Staff Report of Investigation

New Market Solar Project
Hecate Energy Highland 4 LLC

Case No. 20-1288-EL-BGN

January 4, 2021

Ohio | Power Siting Board

Mike DeWine, Governor | **M. Beth Trombold,** Acting Chair

In the Matter of the Application of Hecate Energy Highland 4 LLC for a Certificate of Environmental Compatibility and Public Need	**)** **)** **)**	**Case No. 20-1288-EL-BGN**

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 4 LLC for a Certificate of Environmental Compatibility and Public Need	)))	**Case No. 20-1288-EL-BGN**

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

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 to be 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,

Theresa White
Executive Director
Ohio Power Siting Board

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I. POWERS AND DUTIES

OHIO POWER SITING BOARD

The authority of the Ohio Power Siting Board (Board or OPSB) 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 five MW or greater but less than 50 MW. R.C 4906.13 excludes from economically significant wind farms, one or more wind turbines and associated facilities that are primarily dedicated to providing electricity to a single customer at a single location and that are designed for, or capable of, operational at an aggregate capacity of less than 20 MW, measured at the customer's point of interconnection (POI) to the electrical grid.

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.[1] 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.[2]

1. R.C. 4906.04 and 4906.20.
2. R.C. 4906.06(A) and 4906.20(B)(1).

Within 60 days of receiving an application, the Chairman must determine whether the application is sufficiently complete to begin an investigation.[3] 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 official filing date of the completed application.[4] At the public hearing, any person may provide written or oral testimony and may be examined by the parties.[5]

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.[6] The report sets forth the nature of the investigation and contains the findings and conditions recommended by Staff.[7] 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.[8] A record of the public hearings and all evidence, including the Staff Report, may be examined by the public at any time.[9]

Board Decision

The Board may approve, modify and approve, or deny an application for a certificate of environmental compatibility and public need.[10] 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.[11]

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.[12] 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.[13] Any party to the proceeding that believes its issues were not adequately addressed by the Board may submit within

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

30 days an application for rehearing.[14] An entry on rehearing would then be issued by the Board within 30 days and may be appealed within 60 days to the Supreme Court of Ohio.[15]

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 section 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.

14. R.C. 4903.10 and 4906.12.
15. R.C. 4903.11, 4903.12, and 4906.12.

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II. APPLICATION

APPLICANT

Hecate Energy Highland 4, LLC, (Applicant) is owned by Hecate Energy LLC. Hecate Energy LLC specializes in the development of solar and wind projects, natural gas plants and energy storage.

HISTORY OF THE APPLICATION

On July 16, 2020, the Applicant filed a motion for waiver and request for approval to hold a virtual public informational meeting. The motion was granted.

On August 7, 2020, the Applicant filed a pre-application notification letter regarding the project.

On August 24, 2020, the Applicant held a virtual public informational meeting regarding the project.

On September 2 and 3, 2020, the Applicant filed the New Market Solar Farm application. The Applicant also filed a motion for protective order to keep portions of its application confidential and a motion for partial waiver from Ohio Adm.Code 4906-4-08(D)(1) through (4).

On October 1, 2020, the Applicant filed confidential financial exhibits.

On October 13, 2020, the Staff of the OPSB filed a memorandum contra Applicant's motion for waiver.

On October 15, 2020, the Applicant filed a supplement to the application – cultural resources reports.

On October 20, 2020, the Applicant filed supplements to the application – landmark maps and preliminary geotechnical reports. The Applicant also filed a reply to the Staff's memorandum contra Applicant's motion for waiver.

On October 23, 2020, the Applicant filed a supplement to the application – species review.

On November 2, 2020, the Executive Director of the OPSB issued a letter of compliance regarding the application to the Applicant.

On November 10, 2020, the Applicant filed a supplement to the application – OHPO final concurrence. The Applicant also filed a response to the first set of data requests received from Staff.

On November 18, 2020, the administrative law judge filed an entry granting the Applicant's motion for partial waiver, granting the Applicant's motion for protective order, and establishing a procedural schedule. A local public hearing has been scheduled for January 19, 2020 at 6:00 p.m. The evidentiary hearing will commence on January 25, 2020, at 10:00 a.m.

On December 10, 2020, the Applicant filed a supplement to the application.

This summary of the history of the application does not include every filing in case number 20-1288-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 construct the New Market Solar Project, a 100 MW solar-powered generating facility in Clay and Whiteoak Townships in Highland County. The project would consist of large arrays of photovoltaic (PV) modules, commonly referred to as solar panels, ground-mounted on a tracking rack system. The project would occupy approximately 824 acres within a 1,114-acre project area comprised of private land secured by the Applicant through agreements with the landowners. The project would include associated facilities such as access roads, meteorological stations, underground and/or overhead electric collection lines, inverters and transformers, a substation, a 345 kV gen-tie line, and a POI switchyard. The project would be secured by perimeter fencing, not to exceed seven feet in height, and accessed through gated entrances. The Applicant would ensure that solar modules are setback a minimum of 100 feet from adjacent residences and public road centerlines.

Solar Panels and Racking

The solar panels would be attached to metal racking. The racking would include steel posts driven approximately 10 to 15 feet into the ground. The highest point of each solar module would not exceed 15 feet above the ground. The Applicant has chosen the Jinko Eagle 78TR G4b PV panel model for this project. The solar panel technology for the project will be silicon-based crystalline modules. The highest quality "Tier 1" modules will be used for the project. The Jinko modules are TCLP compliant and can be recycled.

The facility would include approximately 342,368 panels. The Applicant estimates the modules would occupy approximately 551.93 acres of the project area. The solar arrays would be mounted on a single-axis tracking system oriented in rows that would rotate approximately +/- 60 degrees, tracking the sun as it moves through the sky.

DC Collector System, Inverters, and AC Collector System

The Applicant would install a collector system made up of a network of electric and communication lines that would transmit the electric power from the solar arrays to a central location. 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 through cable that will be buried or attached to the racking system.

Power from the combiner boxes would be transmitted to an inverter through underground cables. The facility would include approximately 43 inverters. Each inverter would deliver alternating current (AC) power to the project substation through a system of collection lines. These lines would be installed underground by open cut trench, plowed method, or located overhead on poles. The cables will run a total length of 8.02 miles. The below grade portion of the collector system would be buried at least 36 inches.

Substation and Transmission Line

The facility would include a project substation, an overhead 345 kV gen-tie line, and a 345 kV three ring bus POI substation to be constructed, owned and operated by the Dayton Power and

Light Company (DPL), and would connect to the existing Stuart-Clinton 345 kV transmission line. The electrical interconnection, including the 345 kV transmission loop connecting the substation to the existing 345 kV transmission line, was filed in a separate filing to the OPSB under case no. 19-1822-EL-BLN and referred to as the Clay Substation Project. The Clay Substation was approved by the OPSB on February 4, 2020, as the point of interconnection for the Highland Solar Farm project (18-1334-EL-BGN). The Highland Solar Farm was approved by the OPSB on May 16, 2019 and was also filed by Hecate Energy LLC. The Applicant stated to Staff that no changes to the Clay Substation footprint or equipment would occur as a result of interconnecting the New Market Solar Project. The Applicant anticipates that the project substation would not exceed a height of 75 feet above grade.

Roads

The Applicant proposes to construct approximately 8.03 miles of new access roads. The access roads would consist of aggregate gravel. The access roads would not exceed 20 feet in width.

Laydown Area

The Applicant proposes to use six laydown areas during construction. Laydown areas will be utilized until construction crews have completed work in the applicable portions of the project associated with the laydown areas. The laydown areas would be restored at the end of construction, provided they are not to be used for other proposed project components. All laydown areas will be within the project site boundaries.

Meteorological Stations

The project would include nine meteorological stations that would be approximately 10 feet tall and installed on a concrete base adjacent to inverters. The meteorological stations would include pyranometers, which measure the solar resource; an anemometer to measure wind speed and direction; and a thermometer.

Operations and Maintenance Building

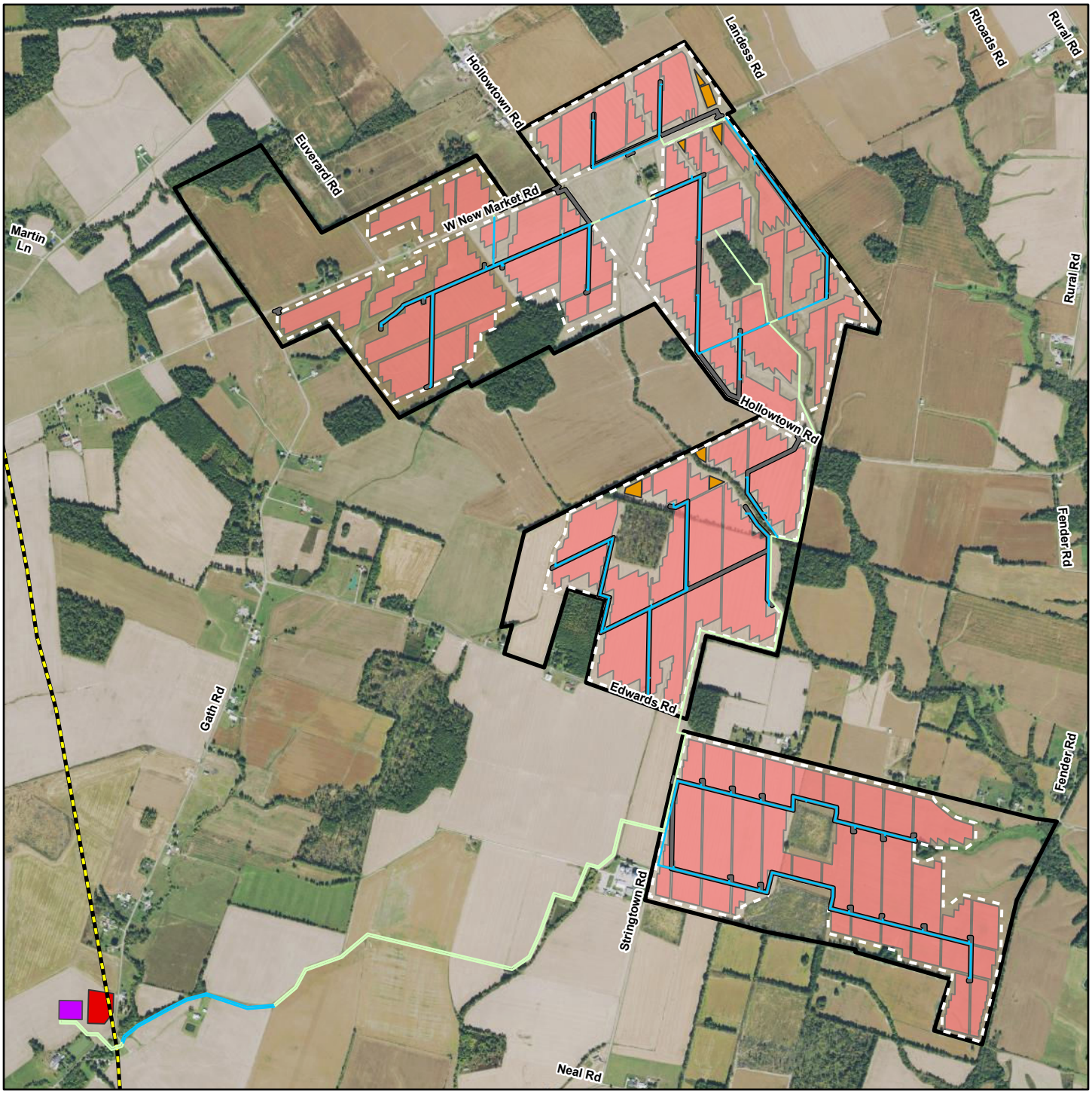
The Applicant states an operations and maintenance (O&M) building will not be constructed for this project. If an O&M building does need to be constructed after final engineering design is complete, the Applicant states an existing building on site will be repurposed as the O&M building.

Lighting

Security lighting would be installed at the O&M building (if the existing building is repurposed as an O&M building), substation, and at project access points.

Project Schedule

The Applicant expects to begin construction of the project in the first quarter of 2021, and complete construction and begin commercial operations by the fourth quarter of 2021. The Applicant stated that delays to this timeline could impact project financing, including the Applicant's ability to procure PV modules and facility components. Further, delays may push the in-service date back, causing significant financial burden, according to the Applicant.



Highland County

N

0 1,000 2,000

Feet

1:24,000

NAD 83 SP Ohio South (Feet)

- Distribution Line
- Underground Collection Line
- Access Roads
- Fence Line
- Existing Transmission Line
- Project Substation
- DP&L Substation
- Laydown Area
- Solar Panel Area
- Project Boundary

Overview Map

20-1288-EL-BGN

New Market Solar

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 4 LLC for a Certificate of Environmental Compatibility and Public Need, 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. 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

Regional Planning

Highland County has adopted a comprehensive land use plan (2003 Highland County, Ohio Comprehensive Plan, or Highland Plan), which emphasizes subdivision regulations, 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 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. The project does not introduce new residential development patterns to the area. After the life cycle of this project, once the panels and posts are removed, the majority of land could be returned to farming, or then developed for other uses.

Land Use

The project is located approximately 3.5 miles east of Buford and 2.5 miles north of Mowrystown. The Applicant proposes to construct the facility on up to 1,114 acres. Of the land acreage for the project, the vast majority is presently used for agricultural production. There are smaller segments presently containing woodlots, roads and open field. Approximately 800 acres of primarily agricultural land would be utilized for the solar panels and associated access roads. Slightly over 300 acres of agricultural land and woodlots would not be developed.

As stated, the majority of land use to be utilized for the project is agricultural in nature, however, the Applicant states that none of the land is classified as an Agricultural District. There are 50 structures located within 1,000 feet of the facility components. According to the Applicant, the nearest non-participating residence would be located approximately 93 feet from the project fenceline.[16] No residential structures not purchased by the Applicant as part of this project would need to be removed. The project footprint does not include any major population centers or industries other than farming.

The project footprint is bifurcated by New Market Road West, running in a northeast-southwest direction on the northern edge of the project. The entire project is located in Highland County. Staff recommends that the Applicant limit the hours of construction and utilize the complaint resolution plan to address potential construction and operational related concerns from nearby

16. Data Request Response to staff dated December 21, 2020.

residents. Staff recommends that the Applicant screen the facility from adjacent residences with a view of the facility with vegetative landscaping where feasible.

There are no National Scenic Trails, National Wildlife Refuges, or State Wildlife Management Areas located within five 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 gather background information and complete a cultural resources records review for a 0.5-mile radius defined as the Area of Potential Effect for the project. This review was based on data provided by the OHPO online geographic information system (GIS) mapping, Ohio Historic Inventory, the Ohio Archaeological Inventory, and National Register of Historic Places (NRHP) files. The Applicant also obtained information on historic cemeteries from the Ohio Genealogical Society.

To assess the potential for archaeological impacts, the Applicant performed a literature review, visual inspection, site surface collection and multiple shovel excavations. A Phase I cultural resources survey and results was included with the application, but was split into two areas: New Market I and New Market II. Twelve archaeological sites or isolated finds were recorded from the survey area in New Market I, and five archaeological sites or isolated finds were recorded from the New Market II survey area. None of these sites were determined to be eligible for listing in the NRHP.

For New Market I, the Applicant's architectural survey identified 20 previously recorded resources and 16 new resources over 50 years of age. Two of these 36 sites were deemed as potentially eligible for inclusion on the NRHP. Two additional resources were identified in the New Market II survey area as being potentially eligible for the NRHP. However, it was determined that this project would not have an adverse effect on these resources. None of the remaining structures were determined to be eligible for the NRHP. There are also no historic districts or cemeteries located within the project boundaries or within the survey radius.

On November 10, 2020, the Applicant filed concurrence letters from OHPO for both the New Market I and II project areas. The OHPO recommended that no further archaeological nor historic structures surveys were required, and that the project as designed would not have an adverse effect on cultural resources. Staff has reviewed and concurs with the Applicant's architectural and archaeological surveys and OHPO's recommendations.

Aesthetics

Aesthetic impacts and considerations are always measured against the surrounding land use features and potential viewers' subjective opinions. The rural nature of the project vicinity limits the number of potential viewers. Transportation corridors typically are smaller and much more lightly traveled, which reduces the number of viewing impacts. Existing woodlots are also able to offer additional natural screening. The project area predominantly consists of agricultural land. Traffic volume on roads throughout the project area is typically light, thus abating the potential number of viewers.

An anti-glare coating would be installed on the solar panels to maximize the amount of solar energy captured by the panels, which would also have the aesthetic benefit of glare reduction. Typically, the solar panels would be installed no higher than 15 feet above ground level. Based on the results of the Applicant's five-mile visual resources report, the solar panels would not likely be visible at locations beyond two miles of the perimeter of the project.

Staff reviewed the Applicant's visual impact analysis, which includes a landscaping review. The Applicant's landscape mitigation proposes the installation of various planting modules along the facility fence line to soften viewshed impacts and to blend the facility into the existing vegetation. The Applicant's landscape mitigation plan would provide for the installation of numerous plant species that would vary in height and variety, as determined by the current location of sensitive receptors such as residential properties that are adjacent to the proposed facility. Specifically, the landscaping review recommends additional screening measures along Stringtown Road (Route 60), and Edwards Road (Route 56).

Staff recommends that the Applicant incorporate a landscape and lighting plan to reduce impacts in areas where an adjacent non-participating parcel contains a residence with a direct line of sight to the project's infrastructure. Staff recommends that aesthetic impact mitigation include native vegetative plantings, alternate fencing, good neighbor agreements, or other methods in consultation with affected landowners and subject to Staff review. With implementation of Staff's condition, the overall expected aesthetic impact would be minimal.

Economics

The Applicant states that it would be responsible for the construction, operation, and maintenance of the proposed project. The Applicant currently owns 100% of the development rights for the proposed project area.

The Applicant chose to file its estimated capital and intangible costs, estimated operation and maintenance expenses, and estimated delay costs, under seal, and filed a motion for protective order to keep the information confidential. Similar requests have been common practice in many, but not all, solar farm applications.

Total cost comparisons between the proposed facility and other comparable facilities are to be provided in the application. The Applicant stated that recent solar PV projects of comparable scale undertaken by Hecate Energy report similar capital costs. Staff verified the Applicant's assertion that the reported average cost of similar facilities is not substantially different from Applicant's estimated costs for the proposed facility and that the reported average cost of Hecate Energy's similar facilities is not substantially different from Applicant's estimated costs for the proposed facility.

O&M expense comparisons between the proposed facility and other comparable facilities are to be provided in the application. The Applicant also provided O&M expenses for its similar facilities. Staff confirmed the Applicant's assertion that its estimated O&M cost estimates were consistent with this amount.

The Applicant provided its estimates of the cost of delays in permitting and construction of the proposed facility, although the estimated costs were filed under seal. The Applicant's characterization of its estimated costs of delays appears reasonable to Staff.

Hecate Energy retained the services of BBC Research & Consulting (BBC) to report on the economic impact of the New Market Solar project.[17] BBC used the IMPLAN regional economic modeling system, as well as data from the Ohio Department of Taxation, to estimate the economic impact of the construction and operation of the solar farm. Staff verified that the methodology of the IMPLAN model was appropriate for this study. Staff believes that the estimated impacts reported by the Applicant are reasonable.

In this model, "earnings" are comprised of direct (on-site) wages, indirect (supply-chain labor) wages, and induced (through spending by persons in first two categories). "Output" in this model refers to the value of goods and services produced by direct, indirect, and induced labor. Based on the results of the IMPLAN model analysis conducted by BBC, the New Market Solar project is expected to have the following impacts:

Jobs

- 134 construction-related jobs for the State of Ohio
- Eight long-term operational jobs for the State of Ohio

Earnings

- $8.4 million in local earnings during construction for the State of Ohio
- $400,000 in annual earnings during facility operations for the State of Ohio

Output

- $175 million in output throughout the life of the project for the State of Ohio.

The New Market Solar Farm project is estimated to generate between $700,000 and $900,000 million annually for Highland County taxing districts. This estimate is based on a Payment in Lieu of Taxes (PILOT) plan in which Hecate Energy LLC would pay between $7000/MW and $9000/MW annually for a total of 100 MW.

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(s) could be a brief reduction in visibility, afterimage, a safety risk to pilots, or a perceived nuisance to neighbors.

The Applicant's consultant conducted a glint and glare analysis to identify any potential impacts along roads and to nearby residences.[18] The Applicant does not anticipate impacts from glare at area airports, because the closest airport is over 12 miles away. As part of its glare analysis, the Applicant did find that for the New Market I delineated project area, there is predicted glare along South Hollowtown Road and West New Market Road. Also, the Applicant found in through its glare analysis that for the New Market II delineated project area, there is glare predicted along Stringtown Road and Edwards Road.

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. Staff concurs with the Applicant's recommendation that the project, as part of its final landscape and lighting

17. BBC Research & Consulting is an economic consulting firm located in Denver, Colorado.
18. Application at Exhibit J.

plan, incorporate additional screening along Stringtown Road, Edwards Road, South Hollowtown Road, and West New Market Road in order to provide suitable concealment of the project site and mitigate any predicted glare along those roads.

Geotechnical Engineering Report

The proposed project area is in Whiteoak and Clay townships, Highland County. This area is in the Illinoian Till Plain physiographic region. The project area lies within the glaciated area of the state and is covered by the relatively flat, continuous till of the Illinoian ground moraine.

The ODNR performed a geological survey of the location of the proposed solar farm.[19] That survey report considered the physiographic region, surficial/glacial geology, bedrock geology, oil/gas and mining, area seismic activity, Karst topography, soils, groundwater, and water resources. Of note from ODNR's survey is that the underlying bedrock geology can be prone to karst features. There are no known sinkholes in the project area, but the nearest karst feature, a sinkhole, is less than 1.4 miles away from the project area. Also, ODNR found that there is record of a plugged oil and gas well from between 2.5 to three miles east of the project area. Also, through its geologic survey, ODNR has informed Staff that it has a record of 12 water wells within one mile of the project area for New Market I and six water wells within one mile of the project area for New Market II.

The Applicant's consultant Terracon Consultants, Inc. (Terracon) prepared a preliminary geotechnical engineering report dated October 2020.[20] In this study, the Terracon performed test borings throughout the project area. The October 2020 Terracon preliminary geotechnical engineering report analyzed and provided information about site conditions, subsurface soil conditions, geotechnical characterization, frost susceptibility, seismic considerations, ground corrosivity issues, a geotechnical overview, contributory construction risk, preliminary solar panel support design driven pile analysis, isolated slab foundation design considerations, access roadways, preliminary earthwork and construction recommendations. Of note from this geotechnical engineering report was that groundwater seepage was encountered at several test boring locations. Also, Terracon recommended generally that to the extent practical, earthwork should be performed during drier weather (late spring to late fall) to reduce subgrade material remediation measures for loose/unstable conditions underneath access roads or equipment pads. This should be accounted for during the final engineering design of the project.

Staff recommends that the final detailed engineering drawings of the final project design shall account for geological features (including, but not limited to Karst topography or earthwork considerations) and include the identity of the registered professional engineer(s), structural engineer(s), or engineering firm(s), licensed to practice engineering in the state of Ohio who reviewed and approved the designs.

Decommissioning

The Applicant holds land rights to and estimates that the solar farm can operate for 30 years or more. The Applicant is developing a comprehensive plan to outline the responsible parties, decommissioning schedule, and decommissioning cost, and land restoration. The decommissioning plan would provide for the safe removal, sale, redeployment, recycling or proper

19. Supplement filed on October 23, 2020 to the Application 20-1288-EL-BGN.
20. Supplement filed on October 20, 2020 to the Application 20-1288-EL-BGN.

disposal of all components of the solar farm. The underground collection systems would be buried more than three feet below ground and would be left in place. This would still allow the fields to return to agricultural use. The decommissioning activities would take nine months or less. Staff has found that site restoration activities are often dependent on weather conditions which may requiring ongoing revegetation and restoration slightly beyond the nine months.

The Applicant is considering panels that have been tested by the manufacturer to comply with the U.S. Environmental Protection Agency's (U.S. EPA) toxicity characteristics leachate procedure (TCLP) test and meet U.S. EPA's definition of non-hazardous waste. Staff has found, and the Applicant noted that many solar panel manufacturers have recycling network programs or are developing programs to accept panels back to their manufacturing facility to recycle and reuse most of the components.

The decommissioning plan will include a financial assurance. The total cost of decommissioning the solar farm would be calculated, with a built-in percentage to cover unanticipated contingencies, as the difference between the full cost to remove the components of the solar farm without regard to salvage and the cost to remove the solar farm components factoring in salvage values. The Applicant proposes to initiate this calculation prior to the start of construction and revisit the evaluation at Year 10 of the project and every five years thereafter. If during the life of the project, the net value of decommissioning exceeds it salvage value, the Applicant will post an acceptable and marketable form of security acceptable to the County. The Applicant has calculated the total decommissioning cost for the New Market I project area as $2,722,527 and $1,465,976 for the New Market II project area. Both of these estimates do not include the salvage or resale value of the solar equipment.

The Applicant also committed that an updated plan will be provided to OPSB Staff prior to construction. Staff recommends that the updated decommissioning plan be provided to OPSB Staff at least 30 days prior to the preconstruction conference, and that the updated decommissioning plan includes a provision that the decommissioning financial assurance mechanism include a performance bond where the company is the principal, the insurance company is the surety, and the Ohio Power Siting Board is the obligee.

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.

Ecological Impacts

Public and Private Water Supply

Staff estimates that there are less than 10 private water wells within the project area as indicated by the ODNR water wells online map viewer. The ODNR has informed Staff that it has a record of 12 water wells within one mile of the project area for New Market I. The ODNR has informed Staff that it has a record of six water wells within one mile of the project area for New Market II. The Applicant does not anticipate adverse impacts to the nearest water wells, because the Applicant will purchase all onsite residences and no longer use the wells. Staff recommends that at least 30 days prior to the preconstruction conference, the Applicant provide the status (i.e. avoidance, mitigation measures, or capping) of each well. Also, Staff recommends that the Applicant indicate whether the nearest solar components to each uncapped well within the project area meets or exceeds any applicable minimum isolation distances outlined in Ohio Adm.Code 3701-28-7.

There are no drinking water source protection areas located within the project area.

The Applicant will implement a Stormwater Pollution Prevention Plan (SWPPP) and a spill prevention, control, and countermeasure plan (SPCC) during construction to minimize and prevent potential discharges to surface waters in the project area and surrounding area.

Surface Waters

The Applicant delineated 20 streams within the project area, including 11 ephemeral streams, and nine intermittent streams. No impacts to streams are anticipated. Installation of collection lines may result in one stream crossing. The Applicant would bore underneath the stream if needed in order to avoid impacts to the stream. Otherwise, the streams are located on the outer edges of the project and would not be impacted during construction.

Eleven ponds were identified within the project area. The Applicant delineated 28 wetlands within the project area. No impacts to wetlands or ponds are anticipated based on the preliminary facility layout.

The Applicant states that the boundaries of streams and wetlands within and immediately adjacent to the construction limits of disturbance would be surrounded by silt/exclusionary fencing to demarcate avoidance areas. These would also be marked on final construction documents. Other sensitive resources would be marked as "Environmentally Sensitive Areas" on final construction documents.

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 SWPPP. The Applicant would obtain an Ohio National Pollutant Discharge Elimination System (NPDES) construction stormwater general permit through the Ohio EPA prior to the start of construction. Staff recommends the Applicant apply Ohio EPA published Guidance on Post-Construction Storm Water Control for Solar Panel Arrays to project construction and operation.

The project would not cross a 100-year floodplain.

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	*Myotis sodalis*	Endangered	Endangered	Historical range includes the project area. Presence within project area has been documented.
northern long-eared bat	*Myotis septentrionalis*	Threatened	Endangered	Historical range includes the project area. Presence within project area has been documented.
Little brown bat	*Myotis lucifugus*	NA	Endangered	Historical range includes the project area. Presence within project area has been documented.
Tricolored bat	*Perimyotis subflavus*	NA	Endangered	Historical range includes the project area. Presence within project area has been documented.
BIRDS				
Common Name	***Scientific Name***	**Federal Status**	**State Status**	**Presence in Project Area**
Loggerhead shrike	*Lanius ludovicianus*	N/A	Endangered	Records exist within the project area
King rail	*Rallus elegans*	N/A	Endangered	Suitable habitat in project area. Impacts to suitable habitat will be avoided.
REPTILES				
Common Name	**Scientific Name**	**Federal Status**	**State Status**	**Presence in Project Area**
Timber rattlesnake	*Crotalus horridus horridus*	Species of Concern	Endangered	Historical range includes the project area.
FISH				
Common Name	**Scientific Name**	**Federal Status**	**State Status**	**Presence in Project Area**
Bigeye shiner	*Notropis boops*	N/A	Threatened	Historical range includes the project area. No in-water work proposed

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 Applicant states 5.46 acres of tree clearing is anticipated for this project. The project area is within the range of state and federal endangered Indiana bat (*Myotis sodalis*), the federal threatened

northern long-eared bat (*Myotis septentrionalis*), the state endangered little brown bat (*Myotis lucifugus*), and the state endangered tricolored bat (*Perimyotis subflavus*). As tree roosting species in the summer months, the habitat of these species would be impacted by the project. In order to avoid impacts to listed bat species, the Ohio Department of Natural Resources and the USFWS recommend seasonal tree cutting dates of October 1 through March 31 for all trees three inches or greater in diameter. The Applicant states it will follow the seasonal tree clearing guidelines in order to avoid impacts to these species.

Impacts to other listed species would be avoided as no in-water work is planned for the project.

Vegetation

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

VEGETATIVE COMMUNITIES WITHIN PROJECT AREA	
Vegetation Community Type	**Approximate Total (Acres)**
Agricultural land	1,070
Developed land	22
Forestland	22
Total	1,114

Permanent vegetative impacts would occur primarily within agricultural lands. The Applicant has developed a vegetation management plan in which it committed to incorporate pollinator-friendly habitat in accordance with the recommendations of the Ohio Pollinator Habitat Initiative. This habitat would enhance the visual appeal of the project, enrich local wildlife habitat, benefit the local farming community, increase plant diversity, and discourage invasive species. This vegetation would be incorporated under and between the panels and in the open areas of the project. This project would be expected to represent a reduced environmental impact when compared to the current land use of agricultural plant production. This is due to the reduction of frequent tilling leading to erosion and sedimentation, and reduced fertilizer and pesticide application. To further assure that these benefits would be realized, Staff recommends that the Applicant take steps to prevent establishment and/or further propagation of noxious weeds identified in Ohio Adm. Code Chapter 901:5-37 during implementation of any pollinator-friendly plantings.

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.

Public Services, Facilities, and Safety

Wind Velocity

The Applicant stated that the facility will install small meteorological stations within the project area to monitor weather conditions. Staff has found that components of the proposed facility are generally not susceptible to damage from high winds except for tornado-force winds, because generally the panels and racking systems proposed for the facility have wind speed design load ratings inherent in their design. The Applicant has also indicated that its single-axis racking system will likely include a stowing feature that would tilt panels to a certain angle to reduce wind loading

on the solar panels during high wind speeds events. During the detailed engineering phase, the Applicant will minimize any potential damage from high wind velocities by proper structural design of the project support equipment at sufficient depths based on the site-specific soil conditions to preclude any adverse influence from high wind velocities.

Roads and Bridges

The Applicant has yet to finalize its delivery route, although it is expected that deliveries to the project site would be by way of State Route 138. From there, the main transportation routes to access the project site would be New Market Road (County Highway 5), Edwards Road (County Highway 56), Gath Road (County Highway 2), Stringtown Road (County Highway 60), and Hollowtown Road (County Highway 24).

The Applicant conducted a route evaluation study to identify viable means of accessing the project area. Traffic patterns, bridge conditions, culvert conditions, road surface conditions, and potential obstructions were identified and analyzed. No bridges were identified as problematic along the probable delivery routes and within the project area. Two culverts identified along Hollowtown Road may require improvements during and/or after construction. All other culverts along potential delivery routes were determined to be in adequate condition. No weight restrictions were documented on the project delivery routes. No overhead obstructions were identified along the proposed delivery routes. The Applicant did not identify any active railroads that would be crossed by construction material deliveries.

Conventional heavy equipment which does not require special permitting would make up the majority of construction traffic. The electrical transformer(s) is likely to be overweight and would require special permitting and route coordination for delivery. The Applicant stated that an increase in truck traffic would be anticipated during construction for the purpose of project area equipment access and equipment and material deliveries but does not anticipate significant changes to traffic patterns. Post construction and operation of the solar facility, the Applicant does not anticipate any additional traffic for the project beyond routine maintenance. No road closures are expected. Once the transportation permitting process has been completed, Staff recommends that the Applicant develop a final transportation management plan which would include any county-required road use maintenance agreements. Any damaged public roads and bridges would be repaired promptly to their previous or better condition by the Applicant under the guidance of the appropriate regulatory authority. Any temporary improvements would be removed unless the appropriate regulatory authority 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 12 months 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 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, 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. The noise monitoring software did not filter out high frequency natural sounds, therefore staff recommends the L90 ambient noise level. The L90 ambient noise level is a statistical descriptor of the sound level exceeded 90 percent of the time of the measurement period. Noise impacts to non-participating receptors were modeled using typical inverters used in similar solar farms. The model showed that operational noise impacts would be less than L90 ambient noise levels. No non-participating receptors were modeled to receive noise impacts greater than the L90 ambient noise level plus five dBA. Therefore, the project would be expected to have minimal adverse noise impacts on the adjacent community. Once an inverter model is chosen, the Applicant will submit a noise report confirming that no non-participating receptors were modeled to receive noise impacts greater than the L90 ambient noise level plus five dBA.

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 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

The Applicant's initial site selection focused on four primary criteria: the availability of solar resources, transmission proximity, topography, and landowner and community interest. The Applicant selected the subject site for development due to interest and positive feedback from landowners and local officials, positive results from initial transmission studies, and the compatibility of previously disturbed cultivated cropland for solar development.

During the public informational meeting held for the project, the Applicant solicited comments and questions from attendees. Comments and questions received covered a range of topic areas including the economic impact for the local community, employment opportunities, increased traffic during construction, potential impacts to property value, concerns regarding flooding and damage to drainage tile systems, viewshed impacts, environmental concerns, and loss of farmland. The Applicant states that, to the extent possible, comments from local officials and the public have been incorporated into the proposed construction and design of the project.

Minimizing Impacts

The Applicant conducted a literature review and a Phase 1 cultural resource survey for the entire project area and submitted their findings to Staff and the OHPO for review. The OHPO recommended that no further architectural or archaeological surveys were required. Staff agrees with the OHPO.

The proposed facility would have an overall positive impact on the state and local economy due to the increase in construction spending, wages, purchasing of goods and services, increased tax revenues and PILOT revenue.

The geology of the project site in Highland County does not present conditions that would limit or negatively impact the construction and future operation of the proposed facility. Staff recommends that the final detailed engineering drawings of the final project design shall account for geological features.

No direct surface water impacts are anticipated and no in-water work is proposed. Impacts to any state or federal listed species can be avoided by following seasonal restrictions for construction in certain habitat types as detailed by the USFWS and the ODNR. The project would not cross a 100-year floodplain.

Noise impacts are expected to be limited to construction activities. The adverse impact of construction noise would be temporary and intermittent and would occur away from most residential structures. Staff recommends that the Applicant limit the hours of construction to address potential construction and operational related concerns from any nearby residents. Staff has also recommended that the Applicant submit an updated noise study, using noise data from the inverter chosen for the project. The updated noise study would confirm that sound levels would

not exceed the daytime ambient level plus five dBa at any non-participating sensitive receptor to assure that operational noise impacts are minimal. Further, the Applicant has developed a complaint resolution plan which would be implemented throughout construction and operation.

During the construction period, local, state, and county roads would experience a temporary increase in truck traffic due to deliveries of equipment and materials. Due to the location of the project, the Applicant anticipates that components for the entire project would be delivered by truck. The transportation management plan would be finalized once the engineering layout is determined. A final delivery route plan would be developed through discussions with local officials. The Applicant intends to enter into a road use agreement with the county engineer.

Due to the low profile of the project, combined with existing vegetation in the area, the visual impacts would be most prominent to landowners in the immediate vicinity of the infrastructure itself. In order to reduce impacts in areas where an adjacent non-participating parcel contains a residence with a direct line of sight to the project, Staff has recommended a condition requiring a final landscape and lighting plan that addresses the potential impacts of the facility.

The Applicant has committed to take steps in order to address potential impacts to farmland, including repairing all drainage tiles damaged during construction and restoring temporarily impacted land to its original use. The Applicant has consulted landowners and county records, and used engineering, such as GIS data, to determine the locations of drain tile mains. In order to avoid impacts to drain tiles, the Applicant stated that it would locate drain tiles as accurately as possible prior to construction. The Applicant has committed to promptly repair any drain tile found to be damaged by the project during the operational life of the project. Following decommissioning of the facility, land can be restored for agricultural use.

The Applicant has prepared a plan to decommission the solar facility. The Applicant would provide for financial security to ensure that funds are available for decommissioning/land-restoration. The Applicant would restore the land significantly to its original topography to allow for resumption of agricultural use.

While the Applicant has not identified the precise final layout of the facility, it has identified an acceptable maximum extent of impacts. This has been accomplished through identifying limits of disturbance and maximum dimensions of equipment such as fences, panels, and access roads. Ancillary impacts which may change as a result of final equipment selection, such as noise, would be minimized through Staff recommended conditions.

Conclusion

Staff concludes that the proposed project would result in both temporary and permanent impacts to the project and surrounding areas. Due to the low potential to impact 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 Applicant proposed to construct a solar-powered electric generation facility, capable of producing 100 MW. The proposed facility would interconnect from the project substation to a newly proposed substation to be named the Clay Substation. The Clay Substation would be constructed, owned, and operated by DPL. The proposed Clay Substation would tap into DPL's existing Stuart-Clinton 345 kV transmission line. The Clay Substation was filed in a separate filing with the OPSB under case no. 19-1822-EL-BLN. The Clay Substation was approved on February 4, 2020 and has yet to begin construction.

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. The NERC reliability standards are included as part of the system evaluations conducted by PJM Interconnection, LLC (PJM).[21]

PJM Interconnection

The Applicant submitted a generation interconnection request for the proposed facility to PJM on September 30, 2016. PJM assigned the project queue position AC1-085. The Applicant requested an energy injection of 400 MW, of which 152 MW could be available in the PJM capacity market. The capacity market ensures the adequate availability of necessary generation resources can be called upon to meet current and future demand. PJM released revisions to the System Impact Study (SIS) in October 2018 and the Facilities Study in November of 2018.[22,23] The Interconnection Service Agreement and Interconnection Construction Service Agreement were executed in May 2019.[24]

21. PJM Interconnection, LLC is the regional transmission organization charged with planning for upgrades and administrating 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 standards with the addition of generation in its footprint.

22. PJM Interconnection, "New Services Queue", Feasibility Study for Queue IDs: AC1-085 accessed December 13, 2020, https://pjm.com/planning/services-requests/interconnection-queues.aspx.

23. PJM Interconnection, "New Services Queue", System Impact Study for Queue IDs: AC1-085, accessed December 13, 2020, https://pjm.com/planning/services-requests/interconnection-queues.aspx.

24. Federal Energy Regulatory Commission, Docket Number ER19-1913-000, https://www.ferc.gov/ferc-online/elibrary, accessed December 13, 2020.

Staff notes the application filed with the Board is for an injection of 100 MW into the BPS and the PJM generation interconnection request is for a 400 MW injection. The facility shall be operated in such a way as to assure that no more than 100 MW's would be injected into the BPS at any time.

PJM Network Impacts

PJM studied the interconnection as an injection into the BPS via the DPL Stuart-Clinton 345-kV transmission line. The 2020 summer peak power flow model was used to evaluate regional reliability impacts. The studies revealed constraints on AEP's Adkins-Beatty 345 kV transmission line because of the retirement of the Stuart and Killen generating units. The remaining Stuart and Killen generating units were retired September 30, 2018. The rights to these units were available until June 1, 2019. The rights to the generating units were not claimed which removed the constraints on the Adkins-Beatty 345 kV transmission line.[25] PJM issued a scope change that removed the requirement of network upgrade n5933. The chart and analysis below depicts the results of the PJM SIS for the regional footprint with network upgrade n5933 removed.[26]

PJM Regional System Impacts (2020 Summer Peak)	
Generator Deliverability - System Normal & Single Contingency Outage	
Plant Output: Capacity Level – 400 MW	No problems identified
Category C and D - Multiple Contingency Outages	
Plant Output: 152 MW	No problems identified

New System Reinforcements

PJM requires mitigation of contingencies that cause reliability violations which are initially caused by the addition of the Applicant's project. The results identified no violations of reliability criteria.

Contribution to Previously Identified Overloads – Network Impacts

PJM studied overloading where the proposed facility may affect earlier projects in the PJM queue. The results identified no network impacts.

Potential Congestion due to Local Energy Deliverability

PJM studied the delivery of the energy portion. Network upgrades under this section would allow for the delivery of energy with operational restrictions. The upgrades to mitigate any future operational restrictions are not required for the facility to be operational and are at the discretion of the Applicant. The results identified the AEP's Kyger-Sporn 345 kV transmission line overloads under certain contingencies.

25. PJM Interconnection, "Generation Deactivations", accessed December 13, 2020, https://pjm.com/planning/services-requests/gen-deactivations.

26. PJM Interconnection, "New Services Queue", System Impact Study for Queue IDs: AC1-085, accessed December 13, 2020, https://pjm.com/planning/services-requests/interconnection-queues.aspx.

Short Circuit Analysis

The short circuit analysis, 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.

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 best management practices such as using water to wet soil to minimize dust. 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

The Applicant would mitigate potential water quality impacts associated with aquatic discharges by obtaining NPDES construction storm water general permits from the Ohio EPA with submittal of a SWPPP to direct the implementation of construction related storm water BMP. The Applicant states that HDD is not intended or anticipated and that a frac-out contingency plan is not applicable. Staff recommends a condition that should HDD be required, a frac-out contingency plan must be docketed seven days before HDD is used.

The Applicant will develop an SPCC to mitigate the unlikely release of hazardous substances.

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/packaging materials, construction scrap, and general refuse. The amount of refuse generated during construction would be approximately 31,000 cubic yards. The Applicant stated that all construction-related debris would be disposed of at an authorized solid waste disposal facility.

Operation of the project could generate small amounts of solid waste similar to a small office which would be 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 lightning mast at the project substation, would not exceed 75 feet tall. That height is under the height requirement from the Federal Aviation Administration (FAA), pursuant to 14 CFR Part 77.9(a), for filing a Form 7460-1.

According to the Applicant, there are no airports, helicopter pads, or landing strips within five miles of the project area.[27] Staff confirmed through the FAA, that the closest public-use airports are the Brown County Airport (GEO) and Highland County Airport (HOC) which are between 12 and 14 miles from the proposed solar farm project substation.

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. ODOT Office of Aviation determined that the solar farm would not constitute an obstruction to air navigation based on rules adopted under R.C. 4561.32.

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 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.

27. Application at page 44, and Figure 5.

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 construct the project with bankable, reliable and fully certified solar panels, inverters, racking, wiring, transformer, and electrical switchgear. In addition, the Applicant has indicated that it would use equipment compliant with applicable Underwriters Laboratories (UL) requirements.[28] The Applicant indicated that all solar equipment would be UL-listed where required and adherent to local and national building and electrical codes.

The Applicant stated that it intends to restrict public access to the facility by enclosing the project area with a chain-link fence at least six feet tall. The solar equipment for the solar farm would be enclosed within that fence. The Applicant intends to use warning signs, fencing, and gates to restrict access to the potential hazards within the solar project area.

Prior to construction, the Applicant also intends to develop and implement an emergency action/response plan and consult with potentially affected emergency response personnel. The plan would address situations and responses to medical emergencies and fires. The plan or Fire and Emergency Services Manual would outline responsibilities, include a map of key solar farm equipment, designate equipment shutoff procedures, and address special training for local emergency service personnel. The Applicant indicated it will coordinate with first responders prior to construction to ensure familiarity with the emergency action/response plan and maintain communication with them throughout the life of the facility.

Public Interaction and Participation

The Applicant hosted a public informational meeting for this project. Attendees were provided the opportunity to view a map of the project, ask questions, and provide comments. The Applicant has developed a complaint resolution plan to handle complaints during the construction and operation of the facility. The Applicant has committed to notify affected property owners and tenants about the project and the complaint resolution plan, no later than seven days prior to the start of construction. Staff recommends that a similar notice be mailed to these same individuals at least seven days prior to the start of facility operation. Staff also recommends that the Applicant submit to Staff a quarterly complaint summary report during construction and for the first five years of operation of the facility.

As of January 4, 2020, one public comment has been filed in the record for this case. The commenter expressed concerns regarding the economics of renewable energy. 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.

The Administrative Law Judge scheduled a public hearing and an evidentiary hearing for this proceeding. Due to the continued state of emergency, and given the passage of Am. Sub. H.B. 197

28. Underwriters Laboratory Standard UL1703/UL61730 Standard for Flat-Plate Photovoltaic Modules and Panels.

and Sub. H.B. 404, the hearings will be held using remote access technology that facilitates participation by telephone and/or live video on the internet. The public hearing will be held on January 19, 2021, beginning at 6 p.m. The evidentiary hearing is scheduled for January 25, 2021, at 10:00 a.m.

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 or produce a minimum average gross annual income of $2,500.

No 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 approximately 800 acres of agricultural lands, none of which is classified as agricultural district land. 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. A drain tile system consists of laterals, which are branches off a main, and main lines. Main lines can allow water to flow into or out of one parcel to another. The locating and avoiding of damaging drain tile mains can help prevent the pooling of water on project parcels and adjacent parcels. When landowners lay down or repair drain tiles, they often keep records of the location of the drain tiles. The Applicant has consulted landowners and tenants to determine the locations of drain tile mains. The Applicant plans to avoid all drain tile mains. Also, the Applicant has committed to repair any drain tile found to be damaged by construction of the project.

The Applicant has committed to take steps in order to address such potential impacts to farmland, including repairing all drainage tiles damaged during construction and restoring temporarily impacted land to its original use. Excavated topsoil would be separated during construction and returned as topsoil after construction. 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 suppression and control on construction access roads or unpaved transportation routes as needed.

Operation of the proposed facility would not require the use of significant amounts of water. The project would not have an onsite O&M building or office space. The project would use water for occasional cleaning of panels as needed.

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. 4906.10(A)(8), 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.

IV. RECOMMENDED CONDITIONS OF CERTIFICATE

Following a review of the application filed by Hecate Energy Highland 4 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 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 commencement 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) 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.

(4) 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.

(5) 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.

(6) 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.

(7) The certificate authority provided in this case shall not exempt the facility from any other applicable and lawful local, state, or federal rules or regulations nor be used to affect the exercise of discretion of any other local, state, or federal permitting or licensing authority with regard to areas subject to their supervision or control.

(8) At least 30 days prior to the preconstruction conference, the Applicant shall submit to Staff, for review and acceptance, one set of detailed engineering drawings of the final project design and mapping in the form of PDF, which the Applicant shall also file on the docket of this case, and geographically referenced data (such as shapefiles or KMZ files) based on final engineering drawings to confirm that the final design is in conformance with the certificate. Mapping shall include the limits of disturbance, permanent and temporary infrastructure locations, areas of vegetation removal and vegetative restoration as applicable, and specifically denote any adjustments made from the siting detailed in the application. All final geotechnical study results shall be included in this submission. The detailed engineering drawings of the final project design shall account for geological features (including, but not limited to Karst topography or earthwork considerations) and include the identity of the registered professional engineer(s), structural engineer(s), or engineering firm(s), licensed to practice engineering in the state of Ohio who reviewed and approved the designs.

(9) At least seven days prior to the start of construction and at least seven days prior to the start of facility operations, the Applicant shall notify via mail affected property owners and tenants including those individuals who were provided notice of the public informational meeting, residences located within one mile of the project area, parties to this case, county commissioners, township trustees, emergency responders, airports, schools, and libraries, as well as anyone who has requested updates regarding the project. These notices shall provide information about the project, including contact information and a copy of the complaint resolution plan. The start of construction notice shall include written confirmation that the Applicant has complied with all preconstruction-related conditions of the certificate, as well as a timeline for construction and restoration activities. The start of facility operations notice shall include written confirmation that the Applicant has complied with all construction-related conditions of the certificate, as well as a timeline for the start of operations. The Applicant shall file a copy of these notices on the public docket. 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 through the first five years of operation. The report shall include a list of all complaints received through the Applicant's complaint resolution process, a description of the actions taken toward the resolution of each complaint, and a status update if the complaint has yet to be resolved.

(10) The facility shall be operated in such a way as to assure that no more than 100 megawatts would be injected into the Bulk Power System at any time.

(11) 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. or until dusk when sunset occurs after 7:00 p.m. Impact pile driving may occur between 7:00 a.m. and 9:00 a.m. if the noise impact at non-participating receptors is not greater than daytime ambient Leq plus 10 dBA. Hoe

ram 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.

(12) Prior to commencement of construction, the Applicant shall prepare a landscape and lighting plan in consultation with a landscape architect licensed by the Ohio Landscape Architects Board that addresses the aesthetic and lighting impacts of the facility with an emphasis on any locations where an adjacent non-participating parcel contains a residence with a direct line of sight to the project area and also include a plan describing the methods to be used for fence repair. The plan shall include measures such as fencing, vegetative screening or good neighbor agreements. Unless alternative mitigation is agreed upon with the owner of any such adjacent, non-participating parcel containing a residence with a direct line of sight to the fence of the facility, the plan shall provide for the planting of vegetative screening designed by the landscape architect to enhance the view from the residence and be in harmony with the existing vegetation and viewshed in the area. The Applicant shall plant especial vegetative screening along Stringtown Road, Edwards Road, South Hollowtown Road, and West New Market Roads. The Applicant shall maintain vegetative screening for the life of the facility and the Applicant shall replace any failed plantings so that, after five years, at least 90 percent of the vegetation has survived. The Applicant shall maintain all fencing along the perimeter of the project in good repair for the term of the project and shall promptly repair any damage as needed. Lights shall be motion-activated and designed to narrowly focus light inward toward the facility, such as being downward-facing and/or fitted with side shields. The Applicant shall provide the plan to Staff for review and confirmation that it complies with this condition.

(13) 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. Damaged field tile systems shall be promptly repaired to at least original conditions or modern equivalent at the Applicant's expense. However, if the affected landowner(s) agrees to not having the field tile system repaired, they may do so only if the field tile systems of adjacent landowners are unaffected by the non-repair of the landowner's field tile system.

(14) At least 30 days prior to construction, the Applicant shall submit an updated noise study, using noise data from the inverter and substation transformer chosen for the project. The updated noise study shall show that sound levels will not exceed the L_{90} ambient level plus five dBA at any non-participating sensitive receptor.

(15) At least 30 days prior to the preconstruction conference, the Applicant shall submit an updated decommissioning plan that includes a provision that the decommissioning financial assurance mechanism include a performance bond where the company is the principal, the insurance company is the surety, and the Ohio Power Siting Board is the obligee.

(16) If horizontal directional drilling is required the Applicant shall docket a frac-out contingency plan seven days before horizontal directional drilling is used.

(17) 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.

(18) The Applicant shall have a Staff-approved environmental specialist on site during construction activities that may affect sensitive areas. Sensitive areas may include, but are not limited to, wetlands and streams, and locations of threatened or endangered species. 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. The environmental specialist shall have authority to stop construction to assure that unforeseen environmental impacts do not progress and recommend procedures to resolve the impact. A map shall be provided to Staff showing sensitive areas which would be impacted during construction with information on when the environmental specialist would be present.

(19) 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. If any listed plant or animal species are encountered prior to construction, the Applicant shall include the location and how impacts would be avoided in a final access plan to be provided to Staff prior to the preconstruction conference.

(20) The Applicant shall construct the facility in a manner that incorporates post construction stormwater management under OHC00005 (Part III.G.2.e, pp. 19-27) in accordance with the Ohio Environmental Protection Agency's Guidance on Post-Construction Storm Water Controls for Solar Panel Arrays.

(21) The Applicant take steps to prevent establishment and/or further propagation of noxious weeds identified in Ohio Adm. Code Chapter 901:5-37 during implementation of any pollinator-friendly plantings.

(22) 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, road use agreements, driveway permits, 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.

(23) At least 30 days prior to the preconstruction conference, the Applicant shall provide the status (i.e. avoidance, mitigation measures, or capping) of each well. The Applicant shall indicate whether the nearest solar components to each uncapped well within the project area meets or exceeds any applicable minimum isolation distances outlined in Ohio Adm.Code 3701-28-7.

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