Staff Report of Investigation

Yellow Wood Solar Energy Project
Yellow Wood Solar Energy, LLC

Case No. 20-1680-EL-BGN

October 4, 2021

Ohio | Power Siting Board

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

In the Matter of the Application of Yellow Wood Solar Energy, LLC for a Certificate of Environmental Compatibility and Public Need for the Construction of a Solar-Powered Electric Generation Facility in Clinton County, Ohio.	**)** **)** **)** **)** **)**	**Case No. 20-1680-EL-BGN**

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Submitted to the
OHIO POWER SITING BOARD

BEFORE THE POWER SITING BOARD OF THE STATE OF OHIO

In the Matter of the Application of Yellow Wood Solar Energy, LLC for a Certificate of Environmental Compatibility and Public Need for the Construction of a Solar-Powered Electric Generation Facility in Clinton County, Ohio.	)))))	**Case No. 20-1680-EL-BGN**

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

To the Honorable Power Siting Board:

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

The findings and recommendations contained in this report are the result of Staff coordination with the following agencies that are members of the Board: Ohio Environmental Protection Agency, the Ohio Department of Health, the Ohio 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. POWERS AND DUTIES

OHIO POWER SITING BOARD

The authority of the Ohio Power Siting Board (Board or OPSB) is prescribed by Ohio Revised Code (R.C.) Chapter 4906. R.C. 4906.03 authorizes the Board to issue certificates of environmental compatibility and public need for the construction, operation, and maintenance of major utility facilities defined in R.C. 4906.01. Included within this definition of major utility facilities are: electric generating plants and associated facilities designed for, or capable of, operation at 50 megawatts (MW) or more; electric transmission lines and associated facilities of a design capacity of 100 kilovolts (kV) or more; and gas pipelines greater than 500 feet in length and more than nine inches in outside diameter, and associated facilities, designed for transporting gas at a maximum allowable operating pressure in excess of 125 pounds per square inch. In addition, pursuant to R.C. 4906.20, the Board authority applies to economically significant wind farms, defined in R.C. 4906.13(A) as wind turbines and associated facilities with a single interconnection to the electrical grid and designed for, or capable of, operation at an aggregate capacity of five MW or greater but less than 50 MW. R.C 4906.13 excludes from economically significant wind farms, one or more wind turbines and associated facilities that are primarily dedicated to providing electricity to a single customer at a single location and that are designed for, or capable of, operational at an aggregate capacity of less than 20 MW, measured at the customer's point of interconnection (POI) to the electrical grid.

Membership of the Board is specified in R.C. 4906.02(A). The voting members include: the Chair of the Public Utilities Commission of Ohio (PUCO or Commission) who serves as Chair 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. Ex officio Board members include two members (with alternates) from each house of the Ohio General Assembly.

NATURE OF INVESTIGATION

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

Application Procedures

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

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

Within 60 days of receiving an application, the Chair 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 conditions recommended by Staff.[7] The Board's Staff, which consists of career professionals drawn from the staff of the PUCO and other member agencies of the Board, coordinates its investigation among the agencies represented on the Board and with other interested agencies such as the Ohio Department of Transportation (ODOT), the Ohio Historic Preservation Office (OHPO), and the U.S. Fish and Wildlife Service (USFWS).

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

Board Decision

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

Upon rendering its decision, the Board must issue an opinion stating its reasons for approving, modifying and approving, or denying an application for a certificate of environmental compatibility and public need.[12] A copy of the Board's decision and its opinion is memorialized upon the record and must be served upon all parties to the proceeding.[13] Any party to the proceeding that believes its issues were not adequately addressed by the Board may submit within

3. Ohio Adm.Code 4906-3-06(A).
4. R.C. 4906.07(A) and Ohio Adm.Code 4906-3-08.
5. R.C. 4906.08(C).
6. R.C. 4906.07.
7. Ohio Adm.Code 4906-3-06(C).
8. R.C. 4906.07(C) and 4906.10.
9. R.C. 4906.09 and 4906.12.
10. R.C. 4906.10(A).
11. R.C. 4906.10.
12. R.C. 4906.11.
13. R.C. 4906.10(C).

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

CRITERIA

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

> The board shall not grant a certificate for the construction, operation, and maintenance of a major utility facility, either as proposed or as modified by the board, unless it finds and determines all of the following:
>
> (1) The basis of the need for the facility if the facility is an electric transmission line or gas pipeline;
>
> (2) The nature of the probable environmental impact;
>
> (3) That the facility represents the minimum adverse environmental impact, considering the state of available technology and the nature and economics of the various alternatives, and other pertinent considerations;
>
> (4) In the case of an electric transmission line or generating facility, that the facility is consistent with regional plans for expansion of the electric power grid of the electric systems serving this state and interconnected utility systems and that the facility will serve the interests of electric system economy and reliability;
>
> (5) That the facility will comply with Chapters 3704, 3734, and 6111 of the Revised Code and all rules and standards adopted under those chapters and under section 4561.32 of the Revised Code. In determining whether the facility will comply with all rules and standards adopted under section 4561.32 of the Revised Code, the board shall consult with the office of aviation of the division of 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

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

(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.

II. APPLICATION

APPLICANT

Yellow Wood Solar Energy, LLC (Applicant) is a subsidiary of Invenergy Solar Project Development, LLC (Invenergy). Invenergy owns and operates approximately 176 solar, wind, storage and natural gas projects with a nameplate capacity of approximately 28.3 gigawatts. The Applicant would construct, own, operate, and maintain the facility. Equipment ownership by the Applicant is anticipated to be delineated at the dead-end structure outside the collection substation and AES Ohio, formerly known as the Dayton Power and Light Company (DP&L) would own equipment beyond that point.

HISTORY OF THE APPLICATION

On November 12, 2020, the Applicant filed a motion for waiver and request for approval to hold an alternative public information meeting. The motion was granted.

On November 25, 2020, the Applicant filed a pre-application notification letter regarding the project.

On December 17, 2020, the Applicant held a virtual public informational meeting for the project.

On February 24, 2021, the Applicant filed the Yellow Wood Solar Energy Project application as well as a motion for protective order to keep portions of its application confidential. Also, on February 24, 2021, the Applicant filed a separate motion requesting a waiver from rule requirements in Ohio Adm.Code 4906-4-08(D)(2) through (4), in order for a reduced study area regarding the review of cultural resources, landmarks, and visual impacts.

On March 22, 2021, the Administrative Law Judge filed an entry granting the Applicant's motion for protective order and the separate motion for waiver.

On April 23, 2021, the Executive Director of the OPSB issued a letter of compliance regarding the application to the Applicant.

On June 15, 2021, the Clinton County Commissioners filed a notice to intervene.

On June 17, 2021, the Applicant filed a supplement to the application identified as a State Historic Preservation Office Architecture Concurrence Letter.

On August 19, 2021, the Applicant filed a second supplement to the application identified as a Phase 1 Archaeological Reconnaissance Report.

On September 3, 2021, the Applicant filed a third supplement to the application identified as an updated project layout.

On September 29, 2021, the Ohio Farm Bureau Federation filed a motion to intervene.

On September 30, 2021, petitioners Brad Cochran Farms LLC, Brad Cochran (its sole member), Brian and Janet Collins, Margaret and Stephen Elam, Robert and Joyce Griffith, Alan and Deborah Hertlein (in their personal capacity and as trustees for the Hertlein Family Revocable Living Trust), Brett Hertlein, JWP Family Farms LLC, Darla and Matthew Long, Benjamin and K. Nicole

Oberrecht, Diane Rhonemus, Jamie and Matthew Roberts, Janice Rowlands, Charles Simpson, Jr. and Pamela McConnell, and Charles W. Thompson, filed a motion to intervene.

A local public hearing has been scheduled for October 20, 2021, at 6:00 p.m. at Expo Hall, Clinton County Fairgrounds, 958 W. Main Street, Wilmington, Ohio 45177. The adjudicatory evidentiary hearing is scheduled to commence on November 17, 2021 at 10:00 a.m.

This summary of the history of the application does not include every filing in case number 20-1680-EL-BGN. The docketing record for this case, which lists all documents filed to date, can be found online at http://dis.puc.state.oh.us.

PROJECT DESCRIPTION

The Applicant intends to construct the Yellow Wood Solar Project, a 300 MW solar-powered generating facility in Clark and Jefferson townships in Clinton County. The project would consist of large arrays of photovoltaic (PV) modules, commonly referred to as solar panels, ground-mounted on a tracking rack system. The project would occupy approximately 2,460 acres within an approximate 4,400-acre project area comprised of private land secured by the Applicant through agreements with the landowners. The project would include associated facilities such as access roads, an operations and maintenance (O&M) building, underground and overhead electric collection lines, weather stations, inverters and transformers, a collection substation, and a 345 kV gen-tie electric transmission line. The project would be secured by perimeter fencing which would be six-feet tall and accessed through gated entrances.

Solar Panels and Racking

The solar panels would be attached to metal racking. The racking would include steel piles driven approximately 10 to 15 feet into the ground. PV modules have not yet been procured for the project. The Applicant would follow the US EPA's safety procedures to ensure all panels are compliant with the US EPA's Toxicity Characteristics Leaching Procedure (TCLP) testing protocol. The Applicant anticipates that the facility would be comprised of panels which produce approximately 400 watts. The facility would include approximately 740,000 panels. The solar panel arrays would be grouped in large clusters that would be fenced in with gated entrances. The project's arrays would be mounted on a single-axis tracking system to track the sun as it moves through the sky each day. The Applicant anticipates using the Jinko, Trina, Longi, JA Solar, First Solar or other similar Tier 1 solar panel module suppliers. The Applicant has provided manufacturer specifications for the Jinko, Trina, JA Solar, First Solar, and Longi solar panels under consideration in Exhibit A of the Application. If the Applicant uses a technology other than those included in Exhibit A, the manufacturer specification will be provided to the Board prior to construction. Further, the Applicant indicated 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, and American National Standards Institute standards.

Collection System

The Applicant would install an underground collector system made up of a network of electric and communication lines that would transmit the electric power from the solar arrays to a central location. Some portions of the collector system would be buried while others would be above ground. The underground lines would be installed by direct burial method. The below grade

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

Collection Substation and Switchyard

The facility collection substation and associated switchyard would occupy land adjacent to the DP&L's 345 kV Clinton-Stuart transmission line. The major components of the Applicant's substation would include a 345 kV circuit breaker and open-air isolation switch, main power transformers, an equipment enclosure, and lightning masts. The collection substation would be located centrally in the project area along the north side of Lynchburg Road between Oak Grove Road and Chaney Road. A 345 kV electric transmission generation interconnection (gen-tie) line would connect the collection substation to a point of interconnection (POI) switchyard. Both the gen-tie line and POI switchyard would be the subject of a future separate application(s) to the OPSB.

Roads

The Applicant proposes to construct new access roads for construction, operation, and maintenance of the solar facility. The roads would be gravel-surfaced and typically 20 feet in finished width.

Construction Laydown Area

One laydown area is proposed for the facility and would be located adjacent to the collection substation and O&M building. The laydown yard would be approximately five acres. The laydown area would accommodate material and equipment storage, parking for construction workers, and construction management trailers.

Weather Stations

The project would include up to 15 weather stations. These devices would measure solar irradiance, barometric pressure, rain, temperature, and wind speed.[16] These stations would also contain communications equipment.

O&M Building

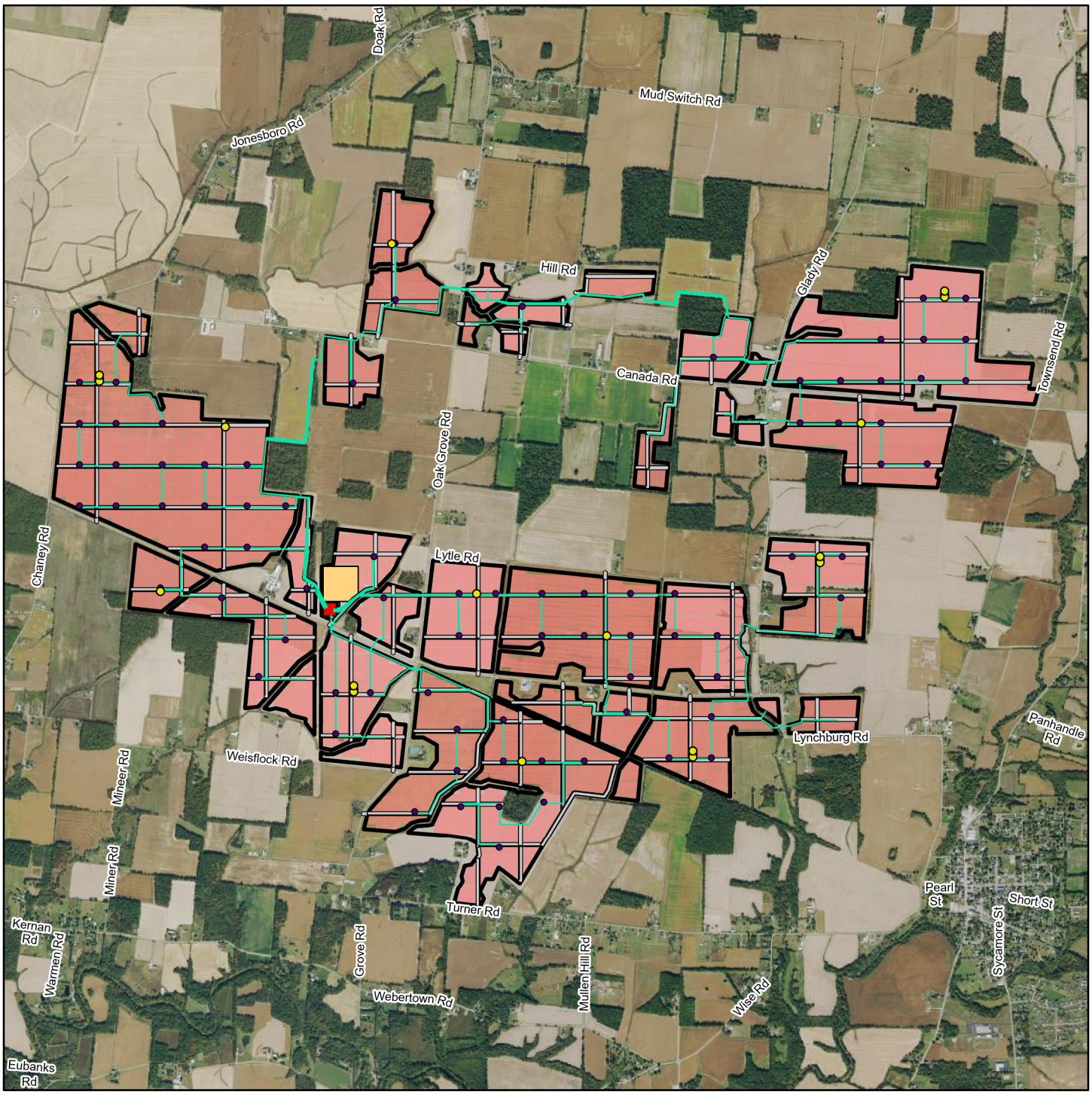
The O&M building would be located south of Sand Ridge Road, approximately 0.2 mile west of Weston Road. The O&M building would be approximately 1,500 square feet and would serve as a workspace for operations personnel and house the facility's supervisory control and data acquisition (SCADA) equipment.

Project Schedule

The Applicant expects to finalize the interconnection agreement in late-2021. Construction would start mid-2022 and would continue until the end of 2023. The facility is expected to be placed in service near the end of 2023. The Applicant further clarified that construction is anticipated to last

16. Solar irradiance is the amount of solar energy per square meter received from the sun.

from 20 to 24 months. 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.



Clinton County

N

0 2,000 4,000

Feet

1:40,000

NAD 83 SP Ohio South (Feet)

- Met Station
- Inverter
- Collection Line
- Access Roads
- O&M Building
- Substation
- Switchyard
- Solar Panel Array
- Project Area

Overview Map

20-1680-EL-BGN

Yellow Wood Solar

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

III. CONSIDERATIONS AND RECOMMENDED FINDINGS

In the Matter of the Application of Yellow Wood Solar Energy, 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[17]

Land Use

The predominant land use within the project area is agriculture. There are some residences in the project area, and some varied commercial and institutional uses within one mile of the project area. The Applicant states that 2,448 acres of agricultural land, seven acres of developed land, one acre each of deciduous forest and herbaceous land would be impacted, totaling approximately 2,457 acres of land to be converted for the proposed solar facility. Impacts from construction would be temporary in nature and contained to the properties 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.

Regional Planning

The Applicant reviewed Clinton County zoning and land use plans and asserts that although the plans do not mention large solar development, the facility is expected to be generally compatible with the overall low density rural residential, agricultural, or unzone or unplanned portions of the plans. Staff agrees with the Applicant's analysis that the solar facility is not expected to conflict with these land use plans. The proposed solar facility would also be expected to aid regional

17. "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."

development by increasing local tax revenues. These plans also generally emphasize the reduction of urban sprawl, which is consistent with a solar facility's centralized layout.

The project is consistent with agricultural industry support, in that the facility would provide supplemental income to farmers and the land could be returned to agricultural production upon decommissioning. Farming activities would require only minor modifications, aside from temporary disruptions that would occur during construction.

Recreation

Construction and operation of the facility would not physically impact any recreational areas. The Applicant identified 18 recreational areas within five miles of the project area. The nearest recreational area to the project footprint is Lynchburg Park. This park is located about 1.25 miles away within the Village of Lynchburg. All recreational facilities are at distances that exceed likely visibility. Staff's review of the Applicant's viewshed analysis determined that significant adverse aesthetic impacts are not likely.

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 five-mile visual resources report, the solar panels would not likely be visible at locations beyond three miles of the perimeter of the project. Existing landscape features limit likely concentration of viewshed impacts to 1.5 miles.

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 mitigation plan proposes the installation of various planting modules along the facility fence line to soften viewshed impacts and to blend the facility into the existing vegetation. The Applicant's landscape mitigation plan would provide for the installation of numerous plant species that would vary in height and variety, as determined by the current location of sensitive receptors (such as 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. Staff's landscaping condition requires that the Applicant also consult with a certified professional landscape architect. To address impacts to the traveling public, nearby communities, and recreationalists, Staff also recommends that the Applicant adjust its landscape and lighting plan to incorporate appropriate planting measures such as shrub and tree planting or enhanced pollinator plantings.

Staff recommends that the Applicant incorporate a landscape and lighting plan to reduce impacts in areas where an adjacent non-participating parcel contains a residence with a direct line of sight to the project's infrastructure. Staff recommends that aesthetic impact mitigation include native

vegetative plantings, alternate fencing, good neighbor agreements, or other methods in consultation with affected landowners and subject to Staff review. With implementation of Staff's condition, the overall expected aesthetic impact would be minimal.

Cultural Resources[18]

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 completed and submitted to the Ohio Historic Preservation Office (OHPO) for review in October and December 2020 and March 2021. In the archaeology survey report, it was determined that a total of 78 archaeological sites were newly identified within the project area. All 78 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. In addition to these sites an additional site was identified as the "Big Onion," which was a flag-stop on the B&O NW railway line. The Applicant has agreed to avoid this site.

The Applicant's cultural resource consultant also conducted a historic architecture survey of the project area in an area within a two-mile radius of the project. The survey recorded 293 properties of which 17 are recommended as eligible for listing on the NRHP. Of these 17 properties, six are recommended to have a potential adverse effect from the project. OHPO concurs with these finding but states that 18 properties are recommended as eligible for listing on the NRHP and of these 18 properties, seven are recommended to have a potential adverse effect from the project.

When locations are recommended to have a potential adverse effect from a project, the OHPO will recommend avoidance or mitigation measures to protect those locations. The OHPO and the Applicant are developing a memorandum of understanding (MOU) to memorialize the appropriate steps to mitigate for and/or avoid cultural resources with potential adverse effects due to the project and to outline procedures to be followed if previously unidentified sites are discovered during construction. Staff recommends that the Applicant finalize and execute the MOU with OPHO. With the implementation of the MOU, 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 ownership, construction, operation, and maintenance of the proposed project. The Applicant has obtained the necessary landowner agreements for the project. All other components of the facility will be located entirely on privately-owned land, and voluntary lease agreements between the Applicant and private landowners will accommodate the facility.

18. 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>).

The Applicant chose to file its estimated capital and intangible costs, estimated O&M 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 stated that its recent solar PV projects of comparable scale report similar capital costs to the proposed facility. Staff verified that the reported average cost of the Applicant's similar facilities is not substantially different from Applicant's estimated costs for the proposed facility.

O&M expense comparisons between the proposed facility and other comparable facilities are to be provided in the application. The Applicant stated that its recent solar PV 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.

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 Strategic Economic Research, LLC (SER)[19] to report on the economic impact of the project. SER 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 model analysis conducted by SER, the project is expected to have the following impacts:

Jobs

- 1,235 construction related jobs for the state of Ohio
- 34 long-term operational jobs for the state of Ohio

Earnings

- $102.5 million in annual earnings during construction for the state of Ohio
- $1.9 million in annual earnings during facility operations for the state of Ohio

19. Strategic Economic Research, LLC is an economic consulting firm located in Bloomington, Illinois.

Output

- $161.3 million in local output during construction for the state of Ohio
- $5.9 million in local annual output during facility operation for the state of Ohio.

The project would generate an estimated $2.1 million annually for the Yellow Wood taxing districts. This estimate is based on a potential Payment in Lieu of Taxes (PILOT) plan in which the Applicant would pay $7,000/MW annually for a 300 MW facility. At this time, the Applicant has not entered into a PILOT agreement with Clinton 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 residences. 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 red, green, or yellow type) from the project is predicted to vehicles using the roadways.

However, the Applicant does predict yellow glare at three discrete observations points (identified as OP 4, OP 5, and OP 7) just north of the project area. These discrete observation points are located just north of the project's fence line at specific points on Oak Grove, Townsend, and Glady roads respectively. Staff recommends that the Applicant incorporate additional screening for the observations points OP 4 (Grove Road location), OP 5 (Townsend Road location), and OP 7 (Glady Road location) in order to provide suitable concealment of the project site and mitigate any predicted glare at those locations.

Decommissioning

The Applicant holds land rights to and estimates that the solar facility can operate for 25 years or more. The Applicant has prepared a decommissioning plan and total decommissioning cost estimate of $14,115,364. 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 401 and 404 permits. At the time 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 36 inches, removing access and internal roads, grading the site, removing the substation, removing overhead transmission lines and poles, de-compacting subsoils and revegetating disturbed land to pre-construction conditions, to the extent practicable. The Applicant may abandon in place any electrical lines that would not impact the restored use and are at least 36 inches below-grade unless required by easement or lease agreement. At the request of the landowner, 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 may leave in place any electrical infrastructure improvements (e.g., collection substation) pending approval by the Board, the transmission owner (which is currently DP&L), and the independent system operator, PJM Interconnection, LLC (PJM). 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 12 to 18-month period. Based on the weather dependent nature of site restoration, Staff recommends that the updated decommissioning plan include a requirement to monitor the site to ensure successful revegetation and rehabilitation. Also, Staff recommends a timeframe be included in the draft decommissioning plan where the majority of equipment is removed within a year.

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 meet U.S. EPA definition of non-hazardous waste.[20]

The Applicant would also provide for financial security to ensure that funds are available for decommissioning/land-restoration. Specifically, the Applicant states that it would employ a surety bond active during the life of the project and renewed annually. The Applicant states that it would periodically review the decommissioning plan and costs and provide an updated report to the Board every five years after the commercial operations date. 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.

20. Yellow Wood Solar Energy, LLC's Response to the First Data Request from Staff of the OPSB, Data Request #34.

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. In the event the owner of the solar facility becomes insolvent, the Applicant surmised sufficient funds would be in place to remove the facility as a condition of OPSB approval.[21]

To further address these concerns that were partially addressed by the website FAQs, 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 one year for removal of the equipment; (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

The Applicant has monitored historical wind speeds in the area and included them in Table 5 of the application. The Applicant has indicated that the facility would be designed and installed to withstand and minimize potential damage from high-wind occurrences. Staff has found that components of the proposed facility are generally not susceptible to damage from high winds except for tornado-force winds, because generally the panels and racking systems proposed for the facility have wind speed design load ratings inherent in their design. The racking and tracking systems currently under consideration by the Applicant are rated to withstand wind speeds from 100 to 145 miles per hour.[22] The racking systems under consideration include a stowing feature activated at certain wind speeds.[23] Stow features also can tilt panels to a certain angle to reduce wind loading on the solar panels during high wind speeds events. The final facility will be designed to withstand wind speeds for the area, because the tracker manufacturer will include a wind loading study with the structural design package associated with the final engineering.[24]

21. Application at Exhibit G (Website FAQ).

22. Application at Exhibit A.

23. Application at Exhibit A and Yellow Wood Solar Energy, LLC's Response to the First Data Request from Staff of the OPSB, Data Request #11.

24.Yellow Wood Solar Energy, LLC's Response to the First Data Request from Staff of the OPSB, Data Request #9.

Roads and Bridges[25]

The Applicant has yet to finalize its delivery route, although it is expected that deliveries to the project site would be by way of State Route 134. The main transportation routes to access the project site would be County Road 47, County Road 6, and County Road 48.

The Applicant conducted a route evaluation study to identify viable means of accessing the project area. Traffic patterns, bridge conditions, culvert conditions, road surface conditions, and potential obstructions were identified and analyzed. According to the Applicant's Transportation Assessment, all bridges are in good condition along the proposed transportation routes.[26] Road surface conditions were rated mostly good by the Applicant with SR 134 being rated fair condition. Roads not to be used for construction were identified by the Clinton County Engineer. No overhead obstructions were identified along the proposed delivery routes. No railway systems exist within the transportation study area.

Conventional heavy equipment which does not require special permitting would make up the majority of construction traffic. The electrical transformer is likely to be overweight and would require special permitting and route coordination for delivery. The Applicant stated that an increase in truck traffic would be anticipated during construction for the purpose of project area equipment access and equipment and material deliveries but does not anticipate significant changes to traffic patterns. Post construction and operation of the solar facility, the Applicant does not anticipate any additional traffic for the project beyond routine maintenance. No road closures are to be expected.

Any damaged public roads and bridges would be repaired promptly to their previous or better condition by the Applicant under the guidance of the appropriate regulatory authority. Any temporary improvements would be removed unless the appropriate regulatory authority requests that they remain in place. The Applicant expects to enter into a Road Use Maintenance Agreement with the Clinton 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 21 months of construction. However, the adverse impact of construction noise would be temporary and intermittent, would occur away from most residential structures, and would be limited to daytime working hours. The Applicant would use mitigation practices such as limiting construction activities to daylight hours and establishing a complaint resolution process.

Operational noise impacts for a solar generation facility would be relatively minor and occur only during the day. Operational noise sources include inverters 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.

25. 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).

26. Application at Exhibit B.

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.[27] 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[28]

Surficial/Glacial[29]

The project area lies within the glaciated margin of the state and includes several Illinoian-age glacial features. The area is comprised of ground moraine materials covered in up to three meters of loess. Terrain is flat and relatively continuous.[30] Glacial drift within the project area ranges from zero feet to approximately 150 feet in thickness. Drift is the thickest in the northern and eastern portions of the project area and thin to absent in the western and southeast.

Bedrock[31]

The uppermost bedrock unit in the project area is the Drakes Formation, Whitewater Formation, and Liberty Formation Undivided. This unit consists of interbedded shale, limestone and dolomite.

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27. For the sound propagation model, the model used for the inverter was the TMEIC Ninja 4.2 kW, and the model used for the substation transformer was a 178 MVA transformer with sound power level of the transformer estimated using the procedures outlined in the "Electric Power Plant Environmental Noise Guide" from the Edison Electric Institute.

28. 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>).

29. "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>).

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

31. "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

This formation makes up the western extent of the project area. Underlying this unit is the Waynesville Formation which is characterized by interbedded limestone and shale dominated by medium to thick bedded shales. This formation is the uppermost bedrock of the central project area. Underlying the Waynesville Formation is the Drakes Formation and Waynesville Formation Undivided. This unit is characterized by interbedded limestone and dolomitic shale makes up the eastern extent of the project area.[32]

Due to the glacial drift discussed above, bedrock may be exposed within the project area boundary. Although conventional pile driving techniques should be adequate for the significant majority of the project area, pre-drilling of pile foundations (7 to 12 feet below ground level (BGL)) may be necessary within certain portions of the project area where shallow bedrock is present.

Karst

Conditions typically necessary for the formation of karst geology features do exist within the project area.[33] The limestone bedrock units underlying the project area are known to produce karst features in other areas.[34] The nearest documented (ODNR Geologic Survey) sinkhole feature is approximately 3.8 miles east of the project area and is part of a large sinkhole field that spans much of Highland and Adams counties.[35] Karst anomalies are not expected to affect the proposed construction. If karst is encountered, the Applicant would likely mitigate by employing a remedial measure known as "reverse filter" where excavation is performed to determine the extent of the karst then aggregate emplaced to serve as structural fill.[36] This technique is preferred to grouting as grouting could impact site hydrogeology.

Oil/Gas and Mining[37]

The ODNR records indicate that no oil and gas activity occurs within two miles of the project area.[38] No Class II injection well activity occurs within several miles of the project area.

The ODNR does not have record of any mining operations within the project area. The nearest (1.3 miles) mine to the project area is the Lynchburg Limestone Mine operated by Martin Marietta

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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>).

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

33. 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.

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

35. ODNR Karst Viewer Interactive Map https://gis.ohiodnr.gov/website/dgs/karst_interactivemap/

36. Yellow Wood Solar Energy, LLC's Response to the First Data Request from Staff of the OPSB, Data Request #26.

37. 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>).

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

Aggregates, Inc.[39] No known abandoned underground mines are located within several miles of the project area.

Seismic Activity[40]

Recent geologic history shows the project area and associated region of the state to be at low risk for seismicity caused by earthquakes as only three earthquakes have been documented within 20 miles. The closest earthquake event occurred in 1881 and is over six miles away from the project area.[41] Based on boring data obtained down to 20 feet BGL and estimates (based on the Applicant's geotechnical team's experience and knowledge of the area geology) of soil conditions from 21 to 100 feet BGL, the Applicant assigns a Class D Seismic Site Classification pursuant to Section 20.4 of ASCE 7 and the International Building Code (IBC).[42] Additional deeper borings or geophysical testing may be performed to confirm the conditions below the current boring depth.

Although bedrock could be a factor in portions of the project area, the Applicant has indicated that no blasting activities are anticipated for the construction or operation of the proposed solar facility.[43]

Soils[44]

According to the United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) Web Soil Survey, the project area consists primarily of soils derived from glacial till, loess, and alluvium. Clermont, Westboro, and Jonesboro are the most common soil series found within the boundaries of the project area. Together, these soils make up about 95 percent of the soil cover in the project area. There is a low to moderate risk of shrink-swell potential in these soils. Other limiting factors include ponding and seasonal saturation. Slope remains relatively flat, with no slope exceeding a 12 percent grade.[45]

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

40. 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>).

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

42. Application at page 6 of Exhibit L (Preliminary Geotechnical Engineering Report by Terracon)

43. Application at page 60.

44. 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>).

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

Geotechnical Report

A Preliminary Geotechnical Engineering Report prepared by Terracon discusses the geotechnical work performed to date. To further evaluate soil properties, 10 borings were advanced to a depth of 20 feet BGL. The Applicant conducted electrical and thermal resistivity testing, corrosion testing, and 30 pile load tests. The application indicates that additional investigations will be necessary to develop the final engineering design.[46]

Bulk soil samples were collected from the upper two feet BGL during preliminary exploration for California bearing ratio (CBR) testing (ASTM D1883). These results will help provide additional geotechnical recommendations for the proposed access roads.[47] The report recommends the proposed gravel access roads should have minimum eight inch to 12 inch-thick aggregate base course over the final prepared subgrade. These are not meant for construction traffic, which will require significantly thicker sections, but rather will be primarily used by light duty maintenance vehicles.[48]

Unsuitable soil conditions are expected in localized areas.[49] These soils should be over-excavated and replaced with suitable structural fill. If unstable, soft/loose or wet subgrade conditions develop during construction, suitable methods of stabilization will be required and may include chemical treatment, undercutting/replacement, and use of geotextile fabric.[50]

With regard to pile embedment depths and design, the report recommends final structural design should consider the anticipated steel loss as determined by a qualified corrosion engineer. Thicker pile sections or additional corrosion protection measures may be required if steel loss is predicted by corrosion analyses.[51]

Due to prior use of the site for agricultural purposes, tilled soils with high organic content should be anticipated to depths deeper than the topsoil depths. As part of final design study, test pits across the site are recommended to determine the depth of these tilled horizon. These soils are not considered suitable for subgrade support or reuse as fill material.[52]

Conclusion

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. Staff recommends that the Applicant provide a final geotechnical engineering report to Staff at least 30 days prior to the preconstruction conference.

Based on the data and considerations provided within the application submittal to date and based on Staff assessment (with consideration and input from the 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.

46. Application at page 20.
47. Application at Exhibit L (Preliminary Geotechnical Engineering Report by Terracon)
48. Application at page 37 of Exhibit L (Preliminary Geotechnical Engineering Report by Terracon)
49. Application at page 8 of Exhibit L (Preliminary Geotechnical Engineering Report by Terracon)
50. Application at page 28 of Exhibit L (Preliminary Geotechnical Engineering Report by Terracon)
51. Application at page 14 of Exhibit L (Preliminary Geotechnical Engineering Report by Terracon)
52. Application at page 8 of Exhibit L (Preliminary Geotechnical Engineering Report by Terracon)

Conditions necessary for the formation of karst geology features do exist throughout the project site, but the lack of documented karst features such as channels, sinkholes, or caverns within nearly four miles of the project area suggests karst features are not expected to impact the construction and operation of the proposed project. Should karst features be discovered during construction, measures will be developed based on observed conditions to mitigate and remediate the exposed conditions.[53]

Ecological Impacts

Public and Private Water Supplies[54]

Groundwater resources throughout most of the project area are limited, yielding less than five gallons per minute (GPM) expected in the southern portion of the project area and yields of five to 25 GPM throughout the rest of the project area. The ODNR has record of 79 water wells drilled within one mile of the project area. Wells in this area are developed in either bedrock or overlying glacial till. Per the ODNR well log data, the average depth of these wells is 98 feet with an average yield of 11.8 GPM.[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 SWPAs occur within the project area.[57] One SWPA assigned to the Village of Lynchburg does occur within one mile of the project area.

A portion of the project area overlies the East Fork of the Little Miami Watershed which is considered a source water area watershed for both the village of Blanchester and Clermont public water systems. A portion of the village of Blanchester's corridor management overlies the project

53. Yellow Wood Solar Energy, LLC's Response to the First Data Request from Staff of the OPSB, Data Request #26.

54. The Clean Water Act (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 S (Ecological Assessment by Cardno) – ODNR Geological Survey Review Letter.

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

57. Application at page 55 and Ohio EPA Source Water Protection Areas Interactive Map https://oepa.maps.arcgis.com/apps/webappviewer/index.html?id=3b39e11ba7fc43c3b41801e3580e6d21

area.[58] Construction or operation of the proposed solar facility 'will not affect the water system(s) as the project activities are similar to or less than agriculture and the Applicant will have permanent ground stabilization and design storm-water control that will likely improve local water quality.'[59] Solar facilities are not a "regulated activity" per Ohio EPA standards established for SWPAs.[60]

The Applicant has indicated six private water wells exist within the project area. None of these wells are located within the footprint of the project. The closest well is located 214 feet from the project's fence boundary.[61]

Conclusion

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

Surface Waters[62]

The Applicant's consultant, Cardno, delineated 29 streams within the project area, including 11 perennial streams, eight ephemeral streams, and 10 intermittent streams. Installation of collection lines would result in stream crossings. In an effort to avoid impacts to these waterbodies, the Applicant proposes to utilize Horizontal Directional Drilling (HDD) for perennial stream crossings (seven streams, 16 crossings in total). 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 provided a detailed Inadvertent Release of Drilling Fluid Contingency Plan that would be implemented at all HDD stream crossings. Two perennial streams (S106 and S204) are proposed for culvert installation for access roads. One perennial stream (S004) is proposed for an open-cut collection line crossing. A response from the Applicant states that it would consider utilizing HDD methodology in place for this open cut crossing depending on conditions at the time of construction. In total the Applicant anticipates approximately 0.2 acres of temporary impacts to streams from collection line

58. Ohio EPA defines the corridor management zone as: "The surface and subsurface area within a source water assessment area where the potential for drinking water contamination warrants delineation, inventory, and management."

59. Yellow Wood Solar Energy, LLC's Response to the First Data Request from Staff of the OPSB.

60. Ohio EPA Requirements for Siting and Setbacks from SWPAs. https://www.epa.state.oh.us/portals/28/documents/swap/SWAP_Rules.pdf

61. Yellow Wood Solar Energy, LLC's Response to the First Data Request from Staff of the OPSB.

62. 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).

installation and approximately <0.1 acres of permanent impacts to streams from culvert access road installations. The Applicant has committed to adhere to the ODNR and USFWS recommendation that no in-water work in perennial streams occur from April 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat, unless further coordination efforts with the ODNR and the USFWS allows for a different course of action.

The Applicant's consultant Cardno delineated 20 wetlands within the project area, including one Category 2 wetland and nineteen Category 1 wetlands.[63] The Applicant anticipates up to 0.01 acres of permanent wetland impact for access roads, and up to 0.03 acres of temporary wetland impacts for collection lines.

Direct impacts, including a proposed access road crossing, would be covered under the U.S. Army Corps of Engineers Clean Water Act Section 404 Nationwide permit. The Applicant would also obtain an Ohio NPDES General Permit through the Ohio EPA prior to the start of construction. Specifics about how surface waters would be further protected from indirect construction stormwater impacts using erosion and sedimentation controls would be outlined in the Applicant's SWPPP, which would be required as part of the NPDES General Permit. Staff does not anticipate issues with the Applicant's procurement of these permits. Staff also recommends the Applicant apply Ohio EPA published Guidance on Post Construction Storm Water Control for Solar Panel Arrays to project construction and operation.

Based on review of Federal Emergency Management Agency (FEMA) 100-year floodplain mapping, and a response from the Applicant, the fence line and all of the project infrastructure contained within the fence line are located outside of the 100-year floodplain. No ground disturbing activities would take place within the floodplain; therefore, no floodplain permit is required.

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

63. 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.

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, 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.

through field assessments and review of published ecological information. The following table provides the results of the information requests, field assessments, and document review.

BIRDS				
Common Name	**Scientific Name**	**Federal Status**	**State Status**	**Presence in Project Area**
Upland Sandpiper	*Bartramia longicauda*	N/A	Endangered	Potential to forage within agricultural fields within the project area. No individuals observed.
Northern Harrier	*Circus hudsonius*	N/A	Endangered	Potential to forage in agricultural fields. Pair observed within the brush within the project area (late fall, 2020).
MAMMALS				
Common Name	**Scientific Name**	**Federal Status**	**State Status**	**Presence in Project Area**
Indiana Bat	*Myotis sodalis*	Endangered	Endangered	Potential to occur as roost trees identified along windrows and wood lot edges. No individuals observed.
Northern Long-eared Bat	*Myotis septentrionalis*	Threatened	Endangered	Potential to occur as roost trees identified along windrows and wood lot edges. No individuals observed.
Little Brown Bat	*Myotis lucifugus*	N/A	Endangered	Potential to occur as roost trees identified along windrows and wood lot edges. No individuals observed.
Tricolored Bat	*Perimyotis subflavus*	N/A	Endangered	Potential to occur as roost trees identified along windrows and wood lot edges. No individuals observed.

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

The project area is within the range of state and federal endangered Indiana bat (*Myotis sodalis*), 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*). As tree roosting species in the summer months, the habitat of these species may be impacted by the project as the Applicant proposes up to 1.5 acres of tree clearing. In order to avoid impacts to these listed bat species, the Applicant has committed to adhere to ODNR and USFWS recommended seasonal tree cutting dates of October 1 through March 31 for all trees three inches or greater in diameter, unless further coordination efforts with the ODNR and the USFWS reflects a different course of action.

During the winter months, bats hibernate in caves and abandoned mines, also known as hibernacula. The proposed project is not expected to impact any bat hibernacula.

Listed bird species such as the Northern Harrier (*Circus hudsonius*) and the upland sandpiper (*Bartramia longicauda*) were recognized as having suitable habitat within the project area. A pair

of Northern Harriers were observed in the late fall of 2020 within the project area. Breeding and nesting Northern Harriers are most common in large, undisturbed tracts of wetlands and grasslands with low, thick vegetation. Impacts to these types of habitats would be minimal. Furthermore, to avoid impacts to potential nesting birds occupying these habitats, the Applicant has committed to avoid construction in these areas during the species' nesting period of April 15 and August 1, unless further coordination with the ODNR and the USFWS allows a different course of action. Winter habitat for these species would be impacted (i.e., croplands and agricultural fields) by the project, however, due to the highly mobile nature of these species and the availability of wintering habitat in the area, it is not anticipated that the project would result in adverse impacts to these species.

Vegetation

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

VEGETATION	
Vegetation Community Type	**Total (acres)**
Cultivated Crops	3,436.10
Deciduous Forest	180.30
Developed, Open Space	111.64
Pasture/Hay	44.24
Mixed Forest	42.01
Woody Wetlands	3.91
Grassland/Herbaceous	1.56
Shrub/Scrub	1.33
Barren Land (Rock/Sand/Clay)	1.11
Total	3,822.2

The estimated vegetative impact includes the entire project area presented within the application. However, the entire project area would not be developed as part of this project. As a result, permanent impacts associated with this project would be less than the amount shown. Permanent vegetative impacts would occur primarily within agricultural lands. The Applicant has developed a vegetation management plan in which it committed to incorporate pollinator-friendly habitat in accordance with the recommendations of the Ohio Pollinator Habitat Initiative. This habitat would enhance the visual appeal of the project, enrich local wildlife habitat, benefit the local farming community, increase plant diversity, and discourage invasive species. This vegetation would be incorporated under and between the panels and in the open areas of the project. This project would be expected to represent a reduced environmental impact when compared to the current land use of agricultural plant production due to the reduction of frequent tilling leading to erosion and sedimentation, and reduced fertilizer and pesticide application. To further assure that these benefits would be realized, Staff recommends that the Applicant take steps to prevent establishment and/or further propagation of noxious weeds identified in Ohio Adm.Code Chapter 901:5-37 during implementation of any pollinator-friendly plantings.

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 site selection process focused on the following criteria: strong 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. In preparation of the application, the Applicant engaged local officials and the public. Local governmental guidance and public input have been incorporated into the project design where feasible.

Minimizing Impacts

An MOU between the Applicant and OHPO is currently being finalized and will be filed in the case docket. The MOU would commit the Applicant to avoid certain sites identified in the field investigation and the Applicant would also not impact any resources which are potentially eligible for NRHP listing. Staff has determined that minimal adverse impacts to cultural resources would be achieved.

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

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

No impacts are proposed to wetlands and significant impacts to surface waters are not anticipated. 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. While the project is within the range of several endangered species, impacts would be avoided to suitable habitats. The project infrastructure is not within and would not cross a 100-year floodplain.

Noise impacts are expected to be limited to construction activities. The adverse impact of construction noise would be temporary and intermittent and would occur away from most residential structures. Staff recommends that the Applicant limit the hours of construction to address potential construction and operational related concerns from any nearby residents. No non-participating receptors were modeled to receive noise impacts greater than the daytime ambient noise level plus 5 dBA during facility operation. If the Applicant chooses an inverter or transformer model with a higher sound output, Staff recommends that the Applicant submit an updated noise study. This would confirm that sound levels would not exceed the daytime ambient level plus five dBA at any non-participating sensitive receptor, assuring that operation 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 tractor-trailer vehicles and multi-axle dump trucks. The transportation management plan would be finalized once the engineering layout is determined and finalized. A final delivery route plan would be developed through discussions with local officials. The Applicant intends to enter into a road use agreement with the county engineer.

Due to the low profile of the project, combined with existing vegetation in the area, the visual impacts would be most prominent to landowners in the immediate vicinity of the infrastructure itself. In order to reduce impacts in areas where an adjacent, non-participating parcel contains a residence with a direct line of sight to the project, Staff has recommended a condition requiring a final landscape and lighting plan that addresses the potential impacts of the facility. 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, 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 to address such 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. 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. 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 US EPA's TCLP test and meet U.S. EPA definition of non-hazardous 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 bulk power system (BPS).

The Applicant proposes to construct a solar-powered electric generation facility, capable of producing 300 MW. The project will also include constructing a collection substation, which would include a 345 kV circuit breaker and an open-air isolation switch that connects the facility to the point of interconnection. The proposed facility would interconnect from the collection substation to the existing Clinton-Stuart 345 kV transmission line, owned by AES, formerly known as the Dayton Power and Light Company (DP&L).

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).[65]

PJM Interconnection

The Applicant submitted one generation interconnection request for the proposed facility to PJM. For the request of March 2019, PJM has assigned the queue ID AE2-221 under the name "Clinton-Stuart 345 kV," which requested an injection of 300 MW. PJM has completed and issued the Feasibility Study Report and the System Impact Study (SIS) Report for AE2-221 in July 2019 and February 2020, respectively.[66] The table below shows the queue position assigned to the Applicant by PJM.

PJM QUEUE: YELLOW WOOD SOLAR GENERATING FACILITY PROJECT

Queue ID	Queue Date	Power Output (MW)	Capacity (MW)
AE2-221	3/21/2019	300	180
	Totals	**300**	**180**

65. 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.

66. PJM Interconnection, "New Services Queue", Feasibility Study and System Impact Study reports for Queue ID: AE2-221, https://www.pjm.com/planning/services-requests/interconnection-queues.aspx (Accessed February 26, 2021).

PJM studied the interconnection as an injection into the BPS via the existing Clinton-Stuart 345kV transmission line. The Applicant requested a total injection of 300 MW, of which 180 MW could be available in the PJM capacity market.[67] The project was studied with a commercial probability of 100 percent.

PJM Network Impacts

PJM analyzed the proposed facility interconnected to the BPS. The 2022 summer peak power flow model was used by PJM to evaluate regional reliability impacts for AE2-221. The studies did not reveal any reliability criteria violations. The chart below displays the results of the PJM SIS for the regional footprint.[68]

PJM REGIONAL SYSTEM IMPACTS (2022 Summer Peak)	
Generation Deliverability – System Normal & Single Contingency Outage	
Plant Output: Capacity Level – 180 MW	No Problems Identified.
Category C and D – Multiple Contingency Outages	
Plant Output: Power Level – 300 MW	No Problems Identified.

New System Reinforcements

PJM requires mitigation of contingencies that cause reliability violations which are initially caused by the addition of the Applicant's project. The PJM SIS required no new system reinforcements for AE2-221.

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. The study results identified no network impacts.

Potential Congestion due to Local Energy Deliverability

PJM also studied the delivery of the energy portion of this interconnection request and whether a potential for congestion would result. 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 results identified no congestion issues.

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

67. The capacity market ensures that there is an adequate availability of generation resources that can meet current and future demand.

68. PJM Interconnection, "New Services Queue", System Impact Study for Queue ID: AE2-221, https://www.pjm.com/planning/services-requests/interconnection-queues.aspx (Accessed February 26, 2021).

circuit analysis, and the results were verified by DP&L. The results identified no circuit breaker problems.

Recommended Findings

Staff recommends that the Board find that the proposed facility is consistent with regional plans for expansion of the electric power grid of the electric systems serving this state and interconnected utility systems, and that the facility would serve the interests of electric system economy and reliability. Therefore, Staff recommends that the Board find that the facility complies with the requirements specified in R.C. 4906.10(A)(4), provided that any certificate issued by the Board for the proposed 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)(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[69]

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 water to wet soil to minimize dust during periods of high heat as 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.

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

Water[70]

The Applicant anticipates obtaining environmental permits, as necessary. Access roads would require stream crossings. These impacts would be covered under USACE Nationwide permitting and would be sufficiently minimal that preconstruction authorization from the USACE would not be required. The Applicant would mitigate potential water quality impacts associated with aquatic discharges by obtaining NPDES construction storm water general permits from the Ohio EPA with submittal of a notice of intent and development and implementation of a SWPPP. The SWPPP would describe and outline BMPs to control soil erosion, minimize sedimentation, and outline placement of silt fence and compost filter sock where appropriate to minimize runoff.

The Applicant would develop an SPCC plan to manage the storage and mitigate the unlikely release of hazardous substances. Specifically, the Applicant indicates that its engineering

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69. 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>).

70. 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 Clean Water Act 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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procurement contractor would implement and 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.

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[71]

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 building could include wood, cardboard, metal packing/packaging materials, used oil, general refuse, universal waste, and used antifreeze. The 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.

At the time of solar panel end of life disposal, regardless of whether a panel marked for decommissioning is to be considered hazardous or non-hazardous, Staff recommends that retired panels marked for disposal be sent to an engineered landfill with various barriers and methods designed to prevent leaching of materials into soils and groundwater.

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

Aviation[72]

The height of the tallest above ground structures would be the lightning mast at the substation at approximately 90 to 100 feet tall.[73] 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 FAA, the closest public-use airports are the Wilmington Air Park (ILN) and Hollister Field (2B6) airports which are between 10 and 12 miles from the proposed solar facility project area. The FAA performed an aeronautical study for various points around the solar facility.

71. 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.

72. 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.

73. Yellow Wood Solar Energy, LLC's Response to the First Data Request from Staff of the OPSB, Data Request #3.

The FAA provided the results of that aeronautical study to the Applicant as a determination of no hazard to air navigation for those various points of the solar facility.[74]

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.[75] 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. Yellow Wood Solar Energy, LLC's Response to the First Data Request from Staff of the OPSB, Data Request #5 and Yellow Wood Solar Energy, LLC's Supplemental Response to First Data Request from Staff of the OPSB.

75. 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 residences, non-participating property lines, and public roads. Specifically, the Applicant would implement the following setbacks: 100 feet from the fence-line to a property line of any non-participating parcel, 300 feet from the fence-line to a non-participating home, and 100 feet from public road right-of-way.

The Applicant stated that it intends to restrict public access to the facility by enclosing the project area with fencing that complies with NESC requirements. The Applicant has proposed fencing that would be a seven feet tall fence (six feet tall chain link fence topped with an additional one foot of barbed wire strand) with access through gates. The Applicant is also considering installation of a woven wire and wooden posts fence that is aesthetically fitting for a rural area, also known as a deer fence.[76] Staff has recommended that, 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 develop and implement an emergency response plan and further consult with potentially affected local and regional emergency response personnel. The Applicant has provided an example emergency response plan, which Staff has reviewed.[77]

Public Interaction and Participation

The Applicant hosted a virtual public informational meeting for the project. Attendees were provided the opportunity to listen to a presentation about the project, ask questions, and provide comments. According to the Applicant, attendees shared comments and questions on topics including impacts to the local economy, the appearance of the project, tax impacts, and grid interconnection, glare, noise, and wildlife impacts.[78] Further, the Applicant stated that the primary concern expressed by attendees was that the facility would have negative impacts on area property values.[79] The Applicant commissioned a property value impact study, which concluded the

76. Application at page 47 and Yellow Wood Solar Energy, LLC's Response to the Third Data Request from Staff of the OPSB, filed 8/23/2021, Data Request #2.

77. Yellow Wood Solar Energy, LLC's Response to the First Data Request from Staff of the OPSB, Data Request #13 and Attachment 4.

78. Application at page 25 and Exhibit G.

79. Application at page 25.

proposed solar facility would have no negative impact on the value of adjoining or abutting property.[80]

The Applicant has drafted a complaint resolution plan to handle complaints during the construction and operation of the facility. Staff recommends that a final version of this plan 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, including those individuals who were provided notice of the public informational meeting, residents located within one mile of the project area, parties to this case, county commissioners, township trustees, emergency responders, airports, schools, and libraries, as well as anyone who as requested updates regarding the project, at least seven days prior to the start of construction and again prior to the start of facility operation. The Applicant has also committed to provide the OPSB with a quarterly complaint summary report. Staff recommends 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 public hearing will be held on Wednesday, October 20, 2021, at 6:00 p.m. at Expo Hall, Clinton County Fairgrounds, 958 W. Main Street, Wilmington, Ohio 45177. The adjudicatory hearing is scheduled for Wednesday, November 17, 2021, at 10:00 a.m.

The Clinton County Board of Commissioners; the Ohio Farm Bureau Federation; and petitioners Brad Cochran Farms LLC, Brad Cochran (its sole member), Brian and Janet Collins, Margaret and Stephen Elam, Robert and Joyce Griffith, Alan and Deborah Hertlein (in their personal capacity and as trustees for the Hertlein Family Revocable Living Trust), Brett Hertlein, JWP Family Farms LLC, Darla and Matthew Long, Benjamin and K. Nicole Oberrecht, Diane Rhonemus, Jamie and Matthew Roberts, Janice Rowlands, Charles Simpson, Jr. and Pamela McConnell, and Charles W. Thompson filed to intervene in this proceeding.

Public Comments

As of October 1, 2021, the OPSB has received 197 documents filed as public comments in the case record. Commenters opposed to the project, including Clinton County/Highland County Citizens Concerned about Solar Farms, have expressed concerns with subjects including potential impacts to agricultural land use, impacts to wildlife and the environment, impacts to drinking water and groundwater, impacts to property value, public health, aesthetics and viewshed, decommissioning, cumulative impacts of multiple solar projects in the area, construction impacts, setbacks, and residences surrounded by solar panels on multiples sides. Those supportive of the project, including the Wilmington-Clinton County Chamber of Commerce, have emphasized the importance of landowner property rights, allowing agricultural land to rest, and benefits to the local economy and the environment. The Applicant categorized and summarized comments received from December 1, 2020 through September 15, 2021.[81]

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. Many of these subjects are addressed through staff's

80. Application at Exhibit E.

81. Yellow Wood Solar Energy, LLC's Response to the Third Data Request from Staff of the OPSB, filed 8/23/2021 and Yellow Wood Solar Energy, LLC's Response to the Fourth Data Request from Staff of the OPSB filed 9/24/2021, DR#2 and #3.

investigation, as detailed in sections of this report. However, several subjects are described in more detail below.

(1) **Opposition to agricultural land used for solar and concern over farmland quantity.**

The Applicant has stated that the project area represents 0.1 percent of acreage available for agricultural use in Ohio.

Staff recommends that the Applicant decommission the facility at the end of its useful life. This decommissioning requires returning the land to agriculture or the landowners desired use.

(2) **Impact to property value.**

The Applicant has performed a property value impact study included as Exhibit E of the application. The Applicant indicated that the proposed project is not expected to negatively impact the value of adjoining or abutting property.

(3) **Viewshed impact opposition.**

While the aesthetics of the project are somewhat subjective, it is understandable that many community residents have visual impact concerns. Because of this, the Applicant has prepared a visual resource assessment and mitigation plan as Exhibit N of the application to lessen the visual impact of the project. In addition, the Applicant has committed to utilizing a fence that would better reflect the rural setting of the project area. Lastly, Staff recommends implementation of a landscape and lighting plan.

(4) **Health Risks and Environmental Impact Opposition.**

The Applicant indicates that the solar modules do not contain hazardous materials. The Applicant does not expect impacts to runoff. Also, Staff notes that the existing private water wells would be outside the project's fence-line. The Applicant has committed for this project that it would use solar panels that are considered non-toxic and would be compliant with the US EPA's Toxicity Characteristics Leaching Procedure (TCLP) testing protocol.

Pursuant to R.C. 4906.10(A)(5), the proposed facility must comply with Ohio law regarding air and water pollution control, withdrawal of waters of the state, solid and hazardous wastes regulations. Staff analysis and evaluation of those pertinent parts of the project are summarized in section 4906.10 (A)(5) of this Staff Report.

Recommended Findings

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

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

AGRICULTURAL DISTRICTS AND AGRICULTURAL LAND

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

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

Approximately 2,450 acres of agricultural land will be disturbed by the proposed project, 770 of those acres are currently enrolled in the Agricultural District program which would be removed from the Agricultural District program upon commencement of construction of the solar facility. No agricultural structures, such as barns, sheds, or silos, will be removed because of the project. The Applicant States the repurposed land could be restored for agricultural use when the project is decommissioned.

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 utilized aerial imagery and the records of landowners and Clinton County Soil Conservation District to identify the locations of existing drain tiles within the project area. The Applicant has supplied a Drainage Tile Mitigation Plan with its OPSB application (Exhibit Q). This report discusses avoidance, repair, and mitigation details of all known drain tile locations; and the report also addresses repair of inadvertently damaged drain tiles upon the Applicant becoming aware of the damage or drainage issue. The Applicant has committed to repair any drain tile found to be damaged by the project during the operational life of the project, however, if the affected landowner 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.

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 suppression and control on open soil surfaces such as construction access roads as needed. The Applicant states it would adhere to the Ohio EPA's Best Management Practices for stormwater management and pollution control, and erosion and sedimentation control.

Operation of the proposed facility would not require the use of significant amounts of water. The Applicant stated the O&M facility will have modern efficient water fixtures and use water at a similar rate to that of a small business office. The Applicant responded to data requests regarding the cleaning of panels, stating it does not have plans to clean panels with water. The Applicant states it will choose between potable water being brought to the building for drinking needs and a greywater system to collect water for toiletry requirements or creating and using a well for all water needs for the building. The Applicant has not yet finalized this decision. A septic system would be installed for the sanitary wastewater from the O&M building.

Recommended Findings

The Staff recommends that the Board find that the proposed facility would incorporate maximum feasible water conservation practices, and therefore complies with the requirements specified in R.C. 4906.10(A)(8), provided that any certificate issued by the Board for the proposed facility include the conditions specified in the section of this *Staff Report of Investigation* entitled Recommended Conditions of Certificate.

IV. RECOMMENDED CONDITIONS OF CERTIFICATE

Following a review of the application filed by the Yellow Wood Solar Energy, LLC, and the record compiled to date in this proceeding, Staff recommends that a number of conditions become part of any certificate issued for the proposed facility. These recommended conditions may be modified as a result of public or other input received subsequent to the issuance of this report. At this time, Staff recommends the following conditions to ensure conformance with the proposed plans and procedures as outlined in the case record to date, and to ensure compliance with all conditions listed in this Staff Report:

(1) The Applicant shall install the facility, utilize equipment and construction practices, and implement mitigation measures as described in the application and as modified and/or clarified in supplemental filings, replies to data requests, and recommendations in this *Staff Report of Investigation*.

(2) The Applicant shall conduct a preconstruction conference prior to the commencement of any construction activities. Staff, the Applicant, and representatives of the primary contractor and all subcontractors for the project shall attend the preconstruction conference. The conference shall include a presentation of the measures to be taken by the Applicant and contractors to ensure compliance with all conditions of the certificate, and discussion of the procedures for on-site investigations by Staff during construction. Prior to the conference, the Applicant shall provide a proposed conference agenda for Staff review 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) Test pits shall be dug in order to further characterize the site soil suitability.

(6) Prior to developing the final structural design, a corrosion analysis shall be performed in order to determine potential steel loss over the projected life of the pile structures.

(7) At least 30 days prior to the preconstruction conference, the Applicant shall provide to Staff, for review and acceptance, the final geotechnical engineering report. This shall include a summary statement addressing both the geologic and soil suitability.

(8) Should karst features be identified during additional geotechnical exploration or during construction, the Applicant shall avoid construction in these areas when possible.

(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 300 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, LLC, 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 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.

(16) Prior to commencement of any 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 also address potential aesthetic impacts to nearby communities, the travelling public, and recreationalists by incorporating appropriate landscaping measures such as shrub plantings or enhanced pollinator plantings. 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 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 and file it on the public docket for review and confirmation that it complies with this condition.

a) The Applicant shall incorporate additional screening for the observations points OP 4 (Grove Road location), OP 5 (Townsend Road location), and OP 7 (Glady Road location) in order to provide suitable concealment of the project site and mitigate any predicted glare at those locations.

(17) The Applicant shall adhere to seasonal cutting dates of October 1 through March 31 for the removal of trees three inches or greater in diameter to avoid impacts to Indiana bats, Northern Long-eared bats, Little Brown bats, and Tricolored bats, unless coordination with the Ohio Department of Natural Resources (ODNR) and the U.S. Fish and Wildlife Service (USFWS) allows a different course of action. If coordination with these agencies allows tree clearing between April 1 and September 30, the Applicant shall docket proof of completed coordination on the case docket prior to clearing trees.

(18) The Applicant shall contact Staff, the ODNR, and the USFWS within 24 hours if state or federally listed species is 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.

(19) 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.

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

(21) The Applicant shall conduct no in-water work in perennial streams from April 15 through June 30 to reduce impacts to aquatic species and their habitat unless coordination with the ODNR reflects a different course of action. If coordination with the ODNR allows in-water work in perennial streams from April 15 through June 30, the Applicant shall file proof of such coordination on the case docket prior to conducting such in-water work in perennial streams.

(22) Construction in upland sandpiper preferred nesting habitat types shall be avoided during the species' nesting period of April 15 through July 31. If present, mapping of these habitat areas shall be provided to the construction contractor along with instructions to avoid these areas during the restricted dates, unless coordination with the ODNR allows a different course of action. If coordination with the ODNR allows a different course of action, the Applicant shall file proof of such coordination on the case docket prior to conducting construction in such habitats.

(23) Construction in Northern Harrier preferred nesting habitat types shall be avoided during the species' nesting period of April 15 through July 31. If present, mapping of these habitat areas shall be provided to the construction contractor along with instructions to avoid these areas during the restricted dates, unless coordination with the ODNR allows a different course of action. If coordination with the ODNR allows a different course of action, the Applicant shall file proof of such coordination on the case docket prior to conducting construction in such habitats.

(24) The Applicant shall take steps to prevent establishment and/or further propagation of noxious weeds identified in Ohio Adm.Code Chapter 901:5-37 during implementation of any pollinator-friendly plantings. This would be achieved through appropriate seed selection and annual vegetative surveys. If noxious weeds are found to be present, the Applicant shall remove and treat them with herbicide as necessary.

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

shall update the transportation management plan with any transportation permits received after the pre-construction conference.

(26) At least 30 days prior to the start of construction, the Applicant shall file a copy of the final complaint resolution plan 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 including those individuals who were provided notice of the public informational meeting, residences located within one mile of the project area, parties to this case, county commissioners, township trustees, emergency responders, airports, schools, and libraries, as well as anyone who has requested updates regarding the project. These notices shall provide information about the project, including contact information and a copy of the complaint resolution plan. The start of construction notice shall include written confirmation that the Applicant has complied with all preconstruction-related conditions of the certificate, as well as a timeline for construction and restoration activities. The start of facility operations notice shall include written confirmation that the Applicant has complied with all construction-related conditions of the certificate, as well as a timeline for the start of operations. The Applicant shall file a copy of these notices on the public docket. During the construction and operation of the facility, the Applicant shall submit to Staff a complaint summary report by the fifteenth day of April, July, October, and January of each year through the first five years of operation. The report shall include a list of all complaints received through the Applicant's complaint resolution process, a description of the actions taken toward the resolution of each complaint, and a status update if the complaint has yet to be resolved. The Applicant shall file a copy of these complaint summaries on the public docket.

(27) 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.

(28) 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.

(29) 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 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.

(30) 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 field tile drainage systems; or

c) 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.

(31) Prior to the commencement of construction, the Applicant shall finalize a memorandum of understanding (MOU) with the Ohio Historic Preservation Office (OHPO) to mitigate for and/or avoid cultural resources with potential adverse effects due to the project and to outline procedures to be followed if previously unidentified sites are discovered during construction. The Applicant shall submit the MOU to Staff and file the MOU on the docket of this case.

(32) 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 one year for removal of the equipment; (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.

(33) At the time of solar panel end of life disposal, 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.

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www.OPSB.ohio.gov
(866) 270-OPSB (6772)

180 E. Broad St.
Columbus, OH 43215-3793

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