

Staff Report of Investigation

Ross County Solar Project
Ross County Solar, LLC

Case No. 20-1380-EL-BGN

March 22, 2021



Power Siting
Board

In the Matter of the Application of)
Ross County Solar, LLC for a Certificate) **Case No. 20-1380-EL-BGN**
of Environmental Compatibility and Public Need)

Staff Report of Investigation

Submitted to the
OHIO POWER SITING BOARD

BEFORE THE POWER SITING BOARD OF THE STATE OF OHIO

In the Matter of the Application of)
Ross County Solar, LLC for a Certificate) **Case No. 20-1380-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

TABLE OF CONTENTS

I. POWERS AND DUTIES.....	1
Ohio Power Siting Board	1
Nature of Investigation.....	1
Criteria	3
II. APPLICATION.....	4
Applicant	4
History of the Application.....	4
Project Description	4
Project Map	7
III. CONSIDERATIONS AND RECOMMENDED FINDINGS	8
Basis of Need.....	8
Nature of Probable Environmental Impact.....	9
Minimum Adverse Environmental Impact.....	24
Electric Grid	26
Air, Water, Solid Waste, and Aviation	29
Public Interest, Convenience, and Necessity.....	31
Agricultural Districts and Agricultural Land	33
Water Conservation Practice	34
IV. RECOMMENDED CONDITIONS OF CERTIFICATE	35

I. POWERS AND DUTIES

OHIO POWER SITING BOARD

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

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

NATURE OF INVESTIGATION

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

Application Procedures

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

1. R.C. 4906.04 and 4906.20.

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

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

Staff Investigation and Report

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

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

Board Decision

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

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

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

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

5. R.C. 4906.08(C).

6. R.C. 4906.07.

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

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

9. R.C. 4906.09 and 4906.12.

10. R.C. 4906.10(A).

11. R.C. 4906.10.

12. R.C. 4906.11.

13. R.C. 4906.10(C).

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

CRITERIA

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

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

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

¹⁴ R.C. 4903.10 and 4906.12.

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

II. APPLICATION

APPLICANT

Ross County Solar, LLC (Applicant) is held under National Grid Renewables formally known as Geronimo Energy. National Grid Renewables is a subsidiary of a development holding company named National Grid Holdings One PLC. National Grid Renewables is based in Minneapolis, Minnesota and is a developer of utility scale solar energy projects. National Grid Renewables has signed over 500 MW of contracts of wind, solar and battery projects. The Applicant would construct, operate, and maintain the facility (Ross County Solar Project), except for the upgrades to the Buckskin substation.

HISTORY OF THE APPLICATION

On August 13, 2020, the Applicant filed a motion for waiver and request for approval to hold an alternative public information meeting. The motion was granted.

On September 14, 2020, the Applicant filed a pre-application notification letter regarding the project.

On September 30, 2020, the Applicant held public informational meetings for the project.

On October 30, 2020, the Applicant filed the Ross County Solar Project application as well as a motion for protective order and a motion for waiver of certain Board rules.

On December 29, 2020, the Executive Director of the OPSB issued a letter of compliance regarding the application to the Applicant.

On March 1, 2021, the Ohio Farm Bureau Federation requested to intervene in this proceeding.

On March 8, 2021, the Board of Trustees of Buckskin Township, Ross County, Ohio requested to intervene in this proceeding.

On March 8, 2021, the Board of Trustees of Paint Township, Ross County, Ohio requested to intervene in this proceeding.

A local public hearing has been scheduled for April 6, 2021, at 6:00 p.m. The evidentiary hearing is scheduled to commence on April 27, 2021, at 10:00 a.m.

This summary of the history of the application does not include every filing in case number 20-1380-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 Ross County Solar Project, a 120 MW solar-powered generating facility in Buckskin and Paint Townships in Ross 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 927 acres within an approximate 1,433-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 building, underground and overhead electric collection lines, weather stations, 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 six-feet tall and accessed through gated entrances. The Applicant would ensure that solar modules are setback a minimum of 300 feet from adjacent non-participating residences, and at least 50 feet from both non-participating property lines and public roads.

Solar Panels and Racking

The solar panels would be attached to metal racking. The racking would include steel piles driven approximately eight to 15 feet into the ground. PV modules have not yet been procured for the project. The Applicant anticipates that the facility would be comprised of 390 to 450-watt panels. Depending on the module selected, the facility would include approximately 365,000 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 panel modules would occupy approximately 656 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 9.3 miles of buried cable. The Applicant is also considering using a hybrid above/below ground electrical cabling system. The system would allow greater access for maintenance and less disturbance of the ground. With this system the DC collection cables will be strung under each row of panels and would not require above ground poles.

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 area along its entire length. The below grade portion of the collector system would be buried at least 36 inches.

The electricity from the solar panels would be generated in direct current (DC). DC power from the solar panels would be delivered to circuits, which would be routed through cable trays, then to combiner boxes. Power from the combiner boxes would be transmitted to groups of components, collectively called an inverter, which would include a DC-to-alternating current (AC) inverter, a step-up transformer that would increase the voltage to 34.5 kV, and a cabinet containing power control electronics. This would be housed in a power conversion station mounted on a concrete foundation. The facility would include approximately 37 inverters/power conversion stations.

Collection Substation and Transmission Line

The facility collection substation would occupy approximately 2.8 acres of land adjacent to the existing AEP Ohio Transmission Company (AEP) Buckskin 69 kV substation. The major components of the Applicant's substation would be a dead-end support structure for the 69 kV gen-tie electric transmission line, a main power transformer, circuit breakers, surge arrestors, insulators, and a lightning mast. The collection substation would be located at the south side of Lower Twin Road near the intersection of Lower Twin Road and State Route 41.

A 69 kV electric transmission gen-tie line, between 475 and 850 feet in length, would connect the project substation to the existing AEP Buckskin 69 kV substation.

The collection substation and gen-tie electric transmission line are denoted on the maps in this report.

Roads

The Applicant proposes to construct approximately 12.4 miles of new access roads for construction, operation, and maintenance of the solar facility. The access roads 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 three construction laydown areas, one each in the northern, central, and southern areas of the project with a total acreage of 6.2 acres. The laydown area would be utilized for material and equipment storage, construction parking, and construction trailers. The laydown area would be fenced-in with six feet tall chain link fence and topped with one foot of barbed wire. The laydown areas would be restored at the end of construction.

Weather Stations

The project would include up to nine weather stations. These devices would measure solar irradiance and wind speed. Solar irradiance is the amount of solar energy per square meter received from the sun.

Operations and Maintenance Building

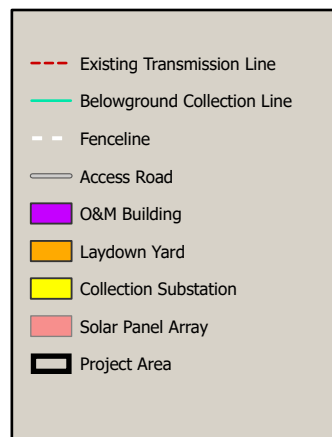
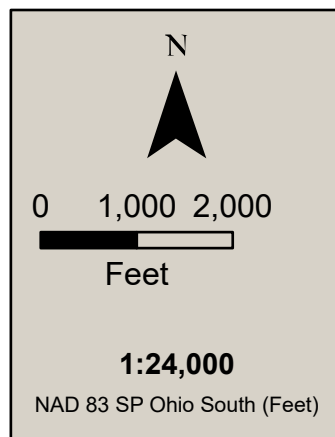
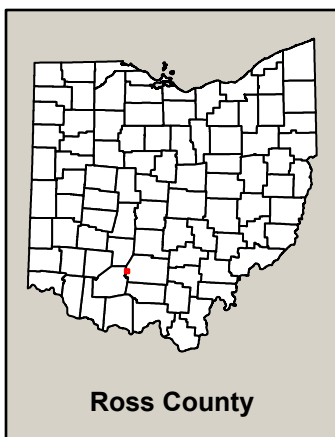
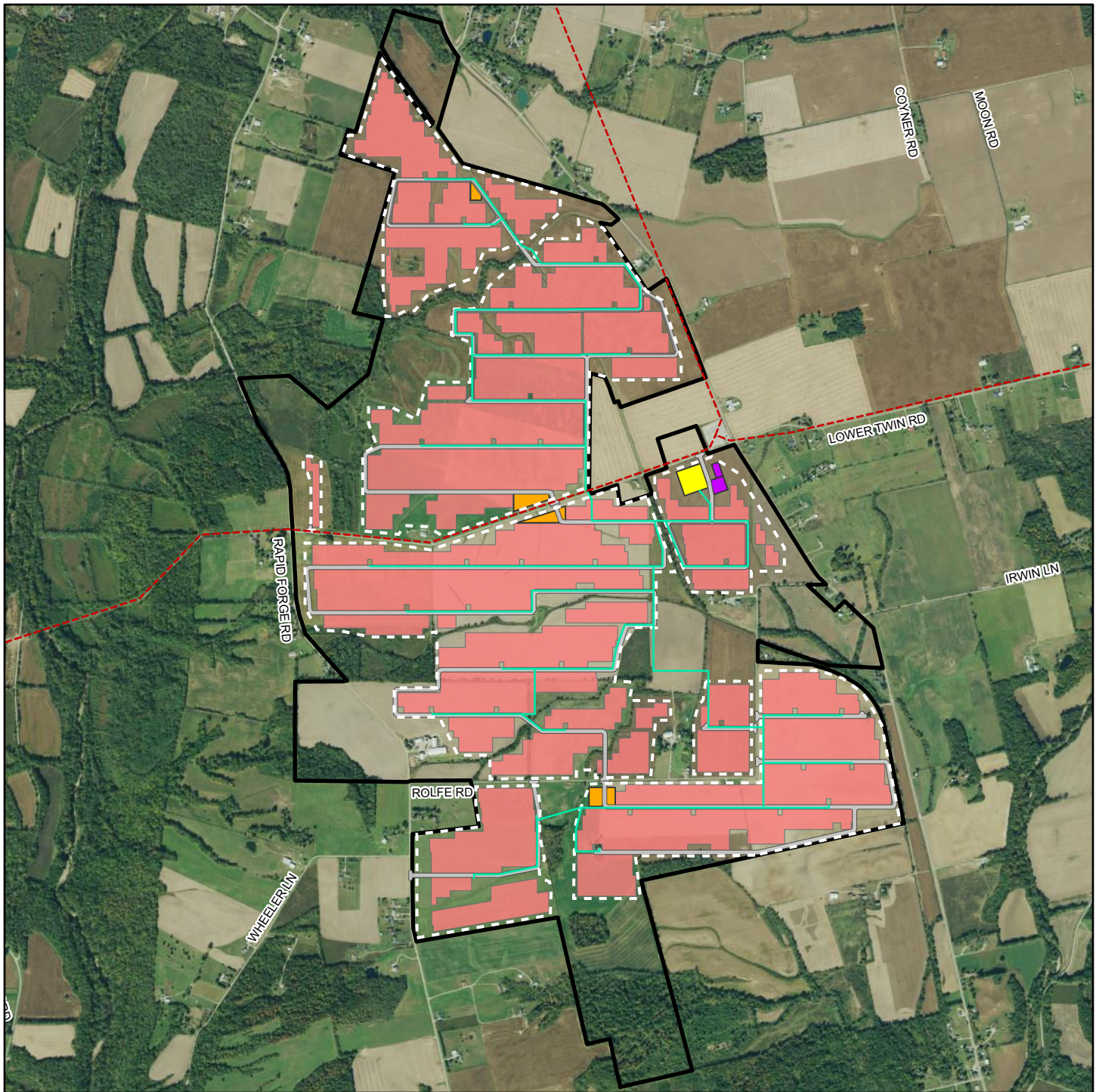
The Applicant proposes to construct one operations and maintenance building. The building would be approximately 5,000 square feet and up to 20 feet tall. The building would require a water supply and would have an onsite septic system. The operations and maintenance building would serve as a workspace for operations personnel.

Lighting

Lighting would be installed at the operations and maintenance 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/ residences. Lighting during operation would be downlit. The Applicant indicates that motion-activated lighting would be used at the operations and maintenance building, inverters, and at project access points.

Project Schedule

The Applicant expects to finalize design of the project in the third quarter of 2021. Construction would start in the fourth quarter of 2021 and would last approximately 12-16 months. The facility is expected to complete construction and place the facility in service in the fourth quarter of 2022. The Applicant stated that delays to this timeline could impact project financing, including the Applicant's ability to procure PV modules and facility components. Further, delays may push the in-service date back, causing significant financial burden, according to the Applicant.



Overview Map

20-1380-EL-BGN

Ross County 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 Ross County 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.

Socioeconomic Impacts

Regional Planning

The Applicant identified three planning documents for governments within the five mile project study area. First, Fayette County adopted the “enVision Fayette County Plan.” This plan calls for the preservation of the rural and agricultural character of Fayette County while promoting healthy growth management strategies. The second document is the “Highland County Needs Assessment.” This plan lists economic development and increased access to jobs as the county’s top needs. The third plan is the “Ross County/City of Chillicothe Throughfare Plan Update.” This plan’s goals are focused on areas in the vicinity of the City of Chillicothe, which is outside the project study area. Staff asserts that the solar facility is not expected to conflict with these land use plans. The proposed solar facility would also be expected to aid regional 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. Farming activities would require only minor modifications, aside from temporary disruptions that would occur during construction.

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 1,433 acres of leased land for the project, roughly 64 percent, or about 924 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.

Recreation

Construction and operation of the facility would not physically impact any recreational areas. The Applicant identified 24 recreational areas within five miles of the project area. According to the Applicant’s visual impact study, for 20 of these recreation areas, visibility of the facility is not anticipated. The nearest recreational area to the project footprint is Paint Creek Lake Wildlife Area, which is adjacent to the project area. The project area is anticipated to be visible from some edges of the wildlife area. Michell Park and the Christian Union campgrounds are located in the village of Greenfield and are located 0.9 and 1.8 miles from the project area, respectively. Limited visibility of the project area is anticipated from Michell Park and the Christian Union campground. Wildlife Production Area 48 is located 1.4 miles from the project area. The project area could be visible in the higher elevation areas of Wildlife Production Area 48. Staff’s review of the Applicant’s viewshed analysis determined that significant adverse aesthetic impacts to recreational areas adjacent to the project area are not likely.

Aesthetics

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

The solar panels would be installed 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. Existing landscape features limit likely concentration of viewshed impacts to a half-mile.

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.

With implementation of the details provided in a Memorandum of Understanding (MOU) executed by the Applicant and the OHPO on February 18, 2021, the overall expected aesthetic impact would be minimal.

Cultural Resources

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, the Ohio Archaeological Inventory, and National Register of Historic Places (NRHP) files. The Applicant also obtained information on historic cemeteries from the Ohio Genealogical Society.

The Applicant's historical survey initially identified 83 potential historic resources. The Applicant worked with OPHO to develop a survey plan for historical and archaeological resources. On October 14, 2020, OHPO's concurrence of the results of the Applicant's historical survey were received. On October 23, 2020, OHPO's concurrence of the results of the Applicant's archaeological survey were received. On February 18, 2021, the OHPO executed a MOU with the Applicant which states impact minimization and mitigation measures, such as avoiding historical and archaeological resources, implementing vegetative screening, and employing a lighting system that minimizes lighting impacts.

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

Economic Impact

The Applicant states that it would be responsible for the construction, operation, and maintenance of the proposed project. The Applicant currently holds lease or purchase options for the land within the project area, other than the 4.8 acres north of Lower Twin Road and west of the Buckskin substation. These agreements will not alter the ownership status of the properties within the proposed project area; however, the Applicant has the option to purchase specific properties as detailed in the application.

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

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

Operations and maintenance expense comparisons between the proposed facility and other comparable facilities are to be provided in the application. The Applicant referenced a 2019 report published by the Berkeley Laboratory that stated that, on average, utility scale solar operations reported operations and maintenance costs totaling \$19/kW_{AC}/year for PV facilities in 2018. Staff verified that the figures put forth by the Applicant were contained in the report and also confirmed the Applicant's assertion that its estimated operations and maintenance cost estimates were consistent with this amount.

The Applicant provided its estimates of the cost of delays in permitting and construction of the proposed facility, although the estimated costs were filed under seal. The Applicant characterized permitting stage delay costs as being associated with an inability to procure necessary project components resulting in the facility's in-service date being pushed back. 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 Ross County Solar Project.¹⁶ 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

16. 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.

the estimated impacts reported by the Applicant are reasonable. Staff believes that the estimated impacts reported by the Applicant are reasonable.

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

Jobs

- 288 construction related jobs for the state of Ohio
- 20 long-term operational jobs for the state of Ohio

Earnings

- \$18.5 million in local earnings during construction for the state of Ohio
- \$1.2 million in annual earnings during facility operations for the state of Ohio

Output

- \$28 million in local output during construction for the state of Ohio
- \$3 million in local annual output during facility operation for the state of Ohio.

The Ross County Solar Project is estimated to generate between \$840,000 and \$1.1 million annually for Ross County taxing districts. This estimate is based on a Payment in Lieu of Taxes (PILOT) plan in which the Applicant would pay between \$7000/MW and \$9000/MW annually for a 120 MW facility.

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.

Solar panels are designed to absorb as much sunlight as possible with minimal reflectivity. The Applicant’s consultant conducted a glint and glare analysis to identify any potential impacts along roads and to area airports.¹⁷ To perform the analysis of glare, the Applicant’s consultant uses the ForgeSolar GlareGauge solar glare tool, formerly known as the Solar Glare Hazard Analysis Tool (SGHAT) which was developed by Sandia National Laboratories to analyze potential glare at sensitive receptor locations. This software is commonly used by solar facility developers to determine the effect of solar glare. The Applicant found that no glare from the project is predicted to vehicles using the roadways. Also, the Applicant does not anticipate impacts from glare at area airports and will not present a risk of glare to pilots making final approaches. The glint and glare analysis specifically analyzed the potential for impact to the runway approaches to the nearest airports, the Ross Field and Unger Field. The results of the Applicant’s analysis found that there is no predicted glare occurrences for approaches to any of the airport runways from the solar facility. The project would conform to the FAA’s interim policy for FAA review of Solar Energy System Projects on Federally Obligated Airports. Staff agrees with the study results. Staff notes

17. Application at Exhibit P.

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 30 years or more. The Applicant has prepared a decommissioning plan and total decommissioning cost estimate of \$12,567,077.¹⁸ 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 will be decommissioned, and the land returned to its current use as agricultural land or other economical land use desired by the landowner. The Applicant will coordinate with Staff prior to the start of any decommissioning activities and obtain applicable federal, state, and local permits. The Applicant will remove all solar components constructed above ground with few exceptions. The Applicant may leave in place any electrical lines that will not impact the restored use and are at least 48 inches below-grade. Access roads or driveways on private property at landowner request, switchyard, interconnection facilities and other similar utility facilities not owned by the Applicant will be left in place. The Applicant will restore the land significantly to its original topography to allow for resumption of the pre-construction agricultural land use, or other economical land use as desired by the relevant landowner. The Applicant stated that it anticipates most facility components would be removed within 12 months, but the Applicant further indicated that site restoration activities are dependent on weather conditions which may requiring ongoing revegetation and restoration extended to 18 months.

During decommissioning, the Applicant states it will repurpose, salvage, recycle or haul offsite to a licensed solid waste disposal facility all solar components. Some of those solar components are anticipated to have a resale or salvage value and would be sold to offset the decommissioning cost. Those salvageable items typically are solar modules, tracking system, steel piles, inverters, and transformers. If solar modules are to be disposed, the Applicant intends to conduct the disposal in compliance with federal, state, and local laws and regulations. The Applicant 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. The Applicant stated it will ensure that panels, if required to be landfilled, meet all disposal requirements. Also, Staff has found and the Applicant noted that many solar panel manufacturers have programs or are developing programs to accept panels back to their manufacturing facility to recycle and reuse most of the components.

The Applicant will obtain all required approvals and necessary permits prior to the start of decommissioning. The decommissioning sequence consists of, but is not limited to, removal of panels, weather stations, inverters, electrical equipment, racking, scrap, piles, access roads, electrical collection lines, fencing, and substation.

The Applicant will also provide for financial security to ensure that funds are available for decommissioning/land-restoration. The Applicant states that, prior to the commencement of commercial operation of the project, it will post a performance bond, where the OPSB is the obligee, in the amount of the net decommissioning costs (total decommissioning cost less salvage/resale value of solar components) to decommission the solar facility as outlined in the

18. Application at Exhibit N.

plan.¹⁹ Net decommissioning cost accounts for the resale or salvage value of the solar equipment. The initial net decommissioning cost of \$4,694,666 was calculated by an Ohio licensed engineering firm and will be recalculated every five years thereafter over the life of the project. If that calculation shows that the net decommissioning cost for the project has increased, the Applicant will increase the amount of the performance bond accordingly.

Geotechnical Engineering Report

The proposed project area is in Buckskin and Paint townships, Ross County. This area is in the Southern Ohio Loamy Till Plain physiographic region. The project area lies within the glaciated area of the state and is covered by the relatively flat, continuous till of the late Wisconsinian ground moraine. This is a typical geologic profile of Ross County.

The ODNR performed a geological survey of the location of the proposed solar facility.²⁰ That survey report considered the physiographic region, surficial/glacial geology, bedrock geology, oil/gas and mining, area seismic activity, Karst topography, soils, groundwater, and water resources. Of note from the ODNR's survey is that the underlying bedrock geology can be prone to karst features. Karst topography is a geologic feature, which requires special consideration during support-structure/foundation design and installation. Karst topography is characterized by sinkholes, caves, and underground drainage. There are no known sinkholes in the project area, but within one mile from the project area there are approximately 12 field verified or suspected sinkholes. Also, the ODNR found that there is record of a plugged oil and gas well approximately 1.8 miles west of the project area.

The Applicant's consultant, Terracon Consultants, Inc. (Terracon), prepared a preliminary geotechnical engineering report dated September 2020.²¹ In this study, the Terracon performed test borings throughout the project area. The September 2020 Terracon preliminary geotechnical engineering report analyzed and provided information about site conditions, subsurface soil conditions, geotechnical characterization, frost considerations, seismic considerations, substation foundation considerations, ground corrosivity issues, a geotechnical overview, contributory construction risk, preliminary solar panel support design recommendations, isolated slab foundation design considerations, access roadways, preliminary earthwork and construction recommendations. The preliminary geotechnical engineering report did not encounter karst features during its geotechnical exploration (i.e. soil boring and testing) but that additional studies could be undertaken to further refine the final project design. The geotechnical engineer anticipates that carbonate rocks, which are those likely to have karstic features, would be 50 feet below ground surface. The solar facility support structures would be 15 feet below ground surface or less. Also, of note from this geotechnical engineering report was that groundwater was encountered at several test boring locations. Terracon believes that excavations for the electrical collection system or shallow foundations could encounter groundwater and may require dewatering especially during seasonal high groundwater periods. The most likely type of solar panel support-structure would be

19. Application at p. 43 and Exhibit N.

20. Application on page 65 of 642 of the Application's Exhibit S, *Ecological Assessment*, October 2020.

21. Application Exhibit C, Terracon Consultants, *Preliminary Geotechnical Engineering Report*, September 16, 2020.

W-Section steel piles driven to depths of eight to 15 feet.²² Driven steel piles are commonly used to support solar panels and racking and would be reasonable to use at this proposed facility. Further, Terracon recommended generally that a full-scale pile load testing program should be considered as the project design progresses to refine the final solar panel support pile embedment depth. This should be accounted for during the final engineering design of the project.

The Applicant expects to complete a final geotechnical evaluation and pull-testing to account for site-specific soil conditions within the solar facility project area. The pull testing would evaluate the lateral and vertical loading on the solar panel support piles to identify soils strength and depth necessary to withstand high wind events. The Applicant anticipates that final geotechnical borings and pile testing will allow its engineering team to account for wind, snow, project area seismic classification, frost, and corrosion inputs to further refine the final designs for the solar facility support structures and foundations.²³

Staff recommends that the final detailed engineering drawings of the final project design shall account for geological features (including, but not limited to Karst topography) 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 also recommends that the final geotechnical evaluation including any boring test results be provided to Staff prior to construction for review and acceptance.

Ecological Impacts

Public and Private Water Supply

There are two water wells within the project area and approximately 93 water wells within one mile of the project area as indicated by the Applicant and the ODNR.²⁴ One of the private wells is approximately 520 feet from proposed solar panels. The other private water well (ODNR Water Well ID 211507) is approximately 30 feet away from proposed facility components. The Applicant stated it will mark all the water wells on final construction drawings. The Applicant does not anticipate adverse impacts to the nearest water wells, because the Applicant indicated that for any wells identified that will be impacted by construction or operation of the facility, the wells would be decommissioned, cut, and capped prior to the anticipated impact, and any necessary documentation would be completed per local and state law.

Staff conferred with the Ohio Department of Health which regulates private water wells. The Ohio Department of Health indicated that the nearest solar components should be further than the minimum isolation distances outlined in Ohio Adm.Code 3701-28-7 between potential contamination sources and private water wells. Specifically, Ohio Department of Health highlighted 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 facility components to each water well within the project area meet or exceed any applicable minimum isolation distances outlined in Ohio Adm.Code 3701-28-7. Specifically, for that water well which is approximately 30 feet from solar equipment (ODNR Water Well ID

22. Application at page 10 and Application Exhibit C, Terracon Consultants, Preliminary Geotechnical Engineering Report, September 16, 2020, page 8.

23. Ross County Solar, LLC's March 3, 2021 Responses to Staff's February 19, 2021 Data Requests

24. Application at p. 60.

211507), that the Applicant relocate the solar equipment at least 50 feet from that water well or demonstrate that the well is for nonpotable use, or seal and abandon the water well.

There are no public drinking water source protection areas located within the project area; Staff reviewed Ohio EPA records and confirmed this. The Applicant would implement a Stormwater Pollution Prevention Plan (SWPPP), a spill prevention control and counter measure plan, and an HDD inadvertent release of drilling fluid contingency plan, an example of which was provided in the Application at Exhibit G, during construction to minimize and prevent potential discharges to surface waters in the project area and surrounding area.

Surface Waters

The Applicant delineated sixty stream segments within the project area, including 11 perennial stream segments, 32 ephemeral stream segments, and 17 intermittent stream segments. The Applicant provided detailed mapping that shows the potential for five streams to be crossed by underground collection lines and access roads. All stream crossings scored as low-quality stream resources by the Applicant's consultant except for one perennial stream. One perennial stream would be crossed by an underground collection line, which would be installed using HDD techniques. HDD is typically preferred to open-cut trenching when crossing surface water resources as impacts can be avoided in most cases. However, the HDD process includes the risk of a frac-out. A frac-out occurs when the drilling lubricant, typically water or a non-toxic, fine clay bentonite slurry, is forced through cracks in bedrock and/or surface soils. The Applicant included a frac-out contingency plan as part of the application. Staff recommends the Applicant have an environmental specialist on site during construction activities where HDD activities may impact surface waters. The environmental specialist would have authority to stop HDD activities to ensure that any impacts related to a frac-out are addressed.

The Applicant delineated 38 wetlands, including one Category 3 wetland, twenty Category 2 wetlands, and seventeen Category 1 wetlands within the project area.²⁵ The Applicant anticipates 0.04 acres of temporary wetland impacts and 0.02 acres of permanent wetland impacts due to the construction of access roads and collection lines for the project.

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

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

25. 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.

Threatened and Endangered Species

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

MAMMALS				
Common Name	Scientific Name	Federal Status	State Status	Presence in Project Area
Indiana bat	<i>Myotis sodalis</i>	Endangered	Endangered	Historical range includes the project area. Presence within project area has been documented.
northern long-eared bat	<i>Myotis septentrionalis</i>	Threatened	Endangered	Historical range includes the project area. Presence within project area has been documented.
MUSSELS				
Common Name	Scientific Name	Federal Status	State Status	Presence in Project Area
rayed bean	<i>Villosa fabalis</i>	Endangered	Endangered	Mussel reconnaissance survey did not result in the presence of mussels. No in-water work proposed
Clubshell	<i>Pleurobema clava</i>	Endangered	Endangered	Mussel reconnaissance survey did not result in the presence of mussels. No in-water work proposed
Fanshell	<i>Cyprogenia stegaria</i>	Endangered	Endangered	Mussel reconnaissance survey did not result in the presence of mussels. No in-water work proposed
Northern riffleshell	<i>Epioblasma torulosa rangiana</i>	Endangered	Endangered	Mussel reconnaissance survey did not result in the presence of mussels. No in-water work proposed
Sheepnose	<i>Plethobasus cyphus</i>	Endangered	Endangered	Mussel reconnaissance survey did not result in the presence of mussels. No in-water work proposed
Snuffbox	<i>Epioblasma triquetra</i>	Endangered	Endangered	Mussel reconnaissance survey did not result in the presence of mussels. No in-water work proposed
Rabbitsfoot	<i>Quadrula cylindrica cylindrica</i>	Threatened	Endangered	Mussel reconnaissance survey did not result in the presence of mussels. No in-water work proposed
Little spectaclecase	<i>Villosa lienosa</i>	N/A	Endangered	Mussel reconnaissance survey did not result in the presence of mussels. No in-water work proposed
Long-solid	<i>Fusconaia maculate maculata</i>	N/A	Endangered	Mussel reconnaissance survey did not result in the presence of mussels. No in-water work proposed

MUSSELS				
Common Name	Scientific Name	Federal Status	State Status	Presence in Project Area
Sharp-ridged pocketbook	<i>Lampsilis ovata</i>	N/A	Endangered	Mussel reconnaissance survey did not result in the presence of mussels. No in-water work proposed
Black sandshell	<i>Ligumia recta</i>	N/A	Threatened	Mussel reconnaissance survey did not result in the presence of mussels. No in-water work proposed
fawnsfoot	<i>Truncilla donaciformis</i>	N/A	Threatened	Mussel reconnaissance survey did not result in the presence of mussels. No in-water work proposed
Threehorn wartyback	<i>Obliquaria reflexa</i>	N/A	Threatened	Mussel reconnaissance survey did not result in the presence of mussels. No in-water work proposed
FISH				
Common Name	Scientific Name	Federal Status	State Status	Presence in Project Area
goldeye	<i>Hiodon alosoides</i>	N/A	Endangered	Historical range includes the project area. No in-water work proposed
Northern brook lamprey	<i>Ichthyomyzon fossor</i>	N/A	Endangered	Historical range includes the project area. No in-water work proposed
Northern madtom	<i>Noturus stigmosus</i>	N/A	Endangered	Historical range includes the project area. No in-water work proposed
Shortnose gar	<i>Lepisosteus platostomus</i>	N/A	Endangered	Historical range includes the project area. No in-water work proposed
Shovelnose sturgeon	<i>Scaphirhynchus platyrhynchus</i>	N/A	Endangered	Historical range includes the project area. No in-water work proposed
Spotted darter	<i>Etheostoma maculatum</i>	N/A	Endangered	Historical range includes the project area. No in-water work proposed
American eel	<i>Anguilla rostrata</i>	N/A	Threatened	Historical range includes the project area. No in-water work proposed
Blue sucker	<i>Cycleptus elongatus</i>	N/A	Threatened	Historical range includes the project area. No in-water work proposed
Channel darter	<i>Percina copelandi</i>	N/A	Threatened	Historical range includes the project area. No in-water work proposed
Paddlefish	<i>Polyodon spathula</i>	N/A	Threatened	Historical range includes the project area. No in-water work proposed
River darter	<i>Percina shumardi</i>	N/A	Threatened	Historical range includes the project area. No in-water work proposed
Tippecanoe darter	<i>Etheostoma Tippecanoe</i>	N/A	Threatened	Historical range includes the project area. No in-water work proposed

BIRDS				
Common Name	Scientific Name	Federal Status	State Status	Presence in Project Area
northern harrier	<i>Circus cyaneus</i>	N/A	Endangered	Historical range includes the project area. Project area currently lacks suitable habitat.
upland sandpiper	<i>Batramia longicauda</i>	N/A	Endangered	Historical range includes the project area. Project area lacks suitable habitat.
REPTILES/AMPHIBIANS				
Common Name	Scientific Name	Federal Status	State Status	Presence in Project Area
Spotted turtle	<i>Clemys guttata</i>	N/A	Threatened	Historical range includes the project area. Due to the location, and the type of habitat present at the project site and within the vicinity of the project area, this project is not likely to impact this species.
Eastern hellbender	<i>Cryptobranchus alleganiensis alleganiensis</i>	Species of Concern	Endangered	Historical range includes the project area. Due to the location, and the type of habitat present at the project site and within the vicinity of the project area, this project is not likely to impact this species.
Timber rattlesnake	<i>Crotalus horridus</i>	Species of Concern	Endangered	Historical range includes the project area. Due to the location, and the type of habitat present at the project site and within the vicinity of the project area, this project is not likely to impact this species.
Midland mud salamander	<i>Pseudotriton montanus diastictus</i>	N/A	Threatened	Historical range includes the project area. Due to the location, and the type of habitat present at the project site and within the vicinity of the project area, this project is not likely to impact this species.

The Applicant did not identify any listed plant or animal species during field surveys. Further, the ODNr and the USFWS did not identify any concerns regarding impacts to listed plant species. In the event that the Applicant encounters listed plant or animal species during construction, Staff recommends that the Applicant contact Staff, the ODNr, and the USFWS, as applicable. Staff also recommends that if the Applicant encounters any listed plant or animal species prior to construction, the Applicant include the location and how impacts would be avoided in mapping based on final engineering drawings 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*) and the state and federal threatened northern long-eared bat (*Myotis septentrionalis*). As tree roosting species in the summer months, the habitat of these species may be impacted by the project. In order to avoid impacts to the Indiana bat and northern long-eared bat, Staff recommends the Applicant adhere to seasonal tree cutting dates of October 1 through March 31 for all trees three inches or greater in diameter, unless coordination efforts with the ODNr and the USFWS reflects a different course of action. The project would not impact any hibernacula.

The project is within the range of the state endangered northern harrier (*Circus cyaneus*). Northern harriers breed and hunt in large wet meadows and dry grasslands. The ODNR recommends that construction be avoided in this habitat during the species' nesting period of May 15 through August 1. Due to the potential of the landscape to change over time, Staff recommends that construction in northern harrier preferred nesting habitat types be avoided during the species' nesting period of May 15 through August 1. Further mapping of any habitat areas should be provided to the construction contractor along with instructions to avoid these areas during the restricted dates, unless coordination with the ODNR allows a different course of action.

The project is within the range of the state endangered upland sandpiper (*Bartramia longicauda*). Upland sandpipers utilize dry grasslands. The ODNR recommends that construction be avoided in this habitat during the species' nesting period of April 15 through July 31. Due to the potential of the landscape to change over time, Staff recommends that construction in upland sandpiper preferred nesting habitat types be avoided during the species' nesting period of April 15 through July 31. Further mapping of any habitat areas should be provided to the construction contractor along with instructions to avoid these areas during the restricted dates unless coordination with the ODNR allows a different course of action.

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

Vegetation

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

VEGETATIVE COMMUNITIES WITHIN PROJECT AREA	
Vegetation Community Type	Total (Acres)
Forestland	99.19
Shrub/Scrub	32.72
Wetlands	2.78
Agricultural Lands	1,295.79

Permanent vegetative impacts would occur primarily within agricultural lands. Forestland impact is estimated to be approximately 0.95 acres and would be limited to narrow tree-lines between fields.

The Applicant has developed a vegetation management plan in which it would incorporate pollinator-friendly habitat in accordance with the recommendations of the Ohio Pollinator Habitat Initiative. This habitat would enhance the visual appeal of the project, enrich local wildlife habitat, benefit the local farming community, increase plant diversity, and discourage invasive species. This vegetation would be incorporated 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, the Applicant has committed

to take steps to prevent establishment and/or further propagation of noxious weeds identified in Ohio Adm.Code 901:5-37 et seq. during implementation of any pollinator-friendly plantings.

Public Services, Facilities, and Safety

Wind Velocity

The Applicant has indicated that the facility would be designed and installed to withstand typical 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. The racking systems under consideration by the Applicant can withstand wind speeds over 100 miles per hour and include a stowing feature to stabilize the solar panel arrays at all wind conditions. Stow features also can tilt panels to a certain angle to reduce wind loading on the solar panels during high wind speeds events.

As part of the geotechnical report, provided in Exhibit C of the Application, the Applicant has completed geotechnical test borings, which indicate the project area's suitability for solar facility development and expected range of pile depths necessary to support the solar equipment. The Applicant indicated that prior to construction, the Applicant anticipates further refinement of that geotechnical report and pull-testing of structural support piles to account for localized site-specific soil conditions. According to the Applicant, pull testing evaluates the lateral and vertical loading to identify soils strength and the pile depth necessary to withstand high wind 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. Specifically, the Applicant has indicated that during the detailed engineering phase it would identify the necessary pile type and depth which may require additional soil test borings and pile load testing to determine the galvanization and proper embedment depths for the solar facility's support piles to account for risk factors for wind, snow, seismic activity, frost, and corrosion.²⁶

Roads and Bridges

The Applicant has yet to finalize its delivery route, although it is expected that deliveries to the project site would be by way of US Route 35 to State Route 753 to State Route 41. From there, the main transportation routes to access the project site would be Lower Twin Road (County Road 54), Rolfe Road, Moxley Road (County Road 9), and Rapid Forge Road (County Road 1).

The Applicant conducted a route evaluation study to identify viable means of accessing the project area. Traffic patterns, bridge conditions, culvert conditions, road surface conditions, and potential obstructions were identified and analyzed. According to the Applicant's Route Evaluation Study,²⁷ the bridges along the anticipated delivery routes are in good condition. The Applicant's consultant, Hull & Associates, also found the culverts along the proposed delivery routes to be in good condition. No weight restrictions were documented on the project delivery routes. No overhead obstructions were identified along the proposed delivery routes. The Applicant's consultant did

26. Application, Exhibit C, *Preliminary Geotechnical Engineering Report* at page 6 and Ross County Solar, LLC's March 3, 2021 Responses to Staff's February 19, 2021 Data Requests.

27. OPSB Case Number 20-1380-EL-BGN Exhibit M.

not identify any inadequate road surfaces or active railroads that would be crossed by construction material deliveries.

Conventional heavy equipment which does not require special permitting would make up the majority of construction traffic. Electrical transformers and switchgear are likely to be overweight and would require special permitting and route coordination for delivery. The Applicant stated that an increase in truck traffic would be anticipated during construction for the purpose of project area equipment access and equipment and material deliveries but does not anticipate significant changes to traffic patterns. Post construction and during operation of the solar facility, the Applicant does not anticipate any additional traffic for the project beyond routine maintenance. No road closures are to be expected. The Applicant expects to enter into a Road Use Maintenance Agreement with the Ross County Engineer.

Once the transportation permitting process has been completed, Staff recommends that the Applicant develop a final transportation management plan which would include any county-required road use maintenance agreements. Any damaged public roads and bridges would be repaired promptly to their previous or better condition by the Applicant under the guidance of the appropriate regulatory authority. Any temporary improvements would be removed unless the appropriate regulatory authority requests that they remain in place.

Noise

Noise impacts from construction activities would include site clearing, installation of mechanical and electrical equipment, and commissioning and testing of equipment. Many of the construction activities would generate significant noise levels during the 12-16 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.

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. The model showed that operational noise impacts would be less than ambient nighttime noise levels. 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.

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

Initial OHPO correspondence received by Staff for this project indicated that the project as proposed would create an adverse effect on cultural resources. The OHPO and the Applicant then signed a MOU detailing avoidance of the identified archaeological site and specific visual mitigation to address adverse effects to historical and 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 Ross 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 0.04 acres of temporary wetland impacts and 0.02 acres of permanent wetland impacts due to construction of access roads and collection lines. Impacts to any state or federal listed species can be avoided by following seasonal restrictions for construction in certain habitat types, as detailed by the USFWS and the ODNR. The Applicant did not identify any listed plant or animal species during field surveys. While the project is within the range of several endangered species, impacts would be avoided on suitable habitats.

Noise impacts are expected to be limited to construction activities. The adverse impact of construction noise would be temporary and intermittent and would occur away from most residential structures. Staff recommends that the Applicant limit the hours of construction to address potential construction and operational related concerns from any nearby residents. No non-participating receptors were modeled to receive noise impacts greater than the daytime ambient noise level. If the Applicant chooses a louder inverter or transformer models than that used in the operational model, 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 operation noise impacts are minimal. Further, the Applicant has developed a complaint resolution plan which would be implemented throughout construction and operation.

During the construction period, local, state, and county roads would experience a temporary increase in truck traffic due to deliveries of equipment and materials. Due to the location of the project, the Applicant anticipates that most components for the entire project would be delivered by using 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 assessment and mitigation plan in which it commits to install vegetation modules to lessen the visual impact to non-participating residences. The Applicant has also developed a lighting plan in which it commits 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 be damaged by the project during the operational life of the project. Following decommissioning of the facility, land can be restored for agricultural use or other economical land use desired by the landowner.

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 or other economical land use desired by the landowner.

Conclusion

Staff concludes that the proposed project would result in both temporary and permanent impacts to the project and surrounding areas. The project is unlikely to pose a significant adverse impact to existing land use, cultural resources, recreational resources or wildlife. With Staff's recommended conditions to further mitigate potential impacts, Staff concludes that the project represents the minimum adverse environmental impact.

Recommended Findings

Staff recommends that the Board find that the proposed facility represents the minimum adverse environmental impact, and therefore complies with the requirements specified in R.C. 4906.10(A)(3), provided that any certificate issued by the Board for the proposed facility include the conditions specified in the section of this *Staff Report of Investigation* entitled Recommended Conditions of Certificate.

CONSIDERATIONS FOR R.C. 4906.10(A)(4)

ELECTRIC GRID

Pursuant to R.C. 4906.10(A)(4), the Board must determine that the proposed electric facilities are consistent with regional plans for expansion of the electric power grid of the electric systems serving this state and interconnected utility systems, and that the facilities will serve the interests of electric system economy and reliability. The purpose of this section of the report is to evaluate the impact of integrating the proposed facility into the bulk power system (BPS).

The Applicant proposes to construct a solar-powered electric generation facility, capable of producing 120 MW. The proposed facility would interconnect from the facility substation to a newly proposed gen-tie connection to the existing AEP Buckskin 69 kV substation. Energy would be injected to the BPS via AEP's existing Adena-Buckskin 69 kV transmission line.

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. NERC reliability standards are included as part of the system evaluations conducted by PJM Interconnection, LLC (PJM).²⁸

PJM Interconnection

The Applicant submitted two generation interconnection requests for the proposed facility to PJM. PJM has completed the feasibility and system impact studies and is in the process of finalizing the facilities studies.^{29, 30, 31, 32} The table below displays the queue positions assigned to the Applicant's project by PJM.

PJM QUEUES: ROSS COUNTY SOLAR			
Queue ID	Queue Date	Energy Output (MW)	Capacity (MW)
AC2-060	2/16/2017	100	64
AD1-073	8/31/2017	20	13.2
Totals		120	77.2

28. PJM Interconnection, LLC is the regional transmission organization charged with planning for upgrades and administering 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 criteria with the addition of generation in its footprint.

29. PJM Interconnection, "New Services Queue," Feasibility Study for Queue IDs: AC2-060, accessed January 29, 2021, https://pjm.com/pub/planning/project-queues/feas_docs/ac2060_fea.pdf.

30. PJM Interconnection, "New Services Queue," System Impact Study for Queue IDs: AC2-060, accessed January 29, 2021, https://pjm.com/pub/planning/project-queues/impact_studies/ac2060_imp.pdf.

31. PJM Interconnection, "New Services Queue," Feasibility Study for Queue IDs: AD1-073, accessed January 29, 2021, https://pjm.com/pub/planning/project-queues/feas_docs/ad1073_fea.pdf.

32. PJM Interconnection, "New Services Queue," System Impact Study for Queue IDs: AD1-073, accessed January 29, 2021, https://pjm.com/pub/planning/project-queues/impact_studies/ad1073_imp.pdf.

PJM studied the interconnection as an injection into the BPS via the AEP Adena-Buckskin 69 kV transmission line. The Applicant requested an injection of 120 MW, of which 77.2 MW could be available in the PJM capacity market.³³

PJM Network Impacts

PJM analyzed the proposed facility interconnected to the BPS. Summer peak power flow models were used to evaluate the regional reliability impacts.

Queue ID AC2-060 was modeled with a 2020 summer peak case. The study revealed no reliability criteria violations on the BPS. Queue ID AD1-073 was modeled with a 2021 summer case peak as an uprate of 20 MW, bringing the total facility output to 120 MW. The study revealed no additional reliability criteria violations on the BPS.

The below chart displays the results of the PJM system impact studies for the PJM regional footprint.

PJM REGIONAL SYSTEM IMPACTS (Summer Peak)	
Generator Deliverability - System Normal & Single Contingency Outage	
<i>Plant Output: Capacity Level – 77.2 MW</i>	No problems identified
Category C and D - Multiple Contingency Outages	
<i>Plant Output: 120 MW</i>	No problems identified

New System Reinforcements

PJM requires mitigation of contingencies that cause reliability criteria violations which are initially caused by the addition of an applicant's project. The results identified no new system reinforcements needed.

Contribution to Previously Identified Overloads - Network Impacts

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

Potential Congestion due to Local Energy Deliverability - Energy Delivery Impacts

PJM studied the delivery of the energy portion. Network upgrades under this section would allow for the delivery of energy with operational restrictions. The upgrades to mitigate any future operational restrictions are not required for the facility to be operational and are at the discretion of the Applicant. If the Applicant wishes to proceed with upgrades, PJM requires a merchant transmission interconnection request. The results identified ten network impacts which may impact energy deliverability.

³³. The capacity market ensures the adequate availability of necessary generation resources can be called upon to meet current and future demand.

Short Circuit Analysis

The short circuit analysis study, which is part of the System Impact Study, evaluates the interrupting capabilities of circuit breakers that would be impacted by the proposed generation addition. The results identified no circuit breaker problems.

Recommended Findings

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

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

AIR, WATER, SOLID WASTE, AND AVIATION

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

Air

Air quality permits are not required for construction or operation of the proposed facility. However, fugitive dust rules adopted under R.C. Chapter 3704 may be applicable to the construction of the proposed facility. The Applicant would control temporary and localized fugitive dust by using best management practices such as using calcium carbonate or water to wet soil to minimize dust. These methods of dust control are typically used to comply with fugitive dust rules.

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

Water

The Applicant 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 best management practices (BMP) for soil erosion control.

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

- The U.S. Army Corps of Engineers Section 404 or nationwide permit for stream crossings and wetland impacts.
- Ohio EPA Water Quality Certification under Section 401 of the Clean Water Act.
- Ohio Isolated Wetland Permit

Within the collection substation footprint, an aboveground storage tank may be used to store oil for cooling and insulation of transformers at the collection substation. Should the tank exceed a certain size, per 40 CFR Part 112, the Applicant would develop an SPCC to mitigate the unlikely release of hazardous substances or oil.

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

Solid Waste

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

The Applicant has indicated that one residence and an associated shed, located on Rolfe Road, are proposed to be removed for construction of the solar facility.³⁴ The Applicant indicates that owner of the residence, since the time of the Application submittal, now intends to relocate the trailer home outside of the project area. The Applicant has confirmed to Staff that it has authorization pursuant to a lease agreement to remove the residence and shed; further the landowner has indicated to the Applicant its intent to move the structures prior to construction.

Operation of the project could generate small amounts of solid waste, such as wood, cardboard, metal packing/packaging materials, used oil, general refuse, universal waste, and used antifreeze, which would be disposed of in accordance with federal, state, and local requirements. The Applicant also anticipates that the operations and maintenance building would generate solid waste comparable in type and quantity to a small business office; it would use a local solid waste disposal and recycling 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.

Aviation

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

According to the Applicant, there are no public use airports within five miles of the project area.³⁵ The Applicant did identify a privately owned private use airfield, located approximately 1.8 miles north of the project area. An aircraft would need to obtain permission prior to landing at a private-use airport. Unger Field, another privately owned private use airport, located three miles northwest of the project area was identified in the Applicant's glare analysis. According to the Applicant, this airfield is no longer actively in use. Staff confirmed through the FAA, that the closest public-use airports are the Highland County Airport (HOC) and Fayette County Airport (I23) which are between 11 and 15 miles from the proposed solar facility project collection substation. The FAA performed an aeronautical study for various points around the solar facility. The FAA provided the results of that aeronautical study to the Applicant as a determination of no hazard to air navigation for those various points of the solar facility.³⁶

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. 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.

34. Application at page 50 and Ross County Solar, LLC's March 3, 2021 Responses to Staff's February 19, 2021 Data Requests.

35. Application at page 51 and Figure 3-1.

36. Application at Exhibit O.

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, and American National Standards Institute standards. The Applicant intends that components would also adhere to applicable building and electrical codes for safe and reliable operation.

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 stated that it intends to restrict public access to the facility by enclosing the project area with a six-foot tall woven wire fence topped with a one-foot tall barbed wire strand. Prior to construction, the Applicant also intends to develop and implement an emergency response plan and further consultation with potentially affected emergency response personnel. Staff recommends that the Applicant submit the finalized plans to Staff prior to construction. Specifically, Staff recommends that at least 30 days prior to the preconstruction conference, the Applicant provide Staff, for review and acceptance, the fire protection, safety, and medical emergency plan(s) to be used during construction and operation of the facility.

Public Interaction and Participation

The Applicant hosted a public informational meeting for this project and maintains a project website. 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 affected property owners and tenants about the project and the complaint resolution plan prior to the start of construction and again prior to the start of operation. Staff also recommends that the Applicant submit to Staff a quarterly complaint summary report during construction and the first five years of operation of the facility.

As of February 22, 2021, nine public comments have been filed in the record for this case. Commenters expressed concerns with the chemical makeup and recycling of solar panels; the loss of agricultural land; impacts to wildlife, the environment, and the area watershed; impacts to aesthetics and property value; and the economic viability of renewable projects. The comments informed Staff during the course of its investigation, and many of the potential impacts and concerns raised are addressed in this Staff Report, minimized by the Applicant, and further mitigated by the Recommended Conditions of Certificate. Public comments are available for Board members and the public to view online in the case record at <http://dis.puc.state.oh.us>.

Buckskin and Paint townships in Ross County filed notices of intervention, and the Ohio Farm Bureau Federation filed a petition for leave to intervene. These filings remain pending before the Administrative Law Judge assigned to this case.

The Administrative Law Judge scheduled a public hearing and an evidentiary hearing for this proceeding. The hearings will be held using remote access technology that facilitates participation by telephone and/or live video on the internet. The public hearing will be held on April 6, 2021, beginning at 6 p.m. The evidentiary hearing is scheduled for April 27, 2021, at 10:00 a.m.

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 925 acres of agricultural land would be disturbed by the proposed project.

Approximately 607 acres of cash crop land and 318 acres of vacant agricultural land would be lost. However, the repurposed land could be restored for agricultural use when the project is decommissioned. No land with Agricultural District designation would be impacted.

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

When landowners lay down or repair drain tiles, they often keep records of the location of the drain tiles. The Applicant has consulted landowners and Ross County officials to collect data on existing drain tiles within the project area. The Applicant has supplied a Drain Tile Mitigation Plan with its OPSB application (Exhibit E). This report discusses repair and mitigation details and provides a map of all known drain tile locations. The Applicant has committed to promptly repair any drain tile found to be damaged by the project during the operational life of the project.

No agricultural structures are expected to be impacted by the proposed project.

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

Recommended Findings

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

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

WATER CONSERVATION PRACTICE

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

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

Operation of the proposed facility would not require the use of significant amounts of water. The operations and maintenance building would have wastewater discharge comparable to a small office building and would install and maintain modern, efficient water fixtures. The Applicant has stated that no appreciable amounts of water will be utilized in project operations. Specifically, the Applicant does not anticipate the need to clean the solar panels with water, because of sufficient rainfall in the project area.³⁷

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.

37. Application at page 12.

IV. RECOMMENDED CONDITIONS OF CERTIFICATE

Following a review of the application filed by the Ross County 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) At least 30 days prior to the preconstruction conference, the Applicant shall submit to Staff, for review and acceptance, one set of detailed engineering drawings of the final project design and mapping in the form of PDF, which the Applicant shall also file on the docket of this case, and geographically referenced data (such as shapefiles or KMZ files) based on final engineering drawings to confirm that the final design is in conformance with the certificate. Mapping shall include the limits of disturbance, permanent and temporary infrastructure locations, areas of vegetation removal and vegetative restoration as applicable, and specifically denote any adjustments made from the siting detailed in the application. All final geotechnical study results shall be included in this submission. The detailed engineering drawings of the final project design shall account for geological features (including, but not limited to Karst topography and groundwater depth) 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.

- (5) At least 30 days prior to the preconstruction conference, the Applicant shall submit to Staff, for review and acceptance, the final geotechnical evaluation including any boring test results.
- (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 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.

- (11) At least 30 days prior to the preconstruction conference, the Applicant shall provide Staff, for review and acceptance, the fire protection, safety, and medical emergency plan(s) to be used during construction and operation of the facility.
- (12) The Applicant shall not commence any construction of the facility until it has as 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.
- (13) The facility shall be operated in such a way as to assure that no more than 120 megawatts would at any time be injected into the Bulk Power System.
- (14) The Applicant shall implement the landscape mitigation listed in the Visual Resource Assessment and Mitigation Plan and the implement the lighting in the Lighting Plan. 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.
- (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 7:00 p.m. or until dusk when sunset occurs after 7:00 p.m. Impact pile driving may occur between 7:00 a.m. and 9:00 a.m. if the noise impact at non-participating receptors is not greater than daytime ambient Leq plus 10 dBA. If impact pile driving is required between 7:00 a.m. and 9:00 a.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 during the on a sunny day 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 less than project area ambient Leq level plus five dBA.

- (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 to at least original conditions or modern equivalent at the Applicant's expense. However, if the affected landowner agrees to not having the field tile system repaired, they may do so only if the field tile systems of adjacent landowners are unaffected by the non-repair of the landowner's field tile system.
- (18) If the Applicant encounters any new listed plant or animal species or suitable habitat of these species prior to construction, the Applicant shall include the location in the final engineering drawings and associated mapping, as required in condition 4. The Applicant shall avoid impacts to these species and explain how impacts would be avoided during construction.
- (19) The Applicant shall adhere to seasonal cutting dates of October 1 through March 31 for the removal of trees three inches or greater in diameter to avoid impacts to Indiana bats and northern long-eared bats, unless coordination with the Ohio Department of Natural Resources (ODNR) and the U.S. Fish and Wildlife Service (USFWS) allows a different course of action.
- (20) Construction in northern harrier preferred nesting habitat types shall be avoided during the species' nesting period of May 15 through August 1. Mapping of these habitat areas shall be provided to the construction contractor along with instructions to avoid these areas during the restricted dates, unless coordination with the ODNR allows a different course of action.
- (21) Construction in upland sandpiper preferred nesting habitat types shall be avoided during the species' nesting period of April 15 through July 31. Mapping of these habitat areas shall be provided to the construction contractor along with instructions to avoid these areas during the restricted dates, unless coordination with the ODNR allows a different course of action.
- (22) 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.

- (23) 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.
- (24) Prior to commencement of construction activities that require transportation permits, the Applicant shall obtain all such permits. The Applicant shall coordinate with the appropriate authority regarding any temporary road closures, road use agreements, driveway permits, lane closures, road access restrictions, and traffic control necessary for construction and operation of the proposed facility. Coordination shall include, but not be limited to, the county engineer, the Ohio Department of Transportation, local law enforcement, and health and safety officials. The Applicant shall detail this coordination as part of a final transportation management plan submitted to Staff prior to the preconstruction conference for review and confirmation by Staff that it complies with this condition.
- (25) 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 each uncapped well within the project area meets or exceeds any applicable minimum isolation distances outlined in Ohio Adm.Code 3701-28-7. For that water well which is approximately 30 feet from solar equipment (ODNR Water Well ID 211507), that the Applicant relocate the solar equipment at least 50 feet from that water well or demonstrate that the well is for nonpotable use, or seal and abandon the water well.



An Equal Opportunity Employer and Service Provider

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

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

This foregoing document was electronically filed with the Public Utilities

Commission of Ohio Docketing Information System on

3/22/2021 1:34:58 PM

in

Case No(s). 20-1380-EL-BGN

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