

Staff Report of Investigation

Palomino Solar Project
Palomino Solar, LLC

Case No. 21-0041-EL-BGN

June 14, 2022

**In the Matter of the Application of Palomino Solar, LLC)
for a Certificate of Environmental Compatibility and) Case No. 21-0041-EL-BGN
Public Need.)**

Staff Report of Investigation

Submitted to the
OHIO POWER SITING BOARD

BEFORE THE POWER SITING BOARD OF THE STATE OF OHIO

In the Matter of the Application of Palomino Solar, LLC)
for a Certificate of Environmental Compatibility and) Case No. 21-0041-EL-BGN
Public Need.)

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

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I. EXECUTIVE SUMMARY

The authority of the Ohio Power Siting Board (Board or OPSB) is prescribed by Ohio Revised Code (R.C.) Chapter 4906. R.C. 4906.10 specifies that the Board shall not grant a certificate for the construction, operation, and maintenance of a major utility facility, either as proposed or as modified by the Board, unless it finds and determines eight specified criteria. Staff investigated the application presented by Palomino Solar, LLC (Applicant) and recommends that the Board approve the Applicant's request for a certificate of environmental compatibility and public need subject to the proposed conditions contained in this report.

II. POWERS AND DUTIES

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

Membership of the Board is specified in R.C. 4906.02(A). The voting members include: the Chairperson of the Public Utilities Commission of Ohio (PUCO or Commission) who serves as Chairperson of the Board; the directors of the Ohio Environmental Protection Agency (Ohio EPA), the Ohio Department of Health (ODH), the Ohio Department of Development (ODOD), the Ohio Department of Agriculture (ODA), and the Ohio Department of Natural Resources (ODNR); and a member of the public, specified as an engineer, appointed by the Governor from a list of three nominees provided by the Ohio Consumers' Counsel. Additionally, in certain cases including the present matter, voting members include two ad hoc members: one county commissioners or designee and one township trustee or designee. Non-voting Board members include four members of the Ohio General Assembly (with alternates) selected by leadership from each house of the Ohio General Assembly.

NATURE OF INVESTIGATION

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

Application Procedures

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

Within 60 days of receiving an application, the Chairperson must determine whether the application is sufficiently complete to begin an investigation.³ If an application is considered complete, the Board or an administrative law judge will cause a public hearing to be held 60 to 90 days after the official filing date of the completed application.⁴ At the public hearing, any person may provide written or oral testimony and may be examined by the parties.⁵

Staff Investigation and Report

The Chair will also cause each application to be investigated and a report published by the Board's Staff not less than 15 days prior to the public hearing.⁶ The report sets forth the nature of the investigation and contains the findings and 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 or deny an application for a certificate of environmental compatibility and public need as filed, or modify and approve it upon such terms, conditions, or modifications as the board considers appropriate.¹⁰ The certificate is also conditioned upon the facility being in compliance with applicable standards and rules adopted under the Ohio Revised Code.¹¹

1. R.C. 4906.04 and 4906.20.

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

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

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

5. R.C. 4906.08(C).

6. R.C. 4906.07.

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

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

9. R.C. 4906.09 and 4906.12.

10. R.C. 4906.10(A).

11. R.C. 4906.10.

Upon rendering its decision, the Board must issue an opinion stating its reasons for approving, modifying and approving, or denying an application for a certificate of environmental compatibility and public need.¹² A copy of the Board's decision and its opinion is memorialized upon the record and must be served upon all parties to the proceeding.¹³ Any party to the proceeding that believes the Board decision to be unlawful or unreasonable may submit within 30 days an application for rehearing.¹⁴ An entry on rehearing would then be issued by the Board within 30 days and may be appealed within 60 days to the Supreme Court of Ohio.¹⁵

CRITERIA

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

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

- (1) The basis of the need for the facility if the facility is an electric transmission line or gas pipeline;
- (2) The nature of the probable environmental impact;
- (3) That the facility represents the minimum adverse environmental impact, considering the state of available technology and the nature and economics of the various alternatives, and other pertinent considerations;
- (4) In the case of an electric transmission line or generating facility, that the facility is consistent with regional plans for expansion of the electric power grid of the electric systems serving this state and interconnected utility systems and that the facility will serve the interests of electric system economy and reliability;
- (5) That the facility will comply with Chapters 3704, 3734, and 6111 of the Revised Code and all rules and standards adopted under those chapters and under section 4561.32 of the Revised Code. In determining whether the facility will comply with all rules and standards adopted under section 4561.32 of the Revised Code, the board shall consult 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

12. R.C. 4906.11.

13. R.C. 4906.10(C).

14. R.C. 4903.10 and 4906.12.

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

the proposed major utility facility. Rules adopted to evaluate impact under division (A)(7) of this section shall not require the compilation, creation, submission, or production of any information, document, or other data pertaining to land not located within the site and alternative site; and

- (8) That the facility incorporates maximum feasible water conservation practices as determined by the board, considering available technology and the nature and economics of the various alternatives.

III. APPLICATION

APPLICANT

Palomino Solar, LLC (Applicant) is a subsidiary of Innergex Renewable Energy, Inc. (Innergex), a global developer-owner-operator of renewable energy projects. Innergex manages a portfolio of 78 operating facilities, including seven solar energy facilities. The Applicant plans to construct and operate the proposed facility for the 30-plus-year term of the project lease agreements.

HISTORY OF THE APPLICATION

On January 14, 2021, the Applicant filed a motion for waiver and request for approval to hold an alternative public informational meeting. The motion was granted.

On February 19, 2021, the Applicant filed a pre-application notification letter regarding the project.

On March 9, 2021, the Applicant held a virtual public informational meeting for the project, with web-based attendance and telephone conference call capabilities.

On April 2, 2021, the Applicant filed a motion requesting a partial waiver of the requirement in Ohio Adm.Code 4906-3-03(B)(2)(b) that a letter describing the certification process be sent to each property owner and affected tenant contiguous to the planned site of the proposed facility, because it inadvertently omitted some of the parcels adjacent to the project's easement area. The motion was denied, and the Applicant was directed to schedule and conduct a second public informational meeting and provide a notification letter to each property owner and affected tenant in accordance with Ohio Adm.Code 4906-3-03.

On June 28, 2021, the Applicant held an in-person public informational meeting for the project.

On September 24, 2021, the Applicant filed the Palomino Solar Project application.

Between October 8, 2021 and June 3, 2022, the Applicant filed responses to OPSB Staff data requests.

On October 18, 2021, the Chair of the OPSB issued a letter of non-compliance regarding the application.

On January 14, 2022, the Applicant filed a first supplement to the application as well as a motion for protective order.

On January 18, 2022 and April 8, 2022, the Applicant filed second and third supplements to the application.

On March 15, 2022, the Executive Director of the OPSB issued a letter of compliance regarding the application.

On April 13, 2022, the Highland County Board of Commissioners filed a resolution appointing Julie Bolender as an ad hoc OPSB member.

On April 14, 2022, Robert and Laurie Banks filed a petition for leave to intervene in the proceeding.

On May 11, 2022, the Dodson Township Trustees filed correspondence appointing Ty Smith as an ad hoc OPSB member.

On May 13, 2022, the Highland County Board of Commissioners filed notice of intervention in the proceeding.

On May 26, 2022, the Ohio Farm Bureau Federation filed a petition for leave to intervene in the proceeding.

On May 27, 2022, Sarah Rogers filed a petition for leave to intervene in the proceeding.

A local public hearing has been scheduled for June 29, 2022, at 5:00 p.m. at the Wharton Building, Highland County Fairgrounds, 604 John Street #1030, Hillsboro, Ohio 45133. The evidentiary hearing is scheduled to commence on July 13, 2022 at 10:00 a.m.

This summary of the history of the application does not include every filing in case number 21-0041-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 and operate the Palomino Solar Project, a 200 MW solar-powered generating facility in Union and Dodson townships in Highland County. The project would consist of large arrays of photovoltaic (PV) modules, commonly referred to as solar panels, ground-mounted on a tracking rack system. The project would impact approximately 1,410 acres within a 2,668-acre project area comprised of private land secured by the Applicant through agreements (lease/easement or option to purchase) with the landowners. The project would include associated facilities such as access roads, an operations and maintenance (O&M) facility, electric collection lines, weather stations, inverters and transformers, and a collection substation. The project would be secured by perimeter fencing which would be no less than seven feet tall and accessed through gated entrances. Lighting will illuminate the entrances, inverters, O&M building, and the substation. The project will have a point of interconnection (POI) to the transmission grid at the Hillsboro-Middleboro 138 kV transmission line. This POI will be the subject of a separate filing.

Solar Panels and Racking

The solar panels would be attached to metal racking. The racking would include steel piles driven up to 20 feet into the ground. The facility would include approximately 600,000 panels. The solar panel arrays would be mounted on a single-axis tracking system to track the sun as it moves through the sky each day. Panel models under consideration are mono-crystalline and thin-film

modules.¹⁶ The maximum height of each panel will be approximately 15 feet from the ground. 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.

Collection System

Electricity from the solar panels would be generated in direct current (DC). DC power from the solar panels would be routed through cables to a nearby inverter that converts the power to alternating current (AC). The facility would include up to 72 inverters, each housed on a gravel pad alongside a transformer, inverter, and supervisory control and data acquisition (SCADA) equipment. The Applicant would install an underground collector system made up of a network of electric lines that would transmit the electric power from the inverters to a project substation. Approximately 60 miles of below ground electrical collection line would be installed. Both trenching and horizontal directional drilling (HDD) will be used to bury collector lines. The underground lines would be installed by trenching to a depth of between three and four feet and by HDD to a depth of typically no more than 10 feet.

Substation

The facility substation would increase the voltage of the electricity for interconnection to the 138 kV Hillsboro-Middleboro transmission line. The substation would include circuit breakers, insulators, transformers, lighting, and surge arrestors.

Point of Interconnection

The project will connect to the transmission grid along the Hillsboro-Middleboro 138 kV transmission line. The POI will consist of a generation interconnection line, a POI switchyard, and a line loop connecting the Hillsboro-Middleboro transmission line to the POI. This POI will be the subject of a separate filing with the OPSB.

Roads

The Applicant proposes to construct approximately 17.7 miles of permanent access roads for the construction, operation, and maintenance of the facility. The roads would be gravel-surfaced and up to 20 feet wide. During construction, temporary access roads may be up to 30 feet wide.

Construction Laydown Areas

Forty-nine construction laydown areas, totaling 30 acres, are proposed for the project. The laydown areas would accommodate material and equipment storage and provide parking for construction management trailers. Following construction, laydown areas not utilized for project infrastructure will be revegetated.

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

Information on Staff's consideration of potential health impacts of each type of solar panel technology can be found in the ODH fact sheet entitled *Solar Farms and Photovoltaic Technologies Summary and Assessment* available on the ODH website at <https://odh.ohio.gov/know-our-programs/health-assessment-section/resources/chemical-factsheets>.

Weather Stations

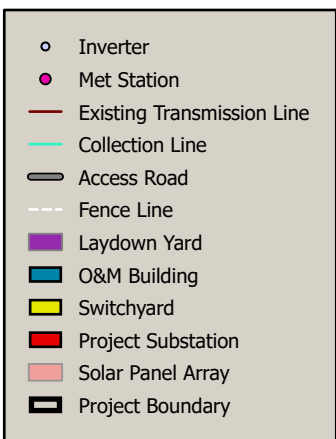
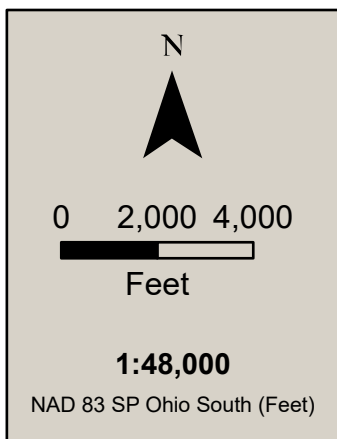
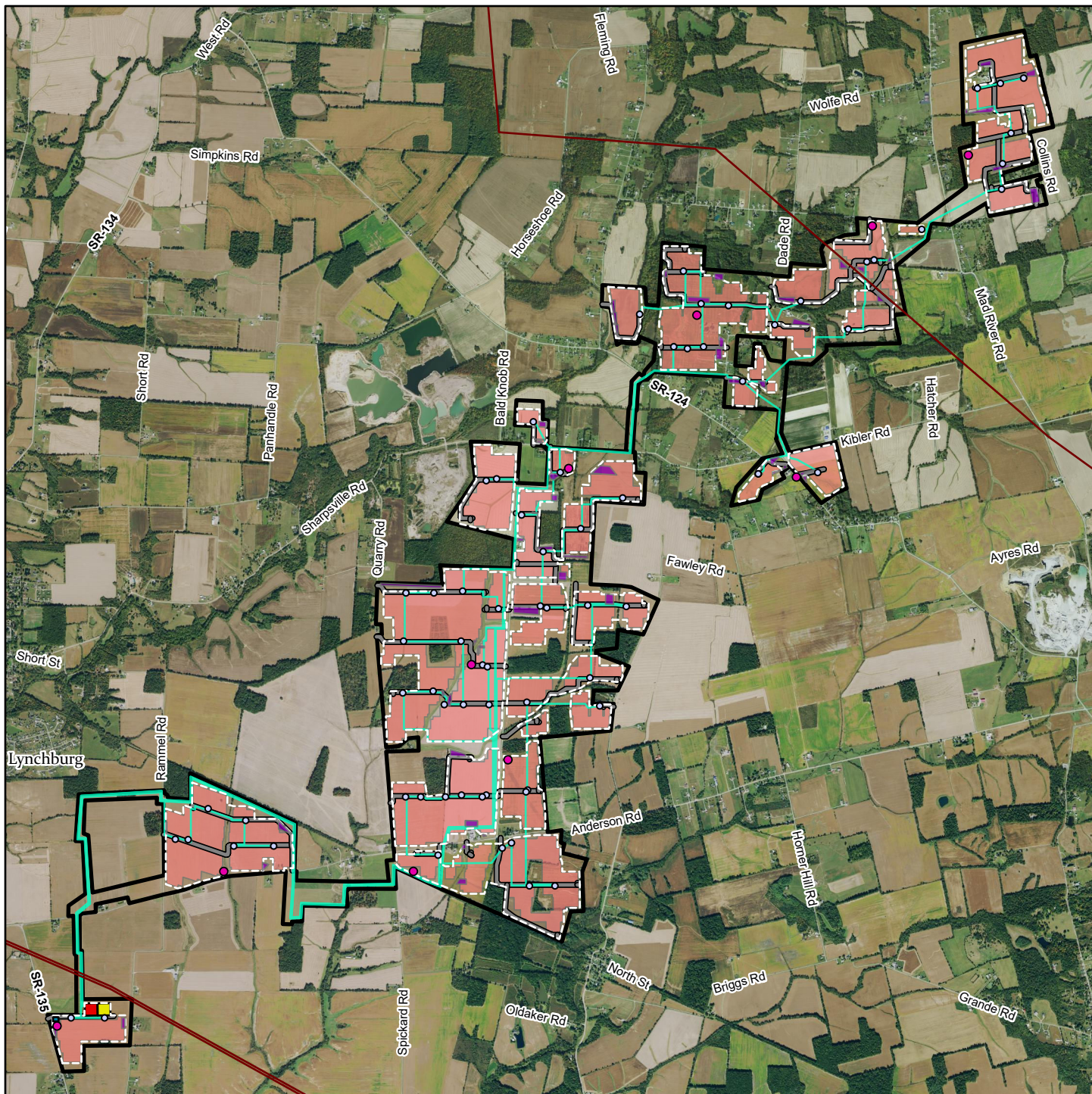
The Applicant proposes using up to 10 weather stations to measure weather conditions, including solar irradiance and wind speed.

O&M Facility

The O&M facility would consist of a single-story building and an adjacent 10,000-square-foot parking lot. The building will adhere to the requirements of applicable building codes and include a septic system to support typical business office usage.

Project Schedule

The Applicant proposes begin construction during the spring of 2023 and complete construction in the summer of 2024, placing the facility in service shortly thereafter.



Overview Map

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Palomino 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.

IV. CONSIDERATIONS AND RECOMMENDED FINDINGS

In the Matter of the Application of Palomino 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 Impacts¹⁷

Land Use

The predominant land use within the project area is agriculture and the application asserts that agricultural land use is the only land use that is directly impacted by the facility's construction and operation. Staff generally concurs with this analysis; however, there are indirect impacts such as viewshed impacts to sensitive receptors such as adjacent residential properties and above ground historic resources that can be significant. These indirect impacts are discussed more fully in the Aesthetics and Cultural Resources sections of this report.

In consultation with the affected landowner, the Applicant intends to remove one residence and two associated uninhabited farm buildings for construction of this project. Significant overall impacts to commercial, industrial, residential, recreational, and institutional land uses are not anticipated, as these uses are either not present, or they would continue with minimal disruption.

Regional Planning

Highland County does not have a comprehensive land use plan. The project is also located in Union and Dodson townships, which also do not have formally adopted land use plans. The Village of Lynchburg is located approximately one mile west of the proposed facility. Project development would not occur within the jurisdiction of the village; therefore, Lynchburg's community plans

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."

and development are unlikely to be adversely affected. The proposed solar facility would be expected to aid long-term regional development by increasing tax revenues, enhancing employment, and increasing economic contributions to the local economy.

The project is also 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. Continuing nearby farming activities would require only minor modifications, aside from temporary disruptions that could occur during construction.

Recreation

Construction and operation of the facility would not physically impact any recreational areas. The Applicant surveyed for recreational areas within a ten-mile radius of the proposed facility. Multiple recreational resources are present. These resources include various wildlife reserve areas, grassland preservation, a city park, the county fairgrounds, and two golf courses.¹⁸

Two wildlife areas are located immediately adjacent to the facility. However, the Applicant asserts that the presence of extensive woodlots effectively screens these wildlife areas from the project and the Applicant's viewshed analysis also determined that adverse impacts to these areas are not likely. The distance from the remaining recreational resources exceeds five miles. The Applicant asserts that the project "will not be visible to any of the recreational areas that are five miles or greater" from the project area.¹⁹

Aesthetics

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

An anti-glare coating would be installed on the solar panels to maximize the amount of solar energy captured by the panels, which would also have the aesthetic benefit of glare reduction. Typically, the solar panels would be installed no higher than 15 feet above ground level. Based on the results of the Applicant's five-mile visual resources report, it is "unlikely that any part of the Facility would be visible beyond two miles away, considering the existing structures and vegetation as well as the limitations of human eyesight."²⁰

Staff reviewed the Applicant's visual impact analysis, which includes a proposed mitigation plan. 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 residential properties that are adjacent to the proposed facility.

18. Application, p. 70.

19. Application, p.70.

20. Application, p. 71.

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.

In addition to vegetative screening mitigation measures, Staff is concerned about aesthetic impacts related to the project's perimeter fencing. Chain-link fence designs have previously elicited many negative public comments and concerns from adjacent residents living near proposed solar facilities. These concerns center on the concepts that chain-link fences generally are more aesthetically intrusive, out-of-character in rural settings, and less wildlife friendly than other fencing options such as *deer fences* and wooden fences with woven wire designs.

Originally, the Applicant proposed using "chain-link fence with barbed wire affixed on top."²¹ Subsequently, in response to Staff data requests the Applicant stated, "From our community engagement, we have noted concern around the use of barbed wire that would be installed as a security feature atop the fencing. Palomino Solar is taking these public comments into consideration and is currently having internal discussions regarding security of the fencing without the barbed wire. Palomino Solar is willing to commit to installing a solar energy project perimeter fence of a design that is more aesthetically fitting for a rural location and type that is small-wildlife permeable provided, however, that this type of fencing shall not apply to Project substation fencing."²²

Additionally, the Applicant intends to design its facility with setbacks from its fence line to non-participating residences, non-participating properties, and public roads. Specifically, the Applicant proposed to implement the following setbacks: 100 feet from a non-participating residence to solar panels, 40 feet from the property line of any non-participating property to the solar project's perimeter fence, and 40 feet from the edge of a public road to the solar facility fence. To mitigate visual impacts to neighboring parcels, Staff recommends that the Applicant implement a minimum setback from the project's solar modules of at least 150 feet from non-participating parcel boundaries, at least 300 feet from non-participating residences, and at least 150 feet from the edge of any state, county, or township road within or adjacent to the project area.

With implementation of Staff's aesthetic, fencing, and setback conditions, the overall expected aesthetic impact would be minimal.

21. Application, p. 15.

22. Response to Staff data request docketed February 9, 2022.

*Cultural Resources*²³

The Applicant enlisted a consultant to perform a Historic Architectural Reconnaissance Survey in April of 2021.²⁴ The survey covered a two-mile radius around the project area. This review was initially based on data provided by the OHPO online geographic information system mapping, Ohio Historic Inventory, the Ohio Archaeological Inventory, Ohio Department of Transportation Historic Bridge Inventory, and National Register of Historic Places (NRHP) files. The Applicant obtained information on historic cemeteries from the Ohio Genealogical Society. No national historic landmarks were identified in the Area of Potential Effects (APE).

The historic survey identified 208 properties, of which two sites were confirmed as potentially eligible for NRHP and likely to have adverse visual effects from the project. The Applicant has since confirmed that the nearest above-ground project component is more than 1,000 feet away from the closest site. Additionally, the Applicant has agreed to implement vegetative screening around the project in accordance with the landscape plan to preserve the traditional visual landscape for the second site.

The Applicant's archaeological survey resulted in the identification of 83 previously unrecorded underground sites. The Applicant determined that most of these sites were not likely to yield additional information about Ohio prehistory or history. The OHPO concurs with the opinion of the Applicant's consultant that three archaeological sites are potentially eligible for inclusion in the NRHP and recommended for additional testing or avoidance.

The Applicant subsequently confirmed that two of the archaeological sites would be fully avoided, as they are approximately 1.70 miles from the project boundary and well outside the APE. The remaining site (located adjacent to the perimeter fencing) would be fully avoided by project design.

Staff has reviewed the Applicant's architectural and archaeological surveys and recommendations pertaining to potential impacts, OHPO's recommendations, and a signed Memorandum of Understanding that has been executed. Staff concurs with the OHPO that the project is not expected to have any adverse effect on historic or archaeological properties.

Economic Impact

The Applicant states that it would be responsible for the construction of the proposed project. The Applicant plans to acquire all necessary permissions, permits, and voluntary lease agreements. All structures and affiliated equipment that are built for the project will be the property of the Applicant.

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

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

24. Application, Exhibit O.

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 cited a 2021 report published by the Lawrence Berkeley National Laboratory (Berkeley Lab) states that utility-scale solar capital costs fell to \$1,400/kWAC in 2020. Staff confirmed that the Applicant's proposed capital costs are consistent with those reported by the Berkeley Lab.

O&M expense comparisons between the proposed facility and other comparable facilities are to be provided in the application. The Applicant cited a report from the Berkeley Lab that O&M costs for utility scale solar projects were \$16/kWAC-year for projects constructed in 2020. Staff also notes that the National Renewable Energy Laboratory (NREL), in its 2021 update on utility-scale solar costs, reports that O&M costs were \$16/kW/year for fixed-tilt PV facilities and \$17/kW/year for facilities using tracking systems. Staff confirms the Applicant's costs are below this range.

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 result in idle construction crews and equipment. The Applicant's characterization of its estimated costs of delays appears reasonable to Staff.

The Applicant retained the services of Cardno to report on the economic impact of the project.²⁵ Cardno used the NREL Jobs and Economic Development Impact (JEDI) model 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 model was 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 Cardno, the project is expected to have the following impacts:

Jobs

- 564 construction related jobs for the state of Ohio
- 18 long-term operational jobs for the state of Ohio

Earnings

- \$38.8 million in local earnings during construction for the state of Ohio
- \$1.2 million in annual earnings during facility operations for the state of Ohio

Output

- \$60.1 million in output during construction of the facility for the state of Ohio

25. Cardno is an infrastructure and environmental consulting firm operating in more than 100 countries.

- \$2.1 million in annual output during facility operations for the state of Ohio

The project is estimated to generate between \$1.4 million and \$1.8 million annually for Highland County taxing districts. This estimate is based on a proposed Payment in Lieu of Taxes (PILOT) plan in which the Applicant would pay between \$7,000/MW and \$9000/MW annually for a total of 200 MW. On February 10, 2021, the Highland County Board of Commissioners approved the Applicant's Qualified Energy Project Tax Exemption application. This approval enables the Applicant to enter into a PILOT agreement with Highland County, although a proposed annual payment amount has not been announced²⁶.

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, airport runways, airport air traffic control tower(s), and at nearby residences.²⁷ To perform the analysis of glare, the Applicant used ForgeSolar's software formerly known as the Solar Glare Hazard Analysis Tool (SGHAT) which was developed by Sandia National Laboratories to analyze potential glare at sensitive receptor locations. This software is commonly used by solar facility developers to determine the effect of solar glare. Glare is classified in three categories in the SGHAT tool: (1) the green type, which is associated with a low potential for temporary after-image when observed prior to a typical blink response time; (2) the yellow type, which is associated with a potential for temporary after-image when observed prior to a typical blink response time; and (3) the red type, which is associated with the permanent retinal damage when observed prior to a typical blink response time. The Applicant found that no glare (i.e., no minutes of either green, yellow, or red type) from the project is predicted to vehicles using the roadways or nearby residences. Staff agrees with the study results. Staff notes that aesthetic impact mitigation measures that include vegetative plantings may also further reduce potential impacts as part of a landscape and lighting plan, which Staff has recommended for this project.

Decommissioning

The Applicant holds land rights to and estimates that the solar facility can operate for 30 years or more. The Applicant has prepared a decommissioning plan and total decommissioning cost estimate of \$19,876,400. Staff has reviewed that decommissioning plan.²⁸

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, which is largely agricultural land with cultivated crops. Prior to the start of any decommissioning activities, the Applicant

26. Highland County Board of Commissioners. (2021, February 10). Highland County Board of Commissioners' Agenda. Available at: <https://co.highland.oh.us/wp-content/uploads/2021/06/02-10-2021.pdf>

27. Application at Exhibit L.

28. Application at Exhibit G.

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 the following permits and authorizations, at the least, an Ohio EPA Construction Storm Water General Permit, ODOT special hauling permit, Highland County building, road, or erosion control permits, and Highland County Soil and Water Conservation district 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 de-energizing and disconnecting the solar facility from the grid, removing solar panels, removing trackers, removing vertical support piles, removing inverters, removing electrical cables to a depth of at least 42 inches, removing access roads, grading the site, removing the substation, removing the O&M building, and revegetating disturbed land to pre-construction conditions, to the extent practicable. At the request of the landowner, the Applicant may leave access roads or fencing in place. The Applicant indicates that some components of the solar facility may be left in place, such as the underground electric collection system buried at least 42 inches deep, since their removal would not be necessary to return the farm fields to cultivation. 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 an 18-month period. The Applicant has clarified that it anticipates that revegetation, including monitoring of the seeding, and re-establishment of drainage features back to preconstruction conditions may occur after one year. Based on the weather dependent nature of site restoration, the Applicant has committed to monitor the site to ensure successful revegetation and rehabilitation.

The Applicant intends to restore the land to its pre-construction condition including establishment of drainage features.²⁹ With that drainage restoration, the Applicant indicates that to the extent that any deeply buried underground facility components, buried at least 42 inches below ground, may remain after decommissioning, the landowner could work around those if encountered during tile maintenance or additional drain tile installation.

The Applicant states it would repurpose, salvage, recycle or haul offsite 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 systems, 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 is considering panels and intends to use only panels that have been certified to comply with the US EPA's TCLP test and meet U.S. EPA definition of non-hazardous waste. Staff recommends that at the time of solar panel end of life disposal, any retired panel material that is not recycled and that is marked for disposal, shall be sent to an engineered landfill with various barriers and methods designed to prevent leaching of materials into soils and groundwater, or another appropriate disposal location at the time of decommissioning approved by Staff.

During construction of the facility, the Applicant would perform grading and topsoil addition to bring the ground elevations up to the designed finished grade elevations of the proposed solar facility. The Applicant anticipates that minimal grading is necessary because of the existing

29. Response to Staff data request response filed February 9, 2022 by the Applicant.

relatively flat topography; minimal grading would be a change of plus or minus two feet. Also, the Applicant would perform temporary excavations for trenching, access roads, and foundation construction.

Staff recommends that the Applicant submit a final grading plan which demonstrates, in compliance with the decommissioning condition, that the project would not obstruct future agricultural land use or a land use otherwise specified by the landowner. Staff recommends that the plan include preconstruction and proposed one-foot contours referenced to U.S. Geological Survey datum, drainage arrows which delineate preconstruction and proposed drainage patterns, estimated earthwork quantities including the amount of cut and fill and the amount of soil to be exported or imported, the location of proposed areas of cut and fill including the extent and maximum depth of cut and fill, the location of proposed project infrastructure, and the location of existing surface waterbodies.

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.

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 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; (h) a provision stating that the bond shall be recalculated every five years by an engineer retained by the Applicant; and (i) a provision that underground equipment will be removed to the extent that allows for future drain tile repairs and installation to be completed. And lastly, Staff recommends that the Applicant implement and comply with the decommissioning plan as approved by Staff.

Wind Velocity

The Applicant has indicated that the facility would be designed and installed to withstand and minimize potential damage from high-wind occurrences. The Applicant indicates that the solar facility would be designed in conformance with relevant portions of the Ohio Building Code, particularly Ohio Adm.Code 4101:1-16-01 (Structural Design). According to the Applicant, the solar facility foundation designs would incorporate wind speeds and wind maps from American Society of Civil Engineers (ASCE) standards and a formal report from the tracker manufacturer. The Applicant has found that this project area of Highland County would necessitate that its solar

equipment, in accordance with the ASCE standard, be designed to withstand a wind design load of 100 mph. Further, the Applicant indicates that its racking contractor will perform a formal engineering analysis report of high wind velocities for the project area prior to construction upon final selection of solar equipment components. Staff recommends that the Applicant provide this formal engineering analysis report to Staff for review and acceptance at least 30 days prior to the preconstruction conference.

The support piles for the racking typically would be made of galvanized steel and would be installed, based on the site-specific soil sampling and after further geotechnical testing, at sufficient depths to prevent the movement of the associated equipment from wind. During the final engineering design, the Applicant would also select racking and solar panels with specific wind ratings from the manufacturers to ensure performance during high wind speeds. The tracking systems dependent on model chosen and currently under consideration by the Applicant can withstand wind speeds ranging up to 140 miles per hour.³⁰ The racking system would also include a stowing feature. Stow features also can tilt panels to a certain angle to reduce wind loading on the solar panels during high wind speed events.

The Applicant and Staff have found that components of the proposed facility are generally not susceptible to damage from high winds except for tornado-force winds, because generally panels and racking systems proposed have wind speed design load ratings inherent in their design.

Roads and Bridges³¹

The Applicant has yet to finalize its delivery route, although it is expected that deliveries to the project site would be by way of U.S. Route 50 and State Route 124. The county and township roads adjacent to the project would receive traffic due to construction. The Applicant evaluated approximately 18 of these roads for their viability to carry construction traffic.

The Applicant conducted a Transportation Effect and Route Evaluation Study to identify any possible restrictions to accessing the site. Bridge conditions, pavement conditions, road width, overhead obstructions, load restrictions, and culvert conditions were evaluated during an on-site consultation. According to the Applicant's evaluation³², the transportation infrastructure is in sufficient condition to carry the necessary construction traffic. The Applicant expects minimal negative impact on roadway surfaces. Staff agrees with this assessment.

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. Staff notes 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, Staff does not anticipate any additional traffic for the project beyond routine maintenance. The Applicant may enter into a Road

30. Application at Exhibit A.

31. 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>.

32. OPSB Case Number 21-0041-EL-BGN Exhibit B.

Use Maintenance Agreement with Highland County. Any damaged public roads and bridges would be repaired by the Applicant under the guidance of the appropriate regulatory authority.

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 construction period. 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.

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.³³ The Applicant's noise consultant noted that below 40 dBA a standard like "ambient plus five dBA" loses meaning as the project sound is so low that the possibility of community disturbance is extremely low. Staff agrees with this conclusion and will be suggesting a condition that uses 40 dBA as a limit if the "ambient plus five dBA" limit is less than 40 dBA. No non-participating receptors were modeled to receive daytime noise impacts greater than the daytime ambient noise level plus five dBA (43 dBA) or 40 dBA at nighttime. 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 daytime noise impacts greater than the daytime ambient noise level plus five dBA or nighttime impacts greater than 40 dBA.

33. For the sound propagation model, the model used for the inverter/transformer was the SMA Model SC4200-UP 4.2 kW, and the model used for the substation transformer was a 250 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.

Geology³⁴

*Surficial/Glacial*³⁵

The project area lies within the glaciated margin of the state and includes several Illinoian-age glacial features. The project area is covered by the silt loam till of the flat Illinoian ground moraine and Wisconsinan loamy till. Glacial drift thickness throughout the project ranges from zero to 78 feet thick. The majority of the southern portion of the project area has less than 10 feet of drift thickness prior to bedrock contact.³⁶

*Bedrock*³⁷

The uppermost bedrock unit in the project area is the Peebles Dolomite, Lilley Formation, and Bisher Formation Undivided. This unit occurs in the far northeastern portion of the project area. Underlying this is the Estill Shale. Underlying the Estill Shale is the Dayton Limestone, Noland Formation and Brassfield Undivided. Underlying the Brassfield Formation is Drakes Formation and Waynesville Formation Undivided in the western portion of the project area. Bedrock may be exposed at the surface within the boundaries of the project area due to the thin glacial drift cited above.³⁸ The shallow bedrock could cause difficulties during construction but is not suspected to have a significant impact. Boulder belts are common in this area.

34. 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>>).

35. "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>>).

36. ODNR Ohio Geology Viewer Interactive Map <https://gis.ohiodnr.gov/website/dgs/geologyviewer/#>

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

38. Page 6 of Exhibit C (Preliminary Geotechnical Engineering Report by Terracon).

*Karst*³⁹

Conditions typically necessary for the formation of karst geology features do exist throughout the entire project area. The nearest documented (ODNR Geologic Survey confirmed) sinkhole feature is approximately 1/10th of a mile outside of the project area.⁴⁰

*Oil/Gas and Mining*⁴¹

ODNR records indicate that one oil and gas well is present within one mile of the project area. Records indicate this well, located just north of the project's central footprint is plugged and abandoned.⁴² No Class II injection well activity occurs within several miles of the project area.

The proposed project area abuts an active limestone quarry (Martin Marietta Aggregates).⁴³ The proposed solar facility construction and operations is not expected to impact the mining operation.⁴⁴ No known abandoned underground mines are located within several miles of the project area.

*Seismic Activity*⁴⁵

Recent geologic history shows Highland County to be at low risk for seismicity caused by earthquakes as only two earthquakes have been documented in the county.⁴⁶ The nearest event epicenter occurred approximately 2.2 miles southeast of the project area. Based on site specific boring/coring data down to 25 feet below ground level (BGL), and estimation of site properties to 100 feet BGL, the application assigns a Class D Seismic Site Classification in accordance with Chapter 20.4 of the ASCE 7 and the International Building Code. Additional deeper borings or geophysical testing may be performed to confirm the conditions below the current boring depth.⁴⁷

39. Karst terrain is formed within carbonate (e.g., limestone or dolomite) or evaporite (e.g., anhydrite or gypsum) rocks through mineral dissolution caused by movement of water. Most common karst features include the formation of underground caves or channels, or the formation of depressions and 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.

40. February 8, 2022 ODNR Geological Survey review letter and ODNR Karst Viewer Interactive Map https://gis.ohiodnr.gov/website/dgs/karst_interactivemap/

41. 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>>).

42. ODNR Oil and Gas Viewer Interactive Map <https://gis.ohiodnr.gov/MapView/?config=OilGasWells>

43. ODNR Mines Viewer Interactive Map <https://gis.ohiodnr.gov/MapView/?config=OhioMines>

44. Applicant’s May 23, 2022 response to Staff’s data request.

45. 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>>).

46. ODNR Earthquake Epicenters <https://gis.ohiodnr.gov/MapView/?config=Earthquakes>

47. Page 8 of Exhibit I (Preliminary Geotechnical Engineering Report by Terracon).

The Applicant has indicated that no blasting activities are anticipated for the construction or operation of the proposed solar facility.⁴⁸

Soils⁴⁹

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 loess over glacial till. Westboro, Clermont, and Jonesboro are the most common soil series found within the boundaries of the project area. Together these soils cover over 81 percent of the project area. The hydric Clermont Soil represents approximately 51 percent of the project area. There is a low to moderate risk of shrink-swell potential in these soils. Slope is variable with slope seldom exceeding a six percent grade.

Geotechnical Report

A preliminary geotechnical recommendation report prepared by Terracon discusses the geotechnical work performed to date. To further evaluate soil properties, 24 borings were advanced to a depth range of 8.8 to 25 feet BGL with the large majority terminating at approximately 15 feet BGL. The Applicant conducted field electrical resistivity testing, laboratory testing for thermal resistivity, compressive strength testing, and corrosion analyses. Ground water as shallow as 2.5 feet was recorded in 10 of the 24 borings.

On June 3, 2022, the Applicant updated its preliminary geotechnical report to include the results of pile load testing completed to date. Axial uplift and lateral load testing were conducted at 31 sites throughout the project area. Additional pile load testing is recommended as part of the final design phase.⁵⁰

The geotechnical report includes recommendations that additional borings be conducted where test borings conducted during the preliminary geotechnical investigation encountered refusal prior to 10 feet BGL. Additional soil laboratory testing and pile load testing is also recommended.

Conclusion

It is unclear if bedrock was encountered during the preliminary geotechnical boring study. However, shallow bedrock may present the need for pre-drilling pile foundations verses conventional pile-driving construction techniques. Additional borings are planned to further assess the depth to bedrock. The investigation may include rock coring

48. Applicant's February 25, 2022 response to Staff's third data request.

49. The United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) 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>>).

50. Page 11 of Exhibit I (Preliminary Geotechnical Engineering Report by Terracon) and page 2 of the revised Preliminary Geotechnical Engineering Report provided on June 3, 2022.

Conditions necessary for the formation of karst geology features do exist throughout the project area. Staff advises, that should karst features be discovered during further geotechnical studies or during construction, the Applicant's primary mitigation should be avoidance measures. In the unlikely event karst features are found to be extensive, thereby rendering avoidance unfeasible, additional mitigation options would be evaluated by the geotechnical engineer of record at that time and submitted to Staff for review and concurrence.

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. Per the preliminary geotechnical engineering report findings, Staff also recommends that the Applicant conduct additional pile load testing and additional borings as part of the final design level study. In addition, Staff recommends a final Unanticipated Discovery Plan be submitted prior to the pre-construction meeting.

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.

Ecological Impacts

Public and Private Water Supplies⁵¹

There are up to two private water wells within the project area as indicated by the ODNR and by Figure 08-1 of the application.⁵² The Applicant consulted the landowners to update the correct location of these water wells and found that these two water wells are at least 80 feet from solar panels and outside of the proposed solar facility perimeter fence.⁵³ The Applicant updated the

51. "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." (US EPA, Summary of Clean Water Act, <<https://www.epa.gov/laws-regulations/summary-clean-water-act>>). The Ohio EPA Division of Surface Water "ensures compliance with the federal Clean Water Act and works to restore and enhance the integrity of Ohio's waters." (Ohio EPA, 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 generally provides for the Ohio EPA to administer and enforce most laws and regulations regarding water pollution control and safe drinking water. See R.C. Chs. 6111 and 6109. 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." (Ohio EPA, Division of Drinking and Ground Waters, <<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." (Ohio EPA, Division of Drinking and Ground Waters, <<https://www.epa.ohio.gov/ddagw/#116665774-about-the-drinking-water-program>>); Private water systems are regulated by the Ohio Department of Health under R.C. 3701.344 to 3701.347 and Ohio Adm.Code 3701-28.

52. Application at Figure 08-1 and Exhibit P.

53. Staff data request response filed February 9, 2022 by the Applicant.

locations of the water wells on project mapping and did not find any other water wells within its project area after further consultation with landowners. The Applicant does not anticipate adverse impacts to the nearest water wells, because these two water wells are outside the project footprint and these water wells would be avoided.

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

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

*Surface Waters*⁵⁴

The Applicant delineated 68 streams, including 35 intermittent streams, 20 ephemeral streams, and 13 perennial streams. Seven ponds were delineated within the project area. The Applicant anticipates 0.6 acres of temporary impacts to streams during construction with 0.005 acres of permanent impacts. The Applicant has designed the project to avoid all remaining streams and ponds during and after construction. The Applicant states that stream crossings by underground collection lines may be accomplished via HDD. HDD is typically preferred to open-cut trenching when crossing surface water resources as impacts can be avoided in most cases. However, the HDD process includes the risk of a frac-out. A frac-out occurs when the drilling lubricant, typically water or a non-toxic, fine clay bentonite slurry, is forced through cracks in bedrock and/or surface soils. The Applicant will submit a frac-out contingency plan prior to the start of HDD construction activities. Staff also recommends that the Applicant have an environmental specialist on site during construction activities where HDD activities may impact surface waters. The environmental specialist should have authority to stop HDD activities to ensure that any impacts related to a frac-out are addressed. In order to avoid potential impacts to listed mussel and fish species, Staff recommends the avoidance of all impacts to perennial streams through facility design, HDD or other methods.

The Applicant delineated 59 wetlands in the project area. All wetlands are Category 1 and Category 2 wetlands.⁵⁵ The Applicant anticipates 0.5 acres of temporary wetland impacts during

54. 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 website 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>).

55. 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.

construction with 0.06 acres of permanent wetland impacts. The Applicant has designed the project to avoid all remaining wetlands during and after construction.

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

Specifics about how surface waters would be further protected from indirect construction stormwater impacts using erosion and sedimentation controls would be outlined in the Applicant's SWPPP. The Applicant would obtain an Ohio National Pollutant Discharge Elimination System (NPDES) construction stormwater general permit through the Ohio EPA prior to the start of construction. The Applicant would implement Ohio EPA published Guidance on Post-Construction Storm Water Control for Solar Panel Arrays to project construction and operation. The project area does not overlap a 100-year floodplain and would therefore not impact a 100-year floodplain.

Threatened and Endangered Species⁵⁶

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

56. 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.*

MAMMALS				
Common Name	Scientific Name	Federal Status	State Status	Presence in Project Area
Indiana bat	<i>Myotis sodalis</i>	Endangered	Endangered	Known range, presence established in project area.
northern long-eared bat	<i>Myotis septentrionalis</i>	Threatened	Endangered	Historical range includes the project area.
Little brown bat	<i>Myotis lucifugus</i>	N/A	Endangered	Historical range includes the project area.
Tricolored bat	<i>Perimyotis subflavus</i>	N/A	Endangered	Historical range includes the project area.
BIRDS				
Common Name	Scientific Name	Federal Status	State Status	Presence in Project Area
bald eagle	<i>Haliaeetus leucocephalus</i>	Bald and Golden Eagle Protection Act	N/A	Known nest exists within project area.
King rail	<i>Rallus elegans</i>	N/A	Endangered	Known range. Potentially suitable nesting habitat present in project area.
Loggerhead shrike	<i>Lanius ludovicianus</i>	N/A	Endangered	Known range. Potentially suitable nesting habitat present in project area.
REPTILES				
Common Name	Scientific Name	Federal Status	State Status	Presence in Project Area
Timber rattlesnake	<i>Crotalus horridus</i>	Species of concern	Endangered	Known range.

The USWFS identified a bald eagle nest within the project area. The bald eagle is not a threatened or endangered species, but it is protected by the Bald and Golden Eagle Protection Act. As such, Staff recommends the Applicant adhere to USFWS's recommended guidelines to avoid negatively impacting this species, including not clearing trees within 660 feet of known nests, or within the woodlots supporting the nest trees, and working in proximity to the nests only between August 1 and January 14.

The project area is within the range of state and federal endangered Indiana bat (*Myotis sodalis*), and the state and federal threatened northern long-eared bat (*Myotis septentrionalis*), the state endangered little brown bat (*Myotis lucifugus*), and the state endangered tricolored bat (*Perimyotis subflavus*). Presence of the northern long-eared bat, little brown bat, and the tricolored bat has already been established in the project area. In order to avoid impacts to listed bat species, Staff recommends the Applicant adhere to seasonal tree cutting dates of October 1 through March 31 for all trees three inches or greater in diameter, unless coordination efforts with the ODNr and the

USFWS reflects a different course of action. The Applicant states all tree clearing would occur outside of the seasonal tree cutting dates. The project would not impact any hibernacula. No impacts to these species are anticipated.

Suitable habitat exists within the project area for the king rail. The ODNR recommends construction be avoided in king rail suitable habitat during the species nesting period of May 1 through August 1 in order to avoid impacts to this species.

Suitable habitat exists within the project area for the loggerhead shrike. The ODNR recommends construction be avoided in loggerhead shrike suitable habitat during the species nesting period of April 1 through August 1 in order to avoid impacts to this species.

The project lies within the range of several federal and state listed fish and mussel species. Impacts to these aquatic species would not occur as no in-water work is planned for the project. Impacts to other listed species would be avoided due to a lack of proposed impacts to suitable habitats.

Vegetation

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

VEGETATIVE COMMUNITIES WITHIN PROJECT AREA	
Vegetation Community Type	Total (Acres)
Agricultural Land	2517.70
Forestland	209.70
Hay/Pasture	69.60
Wetlands	1.2

Current land use of the project area is mainly agricultural. Permanent vegetative impacts would occur primarily within agricultural lands. The Applicant states approximately 13.8 acres of tree clearing would be necessary.

The Applicant has developed a vegetation management plan in which it would incorporate pollinator-friendly habitat in accordance with the recommendations of the Ohio Pollinator Habitat Initiative.⁵⁷ 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. To assure that these benefits would be realized, Staff recommends that the Applicant prepare an updated vegetation management plan in consultation with the ODNR, which the Applicant has committed to. The plan shall include planting a minimum of 70 percent of the impacted project area in beneficial vegetation, utilizing plant species listed in Attachment A of Ohio Department of Natural Resources Recommended Requirements for Proposed Solar Energy

57. The ODNR website states: “ODNR provides recommended requirements for planning and development of solar energy facilities which are subject to Ohio Power Siting Board approval and certification.” ODNR considers the purpose of these recommendations to “provide guidance to developers on incorporating practices into a project to lessen impacts to Ohio’s wildlife and water resources and enhance pollinator habitat.” (ODNR, Recommended Requirements For Planning and Development of Solar Energy Facilities, <https://ohiodnr.gov/discover-and-learn/safety-conservation/about-ODNR/news/recommended-requirements-solar-energy-facilities>).

Facilities in Ohio, and shall follow the Ohio Solar Site Pollinator Habitat Planning and Assessment Form with a minimum score of 80 points. The plan shall include a narrative on how the project proposes to establish and maintain beneficial vegetation and pollinator habitat in accordance with the guidelines provided above. The plan shall include mapping of the areas where pollinator habitat would be established and maintained. The plan shall include that routine mowing would be limited to fall/spring seasons, as needed, to allow for natural reseeding of plantings and reduce impacts to ground-nesting birds. To assure land stabilization, Staff also recommends that the plan specify that seeding be applied to graded areas prior to infrastructure installation.

Staff also recommends that the Applicant take steps to prevent establishment and/or further propagation of noxious weeds identified in Ohio Adm.Code 901:5-37 and invasive plant species identified in Ohio Adm.Code Rule 901:5-30-01 during implementation of any pollinator-friendly plantings. Staff notes that vegetation reestablishment and weed control may take several growing seasons.

Recommended Findings

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

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

MINIMUM ADVERSE ENVIRONMENTAL IMPACT

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

Site Selection

The Applicant's site selection process focused on the following criteria: solar resources, access to the bulk power transmission system, area topography and geology, land use characteristics, population density, and landowner interest. Prior to submitting the application, the Applicant engaged local officials and the public.

Minimizing Impacts

Several archaeological sites within the project area were identified as potentially eligible for listing on the NRHP. The Applicant has agreed to avoid all potentially eligible sites. Staff concurs with the OHPO that the project is not expected to have any adverse effect on historic or archaeological properties.

The proposed facility would have an 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 does not appear to 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 account for geological features and that the Applicant develop a final Unanticipated Discovery Plan to account for any previously unknown conditions or features discovered during the proposed construction.

It appears unlikely that the proposed solar facility construction or operation would adversely impact public or private drinking water supplies.

Minimal impacts are proposed to wetlands and streams. Impacts to any state or federal listed species can be avoided by following seasonal restrictions for construction in certain habitat types, as detailed by the USFWS and the ODNR. The Applicant did not identify any listed plant or animal species during field surveys. The project would not impact 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. If the Applicant chooses an inverter or transformer model with a higher sound power level than the representative models used in the Noise Evaluation, Staff recommends that the Applicant submit an updated noise study, using noise data from the inverter or transformer chosen for the project. The updated noise study would confirm that sound levels would not exceed the ambient level plus five dBA at any non-participating sensitive receptor to assure that operational noise impacts are minimal.

During the construction period, local, state, and county roads would experience a temporary increase in truck traffic due to deliveries of equipment and materials. The Applicant may enter into a road use agreement with the county. Any damaged public roads and bridges would be repaired by the Applicant under the guidance of the appropriate regulatory authority.

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. Further, Staff has recommended a condition that the Applicant implement a minimum setback from the project's solar modules of at least 150 feet from non-participating parcel boundaries, at least 300 feet from non-participating residences, and at least 150 feet from the edge of any state, county, or township road within or adjacent to the project area.

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 ensure that adverse impacts to drain tile systems will not extend outside the project area. Following decommissioning of the facility, land can be restored for agricultural use.

The Applicant has prepared a draft plan to decommission the solar facility. The Applicant would provide for financial security to ensure that funds are available for decommissioning/land restoration. The Applicant would restore the land significantly to its original topography to allow for resumption of agricultural use. 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 200 MW. The project will connect to the regional transmission grid through a gen-tie line into a new 138 kV three circuit breaker switchyard constructed at the project site and operated as a ring bus. The interconnection will be made with the AEP transmission system utilizing the new switching station and joining the Hillsboro-Middleboro Switch section of the Hillsboro-Hutchings 138 kV circuit. The new switching station will also utilize associated protective and control equipment, line risers, revenue metering, switches and related SCADA equipment.

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).⁵⁸

PJM Interconnection

The Applicant submitted two generation interconnection requests for the proposed facility to PJM. For the initial request of March 31, 2020, PJM has assigned the queue ID AF2-440 under the name "Hillsboro-Middleboro 138 kV", which requested an injection of 50 MW. The second request of August 31, 2020 was assigned queue ID AG1-107, also under the name of "Hillsboro-Middleboro 138 kV," and requested an increase of 150 MW. PJM has completed and issued the Feasibility Study reports for AF2-440 and AG1-107 in July 2020 and January 2021, respectively.⁵⁹ PJM has

58. 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.

59. PJM Interconnection, "New Services Queue", Feasibility Study for Queue IDs: AF2-440 and AG1-107, accessed March 12, 2021, <https://www.pjm.com/planning/services-requests/interconnection-queues.aspx>

completed and issued the System Impact Study reports (SIS) for AF2-440 and AG1-107 in March 2021 and August 2021, respectively.^{60, 61}

The Table below shows the queue positions assigned to the Applicant by PJM.

PJM QUEUES: PALOMINO SOLAR PROJECT			
Queue ID	Queue Date	Power Output (MW)	Capacity (MW)
AF2-440	3/31/2020	50	25
AG1-107	8/31/2020	150	85.7
Totals		200	110.7

PJM studied the interconnection as an injection into the BPS via the AEP Hillsboro-Middleboro 138 kV transmission line. The Applicant requested a total injection of 200 MW, of which 110.7 MW could be available in the PJM capacity market. The capacity market ensures that there is an adequate availability of generation resources that can meet current and future demand.

PJM Network Impacts

PJM analyzed the proposed facility interconnected to the BPS. The 2023 summer peak power flow model was used by PJM to evaluate regional reliability impacts for queue project AF2-440 as a 50 MW injection into the Hillsboro-Middleboro section of the Hillsboro-Hutchings 138 kV circuit with a commercial probability of 100 percent. The project was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, Transmission Operators, etc.). The studies identified no problems associated with the queue project AF2-440.

The 2024 summer peak power flow model was used by PJM to evaluate regional reliability impacts for queue project AG1-107 as a 150 MW injection into the Hillsboro-Middleboro section of the Hillsboro-Hutchings 138 kV circuit as an uprate to the PJM project AF2-440. The study revealed one breaker that may be slightly overloaded following a multiple facility contingency. Potential congestion due to local energy deliverability was also identified. The Applicant has indicated that the corrective actions in the manner of network upgrades identified in the PJM Facility Study would be incorporated.⁶² The chart below displays the results of the PJM SIS for the regional footprint.

60. PJM Generation Interconnection, “System Impact Study for Queue Project AF2-440, accessed September 28, 2021, https://www.pjm.com/pub/planning/project-queues/impact_studies/af2440_imp.pdf.

61. PJM Generation Interconnection, “System Impact Study for Queue Project AG1-107, accessed September 28, 2021, https://www.pjm.com/pub/planning/project-queues/impact_studies/ag1107_imp.pdf.

62. PJM Generation Interconnection, “System Impact Study Report for Queue Project AG1-107, accessed September 28, 2021, https://www.pjm.com/pub/planning/project-queues/impact_studies/ag1107_imp.pdf.

**PJM REGIONAL SYSTEM IMPACTS
(2023 and 2024 Summer Peaks)**

Generation Deliverability – System Normal & Single Contingency Outage

Plant Output: Capacity Level – 110.7 MW	No Problems Identified
Category C and D – Multiple Contingency Outages	
Plant Output: Power Level 200 MW	One breaker may Overload with AG1-107 ⁶³

New System Reinforcements

PJM requires mitigation of contingencies that cause reliability violations which are initially caused by the addition of the Applicant’s project. There were no New System Reinforcements identified by PJM for queue AF2-440. There was one system reinforcement need identified in the SIS for AG1-107.⁶⁴

Contribution to Previously Identified Overloads – Network Impacts

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

Potential Congestion due to Local Energy Deliverability

PJM also studied the delivery of the energy portion of this interconnection request. Problems identified here would likely result in operational restrictions for the project. Network upgrades under this section would allow for the delivery of energy with operational restrictions. The studies identified no problems for the queue AF2-440, but operational restrictions were identified for the queue AG1-107.⁶⁵

Short Circuit Analysis

The short circuit analysis, which is part of the SIS, evaluates the interrupting capabilities of circuit breakers that would be impacted by the proposed generation addition. PJM performed a short circuit analysis, and no additional problems were identified for either queue.

Recommended Findings

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

63. The 138 kV breaker 174382063 from bus 05BEATTY (243453) to bus 05COLE (244022). Page 11/25 of the PJM System Impact Study Report for Queue position AG1-107.

64. The 138 kV breaker 174382063 from bus 05BEATTY (243453) to bus 05COLE (244022). Page 13/25 of the PJM System Impact Study Report for Queue position AG1-107.

65. PJM Generation Interconnection, “System Impact Study Report for Queue Project AG1-107, page 11/25, accessed September 28, 2021, https://www.pjm.com/pub/planning/project-queues/impact_studies/ag1107_imp.pdf.

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.

Air⁶⁶

Air quality permits are not required for construction or operation of the proposed facility. However, fugitive dust rules adopted under R.C. Chapter 3704 may be applicable to the construction of the proposed facility. The Applicant would control temporary and localized fugitive dust by using BMPs, such as using dust suppressants such as water to wet soil to minimize dust as needed. These methods are outlined in the ODNR's *Ohio Rainwater and Land Development Manual*. This method of dust control is typically used to comply with fugitive dust rules. The Applicant has also indicated that it would address, as promptly as possible, any dust generation complaints if received through the complaint resolution process.

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

Water⁶⁷

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

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

66. 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>>).

67. 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%20stre>ams). 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>).

- An individual permit or nationwide permit under Section 404 of the Clean Water Act (CWA), if necessary, as determined after final engineering.
- An Ohio Isolated Wetland Permit, if necessary, as determined after final engineering.

The Applicant would develop an SPCC plan to manage the storage and mitigate the unlikely release of hazardous substances, should the volume of aboveground storage of oil (e.g., for hydraulics or transformers) exceed the regulatory threshold in 40 CFR part 112. Additionally, an SWPPP would be developed to ensure compliance with the CWA and detail the BMPs to be implemented during the construction and operation of the facility.

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

Solid Waste⁶⁸

Debris generated from construction activities would include items such as plastic, wood, cardboard, metal packing/packaging materials, construction scrap, and general refuse. Construction of the facility would generate approximately 7,300 cubic yards of solid waste. 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. The onsite O&M building would generate solid wastes comparable to a typical small business office. No hazardous waste would be generated as part of project operations.

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

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

Aviation⁶⁹

The height of the tallest above ground structure would be the lightning mast at the collector substation at approximately 40 to 45 feet tall.⁷⁰ That height is under the height requirement from

68. 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.

69. 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.

70. Application at page 55.

the Federal Aviation Administration (FAA), pursuant to 14 CFR Part 77.9(a), for filing a Form 7460-1.

According to the Applicant, there are no public use airports or heliports within five miles of the project area.⁷¹ Staff confirmed through the FAA, that the closest public-use airports are the Wilmington Airpark (ILN) and Highland County (HOC) airport which are approximately ten and 11 miles from the proposed solar facility. According to the Applicant, there is one private use heliport, Bell Air Ranch heliport, approximately two miles south of, but not adjacent to, the solar project. An aircraft would need to obtain permission prior to landing at that private-use facility.

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.⁷² 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.

71. Application at page 47 and Figure 8-5.

72. 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 equipment. The current equipment under consideration is compliant with applicable Underwriters Laboratories and Institute of Electrical and Electronics Engineers standards. The Applicant intends to select leading suppliers, particularly a Tier 1 solar panel manufacturer and that all of the primary components of the solar facility will have standard industry warranties. The Applicant has also planned for the expenses of O&M for the solar facility to keep the facility in a safe and reliable status.⁷³

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 from its fence line to non-participating residences, non-participating properties, and public roads. Specifically, the Applicant would implement the following setbacks: 100 feet to a non-participating residence to solar panels, 40 feet from the property line of any non-participating property to the solar project's perimeter fence, and 40 feet from the edge of a public road to the solar facility fence. The Applicant would also incorporate any manufacturer recommended setbacks into its final site plan. As noted above in the aesthetics section, Staff has recommended additional setback distances.

The Applicant stated that it intends to restrict public access to the facility by enclosing the project area with a perimeter fence. The Applicant has proposed a chain-link fence that is at least seven-feet tall and is considering alternative fencing around the panel areas such as small-wildlife permeable fence that complies with applicable electrical code requirements. The Applicant intends that fencing around the substation would be a six-foot tall chain link fence topped with a one-foot tall, barbed wire strand and no more than eight-feet tall.⁷⁴ 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 in further consultation with potentially affected emergency response personnel. The Applicant has provided an example emergency response plan from its Hillcrest Solar facility, which Staff has reviewed.⁷⁵

Public Interaction and Participation

The Applicant hosted a public informational meeting for the project on March 9, 2021. Attendees were provided the opportunity to review information about the project, ask questions, and provide written comments. A list of questions and comments received through December 31, 2021, is available in Exhibit Q of the application.

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 the complaint resolution plan

73. Application at pages 30 and 31.

74. Application at page 15 and Staff data request responses filed February 9, 2022 and May 23, 2022.

75. Application at page 49 and Staff data request response filed February 9, 2022.

for construction and operation be filed on the docket no later than 30 days prior to the start of construction. The Applicant has committed to notifying affected property owners and tenants prior to the start of construction. Staff recommends that these notices be mailed to all residences, airports, schools, and libraries located within one mile of the project area; parties to this case; county commissioners, township trustees, and emergency responders; and any other person who requests updates regarding the project. Staff further recommends that a similar notice be mailed to the same recipients prior to the start of facility operations. Staff also recommends that the Applicant prepare a quarterly complaint summary report about the nature and resolution of all complaints received in that quarter and file these reports on the public docket during the first five years of operation.

The Administrative Law Judge scheduled public and evidentiary hearings for this proceeding. The local public hearing will be held on June 29, 2022, at 5 p.m. at the Wharton Building, Highland County Fairgrounds, 604 John Street #1030 in Hillsboro, Ohio 45133. The evidentiary hearing is scheduled to commence on July 13, 2022, at 10 a.m., at the offices of the Public Utilities Commission of Ohio, Hearing Room 11-C, 11th Floor, 180 East Broad Street, Columbus, Ohio 43215-3793.

The Board of Highland County Commissioners, the Ohio Farm Bureau Federation, Robert and Laurie Banks, and Sarah Rogers have filed to intervene in this proceeding.

Senate Bill 52

The passage of Senate Bill 52 (S.B. 52) provides new opportunities for county commissioners and township trustees to participate in the siting of solar projects in their community. The Palomino Solar Facility is one of the first projects partially impacted by the new legislation; it is grandfathered under S.B. 52 except for the ad hoc board member provision. County commissioners may choose one commissioner, or a designee, to serve as an ad hoc board member. In addition, township trustees may choose one trustee, or a designee, to serve as their ad hoc board member representative. Local government boards must designate ad hoc members within 30 days of notice of application completion.

The Board of Highland County Commissioners appointed Julie Bolender as its designee, and the Board of Trustees of Dodson and Union Townships appointed Trustee Ty Smith, as the ad hoc board members for this project.

Public Comments

As of the filing date of this report, 234 document records have been filed in the public comments of the case record. Each document record may include one or more public comments. Public comments include:

- A letter from the Board of Trustees of Dodson Township expressing the township's concern about proposed solar projects in Highland County.⁷⁶
- Letters from local residents in opposition to and in support of the project.

Commenters opposed to the proposed project expressed concerns about issues including traffic impacts, operational noise, agricultural land use and farmland preservation, agricultural

76. Letter from the Board of Trustees of Dodson Township filed May 18, 2021.

production, wildlife, drinking water and ground water, drainage and flooding, runoff pollution, property values, public health, aesthetics and viewshed, fencing, and the protection of eagle and quail habitats. Those supportive of the project emphasized support for landowner rights and the benefits of additional tax revenue for local government and schools, economic investment in the community, job creation, renewable energy, and lease payments for participating landowners. 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>.

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 1,410 acres of agricultural land and agricultural district land would be taken out of service by the proposed project. However, the repurposed land could be restored for agricultural use when the project is decommissioned.

The construction and operation of the proposed facility would disturb the existing soil and could lead to broken drainage tiles. A drain tile system consists of laterals, which are branches off a main, and main lines. Main lines can allow water to flow into or out of one parcel to another. The locating and avoiding of damaging drain tile mains can help prevent the pooling of water on project parcels and adjacent parcels.

When landowners lay down or repair drain tiles, they often keep records of the location of the drain tiles. The Applicant has consulted landowners and county officials to collect data on existing drain tiles within the project area. The Applicant has committed to promptly repair any drain tile main found to be damaged by the project during the operational life of the project.

The Applicant has committed to take steps to address potential impacts to farmland, including repairing all drainage tiles damaged during construction and restoring temporarily impacted land to its original use. The Applicant has also committed to maintain or improve the overall drainage of the project area. Excavated topsoil would be separated during construction and returned as topsoil after construction. Restored topsoil would be de-compacted and seeded after construction.

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. Water for these dust suppression and control activities would be obtained through local municipal sources.

Operation of the proposed facility would not require the use of significant amounts of water. The project would use an O&M building. The Applicant intends to comply with modern industry standards and the Ohio Building Code for water fixtures and usage at the O&M building. The Applicant does not anticipate that it would use water for solar panel cleaning.

Recommended Findings

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

V. RECOMMENDED CONDITIONS OF CERTIFICATE

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

- (1) The Applicant shall install the facility, utilize equipment and construction practices, and implement mitigation measures as described in the application and as modified and/or clarified in supplemental filings, replies to data requests, and recommendations in this *Staff Report of Investigation*.
- (2) The Applicant shall conduct a preconstruction conference prior to the commencement of any construction activities. Staff, the Applicant, and representatives of the primary contractor and all subcontractors for the project shall attend the preconstruction conference. The conference shall include a presentation of the measures to be taken by the Applicant and contractors to ensure compliance with all conditions of the certificate, and discussion of the procedures for on-site investigations by Staff during construction. Prior to the conference, the Applicant shall provide a proposed conference agenda for Staff review and shall file a copy of the agenda on the case docket. The Applicant may conduct separate preconstruction conferences for each stage of construction.
- (3) Within 60 days after the commencement of commercial operation, the Applicant shall submit to Staff a copy of the as-built specifications for the entire facility. If the Applicant demonstrates that good cause prevents it from submitting a copy of the as-built specifications for the entire facility within 60 days after commencement of commercial operation, it may request an extension of time for the filing of such as-built specifications. The Applicant shall use reasonable efforts to provide as-built drawings in both hard copy and as geographically referenced electronic data.
- (4) At least 30 days prior to the preconstruction conference, the Applicant shall provide Staff, for review and acceptance, the final Unanticipated Discovery Plan.
- (5) 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 a list of 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.

- (6) At least 30 days prior to the preconstruction conference, the Applicant shall provide Staff, for review and acceptance, the final geotechnical engineering report. This shall include a summary statement addressing the geologic and soil suitability.
- (7) Additional design level geotechnical investigation shall be conducted to include but not be limited to additional borings, soil laboratory testing, and pile load testing.
- (8) If any changes are made to the facility layout after the submission of final engineering drawings, the Applicant shall provide all such changes to Staff in hard copy and as geographically referenced electronic data. All changes are subject to Staff review for compliance with all conditions of the certificate, prior to construction in those areas.
- (9) Should karst features be identified during additional geotechnical exploration or during construction, the Applicant shall avoid construction in these areas when possible. If avoidance is not feasible, the Applicant shall propose any alternative recommendations to Staff for its review and concurrence.
- (10) At least 30 days prior to the preconstruction conference, the Applicant shall provide the formal engineering analysis report of high wind velocities for the project area to Staff for review and acceptance.
- (11) At least 30 days prior to the preconstruction conference, the Applicant shall submit its emergency response plan that includes and addresses, but is not limited to, the following: scope of the plan, communication and training, roles and responsibilities, medical emergencies, fire/explosion, confined space incidents, falls and high angle emergencies, weather related events or conditions, security incidents, and quantities and type of any specialized firefighting equipment necessary.
- (12) At least seven days before the preconstruction conference, the Applicant shall submit to Staff, for review and acceptance, a copy of all National Pollutant Discharge Elimination System permits including its approved Stormwater Pollution Prevention Plan, approved Spill Prevention, Control, and Countermeasure procedures, and its erosion and sediment control plan. The Applicant must address any erosion related issues through proper design and adherence to Ohio EPA best management practices related to erosion and sedimentation control.
- (13) 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.
- (14) 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.

- (15) The Applicant shall obtain transportation permits prior to the commencement of construction activities that require them. 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. 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.
- (16) 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). Any permit violation received by the Applicant shall be provided on the case docket within seven days of receipt.
- (17) At least 30 days prior to the preconstruction conference, the Applicant shall file a final grading plan which demonstrates, in compliance with the decommissioning condition, that the project would not obstruct future agricultural land use or a land use otherwise specified by the landowner. The plan shall include, but is not limited to the following:
- (a) Preconstruction and proposed one-foot contours referenced to U.S. Geological Survey datum;
 - (b) Drainage arrows which delineate preconstruction and proposed drainage patterns;
 - (c) Estimated earthwork quantities including the amount of cut and fill and the amount of soil to be exported or imported (in cubic yards);
 - (d) Location of proposed areas of cut and fill, including the extent and maximum depth of cut and fill;
 - (e) Location of proposed project infrastructure; and
 - (f) Location of existing surface water locations.
- (18) 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.
- (19) The facility shall be operated in such a way as to assure that no more than 200 megawatts would be injected into the Bulk Power System at any time.
- (20) 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.

- (21) Prior to commencement of construction, the Applicant shall prepare a landscape and lighting plan in consultation with a landscape architect licensed by the Ohio Landscape Architects Board that addresses the aesthetic and lighting impacts of the facility with an emphasis on any locations where an adjacent non-participating parcel contains a residence with a direct line of sight to the project area. The plan shall include measures such as fencing, vegetative screening or good neighbor agreements. Unless alternative mitigation is agreed upon with the owner of any such adjacent, non-participating parcel containing a residence with a direct line of sight to the fence of the facility, the plan shall provide for the planting of vegetative screening designed by the landscape architect to enhance the view from the residence and be in harmony with the existing vegetation and viewshed in the area. The plan shall incorporate planting design features or measures to address aesthetic impacts to the traveling public, nearby communities, sensitive institutional land uses and recreationalists. The Applicant shall maintain vegetative screening for the life of the facility and the Applicant shall substitute or 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 significant damage as needed. Lights shall be motion-activated and designed to narrowly focus light inward toward the facility, such as being downward-facing and/or fitted with side shields. The Applicant shall provide the plan to Staff for review and confirmation that it complies with this condition.
- (22) 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. Fencing around panels should incorporate gaps or spaces of at least six inches by six inches to allow passage of small mammals. Barbed wire shall not be utilized for the perimeter fence. This condition shall not apply to substation fencing.
- (23) 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. 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.
- (24) Operational sound levels shall not exceed 43 dBA during the daytime hours and 40 dBA during nighttime hours at non-participating receptors. If the inverters and/or substation transformer chosen for the project have a higher sound power level than the representative inverter and transformer used in the noise impact assessment, the Applicant shall submit an updated noise study. If noise data from the inverter and substation transformer chosen

for the project is available, the updated noise study shall be submitted at least 30 days prior to construction. If, however, noise data from the inverter and substation transformer chosen for the project is not available, the Applicant shall conduct an operational test with the facility operating at approximately the level with the largest noise impact for its updated noise study. The updated noise study shall show that sound levels will not exceed 43 dBA during the daytime hours and 40 dBA during nighttime hours at non-participating receptors.

- (25) 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. The affected landowner(s) may agree to not having the damaged field tile system repaired, but they may do so only if: i) the field tile systems of adjacent landowners remain unaffected by the non-repair of the landowner's field tile system; and ii) the damaged field tile does not route directly onto or into an adjacent parcel. The Applicant shall design the project to ensure that nearby parcels are protected from unwanted drainage problems due to construction and operation of the project. The Applicant shall 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, together with an independent tile and drainage consultant retained by the Applicant, shall consult with owners of all parcels adjacent to the property, the county soil and water conservation district, and the county engineer to request drainage system information over those parcels. The Applicant shall consult with the county engineer and the county soil and water conservation district for tile located in a county maintenance/repair ditch, and the Applicant shall consult with the county engineer for tile, storm sewers, and ditches located in a county or township right-of-way. A map of discovered and repaired drain tile systems shall be filed in the case docket once construction is complete.
- (26) 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 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; (h) a provision stating that the bond shall be recalculated every five years by an engineer retained by the Applicant; and (i) a provision that underground equipment will be removed to the extent that allows for future drain tile repairs and installation to be completed. The Applicant shall implement and comply with the decommissioning plan as approved by Staff.

- (27) At the time of solar panel end of life disposal, any retired panel material that is not recycled and that is marked for disposal, shall be sent to an engineered landfill with various barriers and methods designed to prevent leaching of materials into soils and groundwater, or another appropriate disposal location at the time of decommissioning approved by Staff.
- (28) 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.
- (29) The Applicant shall have a Staff-approved environmental specialist on site during construction activities that may affect sensitive areas. Sensitive areas which would be impacted during construction shall be identified on a map provided to Staff, and shall include, but are not limited to, wetlands and streams, and locations of threatened or endangered species. The environmental specialist shall be familiar with water quality protection issues and potential threatened or endangered species of plants and animals that may be encountered during project construction. The environmental specialist shall have authority to stop construction to assure that unforeseen environmental impacts do not progress and recommend procedures to resolve the impact. A map shall be provided to Staff showing sensitive areas which would be impacted during construction with information on when the environmental specialist would be present.
- (30) Thirty days prior to the first preconstruction conference, the Applicant shall file on the case docket an ecologically sensitive resource impact avoidance/minimization plan. The plan shall include mapping of ecologically sensitive resources, including streams, wetlands, and suitable habitats of state and federal listed animal and plant species, as well as facility components including access roads, laydown areas, and limits of disturbance. Sensitive resources in proximity to the limits of disturbance shall be demarcated in the field with highly visible flagging, staking, or fencing prior to construction in those areas. The plan shall explain how impacts to all sensitive resources will be avoided or minimized during construction. Those working on-site shall be provided with training to remain in compliance with this plan.
- (31) 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.
- (32) The Applicant shall contact Staff, the ODNR, and the USFWS within 24 hours if state or federal listed species are encountered during construction activities. Construction activities that could adversely impact the identified plants or animals shall be immediately halted until an appropriate course of action has been agreed upon by the Applicant, Staff and the appropriate agencies. The Applicant shall also keep a running list of and notify OPSB Staff and the ODNR Division of Wildlife if any wildlife mortality or entrapment is discovered in the facility during operation.

- (33) The Applicant shall adhere to seasonal cutting dates of October 1 through March 31 for removal of any trees greater than or equal to three inches in diameter unless coordination efforts with the ODNR and the USFWS allows a different course of action. If coordination with these agencies allows clearing between April 1 and September 30, the Applicant shall docket proof of completed coordination on the case docket prior to clearing trees.
- (34) Construction in king rail preferred nesting habitat types shall be avoided during the species' nesting period of May 1 through August 1, unless coordination with the ODNR allows a different course of action during that period. Coordination with the ODNR may allow for alternate impact avoidance measures such as surveys demonstrating the absence of nesting, or buffer areas around nests discovered within the project area. If the ODNR recommends alternate impact avoidance measures for construction in nesting habitat areas during nesting periods, the Applicant shall follow these recommendations and file proof of such coordination on the docket. Absent coordination with the ODNR that allows a course of action different than seasonal avoidance, mapping of these habitat areas shall be provided to the construction contractor along with instructions to avoid these areas during the restricted dates.
- (35) Construction in loggerhead shrike preferred nesting habitat types shall be avoided during the species' nesting period of April 1 through August 1, unless coordination with the ODNR allows a different course of action during that period. Coordination with the ODNR may allow for alternate impact avoidance measures such as surveys demonstrating the absence of nesting, or buffer areas around nests discovered within the project area. If the ODNR recommends alternate impact avoidance measures for construction in nesting habitat areas during nesting periods, the Applicant shall follow these recommendations and file proof of such coordination on the docket. Absent coordination with the ODNR that allows a course of action different than seasonal avoidance, mapping of these habitat areas shall be provided to the construction contractor along with instructions to avoid these areas during the restricted dates.
- (36) The Applicant shall adhere to USFWS's recommended guidelines to avoid negatively impacting the bald eagle, including not clearing trees within 660 feet of known nests, or within the woodlots supporting the nest trees, and working in proximity to the nests only between August 1 and January 14.
- (37) Prior to commencement of any construction, the Applicant shall prepare an updated vegetation management plan in consultation with the ODNR. The goals of the plan shall include planting a minimum of 70 percent of the impacted project area in beneficial vegetation, utilizing plant species listed in Attachment A of Ohio Department of Natural Resources Recommended Requirements for Proposed Solar Energy Facilities in Ohio, or other suitable species as approved by the ODNR and shall follow the Ohio Solar Site Pollinator Habitat Planning and Assessment Form with a minimum score of 80 points. The plan shall include a narrative on how the project proposes to establish and maintain beneficial vegetation and pollinator habitat in accordance with the guidelines provided above. The plan shall include mapping of the areas where pollinator habitat would be established and maintained. The plan shall include that routine mowing would be limited to fall/spring seasons, as needed, to allow for natural reseeding of plantings and reduce

impacts to ground-nesting birds. To assure land stabilization, Staff also recommends that the plan specify that seeding be applied to graded areas prior to infrastructure installation.

- (38) The Applicant shall take steps to prevent establishment and/or further propagation of noxious weeds identified in Ohio Adm.Code Chapter 901:5-37 and invasive plant species identified in Ohio Adm.Code Rule 901:5-30-01 during implementation of any pollinator-friendly plantings, as well as during construction, operation, and decommissioning. This would be achieved through appropriate seed selection, and annual vegetative surveys. If noxious weeds and/or invasive plant species are found to be present, the Applicant shall remove and treat them with herbicide pursuant to R.C. 921.06, as necessary, and shall follow all applicable state laws regarding noxious weeds and invasive plant species.
- (39) Prior to construction, the Applicant shall install orange snow fence or other easily identifiable materials around wetlands and streams adjacent to proposed project infrastructure in order to avoid accidental impacts from construction vehicles. All contractors and subcontractors shall be provided with training to understand the significance of the types of flagging used and the importance of staying within defined limits of work areas.
- (40) The Applicant shall avoid all impacts to perennial streams through facility design, HDD or other methods.
- (41) Prior to the use of horizontal directional drilling, the Applicant shall provide Staff with a frac-out contingency plan detailing monitoring, environmental specialist presence, containment measures, cleanup, and restoration.
- (42) At least 30 days prior to the start of construction, the Applicant shall file a copy of the final complaint resolution plan for construction and operation of the project on the public docket. At least seven days prior to the start of construction and at least seven days prior to the start of facility operations, the Applicant shall notify via mail affected property owners and tenants; all residents, airports, schools, and libraries located within one mile of the project area; parties to this case; county commissioners, township trustees, and emergency responders; and any other person who requests updates regarding the project. These notices shall provide information about the project, including contact information and a copy of the complaint resolution program. The start of construction notice shall include written confirmation that the Applicant has complied with all preconstruction-related conditions of the certificate, as well as a timeline for construction and restoration activities. The start of facility operations notice shall include written confirmation that the Applicant has complied with all construction-related conditions of the certificate, as well as a timeline for the start of operations. The Applicant shall file a copy of these notices on the public docket. The Applicant shall file on the public docket a complaint summary report by the fifteenth day of April, July, October, and January of each year during construction and through the first five years of operation. The report shall include a list of all complaints received through the Applicant's complaint resolution program, a description of the actions taken toward the resolution of each complaint, and a status update if the complaint has yet to be resolved.

- (43) The Applicant shall implement a minimum setback from the project's solar modules of at least 150 feet from non-participating parcel boundaries, at least 300 feet from non-participating residences, and at least 150 feet from the edge of any state, county, or township road within or adjacent to the project area.

**This foregoing document was electronically filed with the Public Utilities
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Summary: Staff Report of Investigation electronically filed by Mr. Matt Butler on
behalf of Staff of OPSB