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September 28, 2020

Ms. Tanowa Troupe, Secretary  
Ohio Power Siting Board  
Docketing Division  
180 East Broad Street, 11<sup>th</sup> Floor  
Columbus, OH 43215

**Re: Case Nos. 09-479-EL-BGN, 11-3446-EL-BGA, 16-469-EL-BGA,  
16-2404-EL-BGA, and 18-677-EL-BGA**  
In the Matter of the Application of Hardin Wind Energy LLC for a Certificate of  
Environmental Compatibility and Public Need for the Hardin Wind Farm.

**Response to the Third Data Request from Staff of the Ohio Power Siting  
Board**

Dear Ms. Troupe:

Attached please find Hardin Wind Energy LLC's ("Applicant") Response to the Third Data Request from Staff of the Ohio Power Siting Board ("OPSB Staff"). The Applicant provided this response to OPSB Staff on September 28, 2020.

We are available, at your convenience, to answer any questions you may have.

Respectfully submitted,

/s/ Christine M.T. Pirik

Christine M.T. Pirik (0029759)

William V. Vorys (0093479)

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***Attorneys for Hardin Wind Energy LLC***

Cc: Theresa White  
Andrew Conway  
Jonathan Pawley  
Chris Zoeller

## CERTIFICATE OF SERVICE

The Ohio Power Siting Board's e-filing system will electronically serve notice of the filing of this document on the parties referenced in the service list of the docket card who have electronically subscribed to these cases. In addition, the undersigned certifies that a copy of the foregoing document is also being served upon the persons below this 28<sup>th</sup> day of September, 2020.

/s/ Christine M.T. Pirik

Christine M.T. Pirik (0029759)

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4844-8351-2011 v1 [39579-20]

**BEFORE  
THE OHIO POWER SITING BOARD**

In the Matter of the Application of Hardin Wind )  
Energy, LLC for a Certificate of Environmental ) Case No: 09-479-EL-BGN  
Compatibility and Public Need for the Hardin Wind )  
Farm. )

In the Matter of the Application of Hardin Wind )  
Energy, LLC for an Amendment to its Certificate to ) Case No: 11-3446-EL-BGA  
Install and Operate a Wind-Powered Electric )  
Generation Facility in Hardin County, Ohio. )

In the Matter of the Application of Hardin Wind )  
Energy, LLC for a Third Modification to its )  
Certificate to Install and Operate a Wind-Powered ) Case No: 16-469-EL-BGA  
Electric Generation Facility in Hardin County, )  
Ohio. )

In the Matter of the Application of Hardin Wind )  
Energy, LLC for a Modification to its Certificate ) Case No: 16-2404-EL-BGA  
Issued in Case No. 09-479-EL-BGN. )

In the Matter of the Application of Hardin Wind )  
Energy, LLC for a Fifth Modification to its ) Case No: 18-677-EL-BGA  
Certificate Issued in Case No. 09-479-EL-BGN. )

**HARDIN WIND ENERGY, LLC'S RESPONSE TO THE  
THIRD DATA REQUEST THE STAFF OF THE OHIO POWER SITING BOARD**

Hardin Wind Energy LLC ("Hardin Wind") was certified by the Ohio Power Siting Board ("Board") to construct the Hardin Wind Farm, a wind-powered electric generation facility to be located in Hardin County, Ohio, in accordance with the Certificate of Environmental Compatibility and Public Need issued by the Board in Case No. 09-479-EL-BGN, as amended in Case Nos. 11-3446-EL-BGA, 16-469-EL-BGA, 16-2404-EL-BGA, and 18-677-EL-BGA ("Certificate"). On July 17, 2020, Hardin Wind filed notice of relinquishment and withdrawal of its Certificate with Board.

On September 16, 2020, the Staff of the OPSB (“OPSB Staff”) provided the Hardin Wind with OPSB Staff’s Third Data Request. Now comes the Hardin Wind providing the following response to the Third Data Request from the OPSB Staff.

**1. Subsurface conditions**

**In support of a joint application filed 10/1/2019 in case number 18-1360-EL-BGN, Invenenergy indicated that “extensive geotechnical testing of the Hardin I Solar project area reveals that subsurface conditions in specific areas are prohibitively expensive to construct upon at this time.”**

**In the 8/19/2020 filing in case number 09-0479-EL-BGN, Hardin Wind Energy LLC indicated that “at the T18 site, ... during excavation water sprouted up.”**

**However, Hardin Wind Energy LLC also stated, “[t]here are no geological or geotechnical issues, including issues pertaining to karst topography, present at the reclamation sites.” (See the 8/19/2020 filing in case number 09-0479-EL-BGN.)**

**Due to the perceived discrepancy between the statements made in various docketed filings, please further explain the basis for this statement (regarding no geological or geotechnical issues present) for each of the turbine reclamation sites.**

- a) Please provide any documents, pictures, or other supporting evidence for the statement that “at T18 site during excavation water sprouted up.”**

**Response:** See the attached letter from the Applicant’s consultant Barr Engineering Company (Attachment 1). In addition, the Applicant has attached pictures regarding the statement “at T18 site during excavation water sprouted up.” (See Attachment 2).

- 2. Please further explain if there are any subsurface conditions, including but not limited to karst topography, that preclude the agricultural land use at each turbine excavation site and T18.**

**Response:** See the attached letter from the Applicant’s consultant Barr Engineering Company (Attachment 1).

3. **On 7/31/2020, Hardin Solar II Energy LLC requested the expansion of the solar farm boundary into the parcels that have Hardin Wind Energy LLC's turbine excavation site T33, T37, and T38. Please further explain if there are any subsurface conditions, including but not limited to karst topography, that preclude the construction, operation, and maintenance of a solar farm specifically at turbine excavation sites T33, T37, and T38.**

**Response:** See the attached letter from the Applicant's consultant Terracon (Attachment 3).

4. **Please explain the potential for subsurface conditions at the turbine excavation sites to adversely impact non-participating parcels.**

**Response:** See the attached letter from the Applicant's consultant Terracon (Attachment 3).

Respectfully submitted,

/s/ Christine M.T. Pirik

Christine M.T. Pirik (0029759)

(Counsel of Record)

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*Attorneys for Hardin Wind Energy, LLC*

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/s/ Christine M.T. Pirik

Christine M.T. Pirik (0029759)

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4828-2158-4587 v1 [39579-20]

## **Attachment 1**

### **Barr Engineering Company**

/s/ Christine M.T. Pirik

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(Counsel of Record)

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*Attorneys for Hardin Wind Energy, LLC*

September 24, 2020

Erin Saal  
Senior Analyst, Renewable Development  
Invenergy  
One South Wacker Drive, Suite 1800  
Chicago, IL 60606

**Re: Hardin Wind Energy Subsurface Conditions  
Hardin County, Ohio**

Dear Ms. Saal:

Per your request, Barr Engineering Company (Barr) is pleased to assist with responding to questions from the OPSB pertaining to the subsurface conditions at the Hardin Wind Energy project located in Hardin County, Ohio. Specifically, Invenergy has requested that Barr provide a statement, as the Geotechnical Engineer of Record for the project, if the construction activities that occurred at the nine turbine reclamation sites would preclude agricultural land use at each turbine reclamation site as well as at T18. Based on our review and understanding of the construction, the excavation and placement of a thin concrete mat approximately 10 feet below grade, subsequent backfilling, completed per the project specifications, does not modify the subsurface conditions significantly from their previous condition prior to construction.

Nine potential turbine sites (2, 16, 17, 19, 20, 21, 33, 37 and 38) were excavated to approximately 10 feet below existing grade and a 3-inch thick nominal concrete mat was placed on the native soil. The sites were then backfilled with native soils placed to a 95 percent standard compaction which is common practice for backfill over foundations. OPSB has specifically inquired about karsts and high groundwater noted at these sites and how they may adversely affect future farming activities. The geotechnical investigation completed in 2012, prior to any construction activity or disturbance, found shallow ground water in the piezometers as high as 0.5 feet below grade therefore ground water was anticipated in the excavations. Field investigations to nominally 50 feet below grade were also completed to investigate the depth of influence of the proposed wind turbine foundations. Placement of the thin concrete slab 10 feet below grade will not modify groundwater conditions or the ability to use standard farm equipment. There is also the potential for karst formation at this project site that could be a risk for wind turbines and was identified in the geotechnical report. The presence of limestone and dolostone rock were encountered 18 to 45 feet below the ground surface and this type of rock is known to be soluble. No karst like features were mapped in the project area as of 2012 but it does not mean they could not occur in the future. But this risk has always been there and has not been altered by the placement of the concrete mat. At site T18 ground water was observed at the bottom of the excavation approximately 10 feet below grade. The bottom of excavation likely had a layer of high permeability material (sand) and therefore it was difficult to stop the flow of groundwater into the excavation without using more elaborate dewatering methods. This is common in the geology found in Ohio. Therefore, this hole was abandoned, backfilled and returned to its original state.

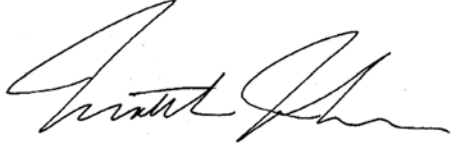


To conclude, we are not aware of any reasons that the placement of the concrete pads would modify the geological or geotechnical subsurface conditions that would alter or reduce the ability for use as agricultural land from what it was prior to installation of the concrete pads.

Please feel free to contact me with any questions or concerns.

Sincerely,

BARR ENGINEERING CO.

A handwritten signature in black ink, appearing to read 'Matthew Johnson', written in a cursive style.

Matthew Johnson  
Vice President

## **Attachment 2**

### **Pictures for site T18**

The following pictures are date stamped and reflect the site from the earliest occurrence through restoration. The last picture reflects the site post-restoration.

/s/ Christine M.T. Pirik

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2016.11.28 09:01





2016.11.29 08:52





2016.11.29 08:52





2016.11.30 07:40





2016.12.06 07:45





2016.12.06 07:45





2016.12.07 08:30





2016.12.08 08:30





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2016.12.12 11:47





2016.12.12 11:48





2016.12.13 10:10





2016.12.13 10:10





2016.12.13 12:49





2016.12.13 14:02





2016.12.13 14:08





2016.12.15 06:55



## Attachment 3

### Terracon

/s/ Christine M.T. Pirik

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*Attorneys for Hardin Wind Energy, LLC*

September 24, 2020

Invenergy Renewables, LLC  
One South Wacker Drive, Suite 1800  
Chicago, Illinois 60606



Attn: Ms. Erin Saal  
Email: [esaal@invenergy.com](mailto:esaal@invenergy.com)

**Re: OPSB Data Request  
Hardin Solar Development  
County Rd 130 and OH-195  
Hardin County, Ohio  
Terracon Project No. N4195224**

Dear Ms. Saal:

As requested, Terracon is providing the following letter documenting our response to the Ohio Power Siting Board (OPSB) Data Request regarding Hardin Solar Energy II LLC. More specifically the following two requests/questions were offered by the OPSB:

1. On 7/31/2020, Hardin Solar Energy II LLC requested the expansion of the solar farm boundary into the parcels that have Hardin Wind Energy LLC's turbine excavation sites T33, T37, and T38. Please further explain if there are any subsurface conditions, including but not limited to karst topography, that **preclude** the construction, operation, and maintenance of a solar farm specifically at turbine excavation sites T33, T37, and T38.
2. Please explain the potential for subsurface conditions at the turbine excavation sites to adversely impact non-participating parcels.

Response to Question 1:

Based on our Geotechnical Engineering Report prepared for the solar project, there are no subsurface risks that Terracon is aware of that would preclude development of the solar project at turbine excavation sites T33, T37, and T38, provided the recommendations within the report are followed. We did not encounter karst, or other overriding geological or subsurface conditions that would preclude nominal solar construction for this project. It should be noted that exploration for the PV Array field portion of a solar project does not typically extend below depths of 20 to 25 feet, as the stresses from the structures of a solar project do not extend below these depths. This is unlike a wind turbine foundation that will stress the subsurface materials to depths on the order of 60 to 100 feet depending on the diameter of the gravity foundation.



## Geotechnical Executive Summary Report

Hardin Solar Development ■ Hardin County, Ohio  
September 24, 2020 ■ Terracon Project No. N4195224



### Response to Question 2:

Based on review of Dwg. No. C-01 Rev. No. 1, prepared by Barr Engineering Co., and dated September 16, 2016, we understand the excavation for the tower foundations would have been to a depth of 10 feet 9 inches in the plan area of the foundation with side slopes of approximately 1.5H:1V coming up to the ground surface. We understand that a mudmat was placed at the bottom of the excavation. The mudmat was designed to consist of a lean concrete with relatively low compressive strength and only 3-inches in thickness. We understand the excavation for the foundations was backfilled with the excavated materials and compacted to a minimum 95% of maximum dry density as determined using Standard Proctor test per ASTM D698.

Due to the method of backfill, these foundation excavation areas will have similar or better engineering characteristics as compared to the surrounding native ground. Considering the relatively thin thickness of the lean concrete mudmat and low strength of the materials, future excavations into or through the mudmat should be relatively easily accomplished. The driving of piles through the mudmat should encounter a slight increase in the resistance, but overall, should not be an issue for a normal pile driver to drive a steel W-section pile through the mudmat.

### Closure

We greatly appreciate the opportunity to continue to be of service on this project. Please do not hesitate to contact us with any questions or comments regarding this submittal.

Sincerely,

**Terracon Consultants, Inc.**

A handwritten signature in black ink, appearing to read "Scott D. Neely".

Scott D. Neely, P.E., G.E. (CA)  
Senior Principal

A handwritten signature in black ink, appearing to read "Yogesh S. Rege".

Yogesh S. Rege, P.E.  
Senior Principal

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

**Commission of Ohio Docketing Information System on**

**9/28/2020 12:06:49 PM**

**in**

**Case No(s). 09-0479-EL-BGN, 11-3446-EL-BGA, 16-0469-EL-BGA, 16-2404-EL-BGA, 18-0677-EL-BGA**

Summary: Response to the Third Data Request from Staff of the Ohio Power Siting Board  
electronically filed by Christine M.T. Pirik on behalf of Hardin Wind Energy LLC