

Staff Report of Investigation

Union Ridge Solar Facility
Union Ridge Solar, LLC

Case No. 20-1757-EL-BGN

August 16, 2021



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

)
) **Case No. 20-1757-EL-BGN**
)

BEFORE THE POWER SITING BOARD OF THE STATE OF OHIO

In the Matter of the Application of)
Union Ridge Solar, LLC for a Certificate) **Case No. 20-1757-EL-BGN**
of Environmental Compatibility and Public Need)

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

To the Honorable Power Siting Board:

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

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

OHIO POWER SITING BOARD

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

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

NATURE OF INVESTIGATION

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

Application Procedures

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

1. R.C. 4906.04 and 4906.20.

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

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

Staff Investigation and Report

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

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

Board Decision

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

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

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

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

5. R.C. 4906.08(C).

6. R.C. 4906.07.

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

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

9. R.C. 4906.09 and 4906.12.

10. R.C. 4906.10(A).

11. R.C. 4906.10.

12. R.C. 4906.11.

13. R.C. 4906.10(C).

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

CRITERIA

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

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

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

¹⁴ R.C. 4903.10 and 4906.12.

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

II. APPLICATION

APPLICANT

Union Ridge Solar, LLC (Applicant or Union Ridge Solar) is a subsidiary of Leeward Renewable Energy, LLC (Leeward). Leeward owns and operates renewable energy facilities across nine states with a nameplate capacity of approximately 1.7 gigawatts. The Applicant would construct, own, operate, and maintain the facility (Union Ridge Solar Facility), except for the direct connection to the American Electric Power (AEP) substation and upgrades to the transmission system identified in the system impact study.

HISTORY OF THE APPLICATION

On December 3, 2020, the Applicant filed a motion for waiver and request for approval to hold an alternative public information meeting. The motion was granted.

On February 9, 2021, the Applicant filed a pre-application notification letter regarding the project.

On February 25, 2021, the Applicant held public informational meetings for the project.

On March 26, 2021, the Applicant filed the Union Ridge Solar Facility application as well as a motion for protective order and a motion for waiver of certain Board rules.

On May 25, 2021, the Executive Director of the OPSB issued a letter of compliance regarding the application to the Applicant.

On June 22, 2021, the Ohio Farm Bureau Federation requested to intervene in this proceeding.

On June 23, 2021, the Licking County Soil & Water Conservation District requested to intervene in this proceeding.

On June 23, 2021, the Engineer of Licking County, Ohio requested to intervene in this proceeding.

On June 23, 2021, Harrison Township Board of Trustees, Licking County, Ohio, requested to intervene in this proceeding.

On June 24, 2021, the Board of County Commissioners, Licking County, Ohio, requested to intervene in this proceeding.

On June 25, 2021, the Licking County Planning Commission, Licking County, Ohio requested to intervene in this proceeding.

A local public hearing has been scheduled for August 31, 2021, at 6:00 p.m. The evidentiary hearing is scheduled to commence on September 14, 2021, at 10:00 a.m.

This summary of the history of the application does not include every filing in case number 20-1757-EL-BGN. The docketing record for this case, which lists all documents filed to date, can be found online at <http://dis.puc.state.oh.us>.

PROJECT DESCRIPTION

The Applicant intends to construct the Union Ridge Solar Facility, a 107.7 MW solar-powered generating facility in Harrison Township in Licking County. The project would consist of large arrays of photovoltaic (PV) modules, commonly referred to as solar panels, ground-mounted on a tracking rack system. The project would occupy approximately 449 acres within an approximate 523-acre project area comprised of private land secured by the Applicant through agreements with the landowners. The project would include associated facilities such as access roads, an operations and maintenance (O&M) building, underground electric collection lines, pyranometers, inverters and transformers, a collection substation, and a 138 kV gen-tie electric transmission line. The project would be secured by perimeter fencing which would be seven-foot tall and accessed through gated entrances. The Applicant would ensure that solar modules are setback a minimum of 100 feet from adjacent non-participating residences, at least 25 feet from non-participating property lines and at least 75 feet from the centerline of public roads.

Solar Panels and Racking

The solar panels would be attached to metal racking. The racking would include steel piles driven a minimum of 7.5 feet into the ground. PV modules have not yet been procured for the project. The project would use crystalline silicon panels.¹⁶ 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. In addition, the panels used would qualify as a Bloomberg New Energy Finance tier 1 panel, per the Q1, 2021 assessment.¹⁷ The Applicant anticipates that the facility would be comprised of 420 to 565-watt panels. Depending on the module selected, the facility would include approximately 250,000 panels. The solar panel arrays would be grouped in large clusters that would be fenced in with gated entrances and electronic security systems. The highest point of each module would be approximately 15 feet, and the fence would not exceed seven feet. The project's arrays would be mounted on a single-axis tracking system that would rotate east-west to track the sun as it moves through the sky each day. The Applicant estimates the solar field would occupy approximately 439 acres of the project area.

Collection System

The Applicant would install an underground collector system made up of a network of electric and communication lines that would transmit the electric power from the solar arrays to a central location. The Applicant proposes to install up to 5.8 miles of buried cable.

The underground lines would be installed by direct burial method or horizontal directional drilling (HDD). Installation of the cable would require an approximately 15-foot-wide temporary work

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

17. Bloomberg New Energy Finance compiles a tiered list of the leading solar panel manufacturers. As an initial step in the Applicant's due diligence process, this tiered list of solar panel suppliers determines the bankability, that is those manufacturers capable of obtaining bank financing and those that have provided solar panels to past significant solar generating facilities.

area along its entire length. The below grade portion of the collector system would be buried at a depth of at least three feet.

The electricity from the solar panels would be generated in direct current (DC). DC power from the solar panels would be delivered to circuits, which would be routed through cable trays, then to combiner boxes. Power from the combiner boxes would be transmitted to groups of components, collectively called an inverter, which would include a DC-to-alternating current (AC) inverter, a step-up transformer that would increase the voltage to 34.5 kV, and a cabinet containing power control electronics. This would be housed in a power conversion station mounted to a concrete foundation. The facility would include approximately 34 inverter stations, consisting of two inverters and a transformer.

Collection Substation and Transmission Line

The Applicant's facility collection substation and switchyard would occupy approximately 3.7 acres of land and would interconnect to the 138 kV AEP Kirk Substation via a 1,700-foot-long overhead transmission line. The major components of the Applicant's substation would be a collection system bus, a main power transformer, circuit breakers, surge arrestors, insulators, and a lightning mast. The collection substation and switchyard would be located approximately 1,200 feet south of the AEP Kirk Substation.

The collection substation, switchyard, electric transmission line, and AEP substation are denoted on the maps in this report.

Roads

The Applicant proposes to construct approximately 7.2 miles of new access roads for construction, operation, and maintenance of the solar facility. The access road disturbance would be up to 25 feet wide during construction. After construction, the finished access roads would be approximately 16 feet in width.

Construction Laydown Area

The Applicant proposes to use two temporary unimproved construction laydown areas of 4.6 acres each. The laydown areas would be used for material staging, equipment storage, parking, and construction trailers. The laydown areas would be located within the project fence and would be restored at the end of construction.

Weather Stations

The project would include three weather stations. These stations contain devices to measure solar irradiance, barometric pressure, rain gauge, temperature (i.e. thermometers), and wind speed.¹⁸ The weather stations would measure wind speed to ensure the solar panels can withstand wind speed in the area and, when wind speeds become too high, the racking systems include a stowing feature that activate to tilt the panels to a certain angle to reduce wind loading on the solar panels. These stations would also contain communications equipment.

O&M Building

The Applicant proposes to have an O&M building. The O&M building would be located next to the facility substation. The building would be approximately 2,500 square feet and up to 20 feet

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

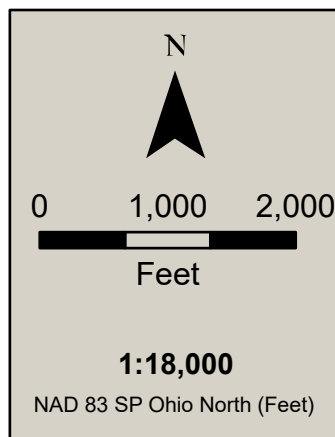
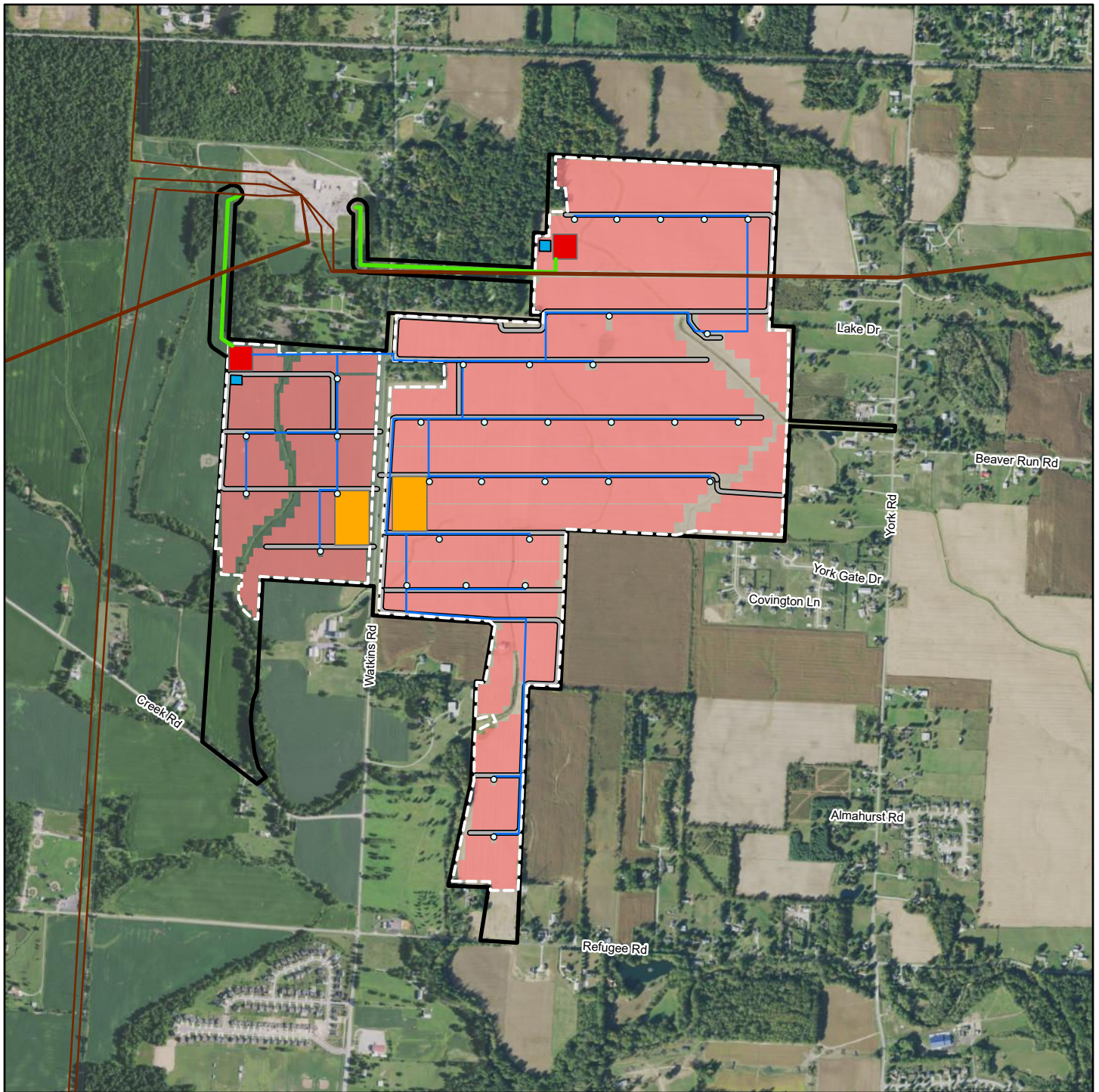
tall. The building would require a water supply and would have an on-site septic system or a connection to a public sewer system. The O&M building would serve as a workspace for operations personnel.

Lighting

Lighting would be installed at the O&M building, inverters, substation, and at project access points. Temporary lighting would be used at the laydown area. The Applicant indicates that to the extent practical, lighting would be oriented toward the interior of the solar facility and away from roadways and residences. Lighting during operation would be downlit. The Applicant indicates that motion-activated lighting would be used at the O&M building, inverters, and at project access points.

Project Schedule

The Applicant expects to finalize design of the project in the fourth quarter of 2021. Construction would start in the first quarter of 2022 and would last approximately 12 months. The facility is expected to complete construction in the fourth quarter of 2022 and be placed in service in the fourth quarter of 2022. The Applicant stated that delays to this timeline could cause a financial burden on the Applicant.



Overview Map

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Union Ridge Solar

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

III. CONSIDERATIONS AND RECOMMENDED FINDINGS

In the Matter of the Application of Union Ridge Solar, 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, ODSA, ODA, ODNR, and a member of the public specified as an engineer.¹⁹ 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.

Socioeconomic Impacts

*Regional Planning*²⁰

In the project five-mile Study Area, Reynoldsburg, Pataskala, Fairfield County, Harrison, St. Albans, Union, Violet, Jersey, Etna, and Granville Townships all have adopted comprehensive land use or economic development plans. The project would reside within Harrison Township. Harrison Township's primary goals in its 1993 Comprehensive Plan include "preserving the land and the rural character of the community" (p. 5). The proposed solar facility is compatible with these goals as it would take land out of agricultural production for the duration of the project, preventing urban sprawl and permanent development. The land would be suitable for agricultural use after the lifespan of the project, thereby preserving agricultural land. The project area is a half mile southeast of the City of Pataskala. The City's 2019 Comprehensive Plan emphasizes renewable energy and agricultural land preservation, both of which the project aligns with. The remaining nearby plans emphasize preserving rural character, agricultural land, renewable energy, combating urban sprawl, and promoting economic opportunities, all of which the project would either support or not conflict with.

19. "It is the mission of the Ohio Development Services Agency to help create jobs and build strong communities in Ohio, while ensuring accountability and transparency of taxpayer money exceptional customer service." (Ohio.gov, Development Services Agency, <https://ohio.gov/wps/portal/gov/site/government/state-agencies/development-services-agency>). See e.g., RC 122.011(A) states, in part, that the development services agency 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, mass transportation, community facilities and services, health, welfare, recreation, open space, and the development of human resources."

20. R.C. 713.23(A) states, in part: "[t]he regional or county planning commission may make studies, maps, plans, recommendations and reports concerning the physical, environmental, social, economic, and governmental characteristics, functions, services, and other aspects of the region or county, respectively."

Staff asserts that the solar facility is not expected to conflict with nearby land use plans. The proposed solar facility would be expected to aid regional development by increasing local tax revenues. The project is consistent with agricultural industry support, in that the facility would provide supplemental income to farmers and the land could be returned to agricultural production upon decommissioning.

Land Use

The predominant land use within the project area is agriculture. The Applicant states that all impacts from construction and operation of the facility would occur on agricultural land. Of the 523 acres of leased land for the project area, roughly 85 percent, or about 445 acres of agricultural land would be converted to solar and ancillary uses. Significant impacts to residential, commercial, industrial, recreational, and institutional land uses are not anticipated, and surrounding agricultural land use would continue with minimal disruption. Impacts from construction would be temporary in nature and contained to the properties participating landowners.

Recreation

Construction and operation of the facility would not physically impact any recreational areas. The Applicant identified 17 recreation areas within five miles of the project area. Those recreation areas that would have the potential for visibility of the solar facility include the South Fork Licking River, Pataskala Lion's Baseball Park, The Historic National Road, and the Cumberland Trail Golf Club. These recreation areas all have existing vegetation that would act as screening of the facility, making the facility partially to minimally visible. It is Staff's opinion that the project would have no impact on recreation areas.

Aesthetics

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

The solar panels would be installed approximately 15 feet above ground level. Based on the results of the Applicant's five-mile visual resources report, the solar panels would not likely be visible at most locations beyond 1.5 miles of the perimeter of the project.

Staff reviewed the Applicant's visual impact analysis, which includes proposed mitigation in the form of vegetative screening at selected areas around the project site. The Applicant's landscape mitigation plan proposes the installation of various planting modules along the facility fence line to soften viewshed impacts and to blend the facility into the existing vegetation. The Applicant's landscape mitigation plan would provide for the installation of numerous plant species that would vary in height and variety, as determined by the current location of sensitive receptors (such as non-participating residential structures) that are adjacent to the proposed facility.

*Cultural Resources*²¹

The Applicant enlisted a consultant to gather background information and complete a cultural resources literature review for a two-mile radius around the project. This review initially was based on data provided by the OHPO's online geographic information system mapping, Ohio Historic Inventory, National Register of Historic Places (NRHP) files, and a previously completed history/architecture survey. The Applicant also obtained information on historic cemeteries from the Ohio Genealogical Society.

The Applicant's field survey identified 23 resources 50 years or older, all of which were residences. No resources were identified within the project area. Six resources are immediately adjacent to or within the viewshed of the of the project area. One resource is eligible for NRHP listing under Criterion C. In a March 20, 2021 letter, OHPO agreed with the Applicant that the project would have no effect on historical resources. Subsequent letters on February 1 and May 26, 2021 provide concurrence for amendments the Applicant filed after the initial application was submitted.

A literature review did not identify any previously documented archaeological sites within the project area. However, an archaeological field survey was completed in November 2020, which identified 48 previously undiscovered archaeological sites. The Applicant's consultant recommended that none of the 48 previously undiscovered archaeological sites are eligible for listing in the NRHP. In a January 4, 2021 letter, OHPO concurred with this recommendation and stated the project as designed would have no effect on significant archaeological resources within the project area.

In consideration of the field surveys completed to date, Staff has determined that minimal adverse environmental impacts to cultural resources would be achieved.

Economic Impact

The Applicant states that it would be responsible for the ownership and construction of the proposed project. The Applicant states that it has obtained the necessary landowner agreements for the project. All other components of the facility would be located entirely on privately-owned land, and voluntary lease agreements between the Applicant and private landowners would accommodate the facility. The Applicant would work with local authorities to obtain necessary crossing permits and permissions for the public right-of-way crossing. The proposed facility would not change the ownership status of property within the project area.

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

21. 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>>).

information confidential. Similar requests have been common practice in many, but not all, solar facility applications.

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

O&M expense comparisons between the proposed facility and other comparable facilities are to be provided in the application. The Applicant referenced the same 2019 study by Berkeley Laboratory that stated that, on average, utility scale solar operations reported O&M costs totaling \$19/kW/year and that its costs are consistent with this amount. Staff verified that the Applicant's figures were consistent with the figures listed in the 2019 Berkeley Laboratory study.

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 during the permitting stage can result in costs associated with the time value of money. The Applicant also stated that delays could prevent the project from meeting federal Investment Tax Credit deadlines which could result in the loss of those benefits to the Applicant. The Applicant's characterization of its estimated costs of delays appears reasonable to Staff.

The Applicant retained the services of Environmental Design & Research (EDR) to report on the economic impact of the Union Ridge Solar Facility.²² EDR used the National Renewable Energy Laboratory's (NREL) Jobs and Economic Development Impact (JEDI) model, the IMPLAN regional economic modeling system, as well as data from the Ohio Department of Taxation, to estimate the economic impact of the construction and operation of the solar facility. Staff verified that the methodology of the JEDI and IMPLAN models were appropriate for this study and that the estimated impacts reported by the Applicant are reasonable.

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

Jobs

- 513 construction related jobs for the state of Ohio
- 10 long-term operational jobs for the state of Ohio

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

Earnings

- \$33.6 million in annual earnings during construction for the state of Ohio
- \$0.8 million in annual earnings during facility operations for the state of Ohio

Output

- \$65 million in local output during construction for the state of Ohio
- \$1.7 million in local annual output during facility operation for the state of Ohio.

The Union Ridge Solar Facility would generate between \$753,900 and \$969,300 annually for the Licking County taxing districts. This estimate is based on a potential Payment in Lieu of Taxes (PILOT) plan in which Leeward would pay between \$7,000/MW and \$9,000/MW annually for a 107.7 MW facility. At this time, the Applicant has not entered into a PILOT agreement with Licking County.

Glare

Glare is the phenomenon where sunlight reflects from a surface to create a duration of bright light. Glare also encompasses glint, which is a momentary flash of bright light. Potential impacts of this reflection from solar panel(s) could be a brief reduction in visibility, afterimage, a safety risk to pilots, or a perceived nuisance to neighbors. The Applicant considered the potential effects of glint and glare in the design of solar array layout and how the panels would be operated.

Solar panels are designed to absorb as much sunlight as possible with minimal reflectivity. The Applicant conducted a glint and glare analysis to identify any potential impacts from glint or glare along local roads, at nearby residents, and to local airports.²³ To perform the analysis of glare, the Applicant used the ForgeSolar Solar Glare Hazard Analysis Tool (SGHAT) which was developed by Sandia National Laboratories to analyze potential glare at sensitive receptor locations. This software is commonly used by solar facility developers to determine the effect of solar glare. Glare is classified in three categories in the SGHAT tool: the green type which is associated with a low potential for temporary after-image; the yellow type which is associated with a potential for temporary after-image; and the red type which is associated with the permanent retinal damage. The Applicant found that no glare (i.e. no minutes of either green or yellow type) from the project is predicted to vehicles using the roadways or nearby neighbors. Also, the Applicant does not anticipate impacts from glare at area airports and anticipates the facility would not present a risk of glare to pilots making final approaches. 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.

Decommissioning

The Applicant holds land rights to and estimates that the solar facility can operate for 35 years or more. The Applicant has prepared a decommissioning plan and total decommissioning cost estimate of \$2,642,895.²⁴ Staff notes that this estimate is low compared to similarly situated projects. Particularly the estimate did not have line-item costs for access road removal, public road repair, and a contingency cost. According to the Applicant, this cost estimate is preliminary, and an updated decommissioning plan based on the final design layout would include a contingency

23. Application at Exhibit M.

24. Application at Exhibit L, Table 1.

cost amount. Staff recommends a contingency percentage or amount be included in the updated decommissioning plan.

Staff has reviewed that decommissioning plan. According to the Applicant's plan, at the end of the useful life of the facility, the solar facility would be decommissioned, and the land be returned to its current use as agricultural land. The Applicant would obtain applicable federal, state, and local permits. At this time, the Applicant has identified that during decommissioning, it may need to obtain at the least an Ohio EPA Construction Storm Water General National Pollutant Discharge Elimination System (NPDES) Permit; and local Soil and Water Conservation District, Harrison Township, and/or Licking County 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, dismantling panels and racking, removing combiner boxes/inverters/transformers, removing electrical cables to a depth of at least 36 inches, removing access and internal roads, removing the substation, removing overhead transmission lines and poles, ripping prior agricultural land to at least 18 inches or to the extent practicable, ripping prior pasture land to at least 12 inches or to the extent practicable, and revegetating disturbed land to preconstruction conditions, to the extent practicable. For the panel support piles that cannot be removed, the Applicant would cut and removed to at least 36 inches below grade, or at bedrock if higher than 36 inches. At the request of the landowner, the Applicant would leave access roads in place, provided that does not violate any permits or legal requirements. The Applicant would salvage or recycle equipment to the extent practicable and dispose of waste materials at a licensed solid waste disposal facility. Staff recommends that the Applicant would coordinate with the appropriate local agency to coordinate the repair of public roads damaged or modified during the decommissioning and reclamation process.

The Applicant would restore the land significantly to its original topography to allow for resumption of the preconstruction agricultural land use. The Applicant stated that it anticipates decommissioning activities and restoration to occur over and be completed in an 8-to-12-month period. Based on the weather dependent nature of site restoration, Staff recommends that the updated decommissioning plan include a requirement to monitor the site to ensure successful revegetation and rehabilitation. Also, Staff recommends a timeframe be included in the draft decommissioning plan where the equipment is removed within a year or less.

The Applicant states it would 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 system, steel piles, inverters, and transformers. The Applicant is considering panels that have been certified to comply with the US EPA's toxicity characteristics leachate procedure (TCLP) test and meet US EPA definition of non-hazardous waste.²⁵ The Applicant stated it would ensure that panels, if required to be landfilled, meet all disposal requirements. If solar modules are to be disposed, the Applicant intends to conduct the disposal in compliance with federal, state, and local laws and regulations.

25. Union Ridge Solar, LLC's July 21, 2021 Responses to Staff's Second Data Request, Data Request #2.

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 performance bond active during the life of the project with funds posted after the commercial operations date. The Applicant indicates that it would have an Ohio registered professional engineer periodically review the decommissioning plan and financial assurance in year 10 and every five years thereafter to assess the value of the financial assurance versus the total decommissioning cost.

The Applicant has considered a scenario where the decommissioning plan may be activated prior to the end of the useful life of the solar facility. In the event the owner of the solar facility becomes insolvent, the Applicant surmised that the bond funds would be in place to remove the facility.²⁶

To further address these concerns that were partially addressed by the Union Ridge Solar Virtual Public Information Meeting Live Q&A Session, Staff recommends that at least 30 days prior to the preconstruction conference, the Applicant submit an updated decommissioning plan and total decommissioning cost estimate (with line-items for all necessary steps to restore/decommission the site) without regard to salvage value on the public docket that includes: (a) a provision that the decommissioning financial assurance mechanism include a performance bond where the company is the principal, the insurance company is the surety, and the Ohio Power Siting Board is the obligee; (b) a timeline of up to one year for removal of the equipment; (c) a provision to monitor the site for at least one additional year to ensure successful revegetation and rehabilitation; (d) a provision where the performance bond is posted prior to the commencement of construction; (e) a provision that the performance bond is for the total decommissioning cost and excludes salvage value; (f) a provision to coordinate repair of public roads damaged or modified during the decommissioning and reclamation process; (g) a provision that the decommissioning plan be prepared by a professional engineer registered with the state board of registration for professional engineers and surveyors; and (h) a provision stating that the bond shall be recalculated every five years by an engineer retained by the Applicant.

²⁶ Application at Exhibit F (Union Ridge Solar Virtual Public Information Meeting Live Q&A Session, Question 16).

Geology²⁷

*Surficial/Glacial*²⁸

The project area lies within the glaciated margin of the state and includes several Wisconsinan-age glacial features. Both end and ground moraine deposits are present in the project area. End moraine features make up the north and east portions of the project area and consist of loam till covered in thin loess. Terrain in this area consists of hummocky ridges higher than the adjacent terrain. The south and west portions of the project area are made up of ground moraine features including a silty loam till and flat to gently undulating terrain.²⁹ Glacial drift within the project area ranges from approximately 60 feet to 400 feet in thickness.

*Bedrock*³⁰

The uppermost bedrock unit throughout the vast majority of the project area is the Logan Formation and Cuyahoga Formations Undivided. The Sunbury and Bedford Formations Undivided is the upper most bedrock in a small portion of the northern project area. Due to the glacial drift thickness cited above, there are no bedrock exposures within the project area. All project foundations proposed are well above bedrock depth.

27. 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>>).

28. "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/geologic-glacial-surficial-geologic-maps>>).

29. Application at Exhibit P (Ecological Assessment Part 1 of 3) – Attachment A– ODNR Geology evaluation overview.

30. "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+Mapping>>).

Karst

Conditions typically necessary for the formation of karst geology features do not exist within the project area.³¹ The nearest documented sinkhole feature is several miles away from the project area.³²

*Oil/Gas and Mining*³³

ODNR records indicate that no oil and gas activity occurs within the project footprint. Eleven historic wells are located within one mile of the project area. Records indicate these wells are either plugged and abandoned or inactive.³⁴ No Class II injection well activity occurs within several miles of the project area.

No active mining occurs within project area.³⁵ The nearest mine is the York Road Gravel Company. ODNR records show this to be an inactive surface mine. No known abandoned underground mines are located within several miles of the project area.

*Seismic Activity*³⁶

No earthquakes have been recorded within several miles of the proposed project area.³⁷ Recent geologic history shows Licking County to be at low risk for seismicity caused by earthquakes as no earthquakes have been documented in the county. Based on both boring data down to 50 feet below ground level (BGL) and estimated (based on the Applicant's geotechnical team experience and knowledge) site properties from 50 to 100 feet, the application assigns a Class D Seismic Site Classification for facility design pursuant to the international building code, and ASCE 7-10 Minimum Design Loads for Buildings and Other Structures.³⁸

The Applicant has indicated that no blasting activities are anticipated for the construction or operation of the proposed solar facility.³⁹

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

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

33. 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>>).

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

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

36. 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>>).

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

38. Application at Page 15/24 of Exhibit C (Geotechnical Report by Kleinfelder). ACSE is the American Society of Civil Engineers.

39. Application at Page 47.

*Soils*⁴⁰

According to the United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) Web Soil Survey, the project area consists primarily of soils derived from glacial till, loess, alluvium and outwash deposits. Centerburg, Pewamo and Bennington are the most common soil series found within the boundaries of the project area. Together these soils make up over 85 percent of the project area. There is a low to moderate risk of shrink-swell potential in these soils. Other limiting factors include occasional flooding and seasonal saturation. Slope remains relatively flat, with slope seldom exceeding a six percent grade.⁴¹ Areas with steep slopes and/or or highly erodible soils do not exist within the project area.⁴²

Geotechnical Report

A geotechnical report prepared by Kleinfelder discusses the geotechnical work performed to date. To further evaluate soil properties, five borings were advanced to a depth of 15 feet BGL, and one boring was advanced to 50 feet BGL. In addition, the Applicant consulted with both ODOT District 5 and the Licking County Engineer's Office to assess their knowledge and experience with regard to subsurface conditions within the project area.⁴³ Boring log data from two ODOT projects within one mile of the project area were also evaluated by the Applicant.⁴⁴

The Applicant also conducted field electrical resistivity testing, and laboratory testing for thermal resistivity and corrosion analyses. Pile load testing was conducted at 15 locations.⁴⁵ The Applicant anticipates that additional borings and pile load testing would be necessary for the final engineering design.⁴⁶

The preliminary report findings indicate the soils and geology at the site are considered suitable for the foundations proposed. The report recommends an estimated California Bearing Ratio (CBR) value of five be used in preliminary access road design.⁴⁷ In addition, a geotextile fabric or grid may be installed beneath the access roads to provide additional support.⁴⁸

40. 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>>).

41. Application at Attachment A (ODNR Geological Survey Review) - Part 1 of 3 of Exhibit P (Ecological Assessment by Hull & Associates)

42. Application at Page 58.

43. Application at Exhibit O (Geology and Hydrogeology Report by Hull & Associates) at page 7.

44. ODOT Transportation Information Mapping System <https://gis.dot.state.oh.us/tims>

45. May 5, 2021, Applicant response to First Staff data request. Appendix C.

46. May 5, 2021, Applicant response to First Staff data request.

47. Application at Page 21/24 of Exhibit C (Geotechnical Report by Kleinfelder).

48. Application at Page 11.

Conclusion

Staff recommends that the final detailed engineering drawings of the final project design shall account for geological features and include the identity of the registered professional engineer(s), structural engineer(s), or engineering firm(s), licensed to practice engineering in the state of Ohio who reviewed and approved the designs. Staff recommends that the Applicant provide a final geotechnical engineering report to Staff at least 30 days prior to the preconstruction conference.

Based on the data and considerations provided within the application submittal to date and based on Staff assessment (with consideration and input from 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 Supplies⁴⁹

There are six abandoned water wells within the project area.⁵⁰ The Applicant has been working with landowners to identify wells through landowner knowledge and record review. The landowners indicate that these water wells are abandoned. The Applicant has indicated that it would avoid or verify that these are properly decommissioned as needed. Staff conferred with the ODH which regulates private water wells. The ODH indicated that the nearest solar components should be at least the minimum isolation distances outlined in Ohio Adm.Code 3701-28-7 between potential contamination sources and private water wells. Specifically, ODH highlighted that Ohio Adm.Code 3701-28-7(F) requires a sanitary isolation radius of 50 feet from any known or possible source of contamination. Staff recommends that the Applicant indicate whether the nearest solar components to each water well within the project area meets or exceeds any applicable minimum isolation distances outlined in Ohio Adm.Code 3701-28-7.

Staff recommends that at least 30 days prior to the preconstruction conference, the Applicant provide the status (i.e., avoidance, mitigation measures, or capping) of each water well within the

49. “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 Ch. 3701-28.

50. Application at page 51, Exhibit O (Figure 7), and Union Ridge Solar, LLC’s May 14, 2021 Responses to Staff’s First Data Request, Data Requests #16 to #18.

project area. The Applicant shall also verify that the six abandoned water wells within the project area have been properly decommissioned. The Applicant shall indicate to Staff whether the nearest solar components to any uncapped water well within the project area meets or exceeds any applicable minimum isolation distances outlined in Ohio Adm.Code 3701-28-7 and denote the well on construction drawings. The Applicant shall relocate the solar equipment at least 50 feet from that water well, demonstrate that the well is for non-potable use and relocate solar equipment at least 10 feet from that well, or seal and abandon the water well.

The City of Pataskala and the Southwest Licking Community's drinking water protection areas, otherwise called source water protection areas (SWPA), each overlap a portion of the project area. Pataskala and Southwest Licking Community are located from between one and three miles away from the project area. Portions of the "Protection Area" zone of the SWPA underlay the project area, which means that travel time of groundwater to the well in that protection zone is estimated to be five years. The Applicant does not anticipate that construction or operation of the solar facility poses a risk to either the City of Pataskala's or Southwest Licking Community's SWPAs, because the Applicant has reviewed programs that have adopted rules related to the presence of SWPAs and determined that construction of the solar facility would not constitute an activity that would be restricted within an SWPA. However, Staff has conferred with the Ohio EPA about the subject of solar generating facilities. Hence, Ohio EPA encourages communication with the SWPA drinking water operator so that it can be informed and take steps it deems necessary (e.g., drinking water advisories) in the event of a spill or significant panel damage. Staff recommends that at least 30 days prior to the preconstruction conference, the Applicant submit its final emergency response plan and that the plan include provision(s) to keep the City of Pataskala (e.g., city administrator or water department) and the Southwest Licking Community Water and Sewer District informed of the status of any spills, significant panel damage, and repair/clean-up schedule.

Additionally, the Applicant would implement a Stormwater Pollution Prevention Plan (SWPPP), a spill prevention control and countermeasure (SPCC) plan, and a preliminary HDD inadvertent release of drilling fluid contingency plan, an example of which was provided in the application at Exhibit P (Attachment E), during construction to minimize and prevent potential discharges to surface waters in the project area and surrounding area.

*Surface Waters*⁵¹

Union Ridge Solar's consultant HULL delineated six streams within the project area, including five perennial streams and one ephemeral stream.⁵² One perennial stream (stream two) would be impacted through the culvert installation of an access road totaling an estimated 32.0 linear feet of permanent impact. Staff recommends the Applicant adhere to the ODNR recommendation of no in-water work in perennial streams from April 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat. All other impacts to streams would be avoided using HDD collection line installation for collection line crossings. 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. Union Ridge Solar included a detailed Inadvertent Release of Drilling Fluid Contingency Plan that would be implemented at all HDD stream crossings.

Union Ridge Solar's consultant HULL delineated nine wetlands within the project area, including five Category 1 wetlands and four Category 2 wetlands. Two Category 1 wetlands (Wetlands B and D) are proposed to be impacted through the installation of access roads totaling 0.006 total acres of permanent impacts.

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

Based on review of Federal Emergency Management Agency 100-year floodplain mapping, project infrastructure would be located outside of 100-year floodplains. No ground disturbing

51. 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>).

52. 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.

activities would take place within a 100-year floodplain; therefore, and no floodplain permitting would be required.

*Threatened and Endangered Species*⁵³

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

MAMMALS				
Common Name	Scientific Name	Federal Status	State Status	Presence in Project Area
Indiana bat	<i>Myotis sodalist</i>	Endangered	Endangered	Potential to occur as roost trees exist along windrows and wood lot edges. No individuals observed.
Northern long-eared bat	<i>Myotis septentrionalis</i>	Threatened	Endangered	Potential to occur as roost trees exist along windrows and wood lot edges. No individuals observed.
little brown bat	<i>Myotis lucifugus</i>	N/A	Endangered	Potential to occur as roost trees identified along windrows and wood lot edges. No individuals observed.
tricolored bat	<i>Perimyotis subflavus</i>	N/A	Endangered	Potential to occur as roost trees identified along windrows and wood lot edges. No individuals observed.

53. 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.

BIRDS				
Common Name	Scientific Name	Federal Status	State Status	Presence in Project Area
upland sandpiper	<i>Bartramia longicauda</i>	N/A	Endangered	Potential to forage within agricultural fields within the project area. No individuals observed.
Northern harrier	<i>Circus hudsonius</i>	N/A	Endangered	Potential to forage within agricultural fields within the project area. No individuals observed.
MOLLUSKS				
Common Name	Scientific Name	Federal Status	State Status	Presence in Project Area
fawnsfoot	<i>Truncilla donaciformis</i>	N/A	Threatened	Not likely to occur due to a lack of large high-quality streams.

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

The project area is within the range of state and federal endangered Indiana bat (*Myotis sodalis*), the state and federal threatened Northern Long-eared bat (*Myotis septentrionalis*), the state endangered Little Brown bat (*Myotis lucifugus*), and the state endangered Tricolored bat (*Perimyotis subflavus*). As tree roosting species in the summer months, the habitat of these species may be impacted by the project as Union Ridge Solar anticipates approximately 0.4 acres of tree clearing for construction of the project. In order to avoid impacts to these listed bat species, Union Ridge Solar has committed to adhere to ODNR and USFWS recommended seasonal tree cutting dates of October 1 through March 31 for all trees three inches or greater in diameter, unless further coordination efforts with the ODNR and the USFWS reflects a different course of action.

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

The project is within the range of the state endangered Northern Harrier (*Circus hudsonius*). Northern Harriers prefer large tracts of wetlands and marshes for breeding and nesting. Union Ridge Solar anticipates minimal permanent impacts to wetlands (0.006 acres) and no marshes were identified within the project area, therefore significant impacts to breeding and nesting Northern Harriers are not anticipated. Winter habitat for this species would be impacted (i.e. croplands and agricultural fields) by the project, however, due to the highly mobile nature of this species and the availability of wintering habitat in the area, it is not anticipated that the project would result in adverse impacts to this species.

The project is within the range of the Upland Sandpiper (*Bartramia longicauda*). Nesting Upland Sandpipers utilize dry grasslands including native grasslands, seeded grasslands, grazed and

ungrazed pasture, hayfields, and grasslands. Grasslands and pastures represent approximately 9.6 acres within the project area. In a response to a data request, Union Ridge Solar stated that construction activities would be avoided in Upland Sandpiper habitat during the species nesting period of April 15 through July 31 as well as further best management practice (BMP) measures to reduce grassland and pasture height through regular mowing to discourage nesting birds.

The project is within range of the state threatened Fawnsfoot (*Truncilla donaciformis*). A desktop review from Union Ridge Solar’s consultant HULL identified one stream (the South Fork Licking River) in the southwest portion of the project area as having potential characteristics for this mollusk species. This stream was classified as a Group 1 stream; defined as a “Small to mid-sized stream where federally listed species are not expected” by Ohio Mussel Survey Protocol (2020). Union Ridge Solar’s consultant HULL completed a mussel reconnaissance survey for this identified stream. No live or dead mussels were observed. Due to the Group 1 classification, the results from a completed mussel reconnaissance survey, and no further significant impacts to delineated streams within the project area, impacts to these species are not anticipated.

Vegetation

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

Vegetation Community Type	Total (Acres)
Cultivated Crops	492.2
Deciduous Forest	11.77
Developed, Open Space	5.65
Pasture/Hay	9.61
Developed, Low Intensity	2.56
Woody Wetlands	1.28
Total	523

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

Public Services, Facilities, and Safety

Wind Velocity

The Applicant has indicated that the facility would be designed and installed to withstand and minimize potential damage from high-wind occurrences. Staff has found that components of the proposed facility are generally not susceptible to damage from high winds except for tornado-force winds, because generally solar panels and racking systems have wind speed design load ratings inherent in their design. For instance, the racking and tracking systems under consideration by the Applicant are rated to withstand wind speeds up to 145 miles per hour.⁵⁴ The racking systems under consideration include a stowing feature activated at certain wind speeds.⁵⁵ Stow features also can tilt panels to a certain angle to reduce wind loading on the solar panels during high wind speeds events. During the detailed engineering phase, the Applicant would minimize any potential damage from high wind velocities by proper structural design of the project support equipment at sufficient depths based on the site-specific soil conditions to preclude any adverse influence from high wind velocities. The Applicant also indicates that an Ohio registered structural engineer would design the foundations (i.e., structural support piles) using the American Society of Civil Engineers (ASCE) code number 7-16 entitled *Minimum Design Loads and Associated Criteria for Buildings and Other Structures*.⁵⁶

*Roads and Bridges*⁵⁷

The Applicant has yet to finalize its delivery route, although it is expected that deliveries to the project site would be from the south via Interstate 70 to State Route 310 to U.S. Route 40 to either Watkins Road or York Road. As an alternate route, State Route 158 may be used rather than State Route 310. Access points to the project site would potentially be situated along Watkins Road, York Road, Refugee Road, and Creek Road. At this time, and according to the Staff Report Map, all access points would occur along Watkins Road.

The Applicant conducted a route evaluation study report to identify viable means of accessing the project area. Traffic patterns, general road surface conditions, bridge and culvert conditions, vertical grade changes and potential overhead height obstructions were identified and analyzed. According to the Applicant's Route Evaluation Study, seven bridges are located along probable transportation routes.⁵⁸ All bridges were given a good to excellent condition assessment. Four visible culverts were identified along the York Road route. Two were identified as being in fair condition whereas the other two were given a good condition assessment. However, some degree of embankment erosion was noted at two culvert locations. The Applicant indicates the erosion has not compromised the integrity of the road at this time. In the event repairs are necessary, it

54. Application at Exhibit A.

55. Application at page 55, at Exhibit A, and Union Ridge Solar, LLC's May 14, 2021 Responses to Staff's First Data Request, Data Requests #11.

56. Union Ridge Solar, LLC's May 14, 2021 Responses to Staff's First Data Request, Data Requests #10 to #12.

57. 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>.

58. Application at pages 6-7 of Exhibit K (Route Evaluation Study and Traffic Control Plan by Hull & Associates).

would be managed through the forthcoming Road Use Authorization and Maintenance Agreement with Licking County.⁵⁹

Road surface quality has been determined by the Applicant to be in good or fair condition. The roads found to be in fair condition are maintained by Licking County. The Applicant determined these roads appear to be stable but show signs of advanced aging. No permanent overhead obstructions, or width restrictions were identified along the proposed delivery routes. Bridge and road load restrictions (50 percent weight reduction) exist at all four roads discussed above during specified periods outlined in the Route Evaluation Study. Impact mitigation measures for roadway infrastructure is outlined in the Applicant's Route Evaluation Study. Overall, the study indicates very little impact to local roads during the construction of the proposed solar facility. The application indicates the roads in their current condition can be used for construction traffic and material delivery. The route evaluation study does note "Road May Flood" signs along portions of Watkins Road which suggests that access may be limited at times.

Conventional heavy equipment which does not require special permitting would make up most of the construction traffic. The electrical transformer and switch gear are likely to be overweight and would require special permitting and route coordination for delivery. The application indicates an increase in truck traffic would be anticipated during construction for the purpose of project area equipment access and equipment and material deliveries but does not anticipate significant changes to traffic patterns. Post construction and operation of the solar facility, the Applicant does not anticipate any additional traffic for the project beyond routine maintenance.

The Applicant would work with the Licking County Engineer's Office and would enter into a Road Use Maintenance Agreement with the county prior to construction.⁶⁰ Once the transportation permitting process has been completed, Staff recommends that the Applicant develop a final transportation management plan which would include any county-required road use maintenance agreements. Mitigating damages to roadways caused by the project would be detailed in agreements and permits with the appropriate regulatory authorities. Any temporary improvements would be removed unless the appropriate regulatory authority requests that they remain in place.

Noise

Noise impacts from construction activities would include site clearing, installation of mechanical and electrical equipment, and commissioning and testing of equipment. Many of the construction activities would generate significant noise levels during the 12 months of construction. However, the adverse impact of construction noise would be temporary and intermittent, would occur away from most residential structures, and would be limited to daytime working hours. The Applicant would use mitigation practices such as limiting construction activities to daylight hours, keeping equipment in good working condition 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.

⁵⁹ August 2, 2021 Applicant Response to Staff's Third Data Request.

⁶⁰. Application at page 32.

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 and transformer models.⁶¹ The model showed that operational noise impacts, with mitigation in the form of noise barriers at six inverters, would be less than ambient noise levels plus five dBA. No non-participating receptors were modeled to receive noise impacts greater than the daytime ambient noise level plus five dBA. Therefore, the project would be expected to have minimal adverse noise impacts on the adjacent community. If an inverter or transformer model different than the proposed inverter or transformer model is chosen, the Applicant would submit a noise report confirming that no non-participating receptors were modeled to receive noise impacts greater than the daytime ambient noise level plus five dBA.

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.

61. The inverter data used for the noise model was for the Power Electronics FS-3430M 3430 kVA. Sound power spectra was not available for the Power Electronics FS-3430M, and therefore the Applicant utilized the sound power spectra from a Sungrow SG3150U with the power shifted to 3430 kVA for the sound power study. Through this methodology, the Applicant was able to model noise impacts by increasing the sound output by the difference in power between the proposed inverter and the inverter with data available. The substation transformer data used the noise model was for the ABB 108 MWac in ONAF2 180 MVA mode with all fans running for a worst-case scenario.

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: availability of solar resources, ease of access to the bulk power transmission system, compatible land use, sufficiently low population density, few environmentally sensitive areas, landowner interest and local governmental support. In preparation of the application, the Applicant engaged local officials and the public. Local governmental guidance and public input have been incorporated into the project design where feasible.

Minimizing Impacts

The Applicant found and OHPO agreed that the project would not have adverse impacts on historical properties or archaeological sites.

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

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

The Applicant anticipates 0.006 acres of permanent wetland impacts due to construction of access roads and collection lines. The ODNr and the USFWS did not identify any concerns regarding impacts to listed plant or animal species. Furthermore, the Applicant did not identify any listed plant or animal species during field surveys. Impacts to any state or federally listed species would be further avoided by following seasonal restrictions for construction in certain habitat types, as detailed by the USFWS and the ODNr.

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 changes inverter or transformer models, Staff recommends that the Applicant submit an updated noise study. The updated noise study would confirm that sound levels would not exceed the daytime ambient level plus five dBA at any non-participating sensitive receptor to assure that operational noise impacts are minimal. Further, the Applicant has developed a complaint resolution plan which would be implemented throughout construction and operation.

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

Due to the low profile of the project, combined with existing vegetation in the area, the visual impacts would be most prominent to landowners in the immediate vicinity of the infrastructure itself. The Applicant has developed a visual resource and mitigation plan in which it commits to install vegetation modules to lessen the visual impact to non-participating residences. The Applicant has committed to using both downward facing and motion sensor lighting where possible to lessen the impact from project lighting.

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

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

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 proposed to construct a solar-powered electric generation facility, capable of producing 107.7 MW. The proposed facility would interconnect from the collection substation to the AEP existing 138 kV Kirk Substation. The interconnection would require a new 138 kV circuit breaker, data gathering and processing equipment and instrumentation, related protection and control equipment and revenue metering.

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).⁶²

PJM Interconnection

The Applicant submitted one generation interconnection request for the proposed facility to PJM. For the request of February 2020, PJM has assigned the queue ID AF2-122 under the name "Kirk 138 kV," which requested an injection of 107.7 MW. PJM has completed and issued the Feasibility Study Report and the System Impact Study Report for AF2-122 in July 2020 and February 2021, respectively.^{63, 64}

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

62. 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.

63. PJM Interconnection, "New Services Queue", Feasibility Study Report for Queue ID: AF2-122, <https://www.pjm.com/planning/services-requests/interconnection-queues.aspx> (Accessed March 30, 2021)

64. PJM Interconnection, "New Services Queue", System Impact Study Report for Queue ID: AF2-122, <https://www.pjm.com/planning/services-requests/interconnection-queues.aspx> (Accessed March 30, 2021)

PJM QUEUES: UNION RIDGE SOLAR FACILITY PROJECT			
Queue ID	Queue Date	Power Output (MW)	Capacity (MW)
AF2-122	2/28/2020	107.7	64.62
Totals		107.7	64.62

PJM studied the interconnection as an injection into the BPS using a direct connection to the AEP 138 kV Kirk Substation, which would serve as the point of interconnection (POI) for the facility.⁶⁵ The POI is the location on the specified transmission line where the facility will deliver its power to the electric grid. The Applicant requested a total injection of 107.7 MW, of which 64.62 MW could be available in the PJM capacity market.⁶⁶ The capacity market ensures that there is an adequate availability of generation resources that can meet current and future demand. The project was studied with a commercial probability of 53.0 percent.

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 AF2-122. The studies did not reveal any reliability criteria violations. The chart below displays the results of the PJM System Impact Study (SIS) for the regional footprint.⁶⁷

PJM REGIONAL SYSTEM IMPACTS (2023 Summer Peak)	
Generation Deliverability – System Normal & Single Contingency Outage	
Plant Output: Capacity Level – 64.62 MW	No Problems Identified.
Category C and D – Multiple Contingency Outages	
Plant Output: Power Level – 107.7 MW	No Problems Identified.

New System Reinforcements

PJM requires mitigation of contingencies that create reliability violations which are initially caused by the addition of the Applicant's project. The PJM SIS required no New System Reinforcements for AF2-122.

65. The POI is the location on the specified transmission line where the facility would deliver its power to the electric grid.

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

67. PJM Interconnection, "New Services Queue", System Impact Study for queue ID: AF2-122, <https://www.pjm.com/planning/services-requests/interconnection-queues.aspx> (Accessed March 30, 2021)

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.

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 results identified no congestion issues.

Short Circuit Analysis

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

Recommended Findings

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

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

AIR, WATER, SOLID WASTE, AND AVIATION

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

Air⁶⁸

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 a dust suppressant such as calcium carbonate or water to wet soil to minimize dust during periods of high heat. These practices are outlined in the ODNR's Ohio Rainwater and Land Development Manual which defines Ohio's standards for stormwater management practices. This method of dust control is typically used to comply with fugitive dust rules.

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

Water⁶⁹

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

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

68. 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., R.C. 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>>).

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

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

The Applicant would develop an SPCC plan to manage the storage and mitigate the unlikely release of hazardous substances. Specifically, the Applicant indicates that it would follow all measures indicated in the SPCC plan and monitor for aquatic discharges draining from the site, such as an oily sheen on storm water, etc. to ensure that the water resources are not at-risk during construction. Additionally, a SWPPP would be developed to ensure compliance with the CWA and detail the BMP's 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 Waste⁷⁰

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

During operation of the project, the Applicant anticipates that the O&M facility would generate solid waste comparable in type and quantity to a small business office; it would use a local solid waste disposal service to handle the waste. The Applicant's solid waste disposal plans would comply with solid waste disposal requirements set forth in R.C. Chapter 3734.

Aviation⁷¹

The height of the tallest above ground structures would be the substation support structures which would be approximately 65 feet tall.⁷² That height is under the height requirement from the Federal Aviation Administration (FAA), pursuant to 14 CFR Part 77.9(a), for filing a Form 7460-1.

According to the Applicant, there are no public use airports, helicopter pads, or landing strips within five miles of the project area.⁷³ The Applicant did identify two privately owned private use airfields: Lee's Dogpatch Airport located approximately one mile south of the project area and the Buckeye Intra-national Airport located approximately five miles east of the project area. An

70. 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.

71. 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.

72. Application at page 56.

73. Application at page 43 and Figure 08-2.

aircraft would need to obtain permission prior to landing at a private-use airport. Staff confirmed through the FAA, that the closest public -use airports are the Miller Farm Landing Strip (7B4), Newark-Heath (VTA), and John Glenn Columbus International (CMH) airports which are between six and 12 miles from the proposed solar 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.⁷⁴ As of the date of this filing, no such concerns have been identified.

Recommended Findings

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

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

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

PUBLIC INTEREST, CONVENIENCE, AND NECESSITY

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

Safety

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

The Applicant intends to use warning signs, fencing, and gates to restrict access to the potential hazards within the solar project area. Additionally, the Applicant intends to design its facility with setbacks to non-participating sensitive receptors, non-participating properties, and public roads. the Applicant would ensure that the solar facility fence lines are setback a minimum of 100 feet from the fence line to adjacent non-participating sensitive receptors, at least 25 feet from the fence line to non-participating property lines, and at least 75 feet from the fence line to the centerlines of public roads.⁷⁵

The Applicant stated that it intends to restrict public access to the facility by enclosing the project area with fencing that complies with NESC requirements. The Applicant proposes a seven-foot-high agricultural security fence with lockable gates around the project and the substation would have a chain link fence (typically six feet tall chain link fence topped with one foot of barbed wire strand).⁷⁶ Staff has recommended that, except for the substation fencing, the solar panel perimeter fence type be both wildlife permeable and aesthetically fitting for a rural location.

Prior to construction, the Applicant also intends to develop and implement a site-specific Health and Safety Plan which includes an emergency action plan to identify preventive measures to reduce emergency occurrences and actions to address medical emergencies, fires, or spills. This plan would be refined with further consultation with potentially affected local and regional emergency response personnel. The Applicant has provided an example emergency response plan, which Staff has reviewed.⁷⁷

Public Interaction and Participation

The Applicant hosted a virtual public informational meeting for the project. Attendees were provided the opportunity to listen to a presentation about the project, ask questions, and provide comments. The Applicant also maintains a project website at <https://unionridgesolar.com>. According to information provided by the Applicant, the questions and comments shared by members of the public covered topics including potential impacts to property values, visual

75. Application at page 91.

76. Application at page 10, 12, and Union Ridge Solar, LLC's May 14, 2021 Responses to Staff's First Data Request, Data Request #31 and #35.

77. Union Ridge Solar, LLC's May 14, 2021 Responses to Staff's First Data Request, Data Request #14 and Appendix B.

impacts and noise, drainage, impacts to wildlife, and economic benefits. A full list of comments received during the public informational meeting can be found in the application.⁷⁸

The Applicant has drafted a complaint resolution plan to handle complaints during the construction and operation of the facility. Staff recommends that a final version of this plan be filed on the docket no later than 30 days prior to the start of construction. The Applicant has committed to notify, by mail, affected property owners and tenants who were provided notice of the public information meeting and OPSB hearings, local officials who received a copy of the application, residences located within one mile of the certificated boundary, and any other person who has requested updates regarding the project, at least seven days prior to the start of construction and again at least seven days prior to the start of facility operation. The Applicant has also committed to provide the OPSB with a quarterly complaint updates during construction and the first five years of operation of the facility. Staff recommends that these reports be filed on the public docket.

The Administrative Law Judge has scheduled a public hearing and an evidentiary hearing for this proceeding. The public hearing will be held on August 31, 2021, beginning at 6:00 p.m. The evidentiary hearing is scheduled for September 14, 2021, at 10:00 a.m.

As of August 16, 2021, the OPSB has received 11 public comments in this proceeding. Commenters expressing concerns with the project cited a range of issues and potential impacts, including aesthetics, construction, fencing, glare, lighting, property values, vegetative screening, setbacks, soil erosion, water conservation, wildlife, and zoning. The majority of these issues and impacts are addressed in prior sections of this report, while any remaining concerns are listed below, along with Staff's responses. Commenters supportive of the project cited benefits to the local economy through tax revenue and jobs, as well as benefits of clean energy. 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>.

The Licking County Board of County Commissioners, the Harrison Township Board of Trustees, the Engineer of Licking County, the Licking County Soil & Water Conservation District, and the Ohio Farm Bureau Federation have requested to intervene in this proceeding.

Public Comments

Staff has received several public comments to date concerning the proposed project and will address them below:

(1) It appears that the proposed acreage does not have to be rezoned. Why is that?

While Staff is unable to provide a legal opinion on zoning laws, Staff will direct concerned individuals to R.C. 4906.13(B), which states, in pertinent part:

No public agency or political subdivision of this state may require any approval, consent, permit, certificate, or other condition for the construction or operation of a major utility facility or economically significant wind farm authorized by a certificate issued pursuant to Chapter 4906. of the Revised Code. Nothing herein shall prevent the application of state laws for the protection of employees engaged in the construction of such facility or wind farm nor of municipal regulations that

78. Application at Exhibit F.

do not pertain to the location or design of, or pollution control and abatement standards for, a major utility facility or economically significant wind farm for which a certificate has been granted under this chapter.

- (2) **I would also like to know who is actually contracting for the electricity that would be generated?**

The project is expected to have a purchase power agreement with Amazon.

- (3) **I would also like to know what consideration has been given to the migratory animals that use this acreage on a regular basis i.e. (deer, geese and others)?**

Staff included a condition for fencing that is both small-wildlife permeable and aesthetically fitting for a rural location.

- (4) **What happens if the Union Ridge Solar Subsidiary file bankruptcy and abandons the solar facility? Would local citizens have to pay to restore the land?**

The Applicant would be required to decommission the facility at the end of its lifetime. This decommissioning requires returning the land to usefulness for agriculture. Additionally, Staff has recommended condition 30, which contains multiple requirements for the Applicant to satisfy related to decommissioning.

- (5) **The York gate estates development is adjacent to the project area. We are concerned about property values.**

The Applicant's landscape plan shows that the aesthetic impact on residences would be minimized with vegetation. Given the speculative nature of property values and lack of statutory requirement to evaluate this topic, Staff does not opine on this issue.

- (6) **I am concerned with natural resources conservation specifically soil erosion prevention, ecosystem preservation-nesting vernal pools, and habitat enhancements for pollinators and wildlife.**

Staff consulted with the Ohio Department of Natural Resources and the U.S. Fish and Wildlife service to minimize ecological impacts. Staff has also recommended conditions 20-27 to address soil erosion and ecological concerns.

- (7) **I have concerns about construction noise.**

Staff recommended condition 15 would limit most construction activities to daytime hours.

- (8) **What is the offset requirement for the barrier? From the property line? From the roadway, From existing structures?**

The project has setbacks from generation equipment to 1) non-participating properties lines of 25 feet, 2) non-participating sensitive receptors (churches, schools, residences) of 100 feet, and 3) the centerlines of public roads of 75 feet.

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 445 acres of agricultural land would be disturbed by the proposed project. All those acres are currently enrolled in the Agricultural District program. Three Agricultural structures would be removed because of the project: a Quonset hut and two silos. The Applicant states the repurposed land could be restored for agricultural use when the project is decommissioned.

The construction and operation of the proposed facility 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.

The Applicant has aggregated GIS data and aerial imagery to create a map of known existing drain tiles within the project area. The Applicant has supplied a Drainage Tile Mitigation Plan with its OPSB application (Exhibit E). This report discusses repair and mitigation details of all known drain tile locations. The Applicant has committed to repair any drain tile found to be damaged by the project during the operational life of the project.

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

Recommended Findings

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

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

WATER CONSERVATION PRACTICE

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

Construction of the proposed facility would not require the use of significant amounts of water. Water may be utilized for dust suppression and control on open soil surfaces such as construction access roads or unpaved transportation routes as needed during periods of high heat.

Operation of the proposed facility would not require the use of significant amounts of water. The O&M building would have water use and wastewater discharge comparable to a small office building. The Applicant anticipates obtaining water through drilling a new on-site water well. Also, a septic system would be installed for the sanitary wastewater from the O&M building.⁷⁹ The Applicant would depend on rainfall to clean the solar panels. The Applicant only anticipates occasional cleaning of panels when rainfall is insufficient. The Applicant estimates that approximately 50,000 gallons per wash would be used.^{80, 81}

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.

79. Application at page 40.

80. Application at page 41.

81. Union Ridge Solar, LLC's May 14, 2021 Responses to Staff's First Data Request, Data Request #15.

IV. RECOMMENDED CONDITIONS OF CERTIFICATE

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

- (1) The Applicant shall install the facility, utilize equipment and construction practices, and implement mitigation measures as described in the application and as modified and/or clarified in supplemental filings, replies to data requests, and recommendations in this Staff Report of Investigation.
- (2) The Applicant shall conduct a preconstruction conference prior to the commencement of any construction activities. Staff, the Applicant, and representatives of the primary contractor and all subcontractors for the project shall attend the preconstruction conference. The conference shall include a presentation of the measures to be taken by the Applicant and contractors to ensure compliance with all conditions of the certificate, and discussion of the procedures for on-site investigations by Staff during construction. Prior to the conference, the Applicant shall provide a proposed conference agenda for Staff review. The Applicant may conduct separate preconstruction conferences for each stage of construction.
- (3) Within 60 days after the commencement of commercial operation, the Applicant shall submit to Staff a copy of the as-built specifications for the entire facility. If the Applicant demonstrates that good cause prevents it from submitting a copy of the as-built specifications for the entire facility within 60 days after commencement of commercial operation, it may request an extension of time for the filing of such as-built specifications. The Applicant shall use reasonable efforts to provide as-built drawings in both hard copy and as geographically referenced electronic data.
- (4) 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. Mapping shall include the limits of disturbance, permanent and temporary infrastructure locations, areas of vegetation removal and vegetative restoration as applicable, and specifically denote any adjustments made from the siting detailed in the application. The detailed engineering drawings of the final project design for each phase of construction shall account for geological features and include the identity of the registered professional engineer(s), structural engineer(s), or engineering firm(s), licensed to practice engineering in the state of Ohio who reviewed and approved

the designs. All applicable geotechnical study results shall be included in the submission of the final project design to Staff.

- (5) At least 30 days prior to the preconstruction conference, the Applicant shall provide Staff, for review and acceptance, the final geotechnical engineering report. This shall include a summary statement addressing the geologic and soil suitability.
- (6) The certificate shall become invalid if the Applicant has not commenced a continuous course of construction of the proposed facility within five years of the date of journalization of the certificate, unless the Board grants a waiver or extension of time.
- (7) As the information becomes known, the Applicant shall file in this proceeding the date on which construction will begin, the date on which construction was completed, and the date on which the facility begins commercial operation.
- (8) Prior to the commencement of construction activities in areas that require permits or authorizations by federal or state laws and regulations, the Applicant shall obtain and comply with such permits or authorizations. The Applicant shall provide copies of permits and authorizations, including all supporting documentation, to Staff within seven days of issuance or receipt by the Applicant. The Applicant shall provide a schedule of construction activities and acquisition of corresponding permits for each activity at the preconstruction conference.
- (9) The 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.
- (10) At least 30 days prior to the start of construction, the Applicant shall file a copy of the final complaint resolution plan on the public docket. At least seven days prior to the start of construction and at least seven days prior to the start of facility operations, the Applicant shall notify via mail affected property owners and tenants including those individuals who were provided notice of the public informational meeting, residences located within one mile of the project area, parties to this case, county commissioners, township trustees, emergency responders, airports, schools, and libraries, as well as anyone who has requested updates regarding the project. These notices shall provide information about the project, including contact information and a copy of the complaint resolution plan. The start of construction notice shall include written confirmation that the Applicant has complied with all preconstruction-related conditions of the certificate, as well as a timeline for construction and restoration activities. The start of facility operations notice shall include written confirmation that the Applicant has complied with all construction-related conditions of the certificate, as well as a timeline for the start of operations. The Applicant shall file a copy of these notices on the public docket. During the construction and operation of the facility, the Applicant shall submit to Staff a complaint summary report by the fifteenth day of April, July, October, and January of each year 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 process, a description of the actions taken toward the resolution of each complaint, and a status update if the complaint has yet to be resolved. The Applicant shall file a copy of these complaint summaries on the public docket.

- (11) At least 30 days prior to the preconstruction conference, the Applicant shall submit its emergency response plan on the docket to Staff for review and acceptance. That plan shall include a provision(s) to keep the City of Pataskala (city administrator or water department) and the Southwest Licking Community Water and Sewer District informed of the status of any spills, significant panel damage, and repair/clean-up/decommission schedule.
- (12) The Applicant shall not commence any construction of the facility until it has executed an Interconnection Service Agreement and Interconnection Construction Service Agreement with PJM Interconnection, which includes construction, operation, and maintenance of system upgrades necessary to integrate the proposed generating facility into the regional transmission system reliably and safely. The Applicant shall docket in the case record a letter stating that the Agreement has been signed or a copy of the executed Interconnection Service Agreement and Interconnection Construction Service Agreement. The facility shall be operated in such a way as to assure that no more than 107.7 megawatts would be injected into the Bulk Power System at any time.
- (13) 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. Following Staff approval, the Applicant shall file details of this solar panel perimeter fence on the public docket. This condition shall not apply to substation fencing.
- (14) Prior to commencement of construction, the Applicant shall prepare a landscape and lighting plan in consultation with a landscape architect licensed by the Ohio Landscape Architects Board that addresses the aesthetic and lighting impacts of the facility with an emphasis on any locations where an adjacent non-participating parcel contains a residence with a direct line of sight to the project area and also include a plan describing the methods to be used for fence repair. The plan shall include measures such as fencing, vegetative screening or good neighbor agreements. Unless alternative mitigation is agreed upon with the owner of any such adjacent, non-participating parcel containing a residence with a direct line of sight to the fence of the facility, the plan shall provide for the planting of vegetative screening designed by the landscape architect to enhance the view from the residence and be in harmony with the existing vegetation and viewshed in the area. The Applicant shall adjust its landscape and lighting plan to incorporate additional planting design features or measures to address aesthetic impacts to the traveling public, nearby communities, and recreationalists. The Applicant shall maintain vegetative screening for the life of the facility and the Applicant shall replace any failed plantings so that, after five years, at least 90 percent of the vegetation has survived. The Applicant shall maintain all fencing along the perimeter of the project in good repair for the term of the project and shall promptly repair any damage as needed. Lights shall be motion-activated and designed to narrowly focus light inward toward the facility, such as being downward-facing and/or fitted with side shields. The Applicant shall provide

the plan to Staff for review and confirmation that it complies with this condition and shall also file it on the public docket.

- (15) General construction activities shall be limited to the hours of 7:00 a.m. to 7:00 p.m., or until dusk when sunset occurs after 7:00 p.m. Impact pile driving shall be limited to the hours between 9:00 a.m. and 6:00 p.m. Impact pile driving may occur between 7:00 a.m. and 9:00 a.m., and after 6:00 p.m. or until dusk when sunset occurs after 6:00 p.m., if the noise impact at non-participating receptors is not greater than daytime ambient Leq plus 10 dBA. If impact pile driving is required between 7:00 a.m. and 9:00 a.m., and after 6:00 p.m. or until dusk when sunset occurs after 6:00 p.m., the Applicant shall install a noise monitor in a representative location to catalog that this threshold is not being exceeded. Hoe ram operations, if required, shall be limited to the hours between 10:00 a.m. and 4:00 p.m., Monday through Friday. Construction activities that do not involve noise increases above ambient levels at sensitive receptors are permitted outside of daylight hours when necessary. The Applicant shall notify property owners or affected tenants within the meaning of Ohio Adm.Code 4906-3-03(B)(2) of upcoming construction activities including potential for nighttime construction.
- (16) If the inverters or substation transformer chosen for the project have a higher sound power output than the models used in the noise model, the Applicant shall show that sound levels will not exceed the daytime ambient level plus five dBA at any non-participating sensitive receptor and will be submitted at least 30 days prior to construction. If noise data is not available from the inverter or transformer manufacturer, an operational noise test may be performed to comply with this condition. The test must be performed on a sunny day between 10 a.m. and 2 p.m. in the months of May-August, at a distance equal to the minimum distance from an inverter to a non-participating residence. If the test shows the operational noise level is greater than project area ambient Leq level plus five dBA additional noise mitigation will be required. This condition is complied with if the test shows the operational noise level is equal or less than project area ambient Leq level plus five dBA. The Applicant shall file a report on the public docket that shows either 1) for the chosen inverter and substation transformer that sound levels will not exceed the daytime ambient level plus five dBA at any non-participating sensitive receptor or 2) results of the operational noise test showing that sound levels will not exceed the daytime ambient level plus five dBA at any non-participating sensitive receptor.
- (17) The Applicant shall avoid, where possible, or minimize to the extent practicable, any damage to functioning field tile drainage systems and soils resulting from the construction, operation, and/or maintenance of the facility in agricultural areas. Damaged field tile systems shall be promptly repaired or rerouted to at least original conditions or modern equivalent at the Applicant's expense to ensure proper drainage. However, if the affected landowner agrees to not having the damaged field tile system repaired, they may do so only if the field tile systems of adjacent landowners remain unaffected by the non-repair of the landowner's field tile system.
- (18) Benchmark conditions of surface and subsurface drainage systems shall be documented prior to construction, including the location of laterals, mains, grassed waterways, and

county maintenance/repair ditches. Applicant will make efforts to conduct a perimeter dig utilizing a tile search trench and consult with owners of all parcels adjacent to the property, the County soil and water conservation district, and the County to request drainage system information over those parcels. The Applicant shall consult with the County Engineer for tile located in a county maintenance/repair ditch.

- (19) When repairing tiles in a county maintenance/repair ditch, the Applicant shall give reasonable notice of such repairs to the County Engineer and Staff. The County Engineer or his/her representative shall have the right to visually inspect and approve the repair work performed prior to backfill. If the County Engineer does not approve the repair work in a timely manner, Staff shall have the right to visually inspect and approve the repair work performed prior to backfill. If the opinion of the County Engineer and the opinion of Staff on approval of the repair work differ, Staff shall have the final authority to approve the repair work
- (20) 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.
- (21) 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.
- (22) 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.
- (23) The Applicant shall have a Staff-approved environmental specialist on site during construction activities that may affect sensitive areas. Sensitive areas may include, but are not limited to, wetlands and streams, and locations of threatened or endangered species. The environmental specialist shall be familiar with water quality protection issues and potential threatened or endangered species of plants and animals that may be encountered during project construction. The environmental specialist shall have authority to stop construction to assure that unforeseen environmental impacts do not progress and recommend procedures to resolve the impact. A map shall be provided to Staff showing sensitive areas which would be impacted during construction with information on when the environmental specialist would be present.
- (24) The Applicant shall adhere to seasonal cutting dates of October 1 through March 31 for the removal of trees three inches or greater in diameter to avoid impacts to Indiana bats, Northern long-eared bats, little brown bat, and the tricolored bat unless coordination with the Ohio Department of Natural Resources (ODNR) and the U.S. Fish and Wildlife

Service (USFWS) allows a different course of action. If coordination with these agencies allows clearing between April 1 and September 30, the Applicant shall docket proof of completed coordination on the case docket prior to clearing trees.

- (25) Construction in upland sandpiper preferred nesting habitat types shall be avoided during the species' nesting period of April 15 through July 31, unless coordination by the Applicant with the ODNR allows a different course of action during that period. Absent coordination with the ODNR that allows a different course of action, mapping of these habitat areas shall be provided to the construction contractor along with instructions to avoid these areas during the restricted dates.
- (26) The Applicant shall conduct no in-water work in perennial streams from April 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat, unless coordination efforts with the ODNR allows a different course of action. If coordination with the ODNR allows in-water work in perennial streams from April 15 through June 30, the Applicant shall file proof of such coordination on the docket.
- (27) The Applicant take steps to prevent establishment and/or further propagation of noxious weeds identified in Ohio Adm.Code Chapter 901:5-37 during implementation of any pollinator-friendly plantings. This would be achieved through appropriate seed selection, and annual vegetative surveys. If noxious weeds are found to be present, the Applicant shall remove and treat them with herbicide as necessary.
- (28) Prior to commencement of construction activities that require transportation permits, the Applicant shall obtain all such permits. The Applicant shall coordinate with the appropriate authority regarding any temporary road closures, road use agreements, driveway permits, lane closures, road access restrictions, and traffic control necessary for construction and operation of the proposed facility. Coordination shall include, but not be limited to, the Licking County Engineer, Etna Township, ODOT, local law enforcement, and health and safety officials. The Applicant shall detail this coordination as part of a final transportation management plan submitted to Staff prior to the preconstruction conference for review and confirmation by Staff that it complies with this condition and then file the plan on the public docket. This final transportation management plan would include any county required road use maintenance agreements. Any damaged public roads, culverts and bridges would be repaired promptly to their previous or better condition by the Applicant under the guidance of the appropriate regulatory authority. Any temporary improvements would be removed unless the appropriate regulatory authority requests that they remain in place.
- (29) At least 30 days prior to the preconstruction conference, the Applicant shall provide the status (i.e. avoidance, mitigation measures, or capping) of each water well within the project area. The Applicant shall indicate to Staff whether the nearest solar components to any uncapped well within the project area meets or exceeds any applicable minimum isolation distances outlined in Ohio Adm.Code 3701-28-7 and denote the water well on construction drawings. The Applicant shall relocate the solar equipment at least 50 feet from a water well or demonstrate that the well is for non-potable use and relocate solar equipment at least 10 feet from the well, or seal and abandon the water well. The

Applicant shall also verify that any abandoned water wells within the project area have been properly decommissioned.

- (30) At least 30 days prior to the preconstruction conference, the Applicant shall submit an updated decommissioning plan and total decommissioning cost estimate (with line-items for all necessary steps to restore/decommission the site) without regard to salvage value on the public docket that includes: (a) a provision that the decommissioning financial assurance mechanism include a performance bond where the company is the principal, the insurance company is the surety, and the Ohio Power Siting Board is the obligee; (b) a timeline of up to one year for removal of the equipment; (c) a provision to monitor the site for at least one additional year to ensure successful revegetation and rehabilitation; (d) a provision where the performance bond is posted prior to the commencement of construction; (e) a provision that the performance bond is for the total decommissioning cost and excludes salvage value; (f) a provision to coordinate repair of public roads damaged or modified during the decommissioning and reclamation process; (g) a provision that the decommissioning plan be prepared by a professional engineer registered with the state board of registration for professional engineers and surveyors; and (h) a provision stating that the bond shall be recalculated every five years by an engineer retained by the Applicant.



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