

# Staff Report of Investigation

Highland Solar Farm  
Hecate Energy Highland LLC

Case No. 18-1334-EL-BGN

March 4, 2019



Power Siting  
Board

Mike DeWine, Governor | M. Beth Trombold, Interim Chair

**In the Matter of the Application of Hecate Energy )**  
**Highland LLC for a Certificate of Environmental )**  
**Compatibility and Public Need for an Electric ) Case No. 18-1334-EL-BGN**  
**Generating Facility in Mowrystown, Highland County, )**  
**Ohio )**

## **Staff Report of Investigation**

Submitted to the  
OHIO POWER SITING BOARD

BEFORE THE POWER SITING BOARD OF THE STATE OF OHIO

**In the Matter of the Application of Hecate Energy** )  
**Highland LLC for a Certificate of Environmental** )  
**Compatibility and Public Need for an Electric** ) **Case No. 18-1334-EL-BGN**  
**Generating Facility in Mowrystown, Highland County,** )  
**Ohio** )

Chairman, Public Utilities Commission	Director, Department of Natural Resources
Director, Department of Agriculture	Public Member
Director, Development Services Agency	Ohio House of Representatives
Director, Environmental Protection Agency	Ohio Senate
Director, Department of Health	

To the Honorable Power Siting Board:

In accordance with the Ohio Revised Code (R.C.) 4906.07(C) and rules of the Ohio Power Siting Board (Board), the staff of the Public Utilities Commission of Ohio (Staff) has completed its investigation in the above matter and submits its findings and recommendations in this Staff Report for consideration by the Board.

The findings and recommendations contained in this report are the result of Staff coordination with the following agencies that are members of the Board: Ohio Environmental Protection Agency, the Ohio Department of Health, the Ohio Development Services Agency, the Ohio Department of Natural Resources, and the Ohio Department of Agriculture. In addition, Staff coordinated with the Ohio Department of Transportation, the Ohio Historic Preservation Office, the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, and the U.S. Coast Guard.

In accordance with R.C. 4906.07(C) and 4906.12, copies of this Staff Report have been filed with the Docketing Division of the Public Utilities Commission of Ohio and served upon the Applicant or its authorized representative, the parties of record, and pursuant to Ohio Administrative Code 4906-3-06, the main public libraries of the political subdivisions in the project area.

The Staff Report presents the results of Staff's investigation conducted in accordance with R.C. Chapter 4906 and the rules of the Board, and does not purport to reflect the views of the Board nor should any party to the instant proceeding consider the Board in any manner constrained by the findings and recommendations set forth herein.

Respectfully submitted,



Tamara S. Turkenton  
Director, Rates and Analysis  
Public Utilities Commission of Ohio

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## **I. POWERS AND DUTIES**

### **OHIO POWER SITING BOARD**

The authority of the Ohio Power Siting Board (Board) is prescribed by Ohio Revised Code (R.C.) Chapter 4906. R.C. 4906.03 authorizes the Board to issue certificates of environmental compatibility and public need for the construction, operation, and maintenance of major utility facilities defined in R.C. 4906.01. Included within this definition of major utility facilities are: electric generating plants and associated facilities designed for, or capable of, operation at 50 megawatts (MW) or more; electric transmission lines and associated facilities of a design capacity of 100 kilovolts (kV) or more; and gas pipelines greater than 500 feet in length and more than nine inches in outside diameter, and associated facilities, designed for transporting gas at a maximum allowable operating pressure in excess of 125 pounds per square inch. In addition, pursuant to R.C. 4906.20, the Board authority applies to economically significant wind farms, defined in R.C. 4906.13(A) as wind turbines and associated facilities with a single interconnection to the electrical grid and designed for, or capable of, operation at an aggregate capacity of 5 MW or greater but less than 50 MW.

Membership of the Board is specified in R.C. 4906.02(A). The voting members include: the Chairman of the Public Utilities Commission of Ohio (PUCO or Commission) who serves as Chairman of the Board; the directors of the Ohio Environmental Protection Agency (Ohio EPA), the Ohio Department of Health, the Ohio Development Services Agency, the Ohio Department of Agriculture, and the Ohio Department of Natural Resources (ODNR); and a member of the public, specified as an engineer, appointed by the Governor from a list of three nominees provided by the Ohio Consumers' Counsel. Ex-officio Board members include two members (with alternates) from each house of the Ohio General Assembly.

### **NATURE OF INVESTIGATION**

The Board has promulgated rules and regulations, found in Ohio Administrative Code (Ohio Adm.Code) 4906:1-01 et seq., which establish application procedures for major utility facilities and economically significant wind farms.

#### **Application Procedures**

Any person that wishes to construct a major utility facility or economically significant wind farm in this state must first submit to the Board an application for a certificate of environmental compatibility and public need.<sup>1</sup> The application must include a description of the facility and its location, a summary of environmental studies, a statement explaining the need for the facility and how it fits into the Applicant's energy forecasts (for transmission projects), and any other information the Applicant or Board may consider relevant.<sup>2</sup>

Within 60 days of receiving an application, the Chairman must determine whether the application is sufficiently complete to begin an investigation.<sup>3</sup> If an application is considered complete, the Board or an administrative law judge will cause a public hearing to be held 60 to 90 days after the

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1. R.C. 4906.04 and 4906.20.

2. R.C. 4906.06(A) and 4906.20(B)(1).

3. Ohio Adm.Code 4906-3-06(A).

official filing date of the completed application.<sup>4</sup> At the public hearing, any person may provide written or oral testimony and may be examined by the parties.<sup>5</sup>

### **Staff Investigation and Report**

The Chairman will also cause each application to be investigated and a report published by the Board's Staff not less than 15 days prior to the public hearing.<sup>6</sup> The report sets forth the nature of the investigation and contains the findings and conditions recommended by Staff.<sup>7</sup> The Board's Staff, which consists of career professionals drawn from the staff of the PUCO and other member agencies of the Board, coordinates its investigation among the agencies represented on the Board and with other interested agencies such as the Ohio Department of Transportation (ODOT), the Ohio Historic Preservation Office (OHPO), and the U.S. Fish and Wildlife Service (USFWS).

The technical investigations and evaluations are conducted pursuant to Ohio Adm.Code 4906-1-01 et seq. The recommended findings resulting from Staff's investigation are described in the Staff Report pursuant to R.C. 4906.07(C). The report does not represent the views or opinions of the Board and is only one piece of evidence that the Board may consider when making its decision. Once published, the report becomes a part of the record, is served upon all parties to the proceeding and is made available to any person upon request.<sup>8</sup> A record of the public hearings and all evidence, including the Staff Report, may be examined by the public at anytime.<sup>9</sup>

### **Board Decision**

The Board may approve, modify and approve, or deny an application for a certificate of environmental compatibility and public need.<sup>10</sup> If the Board approves, or modifies and approves an application, it will issue a certificate subject to conditions. The certificate is also conditioned upon the facility being in compliance with applicable standards and rules adopted under the Ohio Revised Code.<sup>11</sup>

Upon rendering its decision, the Board must issue an opinion stating its reasons for approving, modifying and approving, or denying an application for a certificate of environmental compatibility and public need.<sup>12</sup> A copy of the Board's decision and its opinion is memorialized upon the record and must be served upon all parties to the proceeding.<sup>13</sup> Any party to the proceeding that believes its issues were not adequately addressed by the Board may submit within 30 days an application for rehearing.<sup>14</sup> An entry on rehearing will be issued by the Board within 30 days and may be appealed within 60 days to the Supreme Court of Ohio.<sup>15</sup>

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4. R.C. 4906.07(A) and Ohio Adm.Code 4906-3-08.

5. R.C. 4906.08(C).

6. R.C. 4906.07.

7. Ohio Adm.Code 4906-3-06(C).

8. R.C. 4906.07(C) and 4906.10.

9. R.C. 4906.09 and 4906.12.

10. R.C. 4906.10(A).

11. R.C. 4906.10.

12. R.C. 4906.11.

13. R.C. 4906.10(C).

14. R.C. 4903.10 and 4906.12.

15. R.C. 4903.11, 4903.12, and 4906.12.

## CRITERIA

Staff developed the recommendations and conditions in this *Staff Report of Investigation* pursuant to the criteria set forth in R.C. 4906.10(A), which reads, in part:

The board shall not grant a certificate for the construction, operation, and maintenance of a major utility facility, either as proposed or as modified by the board, unless it finds and determines all of the following:

- (1) The basis of the need for the facility if the facility is an electric transmission line or gas pipeline;
- (2) The nature of the probable environmental impact;
- (3) That the facility represents the minimum adverse environmental impact, considering the state of available technology and the nature and economics of the various alternatives, and other pertinent considerations;
- (4) In the case of an electric transmission line or generating facility, that the facility is consistent with regional plans for expansion of the electric power grid of the electric systems serving this state and interconnected utility systems and that the facility will serve the interests of electric system economy and reliability;
- (5) That the facility will comply with Chapters 3704, 3734, and 6111 of the Revised Code and all rules and standards adopted under those chapters and under sections 1501.33, 1501.34, and 4561.32 of the Revised Code. In determining whether the facility will comply with all rules and standards adopted under section 4561.32 of the Revised Code, the board shall consult with the office of aviation of the division of multi-modal planning and programs of the department of transportation under section 4561.341 of the Revised Code;
- (6) That the facility will serve the public interest, convenience, and necessity;
- (7) In addition to the provisions contained in divisions (A)(1) to (6) of this section and rules adopted under those divisions, what its impact will be on the viability as agricultural land of any land in an existing agricultural district established under Chapter 929 of the Revised Code that is located within the site and alternative site of the proposed major utility facility. Rules adopted to evaluate impact under division (A)(7) of this section shall not require the compilation, creation, submission, or production of any information, document, or other data pertaining to land not located within the site and alternative site; and
- (8) That the facility incorporates maximum feasible water conservation practices as determined by the board, considering available technology and the nature and economics of the various alternatives.



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## **II. APPLICATION**

### **APPLICANT**

Hecate Energy Highland, LLC, (Applicant) is owned by Hecate Energy LLC. Hecate Energy specializes in the development of solar and wind projects, natural gas plants and energy storage.

### **HISTORY OF THE APPLICATION**

On August 31, 2018, the Applicant filed a Pre-Application Notification Letter regarding the proposed facility.

On September 17, 2018, the Applicant held a public informational meeting regarding the proposed facility in Mowrystown, Ohio.

On October 9, 2018, the Applicant filed the Highland Solar Farm application, a motion for waivers from the requirements to submit the manufacturers' safety manuals or similar documents and any manufacturer recommended setbacks, and a motion for protective order of certain financial data included in the application.

On December 6, 2018, the Applicant filed a supplement to the application including GIS mapping of data collection lines and access roads and a map of culturally significant landmarks. The Applicant also filed a supplemental motion for waiver from requirements with respect to the evaluation of impacts to landmarks, identification of and evaluation of impacts to recreation and scenic areas, and visual impacts outside of a 5-mile radius of the project.

On December 10, 2018, the Director of the Rates and Analysis Department of the PUCO, issued a letter of compliance regarding the application to the Applicant.

On January 9, 2019, the Ohio Farm Bureau Federation filed a motion to intervene.

On January 15, 2019, the Administrative Law Judge (ALJ) granted the Applicant's motion for waivers and supplemental motion for waivers.

On February 8, 2019, the Applicant filed a preconstruction noise study.

On February 20, 2019, the Applicant filed a notice regarding modification of project footprint.

A local public hearing has been scheduled for March 19, 2019, at 6:00 p.m., at Whiteoak High School, Student Activities Center, 44 N. High St., Mowrystown, Ohio 45155. The adjudicatory hearing will commence on March 26, 2019, at 10:00 a.m., 11th floor, Hearing Room 11-D, at the offices of the Public Utilities Commission of Ohio, 180 East Broad Street, Columbus, Ohio 43215-3793.

This summary of the history of the application does not include every filing in Case No. 18-1334-EL-BGN. The docketing record for this case, which lists all documents filed to date, can be found online at <http://dis.puc.state.oh.us>.

## **PROJECT DESCRIPTION**

The Applicant intends to build the project as a 300 MW solar-powered generating facility in Mowrystown, Highland County, Ohio. The project would consist of large arrays of ground-mounted photovoltaic (PV) modules, commonly referred to as solar panels. The project also includes associated support facilities, such as access roads, up to thirty pyranometers, buried electrical collection lines, inverter pads, and a substation. The project would occupy up to 1,919 acres within a 3,400 acre project area. The proposed layout is shown on the map in this report.

### **Solar Panels and Racking**

The solar panels would be attached to metal racking. The racking would include piles driven or screw rotated into the ground. The solar panel arrays would be grouped in large clusters that would be fenced, with locked gates at all entrances.

The project's arrays would consist of metal racking with tracking capabilities, in order to move in the direction of the sun. Tracking arrays would consist of racking placed in a north-south direction and would be equipped with electric motors that would slowly rotate the panels throughout the day. Tracking arrays would face east at sunrise, rotate westward during the day, face west at sunset, and then reset to the east.

The Applicant has not yet selected the specific module vendor for the project, but has committed to using silicon-based crystalline modules. The Applicant indicated that it intends to use a manufacturer that has the capability and experience to provide approximately 1,100,000 modules for this project.

### **DC Collector System, Inverters, and AC Collector System**

The Applicant would install a collector system made up of a network of electric lines and communication lines that would transmit the electric power from the solar arrays to a central location. The Applicant proposes to install a mixture of above-ground cables and buried cables. Installation of the cable would require an approximately 20-foot wide temporary work area along its entire length.

The electricity from the solar panels would be generated in direct current (DC). DC power from the solar panels would be delivered to circuits, which would be routed through cable trays, then to combiner boxes. Power from the combiner boxes would be transmitted to groups of components, collectively called an inverter, which would include a DC-to-alternating current (AC) inverter, a step-up transformer that would increase the voltage to 34.5 kV, and a cabinet containing power control electronics. The facility would include approximately 160 inverter stations with 20 inverters at each station.

Each inverter would deliver AC power to a common substation through a system of electric lines and associated communication lines. The Applicant intends for each portion of the AC collector system to originate in one of the solar fields and terminate at the substation. The Applicant has committed that those portions of the AC collector system outside the fenced solar fields and fenced substation would be buried at least 36 inches below grade. The Applicant stated that it will use warning tape over the buried cable and register the underground facilities with Ohio Utilities Protection Service.

**Substation and Transmission Line**

The project substation would occupy approximately 3.5 acres of land adjacent to a planned Dayton Power and Light 345kV 3-breaker ring bus substation. The major components of the Applicant's substation would be collection line feeders and breakers, a 34.5 kV bus, a main power transformer to step up the voltage to 345 kV, a high-voltage breaker, metering/relaying transformers, disconnect switches, an equipment enclosure containing power control electronics, and a lightning mast. An approximately 30 foot long transmission line would connect the project substation to the planned DP&L substation.

**Roads**

The Applicant proposes the use of approximately 8 miles of gravel access roads during construction, and a maximum of 56 miles of internal roads which would be unpaved/grass roads for maintenance of the solar farm. The access roads would consist of aggregate material and/or grass. The access roads would be up to 20 feet wide.

**Laydown Areas**

The Applicant proposes up to approximately 10 temporary equipment laydown areas. All temporary laydown areas would be located within the project footprint. None of the laydown areas would be permanent.

**Meteorological Stations**

The project would not include meteorological stations but rather pyranometers which would be installed near the inverter stations. Up to thirty pyranometers would be installed, all of which would be under 10 feet tall. Pyranometers measure the solar resource.

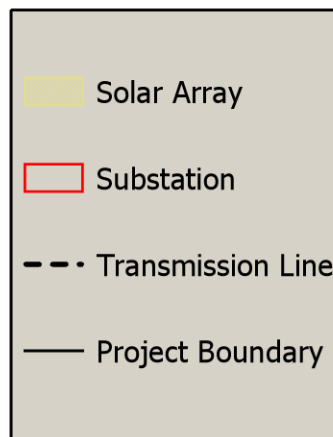
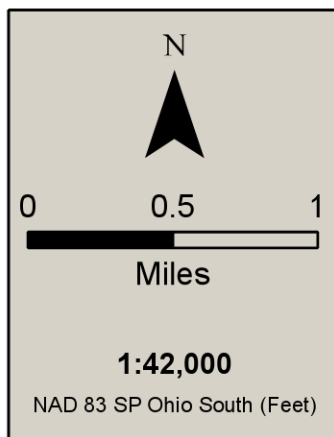
**Lighting**

The project would include permanent lighting only at gates, inverters, and the collection yard. All lights would be shielded, downward- or inward-facing and motion-activated. There would be no permanent lighting associated with the solar panels themselves, the access roads, or any other components of the project.

**Project Schedule**

The Applicant proposes to complete the engineering and design of the facility and commence construction in the third quarter of 2019, and to commission the facility in the first quarter of 2021. The Applicant stated that delays in project development could have adverse effects on the completion of the project. Additionally, the Applicant stated that delays postponing the start of construction by more than one year may affect its contract for electricity sales.





## Overview Map

### 18-1334-EL-BGN

#### Hecate Energy Highland Solar Farm

Maps are presented solely for the purpose of providing a visual representation of the project in the staff report, and are not intended to modify the project as presented by the Applicant in its certified application and supplemental materials.

### **III. CONSIDERATIONS AND RECOMMENDED FINDINGS**

In the Matter of the Application of Hecate Energy Highland LLC for a Certificate for a Certificate of Environmental Compatibility and Public Need to Construct an Electric Generation Facility in Highland and Brown Counties, Ohio, Staff submits the following considerations and recommended findings pursuant to R.C. 4906.07(C) and 4906.10(A).

#### **Considerations for R.C. 4906.10(A)(1)**

##### **BASIS OF NEED**

Pursuant to R.C. 4906.10(A)(1), the Board must determine the basis of the need for the facility only if the facility is an electric transmission line or gas pipeline. The proposed facility is neither an electric transmission line nor a gas pipeline. Therefore, Staff has found an analysis of R.C. 4906.10(A)(1) to be inapplicable to the facility in question.

##### **Recommended Findings**

Staff recommends that the Board find that the basis of need as specified under R.C. 4906.10(A)(1) is not applicable to this facility, as the facility is neither an electric transmission line nor a gas pipeline.

## **Considerations for R.C. 4906.10(A)(2)**

### **NATURE OF PROBABLE ENVIRONMENTAL IMPACT**

Pursuant to R.C. 4906.10(A)(2), the Board must determine the nature of the probable environmental impact of the proposed facility. Staff has found the following with regard to the nature of the probable environmental impact.

#### **Socioeconomic Impacts**

##### *Demographics*

The proposed facility is located in Clay and Whiteoak Townships of Highland County. In 2010, the population of Highland County was 43,589. The population numbers decreased slightly (1.1 percent) from 2010 to 2016 estimates.<sup>16</sup>

##### *Regional Planning*

Highland County has adopted a comprehensive land use plan, entitled the 2003 Highland County, Ohio Comprehensive Plan (Highland Plan), which emphasizes creation of new economic opportunities, support for the agricultural economy, and preservation of valuable agricultural land.

Citizen concerns expressed in the Highland Plan included sporadic residential growth which has converted farmland into unplanned development. Residential development patterns and land use practices were also identified as concerns.

The proposed solar farm would not interfere with surrounding agricultural land use and the development of the project could preserve land for future viable farming operations. After the life cycle of this project, once the panels and posts are removed, the majority of land could be returned to farming, or developed for other uses.

##### *Land Use*

The project is located approximately two miles east-northeast of Buford and approximately three miles northwest of Mowrystown. The Applicant proposes to construct the facility on up to 3,400 acres. Of the land acreage for the project, the majority is presently used for agricultural production. There are smaller segments presently utilized as rural residential or containing woodlots, roads and open field. Approximately 1,919 acres of primarily agricultural land would be utilized for the solar panels, access roads and substation, and approximately 1,500 acres of residential and agricultural land and woodlots would not be developed. A 345 kV transmission line located on steel lattice towers bisects the project. The facility will consist of solar arrays, material staging areas, a project substation, meteorological towers, access roads, and collector lines.

The majority of land use to be used for the project is agricultural in nature. Three parcels totaling approximately 170 acres are listed as Agricultural District land. The Applicant states that approximately 45 of the 170 acres of Agricultural District land would be developed for the project. Aside from residences located within the project area (participating residences), there are 25 non-participating residences located within 1,000 feet of the project boundary. According to the

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16. Application at p. 5, Exhibit H, Table 2-1.



Applicant, no non-participating residences would be located within 250 feet of the project.<sup>17</sup> The project footprint does not include any major population centers or industries other than farming.

Because of the proximity of non-participating sensitive receptors, Staff recommends that the Applicant limit the hours of construction and have a complaint resolution plan in place to address potential construction and operational related concerns from nearby residents. Further, Staff recommends that the Applicant screen the facility from adjacent residences with a view of the facility by providing an opaque perimeter fence, as well as adding vegetative landscaping where feasible.

There are no National Scenic Trails, National Wildlife Refuges, or State Wildlife Management Areas located within 5 miles of the project area. The nearest recreation area to the project is Clay Township Community Park, located in the unincorporated community of Buford. The project would likely not be visible from the community of Buford.

### *Cultural Resources*

The Applicant enlisted a consultant to complete a cultural resources records review for the area. The Applicant conducted a literature review and evaluation of cultural resource surveys previously performed in the area. This review was based on data provided by the OHPO online GIS mapping, as well as other map collections and resources. The consultant found that 2 prior cultural resource surveys were performed within one-mile of the project.

From the literature review, the cultural resources consultant determined that there were no National Register of Historic Places (NRHP) properties, properties deemed eligible for the NRHP, nor National Historic Landmarks within the project area. There were two NRHP-listed properties within 5 miles of the project boundary, one being within 1.6 miles, however the consultant says the project will not be visible from either of these NRHP-listed properties. There were 55 Ohio Historic Inventory (OHI) structures that were identified within the 5 mile radius of the project area, with the closest one being an estimated 2 miles southeast of the project boundary. From any of these structures, the consultant states the project will not likely be visible.

The Applicant's consultant also identified 28 Ohio Archaeological Inventory (OAI) sites from the literature review that are within the 5 mile radius of the project boundary. The OAI sites comprise archeologically significant sites and are typically below ground, meaning there is little to no concern regarding visual impacts from the project. The area of potential effects (APE) for the project is a one mile radius. One of these sites is located within the APE. There are 66 mapped cemeteries within 5 miles of the project area, 10 of which are within one mile.

The literature review revealed no known archeological sites within the locations proposed by the Applicant for solar arrays, access roads, and auxiliary lines.

The Applicant's cultural resources consultant stated that there are no anticipated impacts to NRHP-listed properties, and no anticipated significant impacts to historic resources. However, because of the land area of the project, it was recommended by the consultant that prior to construction, a Phase I Cultural Resource Survey be performed, including an archeological survey and visual impacts as a result of the project. Based on communication with OHPO, it is Staff's understanding

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17. Application at p. 16, Structure Type Table, Exhibit H.



that a cultural resources survey program for further archaeological and architecture-history has been developed by the Applicant in conjunction with OHPO input and feedback.

### *Aesthetics*

The Applicant included a viewshed analysis report (VAR), with the project application. The VAR utilized a component height for the project at a height of 8 feet.<sup>18</sup> Based on the results of the Applicant's VAR, the solar panel project would be visible on a limited basis within 2 miles, and is not likely to be visible at locations between two to five miles of the perimeter of the project.<sup>19</sup>

The VAR further notes that predominate visibility of the project would be from the adjacent properties and intersecting roads.<sup>20</sup> Due to the potential impacts on non-participating residences surrounding the facility, Staff recommends the Applicant incorporate a landscape and aesthetics plan to reduce impacts in areas where an adjacent non-participating parcel contains a residence with a direct line of sight to the project area.

The Applicant plans to install a perimeter chain-linked fence at least six foot in height, so Staff believes that additional screening techniques would be needed. These techniques could include woven (opaque) fabric within the fence itself and/or vegetative screening in various strategic locations.

### *Economics*

Hecate Energy LLC, enlisted the expertise of an independent economic consulting firm to analyze both the direct and indirect economic impact of building and operating the planned facility. The economic analysis identified the following direct, indirect, and induced economic impacts that that would be associated with the construction and operational phases of the planned facility.

### *Jobs*

- 268 new construction related job impacts for Highland County<sup>21</sup>
- 55 long-term operational jobs for Highland County

### *Earnings*

- Approximately \$50.1 million in local earnings during construction for Highland County<sup>22</sup>
- Approximately \$2.3 million in annual earnings resulting from operations for Highland County

### *Output*

- Approximately \$73 million in local output during construction for Highland County<sup>23</sup>
- Over \$25 million in local annual output derived from operations for Highland County

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18. Application at Exhibit J, "Viewshed Analysis Report" at p. 3.

19. Ibid at p. 6.

20. Ibid at p. 6.

21. Application at Exhibit C

22. Ibid.

23. Ibid.

The Applicant filed additional detail on the economic data, including the applicable capital and intangible costs plus the estimated annual operation and maintenance costs, under seal.

#### *Taxes*

The operation of the facility will provide annual tax revenue in Highland County of approximately \$1.8 million during the construction phase. In the operational phase, the project would generate tax revenue of approximately \$100,000 on an annual basis.<sup>24</sup>

All Staff recommendations for the requirements discussed in this section of the *Staff Report of Investigation* are included under the **Socioeconomic Conditions** heading of the Recommended Conditions of Certificate section.

### **Ecological Impacts**

#### *Geology and Seismology*

The bedrock that underlies Highland County is of Ordovician age along the western part of the county and progressively gets younger towards the eastern boundary where Devonian age rocks and is capped by sandstone bedrock of Mississippian age. The project area lies in the southwest section of Highland County.

Deposits of glacial till cover the bedrock over most of the project area. This till material is made up of a very compact mix of sand, gravel, and boulders and has a very high lime content. The project site is in a broad flat lying area with very little relief.

Highland County has experienced both past and current mining activity. However, the project area has no record of any mineral extraction taking place. Staff reviewed the state of Ohio database and interactive map for oil and gas drilling and exploration in Highland County for this project site. There are no current oil and gas drilling operations within the project area.

Highland County has a limited history of seismic activity. In 1881, an earthquake with a 2.9 magnitude on the Richter scale occurred about 10 miles north of the project in New Market Township. A more recent seismic event occurred in 1995 approximately 17 miles east of the project in Marshall Township at a 3.6 magnitude. Although both of these earthquakes registered above 2.0 magnitude, which is generally considered the lower range of an earthquake being felt, the fact is that the frequency of seismic activity is rare in Highland County. The historical record of the magnitude of these seismic events would likely result in little or no measurable property damage to the operation of this facility.

#### *Soil Suitability and Test Borings*

The soils in the project area, as characterized in the *Soil Survey of Highland County, Ohio* generally consist of silt loam and silty clay loam. The Avonburg-Clermont-Blanchester Association is the dominant soil association of which the Clermont is the most prevalent mapped soil unit in the project area. The Avonburg soils consists of poorly drained, nearly level to gently sloping soils formed in loess and the underlying glacial till. The Clermont soils consists of poorly drained, nearly level soils that formed in loess and the underlying glacial till. These soils have a moderately slow permeability and generally a high range of water capacity.

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24. Ibid.

The Applicant does propose performing more site specific test borings at the project area to determine specific criteria related to subsurface soil properties, static water level, rock quality description, percent recovery, and depth and description of bedrock contact. Present site conditions would not adversely effect or negate the design, construction, and future operation of this solar facility.

The Applicant has performed preliminary drilling and subsurface work and has provided Staff with a report of their findings. The Applicant would perform more site specific drilling prior to construction. Staff finds that the geology within the project area of Highland County does not present conditions that would limit or negatively impact the construction and future operation of this solar energy facility.

#### *Public and Private Water Supply*

The Applicant does not anticipate significant adverse impacts to public or private water supplies due to construction of the Highland Solar Farm. The project would disturb a minimal amount of ground surface and would not impact groundwater wells during construction or operation. The project area does not overlap with any drinking water source protection plan areas.

The Applicant should conduct spill response training for construction, operations and maintenance staff as needed to limit potential for impact. The Applicant should also use prudent project design including, but not limited to, the use of containment structures for oil and chemicals used during construction, operation, and/or maintenance.

#### *Surface Waters*

The Applicant delineated 30 streams within the project area. Four streams, including one intermittent stream, and three ephemeral streams, would be crossed by overhead collection lines. One ephemeral stream may be crossed by an access road.

The Applicant delineated 31 wetlands within the project area. Two category 2 wetlands would be crossed by underground collection lines. However, impacts would be avoided due to the use of horizontal directional drilling (HDD). Because the project would use HDD, Staff recommends that, prior to construction, the Applicant provide a frac-out contingency plan detailing monitoring, containment measures, cleanup, and restoration in the event of an inadvertent return.

No ponds or lakes would be impacted by the facility during construction or operation.

The Applicant has proposed a 10-foot construction buffer around all wetlands and streams to minimize any incidental disturbance from construction activities. Specifics about how surface waters would be further protected from indirect construction stormwater impacts using erosion and sedimentation controls would be outlined in the Applicant's Stormwater Pollution Prevention Plan (SWPPP). Direct impacts, including the proposed access road crossing would be covered under the U.S. Army Corps of Engineers (USACE) Nationwide Permit Program. The project would not impact any 100-year floodplains.

#### *Threatened and Endangered Species*

The Applicant requested information from the ODNR and the USFWS regarding state and federal listed threatened or endangered plant and animal species. Staff gathered additional information through field assessments and review of published ecological information. The following table provides the results of the information requests, field assessments, and document review.

MAMMALS				
Common Name	Scientific Name	Federal Status	State Status	Presence in Project Area
Indiana bat	<i>Myotis sodalis</i>	Endangered	Endangered	Historical range includes the project area. Presence within project area has been documented.
northern long-eared bat	<i>Myotis septentrionalis</i>	Threatened	Threatened	Historical range includes the project area. Presence within project area has been documented.
black bear	<i>Ursus americanus</i>	N/A	Endangered	Historical range includes the project area. Impacts not anticipated.
BIRDS				
Common Name	Scientific Name	Federal Status	State Status	Presence in Project Area
loggerhead shrike	<i>Lanius ludovicianus</i>	N/A	Endangered	Historical range includes the project area. Suitable nesting habitat includes hedgerows, thickets, and fencerows. Records of species within project area.
FISH				
Common Name	Scientific Name	Federal Status	State Status	Presence in Project Area
bigeys shiner	<i>Notropis boops</i>	N/A	Threatened	Historical range includes the project area. No in-water work proposed
REPTILES				
Common Name	Scientific Name	Federal Status	State Status	Presence in Project Area
timber rattlesnake	<i>Crotalus horridus</i>	N/A	Endangered	Historical range includes the project area. Impacts not anticipated.
PLANTS				
Common Name	Scientific Name	Federal Status	State Status	Presence in Project Area
running buffalo clover	<i>Trifolium stoloniferum</i>	Endangered	N/A	Historical range includes the project area. No suitable habitat was observed during field studies.

The Applicant did not identify any listed plant or animal species during field surveys. Further, the ODNr and the USFWS did not identify any concerns regarding impacts to listed plant species. In the event that the Applicant encounters listed plant or animal species during construction, Staff recommends that the Applicant contact Staff, the ODNr, and the USFWS, as applicable. Staff also recommends that if the Applicant encounters any listed plant or animal species prior to construction, the Applicant include the location and how impacts would be avoided in a final access plan to be provided to Staff prior to the preconstruction conference.

The project area is within the range of state and federal endangered Indiana bat (*Myotis sodalis*) and the state and federal threatened northern long-eared bat (*Myotis septentrionalis*). Presence of these species has been established within the project area. As tree roosting species in the summer months, the habitat of these species may be impacted by the project. In order to avoid impacts to the Indiana bat and northern long-eared bat, Staff recommends the Applicant adhere to seasonal tree cutting dates of October 1 through March 31 for all trees three inches or greater in diameter, unless coordination efforts with the ODNR and the USFWS reflects a different course of action.

The ODNR has records of the state endangered loggerhead shrike (*Lanius ludovicianus*) within the project area. Suitable nesting habitat for this species includes hedgerows, thickets, and fencerows. In order to avoid impact to this species the Staff recommends that this habitat not be cleared during the species' nesting period of April 1 through August 1.

The Applicant has proposed up to 24.8 acres of tree clearing. Much of the tree clearing is proposed along narrow strips of vegetation to allow better connectivity between areas of solar panels and to reduce shading. Some of these narrow areas of trees and shrubs provide connectivity between woodlots. The result of the removal of these areas would be habitat fragmentation, where continuous habitats would be divided into smaller, more isolated remnants. While the clearing proposed in this project would not be expected to impact any species on the population level, habitat fragmentation in general can have a negative impact on both listed and non-listed wildlife species. As a best management practice, Staff recommends that the Applicant leave narrow areas of woodlot-connecting trees and shrubs intact unless the clearing would be a small area needed for installation of collection lines or access roads. In these instances, the corridors would retain some functionality due to the small size of gaps in habitat.

#### Vegetation

The following table reflects the different vegetative communities present in the project area and associated impact for the facility.

VEGETATION	
Vegetation Community Type	Total Disturbance (Acres)
Forestland	24.8
Grassland	20.4
Agricultural Lands	1483.0
Total	1528.2

The estimated vegetative impact includes the entire project area presented within the application. However, the entire project area would not be developed as part of this project. As a result, permanent impacts associated with this project would be less than the amount shown. Permanent vegetative impacts would occur primarily within agricultural lands. The estimated impact to forestland of 24.8 acres is the result of geographic information system (GIS) calculations and actual forest clearing may be less. Further, Staff's recommendation to preserve wooded corridors would reduce total tree clearing.

Staff recommends that the Applicant be required to provide a vegetation management plan for review prior to the preconstruction conference. The plan would identify all areas of proposed

vegetation clearing for the project, specifying the extent of the any clearing, and describing how such clearing work would be done as to minimize removal of woody vegetation. Staff recommends that the plan also include the implementation and maintenance of native pollinator-friendly plantings in selected locations along the outside border of the solar fields and incorporate plantings of legumes and wildflowers in areas between the solar panels. Plantings should be selected in consultation with the Ohio Pollinator Habitat Initiative. These features would enhance the visual appeal of the project, enrich local wildlife habitat, and benefit the local farming community. Pollinator plantings would: help reduce erosion; reduce fertilizer, herbicide, and pesticide use; discourage invasive species; and improve water quality.

All Staff recommendations for the requirements discussed in this section of the *Staff Report of Investigation* are included under the **Ecological Conditions** heading of the Recommended Conditions of Certificate section.

## **Public Services, Facilities, and Safety**

### *Wind Velocity*

The Applicant stated that the components of the proposed facility are not susceptible to damage from high winds. Specifically, that Applicant indicates that single-axis trackers are designed to tilt into a stow position during high winds to avoid a sail effect on the panels. When wind speeds exceed tolerability, the tracker automatically adjusts to a horizontal position that allows airflow over and under the panels. To minimize and mitigate any potential damage from high wind velocities, the Applicant proposes to install the project support equipment at sufficient depths based on the site-specific soil conditions to preclude any adverse influence from high wind velocities.

### *Road and Bridges*

The principal impact on public services would be increases in traffic on routes leading to the project area. Some traffic management during the construction phase may be necessary in the immediate vicinity of the project area to ensure safe and efficient maintenance of existing traffic patterns and usages. The Applicant has committed to coordinating with local officials to ensure that impacts associated with the increase in traffic would be minimal.

During operation, facility related traffic would be minimal and would not significantly impact local roadways. Potential emergency service requirements would be coordinated with local officials during construction and operation.

There are numerous delivery routes possible for the transportation of equipment to the project site. These possible routes include US Route 68 to State Routes 286, 134 and 138 to enter the project from the west or US Route 62 to State Route 321 to enter the project from the east. Other portions of the project area will be accessed through local County and Township roads. A final delivery route has not been finalized.

The Applicant stated that its contractor would obtain all necessary permits from ODOT and the County Engineer prior to construction. The County Engineer may require a Road Use and Maintenance Agreement for construction activities.

Staff recommends a requirement for the Applicant to develop a final transportation management plan that, if necessary, would include a road use agreement. Any damaged public roads and bridges

would be repaired promptly to their previous condition by the Applicant under the guidance of the appropriate regulatory agency. Any temporary improvements would be removed unless the appropriate regulatory agency requests that they remain in place.

### *Noise*

Noise impacts from construction activities would include site clearing, installation of mechanical and electrical equipment, and commissioning and testing of equipment. Many of the construction activities would generate significant noise levels during the year of construction. However, the adverse impact of construction noise would be temporary and intermittent, would occur away from most residential structures, and would be limited to daytime working hours. The Applicant would use mitigation practices such as maintaining engines and mufflers in good operating order, limiting construction activities to daylight hours, and establishing a complaint resolution process.

Operational noise impacts for a solar generation facility would be relatively minor and occur only during the day. Operational noise sources include inverters and transformers located within a group of solar panels, the step up transformer at the new substation, and tracking motors.

The Applicant conducted an ambient noise level study in order to understand the existing noise levels near the proposed facility. Noise impacts to non-participating receptors were modeled and the model showed that operational noise impacts would be approximately the same as or less than ambient noise levels. No non-participating receptors were modeled to receive noise impacts greater than the daytime ambient noise level plus 5 dBA. Therefore the project would be expected to have minimal adverse noise impacts on the adjacent community.

All Staff recommendations for the requirements discussed in this section of the *Staff Report of Investigation* are included under the **Public Services, Facilities, and Safety Conditions** heading of the Recommended Conditions of Certificate section.

### **Recommended Findings**

Staff recommends that the Board find that the Applicant has determined the nature of the probable environmental impact for the proposed facility, and therefore complies with the requirements specified in R.C. 4906.10(A)(2), provided that any certificate issued by the Board for the proposed facility include the conditions specified in the section of this *Staff Report of Investigation* entitled Recommended Conditions of Certificate.

## **Considerations for R.C. 4906.10(A)(3)**

### **MINIMUM ADVERSE ENVIRONMENTAL IMPACT**

Pursuant to R.C. 4906.10(A)(3), the proposed facility must represent the minimum adverse environmental impact, considering the state of available technology and the nature and economics of the various alternatives, along with other pertinent considerations.

#### **Site Selection**

According to the Applicant, southwestern Ohio presents several factors that are favorable to solar generation projects – a significant regional demand for electricity, a strong transmission grid, and some of the best solar resource in the state. Within the southwestern Ohio region, the study area was chosen by the Applicant primarily due to the impact economic development could have on the region, cost-effective interconnection, flat topography, and minimal impacts to cultural, ecological, and hydrological resources. Siting the project near the existing 345kV Stuart-Clinton transmission line reduces the length of the new transmission line between the solar facility substation and the existing transmission system substation.

The Applicant states that it determined the specific location of the project by using the following criteria: proximity to potential interconnection, solar resource availability, wetland data, flood zone data, ecological resource data, threatened and endangered species habitat data, topography, and the economic status of the community.

During the public informational meeting, the Applicant solicited written comments from attendees but only received verbal comments. These comments, related to aesthetics and the mitigation of visual impacts, are discussed in the application.

#### **Minimizing Impacts**

Of the approximately 3,400 acres of leased land, 1,919 acres would be occupied by solar generation facilities. Agricultural land accounts for 77 percent of all land that would be impacted by the proposed facility, with woodlots accounting for 23 percent.

Relatively few previously recorded cultural resources were identified in the immediate vicinity of the project. The Applicant designed a systematic Phase I survey program for the project, in conjunction with input from the OHPO, to assure impacts to cultural resources are minimized.

The proposed facility would have an overall positive impact on the local economy due to the increase in construction spending, wages, purchasing of goods and services, annual lease payments to the local landowners, and potential tax or payment in lieu of taxes (PILOT) revenue.

To minimize impacts to wetlands, the Applicant has committed to using HDD to install the underground electric collection cable at the two wetland crossings. Four streams would be crossed by overhead collection lines, but the crossing would not impact the streams. One stream would likely be crossed by an access road. The Applicant would use best management practices if the stream would need to be crossed in order to minimize temporary impacts to the resource. Construction of the facility would not require work within mapped 100-year floodplains.



Impacts to any state and federal listed wildlife species can be avoided by following best management practices and seasonal restrictions for construction in certain habitat types, as detailed by the USFWS and the ODNR.

Noise impacts are expected to be primarily limited to construction activities. The adverse impact of construction noise would be temporary and intermittent, would occur away from most residential structures, and would be limited to daytime working hours.

During the construction period, local, state, and county roads would experience a temporary increase in truck traffic due to deliveries of equipment and materials. A final delivery route plan and road use agreement would be developed through discussions with local officials.

Due to the low profile of the project combined with vegetation in the area, the visual impacts would be most prominent to landowners in the immediate vicinity of the facility. Through measures committed to by the Applicant, as well as the landscape and aesthetics plan recommended by Staff, aesthetic impacts would be minimized.

### **Conclusion**

Staff concludes that the proposed project would result in both temporary and permanent impacts to the project area and surrounding areas. Due to the nature of potential impacts to land use, cultural resources, surface water resources, wildlife, and Staff's recommended conditions to further mitigate these impacts, Staff concludes that the project represents the minimum adverse environmental impact.

### **Recommended Findings**

Staff recommends that the Board find that the proposed facility represents the minimum adverse environmental impact, and therefore complies with the requirements specified in R.C. 4906.10(A)(3), provided that any certificate issued by the Board for the proposed facility include the conditions specified in the section of this *Staff Report of Investigation* entitled Recommended Conditions of Certificate.

## **CONSIDERATIONS FOR R.C. 4906.10(A)(4)**

### **ELECTRIC GRID**

Pursuant to R.C. 4906.10(A)(4), the Board must determine that the proposed electric facilities are consistent with regional plans for expansion of the electric power grid of the electric systems serving this state and interconnected utility systems, and that the facilities will serve the interests of electric system economy and reliability. The purpose of this section of the report is to evaluate the impact of integrating the proposed facility into the bulk power system (BPS).

The facility proposed by the Applicant is a solar photovoltaic generating facility located in Highland County, capable of producing 300 megawatts (MW) of electric power. The proposed facility would interconnect to Dayton Power & Light's (DPL) Stuart-Clinton 345kV transmission line.

#### **NERC Planning Criteria**

The North American Electric Reliability Corporation (NERC) is responsible for the development and enforcement of the federal government's approved reliability standards, which are applicable to all owners, operators, and users of the BPS. As an owner, operator, and/or user of the BPS, the Applicant is subject to compliance with various NERC reliability standards. NERC reliability standards are included as part of the system evaluations conducted by PJM Interconnection, LLC (PJM).<sup>25</sup>

#### **PJM**

On September 30, 2016, the Applicant submitted a new service request to PJM requesting to interconnect a 400 MW facility to the BPS. PJM gave the request queue position number AC1-085. The System Impact Study (SIS) was released by PJM in November 2018. The executed Interconnect Service Agreement (ISA) was filed at the Federal Energy Regulatory Commission in February 2019.<sup>26</sup> The Applicant's request to the Board was for an energy output of 300 MW, which is 100 MWs less than the PJM request. The facility shall be operated in such a way as to assure that no more than 300 MW would at any time be injected into the BPS.<sup>27</sup>

PJM studied the interconnection as an injection into DPL's electric grid via the Stuart-Clinton 345kV transmission line. The Applicant requested an injection of 400 MW, of which 152 MW could be available in the PJM capacity market. The capacity market ensures the adequate

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25. PJM Interconnection, LLC is the regional transmission organization charged with planning for upgrades and administering the generation queue for the regional transmission system in Ohio. Generators wanting to interconnect to the bulk electric transmission system located in the PJM control area are required to submit an interconnection application for review of system impacts. The interconnection process provides for the construction of expansions and upgrades of the PJM transmission system, as needed to maintain compliance with reliability criteria with the addition of generation in its footprint.

26. Federal Energy Regulatory Commission, Docket No. ER19-993-000, "Original ISA, SA No. 5258; Queue No. AC1-085," accessed February 12, 2019, <https://ferc.gov/docs-filing/elibrary.asp>.

27. PJM Interconnection, LLC, "System Impact Study, Queue Number AC1-085," accessed February 12, 2019, <https://www.pjm.com/planning/services-requests.aspx>.

availability of necessary generation resources can be called upon to meet current and future demand.<sup>28</sup>

## PJM Network Impacts

PJM analyzed the proposed facility interconnected to the BPS using a 2020 summer peak power flow model to evaluate the regional reliability impacts. The studies revealed a reliability issue while operating under normal conditions at the capacity output of 152 MW. American Electric Power's (AEP) Adkins-Beatty 345 kV transmission line was modeled to overload. The overload is caused by the deactivated Stuart and Killen Generation Facilities. This overload is discussed in more detail under the heading, "Contribution to Previously Identified Overloads - Network Impacts." The chart below displays the results of the PJM SIS for the PJM regional footprint.<sup>29</sup>

PJM REGIONAL SYSTEM IMPACTS	
Generator Deliverability - System Normal & Single Contingency Outage	
<i>Plant Output: Capacity Level – 152 MW</i>	AEP's Adkins-Beatty 345 kV transmission line would overload during normal operating conditions.
Category C and D - Multiple Contingency Outages	
<i>Plant Output: 400 MW</i>	No problems identified

## Contribution to Previously Identified Overloads - Network Impacts

PJM studied how the proposed facility could affect earlier projects in the PJM queue. The results revealed that AEP's Adkins-Beatty 345 kV transmission line would overload under normal system conditions. The modeled overload is caused by the deactivated Stuart and Killen Generation facilities. PJM modeled the energy output of deactivated generating facilities for one-year. The energy rights to Stuart and Killen can be claimed for up to one-year by anyone wanting to purchase the right. If the rights are not claimed by June 1, 2019, the upgrade to the Adkins-Beatty 345 kV transmission line will be unnecessary.

## Potential Congestion due to Local Energy Deliverability- Energy Delivery Impacts

PJM studied the delivery of the energy portion. Network upgrades under this section would allow for the delivery of energy with operational restrictions. Two contingencies were found under N-1 conditions, meaning the system can continue to operate within nominal limits if one element fails. The upgrades are at the discretion of the Applicant.

SINGLE CONTINGENCY OVERLOADS ON ENERGY DELIVERY	
Affected Facility	Upgrade Description
Kyger-Sporn 345 kV Line. (Two different contingencies affected this line)	None – Applicant may request additional studies.

28. PJM Interconnection, LLC, "System Impact Study, Queue Number AC1-085," accessed February 12, 2019, <https://www.pjm.com/planning/services-requests.aspx>.

29. PJM Interconnection, LLC, "System Impact Study, Queue Number AC1-085," accessed February 12, 2019, <https://www.pjm.com/planning/services-requests.aspx>.

### **Short Circuit Analysis**

The short circuit analysis study, which is part of the SIS, evaluates the interrupting capabilities of circuit breakers that would be impacted by the proposed generation addition. The results identified no circuit breaker problems.

### **Conclusion**

PJM analyzed the system, with the facility interconnected to the BPS, for compliance with NERC reliability standards and PJM reliability criteria. The PJM system studies indicated that while operating under normal conditions at the capacity level of 152 MW there is an overload of the AEP Adkins-Beatty 345 kV transmission line. Two additional violations were revealed while operating at 400 MW, but the Applicant is not required to mitigate the violations as the facilities output would be curtailed if the situation were to occur. In addition, no potential violations were found during the short circuit analysis. The executed ISA was filed at the Federal Energy Regulatory Commission in February 2019.

The facility would provide additional electrical generation to the regional transmission grid, would be consistent with plans for expansion of the regional power system, and would serve the interests of electric system economy and reliability.

### **Recommended Findings**

Staff recommends that the Board find that the proposed facility is consistent with regional plans for expansion of the electric power grid of the electric systems serving this state and interconnected utility systems, and that the facility would serve the interests of electric system economy and reliability. Therefore, Staff recommends that the Board find that the facility complies with the requirements specified in R.C. 4906.10(A)(4), provided that any certificate issued by the Board for the proposed facilities include the conditions specified in the section of this *Staff Report of Investigation* entitled Recommended Conditions of Certificate.

## **Considerations for R.C. 4906.10(A)(5)**

### **AIR, WATER, SOLID WASTE, AND AVIATION**

Pursuant to R.C. 4906.10(A)(5), the facility must comply with Ohio law regarding air and water pollution control, withdrawal of waters of the state, solid and hazardous wastes, and air navigation.

#### **Air**

Air quality permits are not required for construction or operation of the proposed facility. However, fugitive dust rules adopted under R.C. Chapter 3704 may be applicable to the construction of the proposed facility. The Applicant would control temporary and localized fugitive dust, by using a licensed construction firm knowledgeable about dust minimization and using water and/or dust suppressant. These methods of dust control are typically used to comply with fugitive dust rules.

This project would not include any stationary sources of air emissions and, therefore, would not require air pollution control equipment.

#### **Water**

Neither construction nor operation of the proposed facility would require the use of significant amounts of water. Therefore, the requirements under R.C. 1501.33 and 1501.34 are not applicable to this project.

Although the project area is large, storm water pollution from the project's construction activities would be limited in scope and regulated as described below. The Applicant would obtain coverage under the Ohio EPA National Pollutant Discharge Elimination System (NPDES) permit. Sedimentation in the local watercourse may occur because of construction activities, but would be minimized through best management practices (BMP) such as silt fences or diversion berms. BMP would be outlined in the Applicant's SWPPP, which is required as part of the NPDES permit.

During operation of the facility, the project would not need a NPDES permit, because solar panels generate electricity without water discharge. Water would be used for occasional cleaning of the solar panels as needed.

With these measures, construction and operation of this facility would comply with requirements of R.C. Chapter 6111, and the rules and laws adopted under that chapter.

#### **Solid Waste**

Debris generated from construction activities would include items such as plastic, wood, cardboard, metal packing materials, construction scrap, and miscellaneous debris. The Applicant estimates that 93,000 cubic yards of construction debris would be generated during construction. The Applicant stated that materials with reuse or salvage value would be recycled and that all construction-related debris would be disposed of at a licensed solid waste facility (e.g. municipal landfill).

Operation of the project would generate small amounts of non-hazardous solid waste, which would be reused, recycled, or disposed of in accordance with federal, state, and local requirements.

The Applicant's solid waste disposal plans would comply with solid waste disposal requirements set forth in R.C. Chapter 3734.

### **Aviation**

The height of the tallest above ground structure, a single narrow lighting mast, would be approximately 75 feet.

There are no public use airports, helicopter pads, or landing strips within 5 miles of the project area. According to the Federal Aviation Administration (FAA), the closest public-use airports is the Brown County Municipal Airport (GEO) which is just over 11 miles from the proposed solar farm project.

No helicopter pads are within or adjacent to the Project Area but there is one paved private use airstrip approximately 4 miles southwest of the project. The Applicant indicates that it has attempted to contact the owner, and it does not anticipate any adverse impacts.

### *Glare*

Glare is the phenomenon where sunlight reflects from a surface to create a duration of bright light. Glare also encompasses glint, which is a momentary flash of bright light. Potential impacts of this reflection from solar panel could be a brief reduction in visibility, afterimage, a safety risk to pilots, or a perceived nuisance to neighbors.

The Applicant intends for the project to have a low reflectivity. The Applicant intends to use an anti-glare coating and a tracking array system, both of which would reduce the potential for glare. Staff notes that aesthetic impact mitigation measures that include native vegetative plantings would also further reduce potential impacts as part of a landscape and lighting plan.

Because the solar farm is well outside three nautical miles of Brown County Municipal Airport an aeronautical study regarding glare is not warranted (14 CFR 77.17(a)(2)).

In accordance with R.C. 4906.10(A)(5), Staff contacted the ODOT Office of Aviation during the review of this application in order to coordinate review of potential impacts of the facility on local airports. As of the date of this filing, no such concerns have been identified.

All Staff recommendations for the requirements discussed in this section can be found under the **Air, Water, Solid Waste, and Aviation Conditions** heading of the Recommended Conditions of Certificate.

### **Recommended Findings**

Staff recommends that the Board find that the proposed facility complies with the requirements specified in R.C. 4906.10(A)(5), provided that any certificate issued by the Board for the proposed facility include the conditions specified in the section of this *Staff Report of Investigation* entitled Recommended Conditions of Certificate.

## **Considerations for R.C. 4906.10(A)(6)**

### **PUBLIC INTEREST, CONVENIENCE, AND NECESSITY**

Pursuant to R.C. 4906.10(A)(6), the Board must determine that the facility will serve the public interest, convenience, and necessity.

#### **Safety**

The Applicant stated that it would comply with safety standards set by the Occupational Safety and Health Administration and National Fire Protection Association. In addition, the Applicant has indicated that it would use equipment compliant with applicable Underwriters Laboratories, Institute of Electrical and Electronics Engineers, National Electrical Safety Code, and American National Standards Institute standards.

The Applicant intends to use warning signs, fencing, and locked gates to restrict access to the potential hazards within the solar project area. Additionally, the Applicant intends to design its facility with setbacks from public roads, property lines, and habitable residences.

Most of the construction activities would occur on private land far from roads and residences. The Applicant would work with local fire departments and other emergency responders to provide training for response to emergencies related to a solar farm.

Additionally, the Applicant stated that it intends to restrict public's access to the facility during operation by enclosing the project area with a seven feet tall chain-link fence.

The Applicant also intends to develop and implement an emergency response plan and consult with potentially affected local officials and emergency response personnel.

#### **Public Interaction**

The Applicant hosted a public informational meeting for this project. Attendees were provided the opportunity to view maps of the project, speak with representatives of the Applicant, and provide written comments.

The Applicant served copies of the complete application on the Highland County Commissioners, the Clay and White Oak township trustees, the Highland County Planning Commission, the Highland County Soil and Water Conservation District, the Highland County Engineer, the City of Hillsboro, and the Village of Sardinia. The Applicant sent a copy of the complete application to the Hillsboro Public Library. Copies of the complete application are also available for public inspection at the offices of the PUCO and on the PUCO online Docketing Information System website.

The Applicant has committed to notify, via mail, affected property owners and tenants who were provided notice of the public informational meeting, as well as anyone who requests updates regarding the project, at least seven days prior to the start of construction. This notice will provide information about construction and will include the contact information of a project representative. Staff recommends that a similar notice be mailed to these same individuals at least seven days prior to the start of facility operations.

During facility operation, the Applicant stated that it will ensure that a point of contact would be established for complaints, and that reasonable efforts would be made to resolve complaints. Staff

recommends that the Applicant formalize a complaint resolution process for use during the construction and operation period.

The Administrative Law Judge scheduled a local public hearing and an adjudicatory hearing for this proceeding. The local public hearing, at which the Board will accept written or oral testimony from any person, is scheduled for March 19, 2019, at 6 p.m. at the Whiteoak High School Student Activity Center, 44 N. High St., Mowrystown, OH 45155. The adjudicatory hearing is scheduled for March 26, 2019, at 10:00 a.m., in Hearing Room 11D at the offices of the Public Utilities Commission of Ohio, 180 E. Broad St., Columbus, Ohio 43215.

The Ohio Farm Bureau Federation filed a motion to intervene in this case. As of the filing of this Staff Report, the Board has received five public comments regarding this project. Public comments are made available for Board members and the public to view online in the case record at <http://dis.puc.state.oh.us>.

### **Liability Insurance**

The Applicant stated that it will carry insurance to cover liability and potential claims during the construction, operation, and decommissioning of the proposed facility.

### **Land Leases**

The Applicant stated that has leased or will purchase, pursuant to options, approximately 3,400 acres to use for the construction and operation of the project.

All Staff recommendations for the requirements discussed in this section of the *Staff Report of Investigation* are included under the Recommended Conditions of Certificate section.

### **Recommended Findings**

Staff recommends that the Board find that the proposed facility would serve the public interest, convenience, and necessity, and therefore complies with the requirements specified in R.C. 4906.10(A)(6), provided that any certificate issued by the Board for the proposed facility include the conditions specified in the section of this *Staff Report of Investigation* entitled Recommended Conditions of Certificate.



### **Considerations for R.C. 4906.10(A)(7)**

#### **AGRICULTURAL DISTRICTS AND AGRICULTURAL LAND**

Pursuant to R.C. 4906.10(A)(7), the Board must determine the facility's impact on the agricultural viability of any land in an existing agricultural district within the project area of the proposed facility. The agricultural district program was established under R.C. Chapter 929. Agricultural district land is exempt from sewer, water, or electrical service tax assessments.

Agricultural land can be classified as an agricultural district through an application and approval process that is administered through local county auditors' offices. Eligible land must be devoted exclusively to agricultural production or be qualified for compensation under a land conservation program for the preceding three calendar years. Furthermore, eligible land must be at least 10 acres in area or produce a minimum average gross annual income of \$2,500.

Forty-five parcels designated as agricultural district parcels would be impacted by the construction of the proposed facility. The construction of the proposed facility would result in the loss of 1,919 acres of cultivated lands. However, the repurposed land could be restored for agricultural use when the project is decommissioned.

The construction and operation of the proposed facility would disturb the existing soil and could lead to broken drainage tiles. The Applicant has committed to take steps to address such potential impacts to farmland, including: repairing all drainage tiles damaged during construction and restoring temporarily impacted land to its original use. In order to avoid impacts to drain tiles, the Applicant stated that it would locate drain tiles as accurately as possible prior to construction. Also, the Applicant has committed to promptly repair any drain tile found to be damaged by the project during the operational life of the project. Excavated top soil would be separated during construction and returned as topsoil after construction, unless otherwise requested by the landowner. Restored topsoil would be seeded after construction to prevent erosion.

The decommissioning plan for the proposed project calls for returning the affected land to original or similar conditions. This plan includes repairing any drainage tiles and the de-compaction of soil.

#### **Recommended Findings**

Staff recommends that the Board find that the impact of the proposed facility on the viability of existing agricultural land in an agricultural district has been determined, and therefore complies with the requirements specified in R.C. 4906.10(A)(7), provided that any certificate issued by the Board for the proposed facility include the conditions specified in the section of this *Staff Report of Investigation* entitled Recommended Conditions of Certificate.

### **Considerations for R.C. 4906.10(A)(8)**

#### **WATER CONSERVATION PRACTICE**

Pursuant to R.C. 4906.10(A)(8), the proposed facility must incorporate maximum feasible water conservation practices, considering available technology and the nature and economics of the various alternatives.

Construction of the proposed facility would not require the use of significant amounts of water. Water may be utilized for dust control, and would be used during earthwork activities, foundation construction, and dust control as needed.

Operation of the proposed facility would not require the use of significant amounts of water. No water is needed for any function, and no water or wastewater discharge is expected. Therefore, the requirements under R.C. 1501.33 and 1501.34 are not applicable to this project.

#### **Recommended Findings**

The Staff recommends that the Board find that the proposed facility would incorporate maximum feasible water conservation practices, and therefore complies with the requirements specified in R.C. 4906(A)(8). Further, the Staff recommends that any certificate issued by the Board for the certification of the proposed facility include the conditions specified in the section of this *Staff Report of Investigation* entitled Recommended Conditions of Certificate.

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#### **IV. RECOMMENDED CONDITIONS OF CERTIFICATE**

Following a review of the application filed by the Hecate Energy Highland LLC, and the record compiled to date in this proceeding, Staff recommends that a number of conditions become part of any certificate issued for the proposed facility. These recommended conditions may be modified as a result of public or other input received subsequent to the issuance of this report. At this time, Staff recommends the following conditions:

##### **GENERAL CONDITIONS**

Staff recommends the following conditions to ensure conformance with the proposed plans and procedures as outlined in the case record to date, and to ensure compliance with all conditions listed in this Staff Report:

- (1) The Applicant shall install the facility, utilize equipment and construction practices, and implement mitigation measures as described in the application and as modified and/or clarified in supplemental filings, replies to data requests, and recommendations in this *Staff Report of Investigation*.
- (2) The Applicant shall conduct a preconstruction conference prior to the start of any construction activities. Staff, the Applicant, and representatives of the primary contractor and all subcontractors for the project shall attend the preconstruction conference. The conference shall include a presentation of the measures to be taken by the Applicant and contractors to ensure compliance with all conditions of the certificate, and discussion of the procedures for on-site investigations by Staff during construction. Prior to the conference, the Applicant shall provide a proposed conference agenda for Staff review. The Applicant may conduct separate preconstruction conferences for each stage of construction.
- (3) The Applicant shall submit one set of detailed engineering drawings of the final project design to Staff at least 30 days before the preconstruction conference. This final design shall include all conditions of the certificate and references at the locations where the Applicant and/or its contractors must adhere to a specific condition in order to comply with the certificate. The final project layout shall be provided in hard copy and as geographically-referenced electronic data.
- (4) If any changes to the project layout are made after the submission of final engineering drawings, the Applicant shall provide all such changes to Staff in hard copy and as geographically-referenced electronic data. All changes are subject to Staff review to ensure compliance with all conditions of the certificate, prior to construction in those areas.
- (5) Within 60 days after the commencement of commercial operation, the Applicant shall submit to Staff a copy of the as-built specifications for the entire facility. If the Applicant demonstrates that good cause prevents it from submitting a copy of the as-built specifications for the entire facility within 60 days after commencement of commercial operation, it may request an extension of time for the filing of such as-built specifications. The Applicant shall use reasonable efforts to provide as-built drawings in both hard copy and as geographically referenced electronic data.

- (6) The certificate shall become invalid if the Applicant has not commenced a continuous course of construction of the proposed facility within five years of the date of journalization of the certificate, unless the Board grants a waiver or extension of time.
- (7) As the information becomes known, the Applicant shall file in this proceeding the date on which construction will begin, the date on which construction was completed, and the date on which the facility begins commercial operation.
- (8) Prior to the commencement of construction activities in areas that require permits or authorizations by federal or state laws and regulations, the Applicant shall obtain and comply with such permits or authorizations. The Applicant shall provide copies of permits and authorizations, including all supporting documentation, to Staff within seven days of issuance or receipt by the Applicant. The Applicant shall provide a schedule of construction activities and acquisition of corresponding permits for each activity at the preconstruction conference.
- (9) The facility shall be operated in such a way as to assure that no more than 300 MW would at any time be injected into the Bulk Power System.

### **SOCIOECONOMIC CONDITIONS**

Staff recommends the following conditions to address the impacts discussed in the **Socioeconomic Impacts** section of the Nature of Probable Environmental Impact:

- (10) General construction activities shall be limited to the hours of 7:00 a.m. to 7:00 p.m., or until dusk when sunset occurs after 7:00 p.m. Impact pile driving shall be limited to the hours between 9:00 a.m. and 7:00 p.m. Monday through Friday; hoe ram and blasting operations, if required, shall be limited to the hours between 10:00 a.m. and 4:00 p.m., Monday through Friday. Construction activities that do not involve noise increases above ambient levels at sensitive receptors are permitted outside of daylight hours when necessary. The Applicant shall notify property owners or affected tenants within the meaning of Ohio Adm. Code 4906-3-03(B)(2) of upcoming construction activities including potential for nighttime construction.
- (11) Prior to construction, the Applicant shall perform cultural resources investigations for the project based upon survey program standards previously planned with the Ohio Historic Preservation Office's (OHPO). If the resulting survey work discloses a find of cultural, archaeological, or architectural significance, or a site that could be eligible for inclusion on the National Register of Historic Places, then the Applicant shall prepare a modification, or mitigation plan detailing how such site(s) will be avoided or impacts minimized. Any such mitigation effort, if needed, shall be developed in coordination with the OHPO and submitted to Staff for review and acceptance.
- (12) Prior to commencement of any construction, the Applicant shall prepare a landscape and lighting plan that addresses the aesthetic and lighting impacts of the facility where an adjacent non-participating parcel contains a residence with a direct line of sight to the project area. The plan shall include measures such as alternate fencing, vegetative screening, good neighbor agreements, or other measures subject to Staff review. The

Applicant shall provide the plan to Staff for review and confirmation that it complies with this condition.

- (13) At least 30 days before the preconstruction conference, the Applicant shall provide Staff with a copy of its public information program, for confirmation that it complies with this condition, that informs affected property owners and tenants of the nature of the project, specific contact information of Applicant personnel who are familiar with the project, the proposed timeframe for project construction, and a schedule for restoration activities.
- (14) At least 30 days before the preconstruction conference, the Applicant shall provide Staff with a copy of a complaint resolution process to address potential public complaints resulting from facility construction and operation. The resolution process must describe how the public can contact the facility and how the facility would contact anyone issuing a complaint.
- (15) At least seven days prior to the start of facility operations, the Applicant shall notify via mail affected property owners and tenants who were provided notice of the public informational meeting, as well as anyone who has requested updates regarding the project. This notice will provide information about the start of operations and describe how the public can contact the facility.
- (16) During the construction and operation of the facility, the Applicant shall submit to Staff a complaint summary report by the fifteenth day of April, July, October, and January of each year for the first five years of operation. The report should include a list of all complaints received through the Applicant's complaint resolution process, a description of the actions taken toward a resolution of each complaint, and a status update if the complaint has yet to be resolved.
- (17) The Applicant shall avoid, where possible, or minimize to the extent practicable, any damage to functioning field tile drainage systems and soils resulting from the construction, operation, and/or maintenance of the facility in agricultural areas. Unless otherwise agreed to by the landowner, damaged field tile systems shall be promptly repaired to at least original conditions or modern equivalent at the Applicant's expense.
- (18) Within 30 days after issuance or receipt, the Applicant shall provide Staff a copy of any arrangement or resulting resolution adopted by any county relating to the Payment in Lieu of Taxes (PILOT) program.

### **ECOLOGICAL CONDITIONS**

Staff recommends the following conditions to address the impacts discussed in the **Ecological Impacts** section of the Nature of Probable Environmental Impact:

- (19) Prior to the preconstruction conference, the Applicant shall submit a vegetation management plan to Staff for review and confirmation that it complies with this condition. The plan would identify all areas of proposed vegetation clearing for the project, specifying the extent of the clearing, and describing how such clearing work would be done as to minimize removal of woody vegetation. The plan shall describe how trees and shrubs along access routes, at construction staging areas, during maintenance

operations, and in proximity to any other project facilities would be protected from damage. The plan shall also describe the implementation and maintenance of pollinator-friendly plantings and describe any planned herbicide use.

- (20) The Applicant shall adhere to seasonal cutting dates of October 1 through March 31 for the removal of trees three inches or greater in diameter to avoid impacts to Indiana bats and northern long-eared bats, unless coordination with the Ohio Department of Natural Resources (ODNR) and the U.S. Fish and Wildlife Service (USFWS) allows a different course of action.
- (21) Construction in loggerhead shrike preferred nesting habitat types shall be avoided during the species' nesting period of April 1 through August 1, unless coordination with the ODNR allows a different course of action.
- (22) The Applicant shall have an environmental specialist on site during construction activities that may affect sensitive areas as shown on the Applicant's final approved construction plan as approved by Staff. Sensitive areas include, but are not limited to, areas of vegetation clearing, designated wetlands and streams, and locations of threatened or endangered species or their identified habitat. The environmental specialist shall be familiar with water quality protection issues and potential threatened or endangered species of plants and animals that may be encountered during project construction.
- (23) The Applicant shall contact Staff, the ODNR, and the USFWS within 24 hours if state or federal listed species are encountered during construction activities. Construction activities that could adversely impact the identified plants or animals shall be immediately halted until an appropriate course of action has been agreed upon by the Applicant, Staff and the appropriate agencies.
- (24) The Applicant shall provide a construction access plan for review prior to the preconstruction conference. The plan would consider the location of streams, wetlands, wooded areas, and sensitive wildlife and plant species, and explain how impacts to all sensitive resources will be avoided or minimized during construction, operation, and maintenance. The plan would include the measures to be used for restoring the area around all temporary access points, and a description of any long-term stabilization required along permanent access routes.
- (25) Prior to the use of horizontal directional drilling, the Applicant shall provide a frac-out contingency plan detailing monitoring, environmental specialist presence, containment measures, cleanup, and restoration.
- (26) Except for the areas necessary for access road and collection line installation, the Applicant shall not clear wooded areas, including scrub/shrub areas, which would lead to fragmentation and isolation of woodlots or reduce connecting corridors between one woodlot and another.

## **PUBLIC SERVICES, FACILITIES, AND SAFETY CONDITIONS**

Staff recommends the following conditions to address the impacts discussed in the **Public Services, Facilities, and Safety** section of the Nature of Probable Environmental Impact:

- (27) Prior to commencement of construction activities that require transportation permits, the Applicant shall obtain all such permits. The Applicant shall coordinate with the appropriate authority regarding any temporary road closures, lane closures, road access restrictions, and traffic control necessary for construction and operation of the proposed facility. Coordination shall include, but not be limited to, the county engineer, the Ohio Department of Transportation, local law enforcement, and health and safety officials. The Applicant shall detail this coordination as part of a final traffic plan submitted to Staff prior to the preconstruction conference for review and confirmation by Staff that it complies with this condition.
- (28) The Applicant shall provide the Board's Staff a copy of the transportation management plan and any road use agreement(s) 30 days prior to the preconstruction conference.





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Summary: Staff Report of Investigation electronically filed by Mr. Matt Butler on behalf of Staff of OPSB