Staff Report of Investigation

Cepheus Energy Project
Cepheus Energy Project, LLC

Case No. 21-0293-EL-BGN

December 1, 2021

Ohio | Power Siting Board

Mike DeWine, Governor | **Jenifer French,** Chair

In the Matter of the Application of Cepheus Energy Project, LLC for a Certificate of Environmental Compatibility and Public Need.	**)** **)** **)**	**Case No. 21-0293-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 Cepheus Energy Project, LLC for a Certificate of Environmental Compatibility and Public Need.	)))	**Case No. 21-0293-EL-BGN**

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

To the Honorable Power Siting Board:

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

The findings and recommendations contained in this report are the result of Staff coordination with the following agencies that are members of the Board: Ohio Environmental Protection Agency, the Ohio Department of Health, the Ohio Department of Development, 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, and the U.S. Army Corps of Engineers.

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

TABLE OF CONTENTS

I. EXECUTIVE SUMMARY

The authority of the Ohio Power Siting Board (Board or OPSB) is prescribed by Ohio Revised Code (R.C.) Chapter 4906. R.C. 4906.10 specifies that 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 eight specified criteria. Staff investigated the application presented by Cepheus Energy Project, LLC (Applicant) and recommends that the Board deny the Applicant's request for a certificate of environmental compatibility and public need, due to its inability to establish one of the eight statutory criteria.

Specifically, Staff recommends the Board find that the Applicant has failed to establish whether the facility will serve the public interest, convenience, and necessity as required under R.C. 4906.10(A)(6).

Although not recommended, in the event the Board determines that a certificate should be granted, Staff has proposed conditions for the Board's consideration in the certificate.

II. POWERS AND DUTIES

OHIO POWER SITING BOARD

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 Chairperson of the Public Utilities Commission of Ohio (PUCO or Commission) who serves as Chairperson of the Board; the directors of the Ohio Environmental Protection Agency (Ohio EPA), the Ohio Department of Health (ODH), the Ohio Department of Development (ODOD), the Ohio Department of Agriculture (ODA), 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. Non-voting Board members include four members of the Ohio General Assembly (with alternates) selected by leadership 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]

Within 60 days of receiving an application, the Chairperson 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 Chair 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, in the event the Board determines that a certificate should be granted, 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]

1. R.C. 4906.04 and 4906.20.
2. R.C. 4906.06(A) and 4906.20(B)(1).
3. Ohio Adm.Code 4906-3-06(A).
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.

Board Decision

The Board may approve or deny an application for a certificate of environmental compatibility and public need as filed, or modify and approve it upon such terms, conditions, or modifications as the board considers appropriate.[10] 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 the Board decision to be unlawful or unreasonable may submit within 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

10. R.C. 4906.10(A).
11. R.C. 4906.10.
12. R.C. 4906.11.
13. R.C. 4906.10(C).
14. R.C. 4903.10 and 4906.12.
15. R.C. 4903.11, 4903.12, and 4906.12.

with the office of aviation of the division of multimodal 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.

III. APPLICATION

APPLICANT

The Applicant, Cepheus Energy Project, LLC, is a wholly owned subsidiary of BP Solar SHP, LLC, which is in turn a wholly owned subsidiary of BP Solar SHH, LLC, which is in turn a wholly owned subsidiary of BP Solar Holding LLC, which is in turn a wholly owned subsidiary of BP Alternative Energy North America Inc. (BPAENA). The Applicant was formed specifically for the purpose of developing the project. Initially developed by 7X Energy, Inc., Cepheus Energy Project, LLC and the majority of 7X Energy's solar project portfolio were acquired in July 2021 by BPAENA, which is a part of the BP group. BP is a global energy company which has announced an interest in being the long-term owner and operator of solar projects in the United States. The same development team that developed the project at 7X Energy will continue to advance project development activities, now as employees of Lightsource bp. Lightsource bp is a fully integrated solar asset company that operates and invests across the full solar project lifecycle and performs all activities in-house and operates 1,291 MW of assets worldwide. Lightsource bp is the developer of approximately 8,900 MW in solar projects currently in development with the North American headquarters in San Francisco and development offices in Denver and Philadelphia. The project will be developed by Lightsource bp under a Development Services Agreement with BPAENA. The project will be constructed, operated, and maintained by the Applicant.

HISTORY OF THE APPLICATION

On March 31, 2021, the Applicant filed a motion for waiver and request for approval to hold an alternative public informational meeting. The motion was granted.

On May 17, 2021, the Applicant filed a pre-application notification letter regarding the project.

On June 2, 2021, the Applicant held web-based and telephone-based public informational meetings for the project.

On July 30, 2021, the Applicant filed the Cepheus Solar application as well as a motion for protective order and memorandum in support.

On August 2, 2021 and September 27, 2021, the Applicant supplemented the application.

On September 10, 2021, September 17, 2021, September 21, 2021, October 13, 2021, November 12, 2021, November 23, 2021, and November 29, 2021, the Applicant filed responses to data requests received from Staff.

On September 28, 2021, the Executive Director of the OPSB issued a letter of compliance regarding the application to the Applicant.

On November 24, 2021, the Ohio Farm Bureau Federation filed a motion to intervene.

A local public hearing has been scheduled for December 16, 2021, 6:00 p.m., at the Stroede Center for the Arts, 319 Wayne Avenue, Defiance, Ohio 43512. The adjudicatory hearing is scheduled to commence on January 11, 2022, at 10:00 a.m.

This summary of the history of the application does not include every filing in case number 21-0293-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 a 68 MW solar-powered generating facility in Delaware Township and the Village of Sherwood in Defiance County. The project will consist of large arrays of photovoltaic (PV) modules, commonly referred to as solar panels, ground-mounted on a tracking rack system. The project will occupy approximately 350 acres within an approximate 649-acre project area comprised of private land secured by the Applicant through agreements with the landowners. The project will include associated facilities such as access roads, operations and maintenance (O&M) building, underground and aboveground electric collection lines, weather stations, inverters and transformers, a collection substation, and a 138 kV gen-tie electric transmission line. The project will be secured by perimeter fencing which will be six-feet tall and accessed through gated entrances. The Applicant will ensure that solar modules are setback a minimum of 100 feet from adjacent non-participating property lines.

Solar Panels and Racking

The solar panels will be attached to metal racking. The racking will include steel piles driven approximately five to 10 feet into the ground. While PV modules have not yet been procured for the project, the Applicant anticipates using a Jinko solar panel or other similar Tier 1 solar panel module supplier. The Applicant has provided manufacturer specifications for the Jinko solar panel model under consideration in Exhibit A of the Application. While not recommended, should the Board approve this project and if the Applicant uses a technology other than that included in Exhibit A, the manufacturer specification will be provided to the Board prior to construction. The Applicant would follow the US EPA's test procedures to ensure that the selected panel model is compliant with the US EPA's Toxicity Characteristics Leaching Procedure (TCLP) testing protocol. The Jinko model is a standard bifacial monocrystalline solar panel module.[16] Bifacial modules have solar panels on the front and back. The Applicant anticipates that the facility would be comprised of panels which produce approximately 545 watts each. The facility would include approximately 195,000 panels.[17] The solar panel arrays will be grouped in large clusters that will be fenced in with gated entrances and electronic security systems. The highest point of each module will be approximately 15 feet. The project's arrays will be mounted on a single-axis tracking system to track the sun as it moves through the sky each day.

Collection System

The Applicant will install an underground collector system made up of a network of electric and communication lines that will transmit the electric power from the solar arrays to a central location. Most portions of the collector system will be buried while some others will be above ground. The underground lines will be installed by direct burial method or horizontal directional drilling

16. Current solar panel technology are one of two basic types: crystalline or thin-film. Crystalline modules are silicon-based. Thin-film modules use several alternative semi-conducting compositions (such as cadmium telluride or copper indium gallium selenide). When the selected panel is a thin-film module, the panels typically contain only exceedingly small amounts of potentially hazardous materials, all of which are safely encased in polymer and tempered glass within an aluminum frame.

17. Application at page 8 and Exhibit A.

(HDD). The below grade portion of the collector system will be buried at least 36 inches. The electricity from the solar panels will be generated in direct current (DC). DC power from the solar panels will be delivered to circuits, which will be routed through cable trays, then to combiner boxes. Power from the combiner boxes will be transmitted to groups of components, collectively called an inverter, which will include a DC-to-alternating current (AC) inverter, a step-up transformer that will increase the voltage to 34.5 kV, and a cabinet containing power control electronics. This will be housed in a power conversion station mounted on a concrete foundation.

Collection Substation and Transmission Line

The facility collection substation will occupy approximately one acre of land near American Electric Power's (AEP) Lockwood Road Substation. The major components of the Applicant's substation will include all the components necessary to step up the collection line voltage of 34.5 kV to the transmission voltage of 138 kV. The collection substation will be located centrally in the project area along the south side of Lockwood Road between Coy Road and Rosebrook Road. An approximate 300-foot, 138 kV electric transmission gen-tie line will connect the project substation to the AEP substation. The collection substation is denoted on the maps in this report.

Roads

The Applicant proposes to construct new access roads for construction, operation, and maintenance of the solar facility. The access roads will be surfaced with gravel and be up to 20 feet in width.

Construction Laydown Area

The Applicant proposes to use one construction laydown area consisting of approximately six acres adjacent to the proposed substation location. The laydown area will be utilized for material and equipment storage, construction parking, and construction trailers.

Weather Stations

The project will include up to five pyranometer stations mounted to 10-foot poles. These devices will measure solar irradiance. Solar irradiance is the amount of solar energy per square meter received from the sun. These stations will also contain communications equipment.

O&M Building

The Applicant proposes to construct one O&M building. The building's purpose will be to provide a workspace for operations personnel as well as a place to house items necessary for the operation and maintenance of the facility. The building will contain a well and septic system.

Lighting

Lighting will be installed at the O&M building. The lighting will be minimal, downlit, and faced toward the facility to the extent practicable. The Applicant indicates that motion-activated lighting will be used.

Co-location of Sheep Grazing Vegetation Management

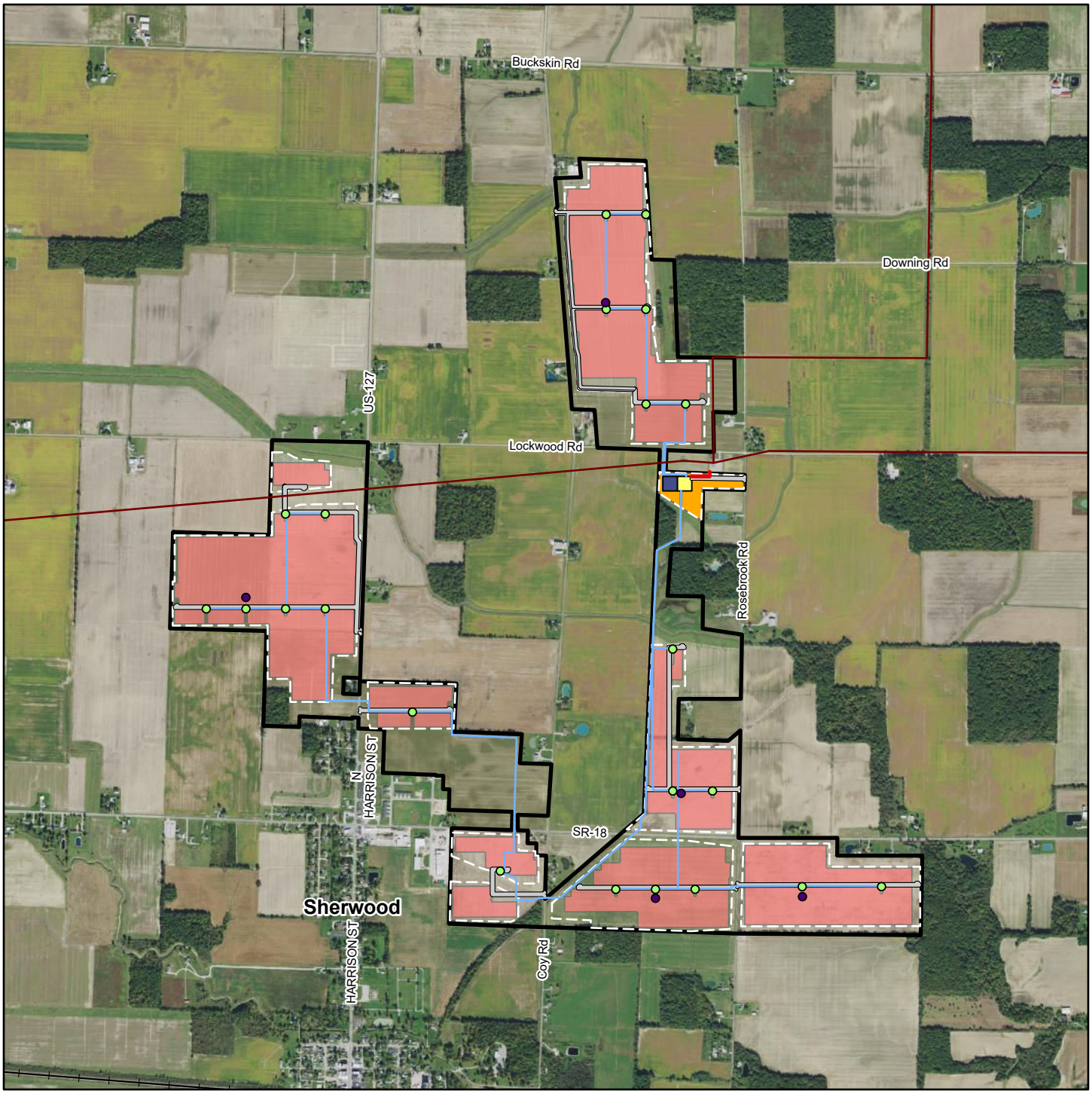
The Applicant intends to use a program of sheep grazing during its operational phase of the solar facility to provide vegetation management within the perimeter fence under and around the proposed solar array layout. Agrivoltaics is the co-location of agricultural activity, such as sheep grazing, with solar generation. The Applicant intends to use a qualified consultant in agrivoltaics

to assist the Applicant with startup, shepherd selection, and selection of an appropriate seed mix to revegetate the site so that it is compatible with sheep and other wildlife, and to provide habitat for pollinator species.

The Applicant intends to develop a grazing plan. This plan would include the extent of the project's footprint where sheep grazing would occur, on a rotational basis, and the stocking rate – the number of sheep onsite. Currently, the Applicant states that only 30 percent of the project fenced area would be used for grazing and that three to five sheep per acre would be necessary. With only 30 percent of the 424-acre footprint available for sheep grazing, the Applicant could use approximately 636 sheep. The stocking rate is subject to weather conditions, time of year, vegetation quality, and livestock class. Mechanical lawnmowing would be used outside the perimeter fence and in areas where the sheep grazing is insufficient.

Project Schedule

The Applicant expects to finalize the project design in the third quarter of 2022. Construction would start no sooner than the fourth quarter 2022 and be completed by the third quarter of 2023. The facility is expected to be placed in service no sooner than the third quarter of 2023. 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.



Defiance County

N

0 1,000 2,000

Feet

1:24,000

NAD 83 SP Ohio North (Feet)

- Weather Station
- Inverter
- Railroad
- Existing Transmission Line
- Gen-Tie Line
- Collection Line
- Access Road
- O&M Building
- Collection Substation
- Laydown Area
- Fenceline
- Solar Panel Area
- Project Area

Overview Map

21-0293-EL-BGN

Cepheus Solar Project

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.

IV. CONSIDERATIONS AND RECOMMENDED FINDINGS

In the Matter of the Application of Cepheus Energy Project, 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.

Overview

As described above, membership of the Board is specified in R.C. 4906.02(A) and its voting membership is comprised of leadership from the PUCO, Ohio EPA, ODH, ODOD, ODA, ODNR, and a member of the public specified as an engineer. Also as described above, the Board's Staff consists of career professionals from member agencies of the Board and their areas of expertise. Therefore, consideration of the nature of the probable environmental impact of a proposed facility incorporates such areas of expertise, as described below.

Community Impacts[18]

Land Use

The Applicant states the main land use type that would be impacted by this project is agricultural land. Those structures within a one-mile radius of the project area are residences, churches, cemeteries, public buildings as part of the Village of Sherwood, and commercial and industrial buildings. The nearest non-participating residential structure to PV panel is 195 feet away. The Applicant states a total of 431.8 acres would be impacted by converting the land to the proposed solar facility. Of these 431.8 acres, 333.4 acres would be occupied by PV panels. Impacts from construction would be temporary in nature and contained to the properties of participating landowners. Significant impacts to residential, commercial, industrial, recreational, and institutional land uses are not anticipated, and surrounding agricultural land use would continue with minimal disruption. The Applicant states no structures would be removed for this project.

Regional Planning

Comprehensive land use plans provide citizens, elected officials and developers with a conceptual planning framework. These plans may be utilized by governmental actors (such as planning boards) to aid in land use decisions; however, it is important to note that comprehensive plans are primarily authored to provide generalized guidance on market-based growth trends and many areas of these plans are deliberately not written with any binding force. In the project five-mile study

18. "The Ohio Department of Development is committed to creating jobs and building strong communities, while ensuring accountability and transparency of taxpayer money and exceptional customer service." (Ohio.gov, Department of Development, https://development.ohio.gov/feat/whatisdsa.htm). R.C. 122.011(A)(6) states, in part, that the department of development shall develop and promote plans and programs designed to assure that state resources are efficiently used, economic growth is properly balanced, community growth is developed in an orderly manner, and local governments are coordinated with each other and the state, and for such purposes may, among other things, cooperate with and provide technical assistance to state departments, regional and local planning commissions, and other appropriate organizations for the solution of community problems. According to R.C. 122.01(B)(1), "'community problems' includes, but is not limited to, taxation, fiscal administration, governmental structure and organization, intergovernmental cooperation, education and training, employment needs, community planning and development, air and water pollution, public safety and the administration of justice, housing, mass transportation, community facilities and services, health, welfare, recreation, open space, and the development of human resources."

area, the city of Defiance and Defiance County both have plans. The City of Defiance Community Strategic Plan proposes priorities and goals, including maintaining the rural character of the area, attracting good jobs, and supporting businesses and the local economy. The Defiance County Comprehensive Plan put forth four main goals, namely to: (1) preserve good farmland for agriculture, (2) preserve the quality of life for residents, (3) support economic development, and (4) maintain cooperation among subdivisions. Staff notes the conflicting perspectives on whether these plans would be met through development of this project. While the project would preserve farmland for future use, result in short-term job creation, and ensure the installation of "green" energy, Staff also notes that the Defiance County Economic Development Office filed a public comment in this case stating "this project's location will halt economic-community development for 40 years to come in our small village of Sherwood," and other local governmental entities filed similar public comments.

Recreation

Construction and operation of the facility would not physically impact any recreational areas. The Applicant identified seven recreation areas within five miles of the project area. There is one recreation area within 0 to 0.5 miles for the project area, and three more under one mile away. These four recreation areas, Little Reservation Station Park, Moats Park, Mud Creek, and Maumee River, are the only ones according to the Visual Impact Assessment (VIA), that have potential for some view of the proposed project. The proposed facility is expected to be at least partially obscured from most viewpoints in these nearby recreation areas due to existing vegetation and topography features. It is Staff's opinion that the project would have minimal impacts on recreational land uses, as those resources are still able to be utilized although with potential views to the facility, if approved by the Board.

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.

The solar panels would be installed no higher than 15 feet above ground level. Based on the results of the Applicant's visual resources report, the solar panels would not likely be visible at any location beyond five miles of the perimeter of the project. The Applicant's viewshed analysis encompassed a total area of 113.3 square miles.[19] Existing vegetation, landscape features, and landforms limit likely concentration of viewshed impacts to less than 6.07 percent of the project area.[20] Anti-glare coating is applied to the solar panels to maximize the capture of solar energy, and it additionally provides an aesthetic benefit as well.[21]

Staff reviewed the Applicant's visual impact analysis, which includes proposed mitigation in the form of vegetative screening at selected areas around the project site. The Applicant's landscape

19. Application at p. 117.
20. Application at p. 118.
21. Application at p. 10 and p. 27.

mitigation plan proposes the installation of planting modules along the facility fence line to soften viewshed impacts and to blend the facility into the existing vegetation. The Applicant's 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 non-participating residential structures) that are adjacent to the proposed facility.

The plan proposes more vegetation density to mitigate potential aesthetic impacts that are related to non-participating residences with a direct line of sight to the planned facility. In the event the Board determines that a certificate should be granted, Staff's proposed landscaping condition requires that the Applicant also consult with a certified professional landscape architect in development of its landscaping mitigation plan. In the event the Board determines that a certificate should be granted, Staff also recommends that the Applicant adjust its landscape plan to incorporate appropriate planting measures such as shrub planting or enhanced pollinator plantings, to address impacts to the traveling public, nearby communities, and recreationalists.

In the event the Board determines that a certificate should be granted, Staff further recommends that the Applicant's landscape and lighting plans incorporate design features 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.

The Applicant initially stated that it would "consider" installing woven wire fence mounted onto wooden posts.[22] In response to a Staff data request filed on November 12, 2021, the Applicant states that it "is willing to commit to an agricultural style, non-barbed wire perimeter fence in areas where barbed-wire is not required. Fencing surrounding the solar panel areas is now anticipated to be non-barbed wire agricultural-style fencing. Fencing is anticipated to include pressure treated wood posts approximately seven to eight feet tall with metal welded wire fencing."

Based upon a review of appropriate National Electric Safety Code (NESC) recommendations, Staff opines that a seven-foot-high perimeter fence without barbed wire strands would meet NESC recommendations. In the event the Board determines that a certificate should be granted, Staff recommends incorporating *wildlife friendly* features (i.e., small-wildlife permeable) into the overall fencing design. With implementation of Staff's landscape/lighting and fencing conditions, the overall expected aesthetic impact would be minimal.

Cultural Resources[23]

The Applicant enlisted a consultant to gather background information and complete cultural resources studies for this project. A Phase I cultural archaeological reconnaissance survey was

22. Application at p. 10.

23. According to RC 149.53, "[a]ll departments, agencies, units, instrumentalities, and political subdivisions of the state shall cooperate with the Ohio history connection and the Ohio historic site preservation advisory board in the preservation of archaeological and historic sites and in recovery of scientific information from such sites, and for such purposes shall, whenever practical, by contract or otherwise provide for archaeological and historic survey and salvage work during the planning phases, before work on a public improvement begins or at other appropriate times." In Ohio, the Ohio Historic Preservation Office (OHPO) is part of the Ohio History Connection. (See, Ohio History Connection, About Section 106 Review, <https://www.ohiohistory.org/preserve/state-historic-preservation-office/hpreviews/about-section-106-review>).

completed and submitted to the Ohio Historic Preservation Office (OHPO) for review in September 2021. In the archaeology survey report it was determined that there were no previously discovered archaeological sites in the project area and a total of 10 archaeological sites were newly identified within the project area. All 10 sites were recommended as ineligible for listing in the National Register of Historic Places (NRHP) as they either do not appear to offer information important to the prehistory of the region or do not appear to be associated with important persons or events in the region.

The Applicant's cultural resource consultant also conducted a historic architecture survey of the project area and an area within a two-mile radius of the project in July 2021. The survey recorded 249 properties of which six are recommended as eligible for listing on the NRHP. The consultant concluded that for each of the six sites, the proximity to the project site and the proposed landscape screening, no adverse effect to these structures is expected from the project. OHPO concurs with these findings.

The OHPO has recommended, and the applicant has committed, to coordinate with OHPO and Staff if the scope of work changes or new/additional archaeological remains are discovered during the course of construction. With OHPO's concurrence of no adverse effects from the project and the applicant's commitments regarding project changes and/or the discovery of new/additional archaeological remains Staff has determined that minimal adverse environmental impacts to cultural resources would be achieved.

Economic Impact

The Applicant states that it would be responsible for the construction, operation, and maintenance of the proposed project. The Applicant will own all of the equipment and structures associated with the proposed project, with the exception of the upgrades to the Lockwood Road 138 kV substation. The Applicant currently owns the necessary leases and agreements for all land within the project area. The proposed facility will not change the ownership status of the public road rights-of-way. All other components of the facility will be located entirely on privately-owned land secured by lease, easement, and option to purchase agreements.

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 facility applications.

Total cost comparisons between the proposed facility and other comparable facilities are to be provided in the application. The Applicant referenced a 2019 study conducted by the U.S. Department of Energy's Lawrence Berkeley National Laboratory (Berkeley Laboratory) which states that the capacity-weighted average installed costs of solar PV projects was around $1,640/kW in 2018 and that its costs are below this range. Also, recent solar PV projects of comparable scale undertaken by the Applicant report similar capital costs. Staff notes that a 2021 report published by the Lawrence Berkeley National Laboratory states that utility-scale solar capital costs fell to $1,400/kWAC in 2020.[24] The Applicant's costs are also below this range. Staff verified the Applicant's assertion that the reported average cost of similar facilities is not

24. Bolinger, Mark., Seel, Joachim., Warner, Cody., Robson, Dana. 2021. Utility-Scale Solar, 2021 Edition, Lawrence Berkeley National Laboratory, Tracking the Sun (lbl.gov).

substantially different from Applicant's estimated costs for the proposed facility and that the reported average cost of the Applicant's similar facilities is not substantially different from Applicant's estimated costs for the proposed facility.

Operation and maintenance expense comparisons between the proposed facility and other comparable facilities are to be provided in the application. The Applicant stated that its recent solar projects of comparable scale report similar O&M costs to the proposed facility. Staff verified that the reported O&M costs of the Applicant's similar facilities is not substantially different from Applicant's estimated costs for the proposed facility. Staff also notes that the National Renewable Energy Laboratory (NREL), in its 2021 update on utility-scale solar costs, reports that O&M costs were $16/kW/year for fixed-tilt PV facilities and $17/kW/year for facilities using tracking systems. Staff confirms the Applicant's costs are below this range as well.

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 stated that delays could prevent the project from meeting federal Investment Tax Credit deadlines which could result in the loss of those benefits to the Applicant. The Applicant's characterization of its estimated costs of delays appears reasonable to Staff.

The Applicant retained the services of Environmental Design & Research (EDR) to report on the economic impact of the project.[25] EDR used the National Renewable Energy Laboratory's (NREL) Jobs and Economic Development Impact (JEDI) model, 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 facility. Staff verified that the methodology of the JEDI and IMPLAN models were appropriate for this study and 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 JEDI and IMPLAN model analysis conducted by EDR, the project is expected to have the following impacts:

Jobs

- 422 construction related jobs for the state of Ohio
- Nine long-term operational jobs for the state of Ohio

Earnings

- $25.6 million in local earnings during construction for the state of Ohio
- $500,000 in annual earnings during facility operations for the state of Ohio

Output

- $51.4 million in output during construction of the facility for the state of Ohio

25. Environmental Design & Research is a multi-disciplinary environmental consulting and design firm that has conducted economic development analysis and studies the economic impact of energy projects at the national, state, and local level.

- $1.2 million in annual output during facility operations for the state of Ohio

The project is estimated to generate between $476,000 and $612,000 annually for Defiance County taxing districts. This estimate is based on a proposed Payment in Lieu of Taxes (PILOT) plan in which the Applicant would pay between $7,000/MW and $9000/MW annually for a total of 68 MW. At this time, the Applicant has not entered into a PILOT agreement with Defiance County.

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 considered the potential effects of glint and glare in the design of solar array layout and how the panels would be operated.

Solar panels are designed to absorb as much sunlight as possible with minimal reflectivity and include an anti-reflection coating. The Applicant conducted a glint and glare analysis to identify any potential impacts along local roads and at nearby residents.[26] To perform the analysis of glare, the Applicant used the ForgeSolar Solar Glare Hazard Analysis Tool (SGHAT) which was developed by Sandia National Laboratories to analyze potential glare at sensitive receptor locations. This software is commonly used by solar facility developers to determine the effect of solar glare. Glare is classified in three categories in the SGHAT tool: (1) the green type, which is associated with a low potential for temporary after-image when observed prior to a typical blink response time; (2) the yellow type, which is associated with a potential for temporary after-image when observed prior to a typical blink response time; and (3) the red type, which is associated with the permanent retinal damage when observed prior to a typical blink response time. The Applicant found that no glare (i.e., no minutes of either green, yellow, or red type) from the project is predicted to vehicles using the roadways or nearby residences. Staff agrees with the study results. Staff notes that aesthetic impact mitigation measures that include vegetative plantings may also further reduce potential impacts as part of a landscape and lighting plan, which Staff has recommended for this project in the event the Board determines that a certificate should be granted.

Decommissioning

The Applicant holds land rights to and estimates that the solar facility can operate for 30 years or more. The Applicant has prepared a decommissioning plan and total decommissioning cost estimate of $3,362,600. Staff has reviewed that decommissioning plan.

According to the Applicant's plan, at the end of the useful life of the facility, the solar facility would be decommissioned, and the land be returned to its current use as agricultural land. Prior to the start of any decommissioning activities, the Applicant would apply for and obtain applicable federal, state, and local permits. At this time, the Applicant has identified that during decommissioning, it may need to obtain, at the least, an Ohio EPA Construction Storm Water General Permit and Clean Water Act Sections 404 permits, Defiance County building, road, or erosion control permits (as necessary), Defiance County Soil and Water Conservation District permit pertaining to stormwater discharge drains, and ODOT special hauling permits. At the time

26. Application at Exhibit M.

of decommissioning, panels would be reused, recycled, or properly disposed in accord with regulations in effect at that time.

The decommissioning sequence consists of, but is not limited to, reinforcing access roads, installing temporary construction fencing and best management practices (BMPs) to protect sensitive environmental resources, de-energizing solar arrays, dismantling panels and racking, removing inverters, removing electrical cables to a depth of at least three feet, removing access and internal roads, grading the site, drain tile repair, and revegetating disturbed land to pre-construction conditions, to the extent practicable. The Applicant may leave access roads in place, provided that does not violate any permits or legal requirements. The Applicant would also coordinate with the appropriate local agency to coordinate repair of any public roads if damaged or modified during decommissioning. The Applicant would restore the land significantly to its original topography to allow for resumption of the pre-construction agricultural land use. The Applicant stated that it anticipates decommissioning activities and restoration to occur over and be completed in a six-month period. Based on the weather dependent nature of site restoration, in the event the Board determines that a certificate should be granted, Staff recommends that the updated decommissioning plan include a requirement to monitor the site to ensure successful revegetation and rehabilitation. Also, in the event the Board determines that a certificate should be granted, Staff recommends a timeframe be included in the draft decommissioning plan where the equipment is removed within that six-month timeframe with prior notification of any impacts to that schedule.

The Applicant states it would repurpose, salvage, recycle or haul off site to a licensed solid waste disposal facility all solar components. Some of those solar components are anticipated to have a resale or salvage value and would be sold to offset the decommissioning cost. Those salvageable items typically are solar modules, tracking system, steel piles, inverters, and transformers. If solar modules are to be disposed, the Applicant intends to conduct the disposal in compliance with federal, state, and local laws and regulations. The Applicant has committed to using only solar panels that have been certified to comply with the US EPA's TCLP test and do not exhibit the characteristic of toxicity under U.S. EPA's definition of non-hazardous waste.[27] In the event the Board determines that a certificate should be granted, Staff further recommends that at the time of solar panel end of life disposal, any retired panel that is not recycled and that is marked for disposal, shall be sent to an engineered landfill with various barriers and methods designed to prevent leaching of materials into soils and groundwater, or another appropriate disposal location at the time of decommissioning approved by Staff.

The Applicant would also provide financial security to ensure that funds are available for decommissioning/land-restoration. Specifically, the Applicant states that it would employ a performance bond for the total decommissioning cost and exclude salvage value. The Applicant states that it would periodically review the decommissioning plan and costs estimates every five years over the life of the project. These reports would be prepared by an independent, registered professional engineer, licensed to practice engineering in the state of Ohio to estimate the total cost of decommissioning the facility, salvage value, and appropriateness of any contingency amount or percentage.

27. Cepheus Energy Project, LLC's Response to Staff's Sixth Data Request Dated November 3, 2021, DR #19.

The Applicant has considered a scenario where the decommissioning plan may be activated prior to the end of the useful life of the solar facility.[28] The Applicant indicated that its decommissioning plan and funding mechanism would be in place at the start of construction.

To further address these concerns that were partially addressed in Exhibit E of the Application, in the event the Board determines that a certificate should be granted, Staff recommends that at least 30 days prior to the preconstruction conference, the Applicant shall submit an updated decommissioning plan and total decommissioning cost estimate without regard to salvage value on the public docket that includes: (a) 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; (b) a timeline of up to six months for removal of the equipment with advance notice to the Board of any impacts/delay to the timeframe; (c) a provision to monitor the site for at least one additional year to ensure successful revegetation and rehabilitation; (d) a provision where the performance bond is posted prior to the commencement of construction; (e) a provision that the performance bond is for the total decommissioning cost and excludes salvage value; (f) a provision to coordinate repair of public roads damaged or modified during the decommissioning and reclamation process; (g) a provision that the decommissioning plan be prepared by a professional engineer registered with the state board of registration for professional engineers and surveyors; and (h) a provision stating that the bond shall be recalculated every five years by an engineer retained by the Applicant.

Wind Velocity

In compliance with the Ohio Administrative Code, the Applicant has provided the analysis of high -wind velocities for the area noting that the 50-year wind hazard is 85 mph for the project area.[29] Applicant has also noted that wind speeds would be equivalent to approximately a 15 percent probability of exceedance in a 50-year period for the wind speeds shown on the Risk Category I of the ACSE Standard 07-16, Minimum Design Loads and Associated Criteria for Buildings and Other Structures, wind map. This would correspond to an annual probability of 0.00333 or 1/300 for exceeding the 50-year hazard. The Applicant stated that the facility would be engineered and installed to withstand typical high-wind occurrences, utilizing a licensed structural engineering firm, and an Ohio-licensed professional engineer would be the engineer of record for the structural drawings and calculations. The engineer would be complying with and following the guidelines and wind velocity data of American Society of Civil Engineers (ASCE) standard 07-16 in the design of the facility.

The Applicant has further complied with the Ohio Adm.Code when stating that the tracker system and supporting structures would be designed to withstand three-second wind gusts of 100 mph under the ASCE 07-16. During periods of high winds, the stow mode of the trackers will be activated to place the panels in a horizontal position to minimize adverse consequences and damage.

During the detailed engineering phase, the manufacturer of the structures will provide a calculation package that evaluates the site-specific loads, such as wind, snow, and dead loads, to the individual structural components, including bolts, clamps and supports, to determine the maximum loads and

28. Application at Exhibit H, Question 8.

29. Applied Technology Council (n.d.) Hazards by Location, https://hazards.atcouncil.org/ Accessed May 2021.

will compare them with the allowable loads. After applying the site loads and appropriate combinations according to ASCE procedures, the manufacturer will compare each component involved with the quality of the material and the allowable stress limits, to ensure there are no likely adverse consequences of high wind speeds.

Roads and Bridges[30]

Delivery routes have not been finalized at this time. Once the final facility layout is complete and the final vehicle characteristics are determined, the final delivery routes will be finalized with the county engineer and other local authorities as needed. The Applicant indicates it is likely that the delivery of facility components to the project area will be from the south by way of US 24 to US 127, which bisects the western project area. An alternate route would be US 24 to SR 18, which traverses through the southern project area. Within the project area, U.S. state, county, and township roads will be used to transport equipment and materials. The project area is roughly bound by Buckskin Road, approximately 0.25 mile to the north, State Route 18, which passes through the southern section of the project area, Rosebrook Road, which runs along the east side of the project area and passes through its southeastern corner, and Behnfeldt Road, approximately 0.5 mile west of the project area. Three roads pass through the center of the project area: Lockwood Road running east-west, and U.S. Route 127 and Coy Road running north-south.

The Applicant conducted a route evaluation study (RES) to identify viable means of accessing the project area. The study included a field verification of local roads, bridges, and culverts along potential transportation routes serving the project area. Use of state highways is preferred over county and township roads where possible. Interstate routes and State highway routes were not part of the evaluation as these roads are assumed to be in accordance with United States Department of Transportation (USDOT) and Ohio Department of Transportation (ODOT) standards for roadway construction and would therefore be sufficient to accommodate construction and operational traffic.[31]

Three local roads were evaluated for pavement condition. All were rated either fair or good condition with the exception of the southern segment of Coy Road, which was characterized as fair to poor. No bridges were identified along the possible travel routes. All of these roads in their current state can be used for construction traffic.[32]

The RES indicates the Defiance County Engineer's Office confirmed there were no load restrictions (weight, height, width) for roads in the project area. Overhead structures and cables were also assessed along local roadways of which no observations were made of potential hazards. If obstructions are noted in the future, utility providers can temporarily or permanently raise the cable and/or move the poles. No other obstructions were noted along potential transportation routes to and from the facility. Final access/driveway locations should take into consideration the location with respect to other driveways and roadways, topography, and vertical and horizontal sight distance.

30. The entity responsible for maintaining roads and bridges within Ohio depends on many factors. See, e.g., ODOT, Roadway Infrastructure Maintenance Responsibility Manual, https://www.transportation.ohio.gov/wps/portal/gov/odot/programs/maintenance-operations/rimr/rimr).

31. Application at page 2 of Exhibit B (Route Evaluation Study by Hull & Associates).

32. Application at page 6 of Exhibit B (Route Evaluation Study by Hull & Associates).

Per the RES, historic data for construction of solar facilities indicates there are 17-18 vehicles per MW of power. Therefore, 1,156-1,254 construction vehicles are estimated over the course of construction.[33] Traffic disruptions will be limited because there are no planned road closings, most deliveries will occur during normal work hours, and equipment delivery will require minimal wide loads. Prior to construction, a Traffic Control Plan (TCP) will be developed that describes the procedures that will be used to manage traffic during construction. The TCP will include the final delivery routes which will be shared with local law enforcement, schools, and local landowners. During operation and maintenance of the facility, there will be very little increase in traffic, as solar electric generation facilities require minimal staffing to accommodate daily operations.

Prior to construction, the contractor will obtain all necessary permits from ODOT and the County Engineer. Requirements for roadway repairs and improvements will be coordinated with the Defiance County Engineer, which the Applicant anticipates will include the development of a Road Use and Maintenance Agreement.[34] This agreement would include information such as procedures for road repairs, temporary road closures, lane closures, road access restrictions and traffic control. In the event impacts do occur, the mitigation measures, as outlined in the RES will be implemented to avoid or minimize transportation-related impacts and/or to provide long-term improvement to the local road system. Construction routes will be monitored for condition changes to ensure roads remain safe for local traffic.[35]

The majority of vehicles used for the construction and operation of the facility are expected to meet current standard dimensions and weight. Therefore, minimal transportation related permits are anticipated. Special hauling permits may be required for vehicles that will transport the switchgears and transformers for the substation. Each vehicle must receive an individual special hauling permit from the ODOT Central Office for travel on state routes, as the specifications of the permit depend on the characteristics of the vehicle, its cargo, and duration of the delivery schedule. Additional permits will be required for driveway access along county roads and crossings of roads and county-maintained ditches by underground or overhead collection lines. These permits will be obtained from the Defiance County Engineer or ODOT, as required.

Overall, the study indicates very little impact to local roads during the construction of the proposed solar facility.[36] If the portion of Coy Road north and south of SR18 is used for construction traffic, it will likely require improvements, before or after construction. Final civil engineering design will be necessary prior to construction to ensure all transportation activities are accounted for and approved by the county engineer.

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 nine 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

33. Application at page 9 of Exhibit B (Route Evaluation Study by Hull & Associates).
34. Applicant's September 10, 2021 response to Staff's first data request.
35. Application at page 13 of Exhibit B (Route Evaluation Study by Hull & Associates).
36. Application at page 11 of Exhibit B (Route Evaluation Study by Hull & Associates).

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 and tracking motors. The step-up transformer at the new substation and the inverters may operate at night but the noise impact would also be relatively minor.

The Applicant conducted an ambient noise level study in order to understand the existing noise levels near the proposed facility. Noise impacts to non-participating receptors were modeled using the proposed inverter model and substation transformer.[37] No non-participating receptors were modeled to receive noise impacts greater than the daytime ambient noise level plus five dBA. Therefore, the project would be expected to have minimal adverse noise impacts on the adjacent community. If an inverter model different than the proposed inverter model is chosen, the Applicant would submit a noise report confirming that no non-participating receptors were modeled to receive noise impacts greater than the daytime ambient noise level plus five dBA.

Geology[38]

Surficial/Glacial[39]

The project area lies within the glaciated margin of the state and includes several Wisconsinan-age glacial features. Glacial drift throughout most of the study area is between 80 and 100 feet thick.

37. For the sound propagation model, the model used for the inverter/transformer is the Power Electronics HEM 3.6 MVA, and for the substation transformer is the Prolec G4257-02 with a rating of 83.2/110.9/138.6 MVA.

38. According, in part, to R.C. 1505.01, the ODNR's division of geological survey "[s]hall advise, consult, or collaborate with representatives of agencies of the state…on problems or issues of a geological nature when requested by such an agency…." One of the missions of the ODNR Division Geological Survey is "to provide geologic information and services needed for responsible management of Ohio's natural resources." (ODNR, Division of Geological Survey, About the Division, <https://ohiodnr.gov/wps/portal/gov/odnr/discover-and-learn/safety-conservation/about-ODNR/geologic-survey/division-of-geologic-survey/division-of-geologic-survey>). This includes studying and investigating, among other things, glacial and surficial geology, bedrock geology, and geological hazards. According to ODNR a "geologic hazard or 'geohazard' is a geologic condition, either manmade or natural, that poses a potential danger to life and property. Ohio is home to a number of potential geohazards, including karst, mine subsidence, earthquakes, landslides, and shore erosion." (ODNR, Geologic Hazards, <https://ohiodnr.gov/wps/portal/gov/odnr/discover-and-learn/safety-conservation/about-ODNR/geologic-survey/geologic-hazards>).

39. "Since its inception in 1837, the ODNR Division of Geological Survey has researched and mapped the state's glacial and surficial geology. Today, highly detailed mapping and meticulous studies continue to inform and broaden our knowledge of Ohio's glacial past." (ODNR, Glacial Geology in Ohio <https://ohiodnr.gov/wps/portal/gov/odnr/discover-and-learn/safety-conservation/about-ODNR/geologic-survey/glacial-geology>).

"Since collaborating with the U.S. Geological Survey to release the first statewide Glacial Map of Ohio in 1961, the ODNR Division of Geological Survey has mapped the unconsolidated geologic materials found at Ohio's surface with increasing detail." (ODNR, Glacial & Surficial Geologic Maps, <https://ohiodnr.gov/wps/portal/gov/odnr/discover-and-learn/safety-conservation/about-ODNR/geologic-survey/glacial-geology/glacial-surficial-geologic-maps>).

Bedrock[40]

The uppermost bedrock unit throughout the project area is the Antrim Shale. Due to the glacial drift cited above, bedrock is not anticipated to be encountered during the construction of the proposed solar facility.

Karst[41]

Conditions typically necessary for the formation of karst geology features do not exist within the project area and therefore are not anticipated be a factor in the construction of the proposed solar facility. The nearest documented (ODNR Geologic Survey) sinkhole feature is approximately 60 miles east of the project area.[42]

Oil/Gas and Mining[43]

ODNR records indicate that no oil and gas activity occurs within two miles of the project area. No Class II injection well activity occurs within several miles of the project area.[44] The ODNR does not have record of any mining operations within the project area. The nearest mine is an active sand and gravel pit operated by K C Sand and Gravel, LLC located approximately six miles north of the site boundary. No known abandoned underground mines are located within several miles of the project area.[45]

Seismic Activity[46]

Recent geologic history shows the project area and associated region of the state to be at low risk for seismicity caused by earthquakes as ODNR records indicate the nearest earthquake event recorded is approximately 26 miles away from the project area.[47] The design of the facility will follow the Ohio Building Code (OBC) which has provisions for earthquake design data.[48] The

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40. "The ODNR Division of Geological Survey has had a long history of generating bedrock geologic maps for the state of Ohio since its inception in 1839. The most recent iteration of the geologic map of Ohio was created by seamlessly piecing together 788 individual 7.5-minute bedrock geologic quadrangles." (ODNR, Bedrock Geology,<https://ohiodnr.gov/wps/portal/gov/odnr/discover-and-learn/safety-conservation/about-odnr/geologic-survey/bedrock-geology/bedrock-geology>).

41. Karst is a geologic feature formed within carbonate rocks through mineral dissolution caused by movement of water. Most common features include the formation of caves or the formation of sinkholes at the surface. Generally, karst features, and the likelihood of karst development are most prevalent in areas where the carbonate bedrock is overlain by 20 feet or less of glacial till material. Limestone and dolomite are the most common carbonate bedrock. Generally, Limestone is more prone to dissolution than dolomite.

42. ODNR Ohio Karst Geology Interactive Map https://gis.ohiodnr.gov/website/dgs/karst_interactivemap/

43. ODNR Division of Oil & Gas states: "[t]he Division is responsible for regulating Ohio's oil and natural gas industry and for the protection of all Ohioans and our environment while ensuring the state's abundant natural resources are managed properly." (ODNR, *Division of Oil & Gas,* <https://ohiodnr.gov/wps/portal/gov/odnr/discover-and-learn/safety-conservation/about-ODNR/oil-gas/division-of-oil-and-gas/division-of-oil-and-gas>).

44. ODNR Oil and Gas Viewer Interactive Map https://gis.ohiodnr.gov/MapViewer/?config=OilGasWells

45. ODNR Mines Viewer Interactive Map https://gis.ohiodnr.gov/MapViewer/?config=OhioMines

46. The ODNR Division of Geological Survey coordinates a 21-station network of seismograph stations throughout the state in order to continuously record earthquake activity. The Ohio Seismic Network (OhioSeis) went online in January 1999 to ensure Ohio has monitoring and coverage 24 hours a day, seven days a week by seismic stations with automatic detection, location and magnitude determination. (ODNR, The Ohio Seismic Network, <https://ohiodnr.gov/wps/portal/gov/odnr/discover-and-learn/safety-conservation/about-ODNR/geologic-survey/division-of-geologic-survey/ohio-seis>).

47. ODNR Earthquake Epicenters https://gis.ohiodnr.gov/MapViewer/?config=Earthquakes

48. Application at Exhibit C (Geology and Hydrology Report by Hull & Associates) Part 1 of 2 - page 4.

geology and hydrology report recommends a Site Class D for the facility design. The Applicant has indicated that no blasting activities are anticipated for the construction or operation of the proposed solar facility, and therefore no blasting-induced seismic activity is anticipated.[49]

Soils[50]

According to the USDA Web Soil Survey, the project area consists primarily of soils derived from glacial till and glaciolacustrine deposits. Latty, Fulton, Paulding and Roselms are the most common soil series found within the boundaries of the project area. Together these soils make up over 90 percent of the project area. There is a moderate to high risk of shrink-swell potential in these soils. Other limiting factors include poor drainage and seasonal saturation in some soils. Slope remains relatively flat, with a slope that does not exceed a three percent grade.[51] No soils within the project area are considered highly erodible.[52]

Geotechnical Report

A geology and hydrology report prepared by Hull & Associates discusses the geotechnical work performed to date. To further evaluate soil properties, 10 borings were advanced from a range of 15 feet (eight borings) to a maximum depth of 50 feet below ground level (BGL). Soil samples from the borings were evaluated for moisture content, grain size and distribution, plasticity characteristics, and corrosivity.

Per the geology and hydrology report, "based on the information reviewed and the field reconnaissance, it appears that there are favorable subsurface conditions for design and construction of the solar arrays, access roads, and site development."[53] No pile load testing has been performed to date. However, pile load testing is a recommendation of the geology and hydrology report. In addition, the geology and hydrology report recommends that a final geotechnical investigation be performed to determine the final foundation system and access road design and construction.

Conclusion

In the event the Board grants a certificate to the Applicant, Staff recommends that the final detailed engineering drawings of the final project design shall account for geological features 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. Additionally, in the event the Board grants a certificate to the Applicant, Staff

49. Application at page 56.

50. The United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRSC) conducts soil surveys and provides technical assistance to private landowners. (USDA NCRS, Ohio NRCS Soils, <https://www.nrcs.usda.gov/wps/portal/nrcs/oh/soils/>).

"Web Soil Survey (WSS) provides soil data and information produced by the National Cooperative Soil Survey. It is operated by the USDA Natural Resources Conservation Service (NRCS) and provides access to the largest natural resource information system in the world. NRCS has soil maps and data available online for more than 95 percent of the nation's counties and anticipates having 100 percent in the near future. The site is updated and maintained online as the single authoritative source of soil survey information. Soil surveys can be used for general farm, local, and wider area planning." (USDA NCRS, *USDA Web Soil Survey*, <https://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>).

51. Application at Exhibit E (Ecological Assessment by Cardno) – ODNR Geological Survey Review Letter.

52. Application at page 71.

53. Application at Exhibit C (Geology and Hydrology Report by Hull & Associates) Part 1 of 2 - page 8.

recommends that the Applicant provide a final geotechnical engineering report to Staff at least 30 days prior to the preconstruction conference. Furthermore, in the event the Board grants a certificate to the Applicant, Staff recommends that the Applicant provide an Unanticipated Discovery Plan that would address the processes that would be followed by the Applicant in the event undocumented or unanticipated contaminated material or other potential hazards were encountered during construction. This shall include detailed plans for remediation of any oil and gas wells within the project area

In the event the Board grants a certificate to the Applicant, based on the data and considerations provided within the application submittal to date, and based on Staff assessment (with consideration and input from ODNR), and implementation of the recommended conditions, there appears to be no particular geological features within the project area that are incompatible with construction and operation of the proposed solar facility. However, additional geotechnical testing as further discussed in the proposed conditions is necessary to confirm this.

Ecological Impacts

Public and Private Water Supplies[54]

Groundwater resources vary throughout the project area. The ODNR has record of 101 water wells drilled within one mile of the project area. These wells range in depth from 43 to 205 feet deep, with an average depth of 71.5 feet. These wells list a sustainable yield range of one to 300 gallons per minute based on well log records, with the majority listing a sustainable yield below 50 gallons per minute. The average sustainable yield from these records within one mile was 53.2 gallons per minute. This is based on records from 41 wells within one mile of the project area that contain sustainable yield data.[55]

Ohio EPA defines source water protection areas (SWPAs) as the area that supplies water to a public water supply well within a five-year time-of-travel.[56] No public drinking water SWPA occur within the project area.[57] One SWPA assigned to the Village of Sherwood does occur within 0.15 miles southwest of the project area. A quarter of a mile from the southeastern edge of the project

54. The CWA establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. One of the missions of the Ohio EPA is to "ensure compliance with the federal Clean Water Act and works to restore and enhance the integrity of Ohio's waters." Ohio EPA Website, Division of Surface Water, <https://www.epa.ohio.gov/dsw/Surface-Water/LiveTabId/113292#:~:text=Ensures%20compliance%20with%20the%20federal,the%20integrity%20of%20Ohio's%20waters.&text=We%20issue%20permits%20to%20regulate,aimed%20at%20improving%20polluted%20streams> In carrying out this mission, among other things, the Revised Code provides for the Ohio EPA to administer and enforce laws and regulations regarding water pollution control and safe drinking water. *See e.g.,* RC 6111.041 and RC 6109.04. The Ohio EPA states: "Division of Drinking and Ground Waters ensures compliance with the federal Safe Drinking Water Act and evaluates potential threats to source waters that supply Ohio's more than 4,800 public drinking water systems. The division has a lead role for statewide ground water protection in cooperation with other state and federal agencies, implements a ground water quality monitoring program and provides technical assistance to the Agency's waste management divisions." <https://www.epa.state.oh.us/ddagw/> The Division of Drinking and Ground Water's (DDAGW) Drinking Water Program manages the federally delegated drinking water program and implements both state and federal Safe Drinking Water statutes and rules adopted under these laws. <https://www.epa.ohio.gov/ddagw/#116665774-about-the-drinking-water-program>.

55. Application at Exhibit E (Ecological Assessment by Cardno.) – ODNR Geologic Survey Review.

56. Ohio EPA Drinking Water Area Source Delineation. Manualhttps://www.epa.state.oh.us/portals/28/documents/swap/swap_delin_guidance.pdf.

57. Application at page 63 and Ohio EPA Source Water Protection Areas Interactive Map https://oepa.maps.arcgis.com/apps/webappviewer/index.html?id=3b39e11ba7fc43c3b41801e3580e6d21.

area is the far western portion of the surface water corridor management zone that extends approximately seven miles east to the city of Defiance. The Applicant concludes "given the proposed project activity (construction and operation of a solar facility), minimal water usage requirements, implementation of project storm water BMPs, and avoidance of riparian areas, the project will not impact these protection areas."

The Applicant has indicated the ODNR records show 10 private water wells exist within a 500--foot buffer of the project area. In addition, a well survey was sent to seven landowners within the project area which revealed two additional wells not documented by the ODNR.[58] The Applicant has committed to ensuring no project infrastructure will be constructed within one hundred feet of any potable well. If a non-abandoned well is encountered during the construction and operation of the facility, then the well will be properly abandoned in accordance with the Ohio Adm.Code 3701-28-17.[59] The Applicant concludes "based on the information gathered and the associated analysis in the geology and hydrogeology report, construction and operation of the facility is not anticipated to result in any significant negative impact to private water supplies."

Based on the data and considerations provided within the application submittal to date, including implementation of a Spill Prevention, Control, and Countermeasure (SPCC) Plan, there appears to be no unreasonable risk posed to public or private drinking water supplies by construction or operation of the proposed solar facility.

Surface Waters[60]

The Applicant delineated three perennial streams within the project area. The Applicant has designed the project to avoid all streams during and after construction. The Applicant states that stream crossings by underground collection lines would be accomplished via HDD. HDD is typically preferred to open-cut trenching when crossing surface water resources as impacts can be avoided in most cases. However, the HDD process includes the risk of a frac-out. A frac-out occurs when the drilling lubricant, typically water or a non-toxic, fine clay bentonite slurry, is forced through cracks in bedrock and/or surface soils. The Applicant included a frac-out contingency plan as part of the application. In the event the Board grants a certificate to the Applicant, Staff also recommends that the Applicant have an environmental specialist on site during construction activities where HDD activities may impact surface waters. The environmental specialist should

58. Application at page 6 of Exhibit C (Geology and Hydrogeology Report by Hull & Associates).

59. Application at page 5 of Exhibit C (Geology and Hydrogeology Report by Hull & Associates).

60. The Ohio EPA website states: "The Division of Surface Water ensures compliance with the federal Clean Water Act and works to increase the number of water bodies that can be safely used for swimming and fishing. The division issues permits to regulate wastewater treatment plants, factories and storm water runoff; develops comprehensive watershed plans aimed at improving polluted streams; and samples streams, lakes and wetlands — including fish, aquatic insects and plants — to determine the health of Ohio's water bodies." (Ohio EPA, About Us: Surface Water, https://www.epa.ohio.gov/About#127147228-surface-water); The U.S. Army Corps of Engineers wesbite states: "The U.S. Army Corps of Engineers (USACE) Regulatory Program involves the regulating of discharges of dredged or fill material into waters of the United States and structures or work in navigable waters of the United States, under section 404 of the Clean Water Act and section 10 of the Rivers and Harbors Act of 1899." (USACE, Obtain a Permit, https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/Obtain-a-Permit/); The Ohio Department of Natural Resources (ODNR) website states: "The Division of Water Resources manages statewide oversight of dams & levees, floodplains, and the collection and management of data related to the state's water resources." (ODNR, Division of Water Resources, https://ohiodnr.gov/wps/portal/gov/odnr/discover-and-learn/safety-conservation/about-odnr/water-resources/water-resources).

have authority to stop HDD activities to ensure that any impacts related to a frac-out are addressed. No impacts to streams are anticipated.

The Applicant delineated nine wetlands in the project area, including seven Category 2 wetlands, and two Category 1 wetlands.[61] The Applicant has designed the project to avoid all wetlands during and after construction. No impacts to wetlands would occur.

The Applicant states that the boundaries of streams and wetlands within and immediately adjacent to the construction limits of disturbance would be flagged, staked, or fenced prior to construction. These sensitive areas would also be depicted on construction drawings. All contractors and subcontractors would be provided with training to understand the significance of the types of flagging used and the importance of staying within defined limits of work areas.

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 Storm Water Pollution Protection Plan (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. The Applicant would implement Ohio EPA published Guidance on Post-Construction Storm Water Control for Solar Panel Arrays to project construction and operation.

Floodplain

No portion of the project area falls within the 100-year floodplain.[62] The nearest floodplain is located approximately 0.3 miles to the north near Mud Creek. The Federal Emergency Management Agency (FEMA) has designated the project area as an Area of Minimal Flood Hazard. Therefore, construction of the facility should have minimal impact on the surface drainage in the project area. Conversely, there should be minimal impact to the facility as a result of surface water flow in the project area and no adverse consequences to the project as a result of flooding.[63]

Threatened and Endangered Species[64]

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

61. Wetlands falling within the purview of the Clean Water Act are regulated within Ohio by R.C. 6111, et seq. and Ohio Adm.Code 3745-1-50, et seq. Ohio Adm.Code 3745-1-54 establishes wetland categories.

62. Application at page 64.

63. Application at page 4 of Exhibit C (Part 1 of 2 - Geology and Hydrology Report by Hull & Associates).

64. Based on agency coordination with the USFWS and ODNR, identified species of concern are, in general, defined as those species that are protected under the federal Endangered Species Act of 1973, as amended (16 U.S.C. §§ 1531-1544) and/or according to the Conservation of Natural Resources within R.C. 1518.01-1518.99; 1531.25; and 1531.99. See also e.g., R.C. 1531.08 states, in part: "In conformity with Section 36 of Article II, Ohio Constitution, providing for the passage of laws for the conservation of the natural resources of the state, including streams, lakes, submerged lands, and swamplands, and in conformity with this chapter and Chapter 1533. of the Revised Code, the chief of the division of wildlife has authority and control in all matters pertaining to the protection, preservation, propagation, possession, and management of wild animals and may adopt rules under section 1531.10 of the Revised Code for the management of wild animals."

One of the missions of the ODNR is to "conserve and improve the fish and wildlife resources and their habitats and promote their use and appreciation by the public so that these resources continue to enhance the quality of life for all Ohioans." In carrying out this mission, the ODNR considers the "status of native wildlife species [to be] very important" and therefore lists wildlife species needing protection. (ODNR, State Listed Species,

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	Known range, presence established in project area.
Northern long-eared bat	*Myotis septentrionalis*	Threatened	Endangered	Known range, presence established in project area.
little brown bat	*Myotis lucifugus*	N/A	Endangered	Known range, presence established in project area.
Tricolored bat	*Perimyotis subflavus*	N/A	Endangered	Historical range includes the project area.
FRESH WATER MUSSELS				
Common Name	**Scientific Name**	**Federal Status**	**State Status**	**Presence in Project Area**
black sandshell	*Ligumia recta*	N/A	Threatened	Known Range. No in-water work proposed.
rayed bean	*Villosa fabalis*	Endangered	Endangered	Known Range. No in-water work proposed.
clubshell	*Pleurobema clava*	Endangered	Endangered	Known Range. No in-water work proposed.
Northern riffleshell	*Epioblasma torulosa tangiana*	Endangered	Endangered	Known Range. No in-water work proposed.
rabbitsfoot	*Quadrula cylindrica cylindrica*	Threatened	Endangered	Known Range. No in-water work proposed.
fawnsfoot	*Truncilla donaciformis*	N/A	Threatened	Known Range. No in-water work proposed.
white catspaw	*Epioblasma obliquata perobliqua*	Endangered	Endangered	Known Range. No in-water work proposed.
threehorn wartyback	*Obliquaria reflexa*	N/A	Threatened	Known Range. No in-water work proposed.
FISH				
Common Name	**Scientific Name**	**Federal Status**	**State Status**	**Presence in Project Area**
greater redhorse	*Moxostoma valenciennesi*	N/A	Threatened	Known Range. No in-water work proposed.

https://ohiodnr.gov/wps/portal/gov/odnr/discover-and-learn/safety-conservation/about-ODNR/wildlife/state-listed-species).

In addition to endangered species, those species classified as "threatened" are considered during OPSB project planning and approval because these species are those "whose survival in Ohio is not in immediate jeopardy, but to which a threat exists. Continued or increased stress will result in its becoming endangered." Id.

BIRDS				
Common Name	**Scientific Name**	**Federal Status**	**State Status**	**Presence in Project Area**
northern harrier	*Circus cyaneus*	N/A	Endangered	Known range. Breeding documented in project area.
REPTILES				
Common Name	**Scientific Name**	**Federal Status**	**State Status**	**Presence in Project Area**
copperbelly water snake	*Nerodia erythrogaster neglecta*	Threatened	Threatened	Known range. Suitable habitat not present within project area.

The Applicant did not identify any listed plant species during field surveys; however, two northern harriers were observed in the project area. In the event that the Board grants a certificate to the Applicant and if the Applicant encounters listed plant or animal species during construction, Staff recommends that the Applicant contact Staff, the ODNR, and the USFWS, as applicable. In the event the Board grants a certificate to the Applicant, 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 the ecologically sensitive resource impact avoidance/minimization plan.

The project area is within the range of state and federal endangered Indiana bat (*Myotis sodalis*), and the state and federal threatened northern long-eared bat (*Myotis septentrionalis)*, the state endangered little brown bat (*Myotis lucifugus*), and the state endangered tricolored bat (*Perimyotis subflavus*). Presence of the Indiana bat, northern long-eared bat, and little brown bat has already been established in the project area. In order to avoid impacts to listed bat species, in the event the Board grants a certificate to the Applicant, Staff recommends the Applicant adhere to seasonal tree cutting dates of October 1 through March 31 for all trees three inches or greater in diameter, unless coordination efforts with the ODNR and the USFWS reflects a different course of action. The Applicant states seven acres of tree clearing would be required for this project. The Applicant has committed to limiting tree-clearing activities to the seasonal tree clearing window in order to avoid impacts to these species. During the winter months, bats hibernate in caves and abandoned mines, also known as hibernacula. The project would not impact any hibernacula.

The project is within the range of the state endangered northern harrier (*Circus cyaneus*). Northern harriers breed and hunt in large wet meadows and dry grasslands. The Applicant stated that the project area currently does not contain suitable nesting habitat for this species. However, this type of habitat may develop over time and Staff notes that two northern harriers have already been observed in the project area. In the event the Board grants a certificate to the Applicant, Staff recommends that construction in northern harrier preferred nesting habitat types be avoided during their nesting period of May 15 through August 1, unless coordination with the ODNR allows a different course of action. Further, mapping of any habitat areas should be provided to construction personnel with instructions to avoid these areas during the restricted dates.

Impacts to other listed species would be avoided due to a lack of proposed impacts to suitable habitats.

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	**Total (Acres)**
Forestland	5.4
Developed	28.7
Agricultural Lands	613.5

Permanent vegetative impacts would occur primarily within agricultural lands. Forestland impact is estimated to be approximately 0.6 acres and would be limited to access and collection line impacts.

The Applicant has developed a vegetation management plan in which it would 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 in select areas outside of the array and within the fence line. 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 elimination of frequent tilling leading to erosion and sedimentation, and reduced fertilizer and pesticide application. To further assure that these benefits would be realized, the Applicant has committed to take steps to prevent establishment and/or further propagation of noxious weeds identified in Ohio Adm.Code 901:5-37 et seq. during implementation of any pollinator-friendly plantings. Staff notes that vegetation reestablishment and weed control may take several growing seasons.

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 process considered the availability and quality of solar resource, proximity to the bulk power transmission system, topography, and identification of willing contiguous land participants. Other factors considered in the site selection process included site accessibility, geologic suitability, limited residential development, limited ecological resources, and lack of impact to cultural resources.

During site selection efforts, the Applicant engaged with both the public and local government officials to explain the proposed project and answer questions and concerns within the community. The Applicant states the proposed site possesses adequate solar resources, manageable access to the bulk power transmission system, sufficiently low population density, positive feedback from landowners and local officials, highly compatible land-use characteristics, and few environmentally sensitive areas.[65]

Minimizing Impacts

A Phase I cultural archaeological reconnaissance survey was completed and submitted to the Ohio Historic Preservation Office (OHPO) for review in September 2021. In the archaeology survey report it was determined that there were no previously discovered archaeological sites in the project area and a total of 10 archaeological sites were newly identified within the project area. All 10 sites were recommended as ineligible for listing in the National Register of Historic Places (NRHP). The cultural resources survey conducted in July 2021 recorded 249 properties of which six are recommended as eligible for listing on the NRHP. The study concluded that for each of the six sites, the proximity to the project site and the proposed landscape screening, no adverse effect to these structures is expected from the project. OHPO concurs with these findings. With the implementation of the commitments for protecting and avoiding cultural resources per Staff's condition, Staff has determined that minimal adverse impacts to cultural resources would be achieved.

The geology of the project site in Defiance County does not appear to present conditions that would limit or negatively impact the construction and future operation of the proposed facility. In the event the Board grants a certificate to the Applicant, Staff recommends that the final detailed engineering drawings of the final project design shall account for geological features and that the Applicant develop an Unanticipated Discovery Plan to account for any previous unknown conditions or features discovered during the proposed construction.

No significant impacts are proposed to stream or wetlands. 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 Applicant did not identify any listed plant species

65. Application at page 24.

during field surveys; however, two northern harriers were observed in the project area. While the project is within the range of several endangered species, impacts would be avoided to suitable habitats.

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. In the event the Board grants a certificate to the Applicant, Staff recommends that the Applicant limit the hours of construction to address potential construction-related concerns from any nearby residents. No non-participating receptors were modeled to receive noise impacts greater than the daytime ambient noise level. In the event the Board grants a certificate to the Applicant and if the Applicant changes inverter or transformer models, Staff recommends that the Applicant submit an updated noise study. 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 most components for the entire project would be delivered by using flatbed or tractor-trailer vehicles and multi-axle dump trucks. The transportation management plan would be finalized once the final engineering layout is determined. The traffic control plan will include delivery route plan which would be developed through discussions with local officials. The Applicant is expected 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, in the event the Board grants a certificate to the Applicant, Staff has recommended a condition requiring a final landscape and lighting plan that addresses the potential impacts of the facility. In the event the Board grants a certificate to the Applicant, Staff also recommends that the Applicant adjust its landscape and lighting plan to address potential impacts to the traveling public, nearby communities, and recreationalists. In addition, in the event the Board grants a certificate to the Applicant, Staff recommends a perimeter fencing condition to further minimize overall aesthetic concerns and to provide more wildlife friendly access for small animals.

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 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 decommissioning plan to decommission the solar facility. The Applicant would provide for financial security to ensure that funds are available for

decommissioning and land-restoration. The Applicant would restore the land significantly to its original topography to allow for resumption of agricultural use. In the event the Board grants a certificate to the Applicant, Staff has recommended a condition requiring that the draft decommissioning plan be updated to include improved financial assurance and a decommissioning cost estimate, among other things.

The Applicant has committed to use panels that have been certified to comply with the U.S. EPA's TCLP test and meet the U.S. EPA definition of nonhazardous waste.

Conclusion

Staff concludes that the proposed project would result in both temporary and permanent impacts to the project and surrounding areas. The project is unlikely to pose a significant adverse impact to existing land use, cultural resources, recreational resources, or wildlife. With Staff's recommended conditions to further mitigate potential 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 existing regional transmission grid and the bulk power system (BPS).

The Applicant proposed to construct a solar-powered electric generation facility, capable of producing 68 MW. The project will connect to the regional transmission grid through a gen-tie line to the AEP Lockwood Road 138 kV Substation. The connection will require the installation of two 138 kV circuit breakers. The project may also require relocation of existing capacitor banks and the expansion of the station to accommodate the interconnection. Protective and control equipment, SCADA-related instrumentation, 138 kV line risers, and metering will also be required.

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).[66]

PJM Interconnection

The Applicant submitted two generation interconnection requests for the proposed facility to PJM. For the initial request of July 2019, PJM has assigned the queue ID AF1-063 under the name "Lockwood Road 138 kV," which requested an injection of 30 MW. The second request of February 2020 was assigned queue ID AF2-127, also under the name of "Lockwood Road 138 kV," and requested an increase of 38 MW. PJM has completed and issued the Feasibility Study reports for AF1-063 and AF2-127 in January 2020 and July 2020, respectively.[67] PJM has completed and issued the System Impact Study reports (SIS) for AF1-063 and AF2-127 in August 2020 and February 2021, respectively.[68] The table below shows the queue positions assigned to the Applicant by PJM.

66. 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.

67. PJM Interconnection, "New Services Queue", Feasibility Study for Queue IDs: AF1-063 and AF2-127, accessed June 1, 2021, https://www.pjm/planning/services-requests/interconnection-queues.aspx

68. PJM Interconnection, "New Services Queue", System Impact Study for Queue IDs: AF1-063 and AF2-127, https://www.pjm.com/planning/services-requests/interconnection-queues.aspx (Accessed June 1, 2021).

PJM QUEUES: CEPHEUS ENERGY SOLAR PROJECT			
Queue ID	**Queue Date**	**Power Output (MW)**	**Capacity (MW)**
AF1-063	7/31/2019	30	19.3
AF2-127	2/28/2020	38	24.9
	Totals	**68**	**44.2**

PJM studied the interconnection as an injection into the BPS via the AEP Lockwood Road 138 kV Substation. The Applicant requested a total injection of 68 MW, of which 44.2 MW could be available in the PJM capacity market. The capacity market ensures that there is an adequate availability of generation resources that can meet current and future demand.

PJM Network Impacts

PJM analyzed the proposed facility interconnected to the BPS. The 2023 summer peak power flow model was used by PJM to evaluate regional reliability impacts for the queue project AF1-063 as a 30 MW injection into the AEP area with a commercial probability of 100 percent. The project was evaluated for compliance with applicable reliability planning criteria . No overloads or restrictions were identified for the project. The 2023 summer peak power flow model was also used to evaluate regional reliability impacts for the queue project AF2-127 as a 38 MW injection into the AEP area with a commercial probability of 100 percent. The studies revealed two lines that may overload, resulting in operational restrictions. The Applicant may proceed with network upgrades to eliminate these restrictions. A separate agreement with the local utility that provides service in the project area may be reached to ensure the infrastructure and metering are in place to meet this demand. The table below displays the results of the PJM SIS for the regional footprint.[69]

PJM REGIONAL SYSTEM IMPACTS (2023 Summer Peak)	
Generation Deliverability – System Normal & Single Contingency Outage	
Plant Output: Capacity Level – 44.2 MW	No Problems Identified
Category C and D – Multiple Facility Contingency Outages	
Plant Output: Power Level 68 MW	Two different 138 kV lines may Overload[70]

69. PJM Interconnection, "New Services Queue", System Impact Study for queue IDs: AF1-063 and AF2-127, https://www.pjm.com/planning/services-requests/interconnection-queues.aspx (Accessed June 1, 2021).

70. The ATSI-P1-2-TE-138-039 138-kV line from bus 238979 to bus 238962 and the ATSI-P1-2-TE-138-039 138 kV line from bus 239127 to bus 238979. Page 12/19 of the PJM System Impact Study Report for Queue position AF2-127.

New System Reinforcements

PJM requires mitigation of contingencies that cause reliability violations which are initially caused by the addition of the Applicant's project. There were no New System Reinforcements identified by PJM for either queue AF1-063 or AF2-127.

Contribution to Previously Identified Overloads – Network Impacts

PJM studied the project for possible overloading where the proposed facility may affect earlier generation or transmission projects in the PJM queue. None were identified for either queue.

Potential Congestion due to Local Energy Deliverability

PJM also studied the delivery of the energy portion of this interconnection request. Problems identified here would likely result in operational restrictions for the Project. Network upgrades under this section would allow for the delivery of energy with operational restrictions. The studies revealed two lines that may overload, and these were identified previously in footnote 68.

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. PJM performed a short circuit analysis, and no additional problems were identified.

Recommended Findings

Staff recommends that the Board find that the proposed facility is consistent with regional plans for expansion of the electrical 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[71]

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 BMPs, such as using dust suppressants such as calcium carbonate or water to wet soil to minimize dust as needed. These methods are outlined in the ODNR's *Ohio Rainwater and Land Development Manual*. This method of dust control is typically used to comply with fugitive dust rules. The Applicant has also indicated that it would address, as promptly as possible, any dust generation complaints if received through the complaint resolution process.

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

Water[72]

The Applicant anticipates obtaining environmental permits if and where necessary. The Applicant would mitigate potential water quality impacts associated with aquatic discharges by obtaining NPDES construction storm water general permit (OHC00005) from the Ohio EPA with submittal of a notice of intent for coverage under that permit. The construction storm water general permit also requires development of an SWPPP to direct the implementation of construction-related storm water BMPs for soil erosion control.

The Applicant would obtain, if required, the following permits:

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71. The Revised Code provides for the Ohio EPA to administer and enforce the provisions of R.C. Ch. 3704 with regards to air pollution control. See e.g., RC 3704.03, 3704.161. The Ohio EPA Division of Air Pollution Control ensures compliance with the federal Clean Air Act and the Emergency Planning and Community Right-to-Know Act as part of its mission to attain and maintain air quality at a level that protects the environment and public health. (Ohio EPA, *Division of Air Pollution Control,* https://www.epa.ohio.gov/dapc/#188913097-featured-topics>). The Division of Air Pollution Control develops and enforces rules in the Ohio Administrative Code, which assist the state of Ohio to: attain and maintain the National Ambient Air Quality Standards (NAAQS) contained in the Clean Air Act; fulfill the requirements set forth by the Ohio General Assembly in R.C. 3704; and protect and maintain healthy air quality for the citizens of the state of Ohio. (*See*, Ohio EPA, *Division of Air Pollution Control Rules and Laws,* <https://www.epa.ohio.gov/dapc/DAPCrules>).

72. The Revised Code provides for the Ohio EPA to be the lead agency in administering the provisions of Ch. 6111 with regards to water quality. See e.g., RC 6111.041. For example. the Ohio EPA, among other things, "ensures compliance with the federal Clean Water Act and works to restore and enhance the integrity of Ohio's waters." (Ohio EPA Website, *Division of Surface Water*, https://www.epa.ohio.gov/dsw/Surface-Water/LiveTabId/113292#:~:text=Ensures%20compliance%20with%20the%20federal,the%20integrity%20of%20Ohio's%20waters.&text=We%20issue%20permits%20to%20regulate,aimed%20at%20improving%20polluted%20streams). The CWA establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. (US EPA, *Summary of Clean Water Act*, https://www.epa.gov/laws-regulations/summary-clean-water-act.

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- The Ohio NPDES construction storm water general permit, currently issued as Ohio EPA Permit No. OHC000005.
- An individual permit or nationwide permit under Section 404 of the Clean Water Act (CWA), if necessary as determined after final engineering.
- A Water Quality Certification from the Ohio EPA, if necessary as determined after final engineering.
- An Ohio Isolated Wetland Permit, if necessary as determined after final engineering.

The Applicant would develop an SPCC plan to manage the storage and mitigate the unlikely release of hazardous substances, should the volume of aboveground storage of hydraulic oil exceed the regulatory threshold in 40 CFR part 112. Specifically, the Applicant indicates that it would follow all measures indicated in the SPCC plan and monitor for aquatic discharges draining from the site, such as an oily sheen on storm water, etc. to ensure that the water resources are not at-risk during construction. Additionally, an SWPPP would be developed to ensure compliance with the CWA and detail the BMPs to be implemented during the construction and operation of the facility.

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[73]

Debris generated from construction activities would include items such as plastic, wood, cardboard, metal packing/packaging materials, construction scrap, and general refuse. The Applicant stated that all construction-related debris would be disposed of at an authorized solid waste disposal facility. Materials such as cardboard and metal packaging would be recycled at an appropriate facility.

Operation would not result in significant generation of debris or solid waste. Waste generated from the O&M container(s) could include wood, cardboard, metal packing/packaging materials, used oil, general refuse, universal waste, and used antifreeze. The onsite O&M building would generate solid wastes comparable to a typical small business office. No hazardous waste would be generated as part of project operations.

In the event the Board grants a certificate to the Applicant, at the time of solar panel end-of-life or decommissioning, for any solar panel that is not recycled and that is marked for disposal, Staff recommends that retired panels marked for disposal shall be sent to an engineered landfill with various barriers and methods designed to prevent leaching of materials into soils and groundwater, or another location at the time of decommissioning approved by Staff.

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

73. The Revised Code generally provides for Ohio EPA to administer and enforce the provisions of Chapters 3714. and 3734., in particular with regard to solid waste facilities, infectious waste treatment facilities and construction and demolition debris facilities.

Aviation[74]

The height of the tallest above ground structures would be the gen-tie transmission line support structures at approximately 100 feet tall.[75] Those heights are 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 are within five miles of the project area.[76] Staff confirmed through the FAA, that the closest public-use airport is the Defiance Memorial Airport (DFI) which is approximately 5.7 miles from the proposed solar facility project collection substation. The Applicant found that a former airport, Rogers Private Airport (5O19) is listed in some databases. However, upon follow up, the Applicant found that this facility is no longer listed as active in the FAA airport facility directory, aerial imagery does not indicate an active airport or airstrip, and the phone number associated with the airport is no longer in use.[77]

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.[78] As of the date of this filing, no such concerns have been identified.

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.

74. The FAA is the authority in the U.S. government responsible for regulating all aspects of civil aviation, including issuing determinations on petitions for objects that penetrate the nation's airspace. The FAA conducts aeronautical studies for new structures that will exceed 200 feet in height under the provisions of 49 U.S.C. 44718, and applicable 14 CFR Part 77. Pursuant to R.C. 4561.32, ODOT regulates the height and location of structures and objects within any airport's clear zone surface, horizontal surface, conical surface, primary surface, approach surface, or transitional surface.

75. Application at page 69.

76. Application at page 52.

77. Cepheus Energy Project, LLC's Response to Staff's Third Data Request Dated September 8, 2021, DR #6.

78. R.C. 4906.10(A)(5) states: "[i]n 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." R.C. 4561.341 states: "[p]ursuant to any consultation with the power siting board regarding an application for certification under section 4906.03 or 4906.10 of the Revised Code, the office of aviation of the division of multi-modal planning and programs of the department of transportation shall review the application to determine whether the facility constitutes or will constitute an obstruction to air navigation based upon the rules adopted under section 4561.32 of the Revised Code. Upon review of the application, if the office determines that the facility constitutes or will constitute an obstruction to air navigation, it shall provide, in writing, this determination and either the terms, conditions, and modifications that are necessary for the applicant to eliminate the obstruction or a statement that compliance with the obstruction standards may be waived, to the power siting board under section 4906.03 or 4906.10 of the Revised Code, as appropriate."

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 use reliable and certified equipment compliant with applicable Underwriters Laboratories, Institute of Electrical and Electronics Engineers, National Electrical Code, National Electrical Safety Code (NESC), and American National Standards Institute standards.

The Applicant intends to use warning signs, fencing, and gates to restrict access to the potential hazards within the solar project area. Additionally, the Applicant intends to design its facility with setbacks to non-participating property and public roads. Specifically, the Applicant would implement the following setbacks: 100 feet from the solar facility fence line to a property line of any non-participating parcel and 50 feet from solar facility fence line to the edge of public roads.

The Applicant originally indicated that it intended to restrict public access to the facility by enclosing the project area with chain-link fencing, which would have been a six feet tall chain link fence topped with an additional one foot of barbed wire strand, with access through gates. In response to Staff data requests, the Applicant has since committed to fencing that would be made of welded wire mesh supported on wooden posts which is aesthetically fitting for rural locations. Staff finds this approach is becoming common for Ohio solar facilities and has recommended that, in the event the Board grants a certificate to the Applicant, except for the substation fencing, the solar panel perimeter fence type be both wildlife permeable and aesthetically fitting for a rural location.

Prior to construction, the Applicant also intends to finalize development and implementation of an emergency response plan and further consult with potentially affected local and regional emergency response personnel, specifically the Defiance County Emergency Management Agency. The Applicant has provided an example emergency response plan, which Staff has reviewed.[79]

Electromagnetic Fields

Electric transmission lines, when energized, generate electromagnetic fields (EMF). Laboratory studies have failed to establish a strong correlation between exposure to EMF and effects on human health. There have been concerns, however, that EMF may have impacts on human health. The gen-tie transmission line is not within 100 feet of an occupied residence or institution, therefore calculation of the production of EMF during operation of the proposed gen-tie transmission line is not warranted per Ohio Adm.Code 4906-5-07(A)(2).[80] The Applicant states that the transmission facilities would be designed and installed according to the requirements of the NESC.

79. Cepheus Energy Project, LLC's Response to Staff's Third Data Request Dated September 8, 2021, DR #4, Attachment 1.

80. Cepheus Energy Project, LLC's Response to Staff's Third Data Request Dated September 8, 2021, DR #3.

Public Interaction and Participation

The Applicant hosted virtual and in-person public informational meetings for the project. Attendees were provided the opportunity to review information about the project, ask questions, and provide comments. According to the Applicant, attendees shared comments and questions on topics including noise, decommissioning, visual screening, participation in the OPSB process, wildlife, public health, property value, and drainage.[81] Comments received at the public informational meeting are provided in Exhibit H to the application.

The Applicant has drafted a complaint resolution plan to handle complaints during the construction and operation of the facility.[82] In the event the Board grants a certificate to the Applicant, Staff recommends that a final version of the complaint resolution plan for construction and operation be filed on the docket no later than 30 days prior to the start of construction. The Applicant has committed to notify, by mail, affected property owners and tenants at least seven days prior to the start of construction. In the event the Board grants a certificate to the Applicant, Staff recommends that these notices also be mailed to all residents, airports, schools, and libraries located within one mile of the project area; parties to this case; county commissioners, township trustees, and emergency responders; and any other person who requests updates regarding the project. Further, in the event the Board grants a certificate to the Applicant, Staff recommends the Applicant provide the OPSB with a quarterly complaint summary report and that these reports be filed on the public docket.

The Administrative Law Judge scheduled a public hearing and an adjudicatory hearing for this proceeding. The local public hearing will be held on December 16, 2021, 6:00 p.m., at the Stroede Center for the Arts, 319 Wayne Avenue, Defiance, Ohio 43512. The adjudicatory hearing is scheduled to commence on January 11, 2022, at 10:00 a.m. The Ohio Farm Bureau Federation filed a motion to intervene in this proceeding.

Public Comments

In addition to the filings made by parties to the case as described above, as of the filing of this report, the OPSB has received 146 documents in the public comments of the case record. The public comments include the following:

- A letter from the Defiance Soil and Water Conservation District expressing concerns with the project, including soil erosion and water runoff, vegetative ground cover, and noxious weeds.
- Delaware Township Board of Trustees Resolution #5-21-2021 in opposition to the solar project. One township trustee later rescinded his support for the resolution in a public comment, but the resolution remains in place. Additionally, a separate public comment contains a letter from the newly elected Sherwood Township trustee expressing his opposition to the project.
- A letter from the Village of Sherwood Village Council expressing concerns with the project, including that the project would limit growth and impact property values.

81. Application at page 27 and Exhibit H.
82. Application at Exhibit J.

- A comment from the Defiance County Economic Development Office stating the project's location would halt economic development in the Village of Sherwood.
- A letter signed by the Defiance County Board of Commissioners concluding the project lacks "service to the public interest, convenience, and necessity."
- A letter from the President of the Sherwood Area Economic Development Corporation stating that the project will have a potentially negative impact on the village.
- A letter from the Chief of the Delaware Township Fire Department expressing support for the project and the resulting tax revenue.
- Comments expressing concern that certain comments filed in the case record may have been filed by someone other than the named commenter and therefore should be considered invalid. To this same point, on separate occasions, individuals contacted the Board staff to request that comments submitted in their names be deleted from the case record.

Commenters opposed to the project are concerned about limits to economic growth in the community, decommissioning, impacts to agricultural land use, wildlife, the environment, drinking water, and property values, public health, aesthetics and viewshed, proximity to residential areas, and setbacks. Those supportive of the project have emphasized benefits to the local economy, clean energy and the environment, tax revenue, and job creation. All public comments are available for Board members and the public to view online in the case record at http://dis.puc.state.oh.us.

Conclusion

With respect to R.C. 4906.10(A)(6), Staff finds that the project will not serve the public interest, convenience, and necessity. Public interest, convenience, and necessity should be examined through a broad lens. At the same time, this statutory criterion regarding public interest, convenience, and necessity, must also encompass the local public interest, ensuring a process that allows for local citizen input, taking into account local government perspective.

As explained in more detail above, Staff notes that there is general opposition to the project from local governmental bodies, in addition to active disagreement on the project between local citizenry. Local governmental bodies, including the Delaware Township Board of Trustees, Village of Sherwood, Defiance County Economic Development Office, and the Defiance County Board of Commissioners filed comments in opposition to the project, and the Defiance Soil and Water Conservation District also expressed its concerns.

Staff notes that these governmental bodies are local elected officials charged with representing and serving their respective communities. Many of these entities have responsibility for preserving the health, safety, and welfare within their respective communities. Therefore, their interest in and, in this case strong opposition to, the project is especially compelling.

While some local opposition is common in many siting projects, considering the above opposition filed in the docket, Staff recognizes that in this proceeding it has been especially prominent, one-sided from the local governmental bodies, and compelling. Staff believes that the public opposition will create negative impacts on the local community. Staff believes that any benefits to

the local community are outweighed by this overwhelming public opposition and, therefore, the project would not serve the public interest, convenience, and necessity.

Recommended Findings

Staff recommends that the Board find that the proposed facility would not serve the public interest, convenience, and necessity, and therefore does not comply with the requirements specified in R.C. 4906.10(A)(6).

Should the Board determine the Applicant has met the requirements specified in R.C. 4906.10(A)(6) subject to modification, Staff recommends that any certificate issued by the Board for the proposed facility include the conditions specified in the section of this *Staff Report of Investigation* entitled Recommended Conditions of Certificate.

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

AGRICULTURAL DISTRICTS AND AGRICULTURAL LAND

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

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

Approximately 425 acres of agricultural land will be permanently disturbed by the proposed project. Of those acres, approximately 310 are designated as Agricultural district land. The Applicant states the repurposed land could be restored for agricultural use when the project is decommissioned. No Agricultural structures will be disturbed due to the proposed project.

The construction and operation of the proposed facility will 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.

The Applicant has supplied a Drainage Tile Mitigation Plan with its OPSB application (Exhibit P). This report discusses avoidance, repair, and mitigation details of all known drain tile locations. The Applicant has committed to repair any drain tile found to be damaged by the project during the operational life of the project unless the landowner desires otherwise and it does not affect adjacent properties.

The Applicant has committed to take steps to address potential impacts to farmland, including repairing drainage tiles damaged during construction and restoring temporarily impacted land to its original use. Excavated topsoil will be separated during construction and returned as topsoil after construction unless otherwise specified by landowners. Disturbed areas upon decommissioning will be restored for agricultural use.

Recommended Findings

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

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

WATER CONSERVATION PRACTICE

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

Construction of the proposed facility would not require the use of significant amounts of water. Water may be utilized for dust control on construction access roads or unpaved surfaces as needed. The only facility component anticipated to require a water source is the O&M building. Staff operating out of the O&M building will use water at a rate comparable to a typical small business or office. Modern, efficient fixtures will be installed and will be maintained in proper working order. The water would be provided by an onsite well and wastewater will be discharged to an on lot septic system.

The Applicant expects solar panels will be adequately cleaned by natural precipitation. However, in unexpected circumstances such as severe drought, water may be needed to clean panels. The maximum amount of water required for this scenario would not exceed 300,000 gallons.

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.

V. RECOMMENDED CONDITIONS OF CERTIFICATE

Following a review of the application filed by the Applicant and the record compiled to date in this proceeding, Staff recommends that a certificate not be issued for the proposed facility.

However, should the Board choose to issue a certificate for the proposed facility, Staff recommends that a number of conditions become part of such certificate. 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:

(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 and shall file a copy of the agenda on the case docket. 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) Separate preconstruction conferences may be held for the different phases of civil construction and equipment installation. At least 30 days prior to each preconstruction conference, the Applicant shall submit to Staff, for review and acceptance, one set of detailed engineering drawings of the final project design for that phase of construction 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. The Applicant shall include the manufacturers, models, specifications, and material safety data sheets for all solar panels, inverters, and racking system components selected for construction of the facility. 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. The detailed engineering drawings of the final project design for each phase of construction shall account for geological features 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. All applicable geotechnical study results shall be included in the submission of the final project design to Staff.

(5) At least 30 days prior to the preconstruction conference, the Applicant shall provide Staff, for review and acceptance, the final geotechnical engineering report. This shall include a summary statement addressing the geologic and soil suitability, and recommendations for the final foundation systems and access road design and construction.

(6) At least 30 days prior to the preconstruction conference, the Applicant shall provide Staff, for review and acceptance, an Unanticipated Discovery Plan to address the processes that would be followed by the Applicant in the event any previously unknown contaminated material or other potential hazard(s) are discovered during the proposed construction. This shall include detailed plans for remediation of any oil and gas wells within the project area.

(7) At least 30 days prior to the preconstruction conference, the Applicant shall provide Staff, for review and acceptance, the results of the pile-load testing, and the final engineering recommendations based on those results. This testing shall be conducted as outlined in the recommendations of the geology and hydrology report included with the application.

(8) If any changes are made to the facility layout after the submission of final engineering drawings, the Applicant shall provide all such changes to Staff in hard copy and as geographically-referenced electronic data. All changes are subject to Staff review for compliance with all conditions of the certificate, prior to construction in those areas.

(9) 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.

(10) As the information becomes known, the Applicant shall file on the public docket the date on which construction will begin, the date on which construction was completed, and the date on which the facility begins commercial operation.

(11) 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 and shall file such permits or authorizations on the public docket. The Applicant shall provide a schedule of construction activities and acquisition of corresponding permits for each activity at the preconstruction conference(s).

(12) 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.

(13) The facility shall be operated in such a way as to assure that no more than 68 megawatts would be injected into the Bulk Power System at any time.

(14) The Applicant shall not commence any construction of the facility until it has executed an Interconnection Service Agreement and Interconnection Construction Service Agreement with PJM Interconnection, which includes construction, operation, and maintenance of system upgrades necessary to integrate the proposed generating facility into the regional transmission system reliably and safely. The Applicant shall docket in the case record a letter stating that the Agreement has been signed or a copy of the executed Interconnection Service Agreement and Interconnection Construction Service Agreement.

(15) 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. 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 adjust its landscape and lighting plan to incorporate additional planting design features or measures to address aesthetic impacts to the traveling public, nearby communities, and recreationalists. 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.

(16) Prior to commencement of construction, the Applicant shall submit to Staff for approval a solar panel perimeter fence type that is both small-wildlife permeable and aesthetically fitting for a rural location. This condition shall not apply to substation fencing.

(17) The Applicant shall have a Staff-approved environmental specialist on site during construction activities that may affect sensitive areas. Sensitive areas which would be impacted during construction shall be identified on a map provided to Staff, and shall 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.

(18) If the Applicant encounters any new listed plant or animal species or suitable habitat of these species prior to construction, the Applicant shall include the location in the final

engineering drawings and associated mapping, as required in Condition 4. The Applicant shall avoid impacts to these species and explain how impacts would be avoided during construction.

(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. The Applicant shall also keep a running list of and notify OPSB Staff and ODNR Division of Wildlife (DOW) if any wildlife mortality or entrapment is discovered in the facility during operation.

(20) Construction in northern harrier preferred nesting habitat types shall be avoided during the species' nesting period of May 15 through August 1, unless coordination by the Applicant with the ODNR allows a different course of action during that period. If coordination with ODNR allows clearing between May 15 and August 1, the Applicant shall file proof of such coordination on the docket. Absent coordination with the ODNR that allows a different course of action, mapping of these habitat areas shall be provided to the construction contractor along with instructions to avoid these areas during the restricted dates.

(21) The Applicant shall prevent the establishment and propagation of noxious weeds identified in Ohio Adm.Code Chapter 901:5-37 in the project, including its setback areas, during construction, operation, and decommissioning via procedures and processes specified and required by the project's vegetation plan. The Applicant shall provide annual proof of weed control for the first four years of operation, with the goal of weed eradication significantly completed by year three of operation.

(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 Defiance County Engineer, the ODOT, local law enforcement, and health and safety officials. The Applicant shall detail this coordination as part of a final transportation management plan submitted to Staff prior to the preconstruction conference for review and confirmation by Staff that it complies with this condition and then file the plan on the public docket. This final transportation management plan would include any county required road use maintenance agreement/s. All local county and township roads used for construction traffic should be monitored at sufficient frequency during construction to ensure these roads remain safe for local traffic. Any damaged local public roads, culverts 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 request that they remain in place.

(23) Any construction within the FEMA delineated 100-year floodplain shall be coordinated with the local floodplain program administrator. All permitting or other documents authorizing construction in the floodplain shall be filed on the case docket.

(24) At least 30 days prior to the preconstruction conference, the Applicant shall submit an updated decommissioning plan and total decommissioning cost estimate without regard to salvage value on the public docket that includes: (a) 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; (b) a timeline of up to six months for removal of the equipment with advance notice to the Board of any impacts/delay to the timeframe; (c) a provision to monitor the site for at least one additional year to ensure successful revegetation and rehabilitation; (d) a provision where the performance bond is posted prior to the commencement of construction; (e) a provision that the performance bond is for the total decommissioning cost and excludes salvage value; (f) a provision to coordinate repair of public roads damaged or modified during the decommissioning and reclamation process; (g) a provision that the decommissioning plan be prepared by a professional engineer registered with the state board of registration for professional engineers and surveyors; and (h) a provision stating that the bond shall be recalculated every five years by an engineer retained by the Applicant.

(25) At the time of solar panel end of life disposal, any retired panel that is not recycled and that is marked for disposal, shall be sent to an engineered landfill with various barriers and methods designed to prevent leaching of materials into soils and groundwater, or another appropriate disposal location at the time of decommissioning approved by Staff.

(26) 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 6:00 p.m. Impact pile driving may occur between 7:00 a.m. and 9:00 a.m., and after 6:00 p.m. or until dusk when sunset occurs after 6:00 p.m., if the noise impact at non-participating receptors is not greater than daytime ambient Leq plus 10 dBA. If impact pile driving is required between 7:00 a.m. and 9:00 a.m., and after 6:00 p.m. or until dusk when sunset occurs after 6:00 p.m., the Applicant shall install a noise monitor in a representative location to catalog that this threshold is not being exceeded. 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.

(27) If the inverters or substation transformer chosen for the project have a higher sound power output than the models used in the noise model, the Applicant shall show that sound levels will not exceed the daytime ambient level plus five dBA at any non-participating sensitive receptor and will be submitted at least 30 days prior to construction. If noise data is not available from the inverter or transformer manufacturer, an operational noise test may be performed to comply with this condition. The test must be performed on a sunny day between 10 a.m. and 2 p.m. in the months of May-August, at a distance equal to the minimum distance from an inverter to a non-participating residence. If the test shows the operational noise level is greater than project area ambient Leq level plus five dBA additional noise mitigation will be required. This condition is complied with if the test

shows the operational noise level is equal or less than project area ambient Leq level plus five dBA. The Applicant shall file a report on the public docket that shows either 1) for the chosen inverter and substation transformer that sound levels will not exceed the daytime ambient level plus five dBA at any non-participating sensitive receptor or 2) results of the operational noise test showing that sound levels will not exceed the daytime ambient level plus five dBA at any non-participating sensitive receptor.

(28) 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 or rerouted to at least original conditions or modern equivalent at the Applicant's expense to ensure proper drainage. However, if the affected landowner(s) agrees to not having the damaged field tile system repaired, they may do so only if the field tile systems of adjacent landowners remain unaffected by the non-repair of the landowner's field tile system.

(29) The Applicant shall ensure that nearby parcels are protected from unwanted drainage problems due to construction and operation of the project. The Applicant shall accomplish this through any one of the following:

(a) document benchmark conditions of surface and subsurface drainage systems prior to construction, including the location of laterals, mains, grassed waterways, and county maintenance/repair ditches. The Applicant will make efforts to conduct a perimeter dig utilizing a tile search trench and consult with owners of all parcels adjacent to the property, the county soil and water conservation district, and the county to request drainage system information over those parcels. The Applicant shall consult with the county engineer for tile located in a county maintenance/repair ditch;

(b) locate and replace all impacted field tile drainage; or

(c) in addition to prompt repair as required under Condition 28, agree to compensate parcels owners affected by damage to functioning field tile drainage systems and soils resulting from the construction, operation, and/or maintenance of the facility in agricultural areas for damage to crops or other agricultural activities.

(30) At least 30 days prior to the preconstruction conference, the Applicant shall file a copy of the grazing plan on the public docket for Staff review and acceptance. The grazing plan shall include: (a) a map of the area to be utilized for sheep grazing; (b) seed mix selected for the site; (c) times of year when sheep grazing would occur; (d) stocking rate; (e) how manure and deceased livestock would be managed; (f) and the Applicant’s plan to comply with Condition 12 in relation to sheep grazing.

(31) At least 30 days prior to the start of construction, the Applicant shall file a copy of the final complaint resolution plan for construction and operation of the project on the public docket. 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; all residents, airports, schools, and libraries located within one mile of the project

area; parties to this case; county commissioners, township trustees, and emergency responders; and any other person who requests updates regarding the project. These notices shall provide information about the project, including contact information and a copy of the complaint resolution program. 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 program, a description of the actions taken toward the resolution of each complaint, and a status update if the complaint has yet to be resolved. The Applicant shall file a copy of these complaint summaries on the public docket.

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