a combined generation capacity of 48.6 megawatts (MW).

On November 18, 2010, in case number 10-0369-EL-BGN, the Board authorized Paulding Wind Farm II, LLC to construct a wind-powered electric generating facility consisting of up to 98 turbine sites with a combined generation capacity of 150.4 MW.

On February 28, 2011, in case number 10-3128-EL-BGA, the Board authorized Paulding Wind Farm II, LLC to amend the certificate granted in case number 10-0369-EL-BGN. Changes included an increase to the hub height of the approved Vestas V100 1.8 MW turbine model from

262.5 feet to 311.7 feet, the addition of a new permanent meteorological tower, and the removal of three of the previously approved meteorological tower locations.

On February 28, 2011, in case number 10-0369-EL-BGN, the Board authorized the bifurcation of the project into two phases: Phase I which now consists of 55 operational turbines and Phase II which consists of 37 unconstructed turbine locations. As a result of this bifurcation, Phase I of Timber Road II is now known as Timber Road II, which began commercial operation in July 2011. Phase II of Timber Road II is now known as Timber Road III and has been assigned to Paulding Wind Farm III, LLC.

On December 9, 2015, the Applicants filed joint applications to amend the Timber Road I and Timber Road III certificates. Proposed changes include the addition of a turbine model; modification of access roads, a collection substation, and collection line locations; an increase in facility output by 0.8 MW; and a change in transmission line interconnection.

Proposed changes to the Timber Road I facility include the following:

1. Deliver electricity from the project to the Lincoln-Sterling 138 kilovolt (kV) transmission line instead of the Hicksville-Payne 69 kV transmission line.
2. Add the option to use the Gamesa G114 STD2 IIIA 2.1 MW (Gamesa G114) turbine model.
3. Relocate the collection substation onto a parcel centrally located to both projects.
4. Modify 12 access road locations by eliminating four, adding seven, and shifting one.
5. Modify 17 collection line locations by eliminating seven, adding two, and shifting eight.
6. Provide notice of the elimination of four approved turbine sites (B1, 40/D3, 43/D6, and 60/E10) from consideration.
7. Provide notice that turbine sites B2, C6, and C7, which were approved for both cases, will be dropped from Timber Road I and retained for Timber Road III.

Proposed changes to the Timber Road III facility include the following:

1. Deliver electricity from the project to the Lincoln-Sterling 138 kV transmission line instead of the Haviland-Milan 138 kV transmission line.
2. Add the option to use the Gamesa G114 turbine model.
3. Share the Timber Road I collection substation at a new location.
4. Modify 11 access road locations by eliminating two, adding four, and shifting five.
5. Modify 21 collection line locations by eliminating four, adding six, and shifting 11.
6. Provide notice of the elimination of one approved turbine site (28/95) from consideration.

7. Provide notice that turbine site 106, which was approved for both cases, will be dropped from Timber Road III and retained for Timber Road I.

Collective proposed changes include:

1. Access roads – modify 23 access roads by eliminating six, adding 11, and shifting six for a net increase of 0.5 miles.
2. Collection lines – modify 38 collection lines by eliminating 11, adding eight, and shifting 19 for a net decrease of 4.7 miles.
3. Turbines – add the Gamesa G114 turbine model and eliminate five locations. Since five sites would be eliminated and four sites are approved for both projects, these applications consider a total of 63 turbine sites, of which only 48 sites are anticipated to be developed with the turbine model proposed in these applications to achieve the requested facility nameplate capacity.
4. Point of Interconnect – change the point of interconnection to the Lincoln-Sterling 138 kV transmission line, which is owned and operated by AEP. The Applicant has obtained the required signed interconnection service agreement with PJM for queue position T131.
5. Collection Substation – relocate the collection substation to a central location. No change in size is proposed and therefore the collection substation would remain at 3 acres when complete and would be shared by both projects.
6. Facility Output – Increase combined facility output by 0.8 MW.

The Applicants stated that all infrastructure shifts and additions would occur on participating landowner property.

Application Reviews: Additional Turbine Model

In relation to the Applicants’ request to add the Gamesa G114 turbine model to the list of approved turbine models for these projects, Staff notes that the location of the facility components would not change as a result of this request. Staff’s review of the Applicants’ request regarding this additional turbine model focuses solely on whether adding this proposed Gamesa G114 turbine model would impact any of the stipulated conditions or result in a material increase in environmental impact as compared to the original projects.

Additional Turbine Model

Applicable to the original certificates in case numbers 09-0980-EL-BGN and 10-0369-EL-BGN, 750 feet in horizontal distance from the tip of the turbine’s nearest blade at ninety degrees to the exterior of the nearest, habitable, residential structure is the minimum distance a turbine is authorized to be located in proximity to a habitable structure on an adjacent property, without property owner approval. Likewise, applicable to the original certificates, the property line setback is equal to a horizontal distance, from the turbine’s base to the property line of the wind

farm property, equal to one and one-tenth times the total height of the turbine structure as measured from its base to the tip of its highest blade.

Using the turbine height of the proposed Gamesa G114 turbine model, Staff calculated the exact required distance from the wind farm property line and the exterior of any nearest, habitable, residential structure to determine if the use of this proposed Gamesa G114 turbine model would impact any of the stipulated conditions or result in a material increase in environmental impact as compared to the originally approved projects.

The largest of the turbine models approved in the previously certificated case for Timber Road I led to a minimum residential setback calculation of 914 feet from the turbine base to the exterior of the nearest habitable residential structure. The largest of the turbine models approved in the previously certificated case for Timber Road III led to a minimum residential setback calculation of 914 feet from the turbine base to the exterior of the nearest habitable residential structure. Using the turbine height of the proposed Gamesa G114 turbine model and the minimum setback requirement applied in the original cases, the residential setback requirement would be 937 feet from the turbine base to the exterior of the nearest habitable residential structure. Staff determined that no residential structures are within 1,000 feet of the proposed turbine locations.

Using the turbine height of the tallest turbine model approved in the previously certificated case for Timber Road I, the minimum property line setback would be 470 feet from the turbine base to the property line of the wind farm. Using the turbine height of the tallest turbine model approved in the previously certificated case for Timber Road III, the minimum property line setback would be 523 feet from the turbine base to the property line of the wind farm. Using the turbine height of proposed Gamesa G114 turbine model and the minimum setback requirement applied in the original cases calculates to 541 feet from the turbine base to the property line of the wind farm.

The originally approved projects included several turbine sites that were within the minimum setback from the property line of the wind farm property. The Applicants are in the process of obtaining waivers of the setbacks for these properties and are required to execute appropriate waivers prior to construction.

With regard to compliance with the required minimum setback distances for each turbine, Staff finds that the addition of the proposed Gamesa G114 turbine model does not create the need for any additional stipulated conditions or result in a material increase in environmental impact when compared to the original projects. Consistent with the originally approved projects, if the location of a wind turbine does not meet the required setback, it may not be constructed unless the Applicants secure appropriate executed waiver(s) of the minimum setback requirement.

Safety Manual

Staff reviewed the safety manual for the proposed Gamesa G114 turbine model. Staff finds that the conditions of the certificates in case numbers 09-0980-EL-BGN, 10-0369-EL-BGN, and 10-3128-EL-BGA adequately address safety considerations. Staff finds that the addition of the proposed Gamesa G114 turbine model does not result in a material increase in environmental impact when compared to the original projects.

Turbine Noise

The Applicants modeled the noise impact of the proposed Gamesa G114 turbine model for each of the amended certificated projects.

In relation to Timber Road I, the modeled impact of the proposed Gamesa G114 turbine model was compared to the ambient nighttime noise level presented in the original application, specifically 43 A-weighted decibels (dBA). The Applicants committed to adhering to the noise conditions of case number 09-0980-EL-BGN, specifically Conditions 34, 35, and 36. These conditions, among other things, require the Applicants to model the expected noise contribution at the exterior of nonparticipating residences and apply mitigating actions for those nonparticipating residences where ambient nighttime noise level is exceeded by greater than five dBA, or 48 dBA.

The Applicants conducted a noise study for the proposed Gamesa G114 turbine model, which showed that the modeled impact would exceed the ambient nighttime noise level plus five dBA, or 48 dBA, for one nonparticipating residence. The Applicants have committed to either signing a participation agreement with the residence owner or reducing the noise impact, in order to comply with the noise conditions of case number 09-0980-EL-BGN.

In relation to Timber Road III, the Applicants compared their modeled impact of the proposed Gamesa G114 turbine model to the ambient nighttime noise level presented in the original application, specifically 41 dBA. The Applicants' noise study showed that the modeled impact would exceed the ambient nighttime noise level plus five dBA, or 46 dBA, for six nonparticipating residences. In case number 10-0369-EL-BGN, Conditions 37, 38, and 39 require, among other things, the Applicants to model the expected noise contribution at the exterior of nonparticipating residences and apply mitigating actions for those nonparticipating residences where ambient nighttime noise level is exceeded by greater than five dBA, or 46 dBA.

However, in the Timber Road III prior amendment case, case number 10-3128-EL-BGA, the Applicants more recently determined the ambient nighttime noise level to be 40 dBA for Timber Road III. Within the Order for case number 10-3128-EL-BGA, the Board amended Condition 39 from case number 10-0369-EL-BGN and accepted the staff recommended condition requiring, among other things, that the Applicant apply mitigating actions for those nonparticipating residences where the projected ambient nighttime noise level of 40 dBA is exceeded by greater than five dBA. Applying the more recent and more stringent ambient nighttime noise level of 40 dBA in the present case may yield an exceedance of the ambient nighttime noise level plus five dBA, or 45 dBA, for up to 10 nonparticipating residences. Staff recommends the following conditions be applied to the present application for Timber Road III:

For Timber Road III, if preconstruction acoustic modeling indicates a facility contribution that exceeds the facility area nighttime L_{EQ} (40 dBA) by greater than five dBA at the exterior of any nonparticipating residences within one mile of the facility boundary, the project shall be subject to further study of the potential impact and possible mitigation prior to construction. Mitigation, if required, shall consist of either reducing the impact so that the project contribution does not exceed the facility ambient nighttime

L_{EQ} (40 dBA) by greater than five dBA, or other means of mitigation approved by staff and Paulding Wind III in consultation with the affected receptor(s).

After commencement of commercial operation of Timber Road III, Paulding Wind III shall conduct further review of the impact and possible mitigation of all facility noise complaints. Mitigation shall be required if the facility contribution at the exterior of any nonparticipating residences within one mile of the facility boundary exceeds the greater of: (1) the project ambient nighttime L_{EQ} (40 dBA) plus five dBA, or (2) the validly measured ambient L_{EQ} at the location of the complaint and during the same time of day or night as that identified in the complaint plus five dBA. Mitigation, if required, shall consist of either reducing the impact so that the project contribution does not exceed the greater of: (1) the project ambient nighttime L_{EQ} (40 dBA) plus five dBA, or (2) the validly measured ambient L_{EQ} plus five dBA, or other means of mitigation approved by staff and the applicant in consultation with the affected receptor(s).

With regard to the potential noise impact of the proposed Gamesa G114 turbine model, Staff finds that the addition of the proposed Gamesa G114 turbine model does not create the need for any additional stipulated conditions, but instead reiterates that of the previously imposed conditions, the more stringent conditions should be applied. Staff also finds that the addition of the proposed Gamesa G114 turbine model does not result in a material increase in environmental impact when compared to the originally certificated turbine models.

Shadow Flicker

The Applicants have committed to adhering the shadow flicker conditions of 09-0980-EL-BGN and 10-0369-EL-BGN, specifically Conditions 39 and 41, respectively, which state that any turbine forecasted prior to construction to create in excess of 30 hours per year of shadow flicker at a nonparticipating receptor within 1,000 meters shall be subject to further review and possible mitigation, with mitigation consisting of either reducing the turbine's forecasted impact to 30 hours per year, or other measures acceptable to Board Staff, the Applicants, and the affected receptor(s).

The Applicants modeled the shadow flicker impact of the proposed Gamesa G114 turbine model for each of the amended certificated projects. The original certificate in case number 09-980-EL-BGN included projected impacts to 10 nonparticipating receptors in Timber Road I with shadow flicker in excess of 30 hours per year. The original certificate in case number 10-0369-EL-BGN included projected impacts to one nonparticipating receptor in Timber Road III with shadow flicker in excess of 30 hours per year. The amended certificate for Timber Road III in case number 10-3128-EL-BGA included projected impacts to one nonparticipating receptor in Timber Road III with shadow flicker in excess of 30 hours per year. The proposed Gamesa G114 turbine model is projected to impact six nonparticipating receptors in Timber Road I and two nonparticipating receptors in Timber Road III with shadow flicker in excess of 30 hours per year.

With regard to the potential impact of shadow flicker from the proposed Gamesa G114 turbine model, Staff finds that the addition of the proposed Gamesa G114 turbine model does not create the need for any additional stipulated conditions, but rather the application of the prior condition (i.e. Condition 39 of case number 09-0980-EL-BGN and Condition 41 of case number 10-0369-

EL-BGN) for each project is appropriate. Staff also finds that the addition of the proposed Gamesa G114 turbine model does not result in a material increase in environmental impact when compared to the originally certificated turbine models.

Ice Throw

Staff evaluated the potential for ice throw for the proposed Gamesa G114 turbine model as compared to the certificated turbine models. Both the previously certificated and proposed turbine models will have ice detection equipment and safety features that would shut down a turbine if the buildup of ice would cause excess vibrations or the speed to power ratio to become too high.

Therefore, in terms of potential ice throw, Staff found that the addition of the proposed Gamesa G114 turbine model does not create the need for any additional stipulated conditions and does not result in a material increase in environmental impact when compared to the original project.

Blade Shear

Staff evaluated the potential for blade shear for the proposed Gamesa G114 turbine model as compared to the certificated turbine models. Both the previously certificated and proposed turbine models have multiple safety features to address blade shear, including two fully independent braking systems, a pitch control system, and turbine shut-offs in the event of excessive wind speeds, excessive blade vibration, or stress.

Staff evaluated the Applicant's analyses and determined there to be negligible potential impact due to blade shear. Therefore, in terms of potential blade shear, Staff finds that the addition of the proposed Gamesa G114 turbine model does not create the need for any additional stipulated conditions and does not result in a material increase in environmental impact when compared to the original project.

Application Reviews: Turbine Capacity

The current certificates allow construction of wind energy facilities capable of producing up to 199 MW collectively (comprised of 48.6 MW for Timber Road I, 99 MW for Timber Road II, and 51.4 MW for Timber Road III). If the Gamesa G114 turbine model is selected for the Timber Road I and Timber Road III projects, a total of 48 turbines would be constructed across both projects, resulting in a combined nameplate capacity of 100.8 MW, instead of the previously certificated total of 100 MW. Staff notes that the location of the turbine sites and non-turbine associated facilities would not change as a result of this request.

The Applicants have executed a signed interconnection service agreement with PJM for queue position T131, which includes specifications for construction, operation, and maintenance of system upgrades necessary to reliably and safely integrate the proposed generating facility into the regional transmission system. The Applicants provided a copy of the signed interconnection service agreement to Staff.

Staff has reviewed the proposed increase in overall turbine capacity and finds that the proposal does not result in a material increase in environmental impact when compared to the original project.

Application Reviews: Access Roads

The Applicants propose to eliminate six access roads, construct 11 additional access roads, and relocate six access roads. The net result of the access road additions and relocations would be an overall increase of access road length of approximately 0.5 miles. These adjustments reduce landowner conflicts and minimize environmental impacts. Staff recommends the Board find this change to constitute a substantial change in the location of the access roads. Staff has reviewed the proposed access road modifications and finds that the changed locations would pose no material increase in environmental impact.

Application Reviews: Collector Substation

The Applicants propose to relocate the project collector substation approximately 1.25 miles to the west. The collector substation would be utilized by both projects. The proposed relocation would place the collector substation in a more centralized location to both projects. Staff has reviewed the newly proposed project collector substation location. Land impacts associated with the substation would be limited to agricultural land. The new location would pose no material increase in environmental impact, however, Staff recommends the Board find this change to constitute a substantial change in location of the collector substation.

Application Reviews: Collection Lines

The Applicant proposes to eliminate 11 segments of underground collection line, install eight new collection line segments, and relocate 19 segments of underground collection line. These modifications would result in a total reduction in length of collection lines by approximately 4.7 miles. The majority of the reduction is due to the fact that underground collection would no longer be used to connect to the grid. The projects would instead use an overhead 138 kV transmission line that is subject to the filing in case number 15-1737-EL-BTX. Staff recommends the Board find this change to constitute a substantial change in location of the collection lines. Staff has reviewed the proposed collection line modifications and finds that the changed locations would pose no material increase in environmental impact.

Application Reviews: Interconnection Point

The interconnection point originally contemplated for Timber Road I was on the Hicksville-Payne 69 kV transmission line. Interconnecting at the original Hicksville-Payne 69 kV point of interconnect is not feasible as the 69 kV line cannot accept the injection of 100.8 MW of nameplate capacity onto the grid without significant upgrades. The originally contemplated interconnection will no longer be implemented as both projects would now share the same point of interconnection on the Lincoln-Sterling 138 kV transmission line adjacent to the existing Timber Road II point of interconnection.

The interconnection point originally contemplated for Timber Road III was on the Haviland-Milan 138 kV transmission line utilizing PJM queue position R49 which had a total

interconnection capacity of 150 MW. The operating 99 MW of Timber Road II utilizes this Haviland-Milan POI. The Haviland-Milan POI cannot be utilized for Timber Road III due to the fact that the remaining capacity available (51.4 MW) of the PJM R49 queue position was put into suspension by the Applicant and subsequently, due to the inability of Paulding Wind Farm III LLC to build-out the remaining 51.4 MW within 3 years of the first MW coming online as per PJM Interconnection regulations, the Applicants can no longer utilize this point of interconnect. The Timber Road III Facility will instead interconnect to the grid utilizing queue position T131 on the Lincoln-Sterling 138 kV line, which is located on the same pole structures as the Haviland-Milan line. The Applicant has executed a signed interconnection service agreement with PJM for queue position T131.

Staff finds that this joint facility interconnection point would pose no material increase in environmental impact. Due to its location on the previously certificated pole structure, Staff recommends the Board find that this change does not constitute a substantial change in location for the facility interconnection point.

Conclusion

Staff's review of the Applicants' requests regarding the additional turbine model focuses solely on the potential impacts associated with the turbine model and whether the additional turbine model impacts any of the stipulated conditions or result in a material increase in environmental impact when compared to the original project. The proposed addition of the Gamesa G114 turbine model to the list of authorized turbine models would not impact the location of any turbine sites or non-turbine associated facilities. Further, by adding this proposed Gamesa G114 turbine model, the number of turbines installed would not exceed the number of turbine locations certificated by the Board in the original certificates. Staff finds that if the proposed Gamesa G114 turbine model were selected, the original conditions of the certificate are adequate to ensure that adverse environmental impacts would continue to be minimized for these projects.

In relation to the proposed relocation and addition of non-turbine associated facilities, the Applicants introduce substantial change in the location of these portions of the facilities. However, none of these revisions proposed by the Applicants result in a material increase in environmental impact of the facility compared to the original certificates. If the proposed modifications to non-turbine associated facilities were approved, the original conditions of the certificate are adequate to ensure that adverse environmental impacts would continue to be minimized for this project.

Recommended Findings

Staff recommends that the Board approve the applications as proposed, provided that the certificates include the conditions specified in the opinions, orders, and certificates issued in case numbers 09-0980-EL-BGN, 10-0369-EL-BGN, and 10-3128-EL-BGA, including the Applicants' compliance with the applicable statutory setback requirements, and subject to the conditions of this staff report.

Recommended Conditions

1. The Applicants shall continue to adhere to all conditions of the opinions, orders, and certificates issued in case numbers 09-0980-EL-BGN, 10-0369-EL-BGN, and 10-3128-EL-BGA, for the respective cases, as modified with the addition of the Gamesa G114 turbine model to be added as an acceptable turbine model, and including the increased facility nameplate capacity and the modifications of the collector substation, access roads, interconnection point, and collection lines.
2. For Timber Road III, if preconstruction acoustic modeling indicates a facility contribution that exceeds the facility area nighttime L_{EQ} (40 dBA) by greater than five dBA at the exterior of any nonparticipating residences within one mile of the facility boundary, the project shall be subject to further study of the potential impact and possible mitigation prior to construction. Mitigation, if required, shall consist of either reducing the impact so that the project contribution does not exceed the facility ambient nighttime L_{EQ} (40 dBA) by greater than five dBA, or other means of mitigation approved by staff and Paulding Wind III in consultation with the affected receptor(s).
3. After commencement of commercial operation of Timber Road III, Paulding Wind III shall conduct further review of the impact and possible mitigation of all facility noise complaints. Mitigation shall be required if the facility contribution at the exterior of any nonparticipating residences within one mile of the facility boundary exceeds the greater of: (1) the project ambient nighttime L_{EQ} (40 dBA) plus five dBA, or (2) the validly measured ambient L_{EQ} at the location of the complaint and during the same time of day or night as that identified in the complaint plus five dBA. Mitigation, if required, shall consist of either reducing the impact so that the project contribution does not exceed the greater of: (1) the project ambient nighttime L_{EQ} (40 dBA) plus five dBA, or (2) the validly measured ambient L_{EQ} plus five dBA, or other means of mitigation approved by staff and the applicant in consultation with the affected receptor(s).

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Case No(s). 15-2030-EL-BGA, 15-2031-EL-BGA

Summary: Staff Report of Investigation electronically filed by Mrs. Yvonne W Cooper on behalf of Staff of OPSB