Staff Report of Investigation

Birch Solar Project
Birch Solar 1, LLC

Case No. 20-1605-EL-BGN

October 20, 2021

Ohio | Power Siting Board

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

In the Matter of the Application of Birch Solar 1, LLC for a Certificate of Environmental Compatibility and Public Need.	**)** **)** **)**	**Case No. 20-1605-EL-BGN**

Staff Report of Investigation

Submitted to the
OHIO POWER SITING BOARD

BEFORE THE POWER SITING BOARD OF THE STATE OF OHIO

In the Matter of the Application of Birch Solar 1, LLC for a Certificate of Environmental Compatibility and Public Need.	)))	**Case No. 20-1605-EL-BGN**

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

To the Honorable Power Siting Board:

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

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

In accordance with R.C. 4906.07(C) and 4906.12, copies of this Staff Report have been filed with the Docketing Division of the Public Utilities Commission of Ohio to be served upon the Applicant or its authorized representative, the parties of record, and pursuant to Ohio Administrative Code 4906-3-06, the main public libraries of the political subdivisions in the project area.

The Staff Report presents the results of Staff's investigation conducted in accordance with R.C. Chapter 4906 and the rules of the Board, and does not purport to reflect the views of the Board nor should any party to the instant proceeding consider the Board in any manner constrained by the findings and recommendations set forth herein.

Respectfully submitted,

Theresa White
Executive Director
Ohio Power Siting Board

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I. EXECUTIVE SUMMARY

The authority of the Ohio Power Siting Board (Board or OPSB) is prescribed by Ohio Revised Code (R.C.) Chapter 4906. R.C. 4906.10 specifies that the Board shall not grant a certificate for the construction, operation, and maintenance of a major utility facility, either as proposed or as modified by the Board, unless it finds and determines eight specified criteria. Staff investigated the application presented by Birch Solar 1, LLC (Applicant) and recommends that the Board deny the Applicant's request for a certificate of environmental compatibility and public need, due to its inability to establish three of the eight statutory criteria.

Specifically, Staff recommends the Board find that the Applicant has failed to establish: the nature of the probable environmental impact, primarily related to oil and gas wells and cultural resources, as required by R.C. 4906.10(A)(2); and the facility represents minimum adverse environmental impact, primarily related to oil and gas wells and cultural resources, as required by R.C. 4906.10(A)(3). Finally, Staff notes its concerns regarding the Applicant's satisfaction of R.C. 4906.10(A)(6): whether the facility will serve the public interest, convenience, and necessity.

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

II. POWERS AND DUTIES

OHIO POWER SITING BOARD

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

Membership of the Board is specified in R.C. 4906.02(A). The voting members include: the Chairperson of the Public Utilities Commission of Ohio (PUCO or Commission) who serves as Chairperson of the Board; the directors of the Ohio Environmental Protection Agency (Ohio EPA), the Ohio Department of Health (ODH), the Ohio Department of Development (ODOD), the Ohio Department of Agriculture (ODA), and the Ohio Department of Natural Resources (ODNR); and a member of the public, specified as an engineer, appointed by the Governor from a list of three

nominees provided by the Ohio Consumers' Counsel. Non-voting Board members include four members (with alternates) selected by leadership in 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 et seq., which establish application procedures for major utility facilities and economically significant wind farms.

Application Procedures

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

Within 60 days of receiving an application, the 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 Chairperson 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 et seq. The recommended findings resulting from Staff's investigation are described in the Staff Report pursuant to R.C. 4906.07(C). The report does not represent the views or opinions of the Board and is only one piece of evidence that the Board may consider when making its decision. Once published, the report becomes a part of the record, is served upon all parties to the proceeding and is made available to any person upon request.[8] A record of the public hearings and all evidence, including the Staff Report, may be examined by the public at any time.[9]

1. R.C. 4906.04 and 4906.20.
2. R.C. 4906.06(A) and 4906.20(B)(1).
3. Ohio Adm.Code 4906-3-06(A).
4. R.C. 4906.07(A) and Ohio Adm.Code 4906-3-08.
5. R.C. 4906.08(C).
6. R.C. 4906.07.
7. Ohio Adm.Code 4906-3-06(C).
8. R.C. 4906.07(C) and 4906.10.
9. R.C. 4906.09 and 4906.12.

Board Decision

The Board may approve or deny an application for a certificate of environmental compatibility and public need as filed, or modify and approve it upon such terms, conditions, or modifications as the board considers appropriate.[10] The certificate is also conditioned upon the facility being in compliance with applicable standards and rules adopted under the Ohio Revised Code.[11]

Upon rendering its decision, the Board must issue an opinion stating its reasons for approving, modifying and approving, or denying an application for a certificate of environmental compatibility and public need.[12] A copy of the Board's decision and its opinion is memorialized upon the record and must be served upon all parties to the proceeding.[13] Any party to the proceeding that believes its issues were not adequately addressed by the Board may submit within 30 days an application for rehearing.[14] An entry on rehearing would then be issued by the Board within 30 days and may be appealed within 60 days to the Supreme Court of Ohio.[15]

CRITERIA

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

> The board shall not grant a certificate for the construction, operation, and maintenance of a major utility facility, either as proposed or as modified by the board, unless it finds and determines all of the following:
>
> (1) The basis of the need for the facility if the facility is an electric transmission line or gas pipeline;
>
> (2) The nature of the probable environmental impact;
>
> (3) That the facility represents the minimum adverse environmental impact, considering the state of available technology and the nature and economics of the various alternatives, and other pertinent considerations;
>
> (4) In the case of an electric transmission line or generating facility, that the facility is consistent with regional plans for expansion of the electric power grid of the electric systems serving this state and interconnected utility systems and that the facility will serve the interests of electric system economy and reliability;
>
> (5) That the facility will comply with Chapters 3704, 3734, and 6111 of the Revised Code and all rules and standards adopted under those chapters and under section 4561.32 of the Revised Code. In determining whether the facility will comply with all rules and standards adopted under section 4561.32 of the Revised Code, the board shall consult with the office of aviation of the division of multimodal planning and programs of the department of transportation under section 4561.341 of the Revised Code;

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

(6) That the facility will serve the public interest, convenience, and necessity;

(7) In addition to the provisions contained in divisions (A)(1) to (6) of this section and rules adopted under those divisions, what its impact will be on the viability as agricultural land of any land in an existing agricultural district established under Chapter 929 of the Revised Code that is located within the site and alternative site of the proposed major utility facility. Rules adopted to evaluate impact under division (A)(7) of this section shall not require the compilation, creation, submission, or production of any information, document, or other data pertaining to land not located within the site and alternative site; and

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

III. APPLICATION

APPLICANT

The Applicant is a wholly owned subsidiary of Lightsource US. The parent company of Lightsource US is Lightsource BP, a solar developer headquartered in London, United Kingdom. Currently, Lightsource BP has 1,291 MW of solar assets under management worldwide.

Lightsource US has offices in San Francisco, Denver, and Philadelphia. As stated in the application, Lightsource US has nearly 1,500 MW of solar assets in United States that are either contracted, under construction, or operating within the past five years. Of these solar assets, five projects totaling 385 MW are currently operating in the United States.

HISTORY OF THE APPLICATION

On October 16, 2020, the Applicant filed a motion for waiver and request for approval to hold an alternative public information meeting. The motion was granted.

On November 3, 2020, the Applicant filed a pre-application notification letter regarding the project.

On November 20, 2020, and November 23, 2020, the Applicant held virtual public informational meetings for the project.

On February 12, 2021, the Applicant filed the Birch Solar application.

On March 12, 2021, April 6, 2021, April 9, 2021, April 12, 2021, April 28, 2021, June 7, 2021, June 8, 2021, June 25, 2021, September 27, 2021, October 14, 2021, October 15, 2021, and October 18, 2021, the Applicant filed responses to Staff data requests.

On March 25, 2021, March 31, 2021, and April 5, 2021, and October 5, 2021, Birch Solar filed supplements to its application.

On April 13, 2021, Staff filed a motion to suspend the finding of completeness and a request for an expedited ruling.

On April 30, 2021, the administrative law judge (ALJ) granted Staff's motion for extension of completeness review, extending the deadline until June 14, 2021.

On June 2, 2021, a petition for leave to intervene was filed on behalf of Against Birch Solar LLC, Linda M. Beckstedt, Jesse M. Bott and Kacie Rison, Ryan and Stacy Brenneman, Patricia Buzard, Cherly M. Counts, Ann Marie R. and Christopher H. Fisher, Deed Hall, Allyshia and Kyle Kuhbander, Angie M. and Kenneth R. McAlexander, Alexandra and Timothy Rostorfer, Susan and William Walters, Althea A. and Mark Wellman, and Ellen Wieging (collectively, Against Birch Solar).[16]

16. On June 11, 2021, counsel for Against Birch Solar filed a notice of withdrawal from representation of Allyshia and Kyle Kuhbander (collectively, Kuhbanders), indicating that, while he was no longer representing them, the Kuhbanders continued to seek intervention in the case.

On June 9, 2021, Against Birch Solar filed a motion for an in-person public informational meeting and postponement of Staff's completeness determination of the application.

On June 14, 2021, the ALJ stayed the deadline for Staff to make its completeness determination of the application.

On July 7, 2021, the ALJ granted intervention to Against Birch Solar and the Kuhbanders, ordered that Birch Solar conduct an in-person public information meeting, and set the deadline for Staff to file its determination of completeness by July 14, 2021.

On July 14, 2021, the Executive Director of the OPSB issued a letter of compliance regarding the application to the Applicant.

On August 19, 2021, the Applicant held an in-person public informational meeting.

On August 19, 2021, the Board of County Commissioners of Auglaize County and the Board of Township Trustees of Logan Township, Auglaize County filed notices to intervene.

On September 8, 2021, the Kuhbanders filed a notice of withdrawal of intervention.

On September 29, 2021, the Ohio Farm Bureau Federation and Ryan and Michelle Kalnins filed to intervene in this case.

On October 1, 2021, the Allen Auglaize Coalition for Reasonable Energy and the Brotherhood of Electrical Workers Local Union 32 filed to intervene in this case.

On October 20, 2021, the Board of Township Trustees of Shawnee Township, Allen County filed a motion to intervene.

A local public hearing has been scheduled for November 4, 2021, at 6:00 p.m., at the Allen County Fairgrounds Youth Activities Building, 2750 Harding Highway, Lima, Ohio 45804. The evidentiary hearing will commence on November 30, 2021, at 10:00 a.m.

This summary of the history of the application does not include every filing in case number 20-1605-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 proposes to construct the Birch Solar Project, an up to 300 MW solar-powered generating facility located in Shawnee township, Allen County and Logan township, Auglaize County. The project would consist of large arrays of ground-mounted photovoltaic (PV) modules, commonly referred to as solar panels. The project would include associated facilities including access roads, electric collection lines, inverters, meteorological towers, a facility substation, a generation interconnect (gen-tie) line, an operations and maintenance facility, and construction laydown yards. The project would be secured by perimeter fencing and accessed through gated entrances. The Applicant has or would design the facility to account for setbacks of at least 300 feet from the solar panels to a non-participating residence and 300 feet from solar panels to Breese Road and certain portions along Wapakoneta Road. The Applicant has leased or optioned a 2,334-acre project area. The Applicant intends to utilize approximately 1,410 acres for construction and operation.

Solar Panels and Racking

The solar panels would be attached to metal racking. The racking would include steel piles driven approximately seven to 11 feet into the ground. While PV modules have not yet been procured for the project, the Applicant anticipates using a Trina solar panel or other similar Tier 1 solar panel module suppliers. The Applicant has provided manufacturer specifications for the Trina solar panel model under consideration in Exhibit C of the Application. While not recommended, should the Board approve this project and if the Applicant uses a technology other than that included in Exhibit C, the manufacturer specification will be provided to the Board prior to construction. The Applicant would follow the US EPA's safety procedures to ensure all panels are compliant with the US EPA's Toxicity Characteristics Leaching Procedure (TCLP) testing protocol. The Applicant anticipates that the facility would be comprised of panels which produce approximately 600 watts each. The facility would include approximately 635,580 panels.[17] The solar panel arrays would be grouped in large clusters that would be fenced in with gated entrances. The project's arrays would be mounted on the Array Technologies brand single-axis tracking system to track the sun as it moves through the sky each day. Further, the Applicant indicated that it would use reliable and certified equipment compliant with applicable Underwriters Laboratories, Institute of Electrical and Electronics Engineers, National Electrical Code (NEC), National Electrical Safety Code (NESC), and American National Standards Institute standards.

Electric Collection System

The Applicant would install a collector system made up of a network of electric and communication lines that would transmit the electric power from the solar arrays to a central location. Some portions of the collector system would be buried while others would be above ground.

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 inverters. The proposed facility design includes 95 inverters, which convert energy from DC to alternating current (AC).

The Applicant proposes to install approximately 34.7 miles of buried 34.5 kV AC electric collection lines. The below-ground lines would be installed by the direct burial method, that is plowed or the open trench method to a minimum depth of 36 inches. In the case of ecologically sensitive areas, the collection lines would be installed by horizontal directional drilling (HDD) or the limited use of overhead electric collection lines. The Applicant intends to primarily use and has designed its layout with underground electric collection lines.

The Applicant has stated that its electrical system design will be certified by a licensed professional engineer.[18] Also, the solar equipment would be regularly inspected and maintained.

Facility Collection Substation

The facility collection substation would occupy less than seven acres of land near American Electric Power's (AEP) existing Southwest Lima 345 kV substation. The major components of the Applicant's collection substation would include two transformers and all the components necessary to step up the collection line voltage of 34.5 kV to 345 kV. The collection substation

17. Application at Exhibit B (Table 1)
18. Application at page 44.

would be located in the northwest portion of the project area along Sellers Road approximately a half-mile south of the intersection with Breese Road. The Applicant states that its collection substation would be designed according to all regional utility practices including PJM Interconnection LLC Standards, ReliabilityFirst Corporation Standards, the NEC, and the Rural Utility Service Code.[19]

The preliminary layout is depicted in the maps of this report and Figure 03-2 of the Application.

345 kV Gen-tie Transmission Line

The Applicant has proposed a short 345 kV gen-tie transmission line that would connect the Applicant's substation to the existing AEP Southwest Lima 345 kV substation. The Applicant expects that the gen-tie would be up to 1,000 feet in length. The gen-tie line would have span between two to four self-supporting steel support structures from 70 to 120 feet tall.

Access Roads

The Applicant proposes to construct approximately 22.5 miles of gravel access roads. The access roads would be up to 20 feet wide. Typically, during construction, the access roads may be wider. The Applicant expects that the access roads would have a six-inch gravel base based on its preliminary geotechnical findings.

Laydown Areas

During construction the Applicant proposes three temporary construction laydown areas. The Applicant would have one main laydown area adjacent to the collection substation to be used for construction management trailers. The Applicant may use additional staging areas as needed. These temporary construction laydown areas would be used until the construction crew completes installation of that nearby portion of the solar facility. The laydown areas would be used during construction for material and equipment storage, trailers, and parking.

Operations and Maintenance Facility

The Applicant is currently considering an on-site operations and maintenance (O&M) facility similar to a small office building but has not finalized that aspect of the project. The location has not been finalized. The O&M facility would be placed within the project area and likely adjacent to the collection substation. While not recommended, should the Board approve this project and if an onsite O&M facility is selected, the Applicant would provide location and dimension details in the final engineering drawings.

Meteorological Towers

The project would include up to 14 meteorological towers. These towers would be on a 12-foot tall H-frame or tubular structure. These devices would measure solar irradiance, barometric pressure, temperature, and wind speed.[20]

Co-location of Agricultural Program (Sheep Grazing Vegetation Management and Bee Pollinator Research)

The Applicant intends to use a program of sheep grazing during its operational phase of the solar facility to provide vegetation management within the perimeter fence under and around the

19. Birch Solar 1, LLC's Response to the Second Data Request from Staff of the OPSB, Data Request #13.
20. Solar irradiance is the amount of solar energy per square meter received from the sun.

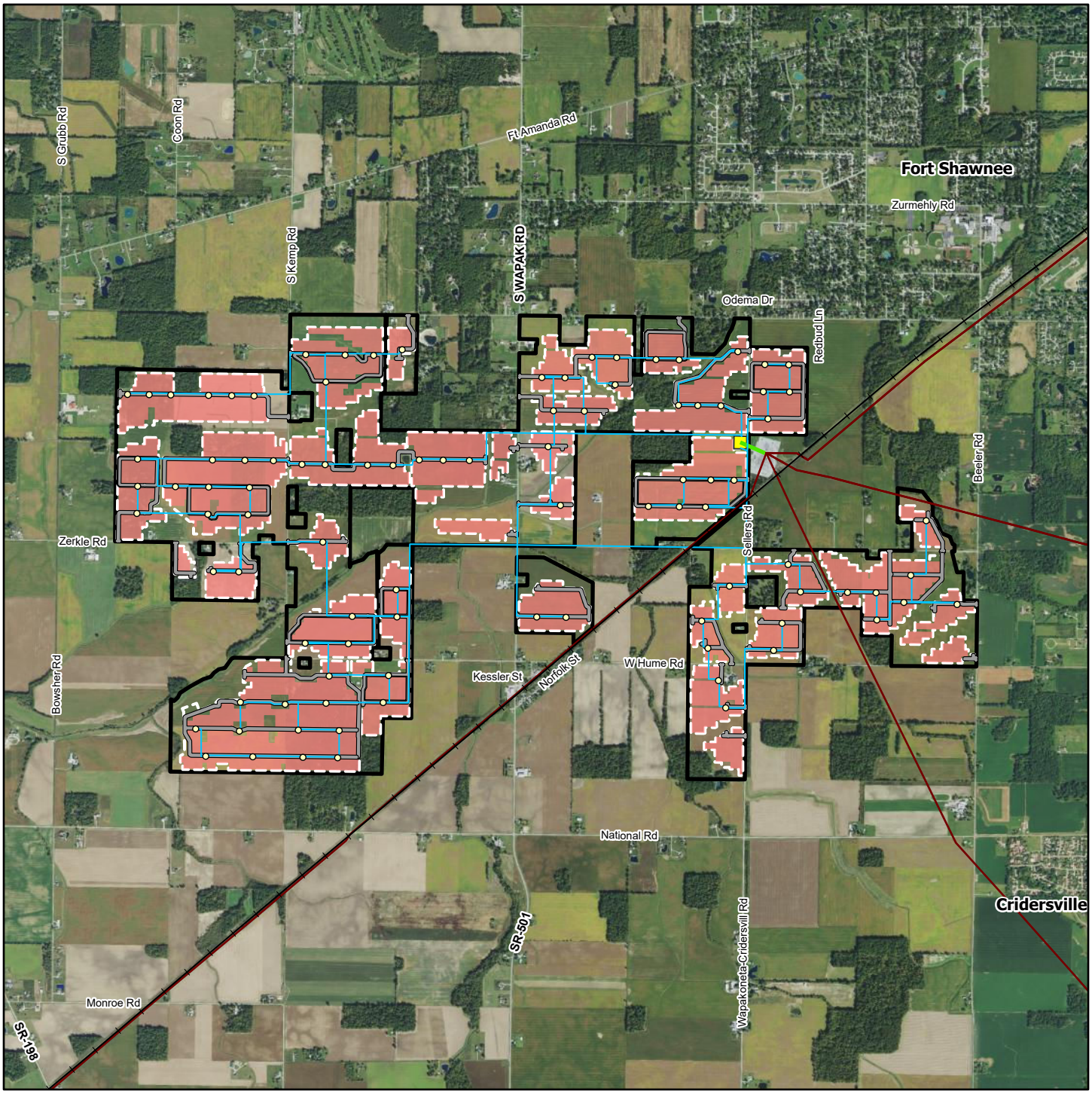
proposed solar array layout. Agrivoltaics is the co-location of agricultural activity, such as sheep grazing, and solar generation. The Applicant intends to use a qualified consultant in agrivoltaics to assist the Applicant with startup, shepherd selection, and selection of an appropriate seed mix to revegetate the site that is compatible with sheep and other wildlife, and to provide habitat for pollinator species.

The Applicant intends to develop a grazing plan. This plan would include the extent of the project's footprint where sheep grazing would occur and the stocking rate—the number of sheep onsite. Currently, the Applicant states that only 30 percent of the project fenced area would be used for grazing and that three to five sheep per acre would be necessary. With only 30 percent of the 1,410-acre footprint available for sheep grazing, the Applicant could use approximately 2,115 sheep. The stocking rate is subject to weather conditions, time of year, vegetation quality, and livestock class. Mechanical lawnmowing would be used outside the perimeter fence and in areas where the sheep grazing is insufficient.

The Applicant also intends to partner with the Ohio State University to co-locate honeybee colonies within the solar facility to further advance research on bees.

Project Schedule

The Applicant expects to finalize the interconnection agreement in fourth quarter 2021. Construction would start first quarter 2022 and would continue until the second quarter of 2023. The facility is expected to be placed in service during the second quarter of 2023. The Applicant further clarified that construction could last from 12 to 18 months. The Applicant stated that delays to this timeline could impact project financing, including the Applicant's ability to procure PV modules and facility components, and seasonal construction windows. Further, delays may push the in-service date back, according to the Applicant.



Allen & Auglaize County

N

0 2,000 4,000

Feet

1:40,000

NAD 83 SP Ohio North (Feet)

- Inverter
- Railroad
- Existing Transmission Line
- Collection Line
- Access Road
- Fence Line
- 345kv Gen-Tie Line
- Project Substation
- Solar Panel Array
- Project Boundary

Overview Map

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Birch Solar

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

IV. CONSIDERATIONS AND RECOMMENDED FINDINGS

In the Matter of the Application of Birch Solar 1, LLC for a Certificate of Environmental Compatibility and Public Need, Staff submits the following considerations and recommended findings pursuant to R.C. 4906.07(C) and 4906.10(A).

Considerations for R.C. 4906.10(A)(1)

BASIS OF NEED

Pursuant to R.C. 4906.10(A)(1), the Board must determine the basis of the need for the facility only if the facility is an electric transmission line or gas pipeline. Therefore, Staff has found an analysis of R.C. 4906.10(A)(1) to be inapplicable to the facility in question.

Recommended Findings

Staff recommends that the Board find that the basis of need as specified under R.C. 4906.10(A)(1) is not applicable to this facility, as the facility is neither an electric transmission line nor a gas pipeline.

Considerations for R.C. 4906.10(A)(2)

NATURE OF PROBABLE ENVIRONMENTAL IMPACT

Pursuant to R.C. 4906.10(A)(2), the Board must determine the nature of the probable environmental impact of the proposed facility. Staff has found the following with regard to the nature of the probable environmental impact.

Overview

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

Community Impacts[21]

Land Use

The predominant land use within the project area is agriculture. Non-agricultural uses such as wetlands, forests, and open green spaces account for nine percent of the total project area. These non-agricultural uses provide project buffering areas. The Applicant intends to partner with the Ohio State University to facilitate the study of honeybee foraging. Bee colonies would be established within the project area. These colonies would be integrated with the Applicant's sheep grazing and pollinator planting programs to further support agricultural land use.

Low-density residential land use is scattered throughout the project area and low-to-medium density suburban uses are clustered primarily along the northwestern portion of the project. In Staff's opinion, the proposed solar facility is not expected to significantly alter existing demographic trends within five miles of the project area. Since 2010, the population counts have reduced by a range of 0.4 to 0.6 percent and that trend is expected to continue through 2030.[22]The Applicant states that all impacts from construction and operation of the facility would occur on agricultural land. The Applicant does not intend to remove or relocate any structures.[23] Significant

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

22. Application at page 74.

23. Application p. 72.

impacts to residential, commercial, industrial, recreational, and institutional land uses are not anticipated, and surrounding agricultural land use would continue with minimal disruption.

Regional Planning

The Applicant's economic analysis concludes that the proposed solar facility would be expected to aid long-term regional development by increasing tax revenues, enhancing employment, and increasing economic contributions to the local economy. Importantly, 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. Additionally, the Applicant is planning a sheep grazing program to control vegetation at the site; thus, maintaining agricultural land use concurrent with electrical energy production. By installing the facility onto leased land, the opportunity for agricultural preservation is maintained. Associated farming activities would require only minor land use modifications, aside from temporary disruptions that would occur during construction.

Staff has reviewed the Shawnee Township Comprehensive Plan (published in 2009), as well as the 2020 edition of the plan. The 2020 plan in part envisions the township moving in the direction of a "more city-like status [that] is anticipated in the future. Toward that end, the citizens of Shawnee want regional scale facilities and industries. The reasons for wanting this development are to provide a more balanced tax base, a more dynamic and vital city, and more of the urban goods and services within the City's boundaries."[24]

Comprehensive land use plans provide citizens, elected officials and developers with a conceptual planning framework. These plans may be utilized by governmental actors (such as planning boards) to aid in land use decisions; however, it is important to note that comprehensive plans are primarily authored to provide generalized guidance on market-based growth trends and many areas of these plans are deliberately not written with any binding force. Staff opines that the construction and operation of the proposed solar facility is consistent with the comprehensive plan's general goals in several respects, namely that: agricultural land use will coexist with the proposed facility, agricultural land is preserved for future use, urban and residential expansion are aided by expected economic inputs and simultaneously not hindered by significant increases in demand for public services.

Recreation

Construction and operation of the facility would not physically impact any recreational areas. The Applicant studied for the presence of recreational areas within ten miles of the project area. No scenic rivers or scenic byways are located within five miles of the facility.[25] The only identified recreational area within a two-mile radius of the project area is the Winona Lake Water Park and Campground. This park is adjacent to the proposed facility, but its continued serviceability is not expected to be significantly affected by the project. According to the Applicant's visual impact study and subsequent mapping analysis, other known recreational resources are well beyond two miles of any solar equipment and unlikely to be significantly impacted. Staff concurs with this analysis.[26]

24. 2020 Edition Shawnee Comprehensive Land Use Plan, p. 3-3.
25. Application, Exhibit U, p.3.
26. Application, Figure 3-1.

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 Applicant initially considered a project area that exceeded 3,500 acres. Due to community concerns and to minimize overall aesthetic impacts, the project boundary was subsequently reduced to 2,345 acres. The final facility design would occupy 1,410 acres of the 2,345-acre total. The excess land would provide for increased buffering spaces.

The solar panels would be installed no higher than 10 feet above ground level. Based on the results of the Applicant's 10-mile visual resources report, the solar panels would not likely be visible at locations beyond two miles of the perimeter of the project. Existing landscape features limit likely concentration of viewshed impacts to an area that diminishes to approximately four-tenths of a mile.[27]

Staff reviewed the Applicant's visual impact analysis, which includes proposed mitigation in the form of vegetative screening around the project perimeter fence. The Applicant's landscape mitigation plan proposes the installation of evergreen tree species spaced six-feet-on-center along the facility fence line to soften viewshed impacts and to blend the facility into the existing vegetation.

The Applicant's plan also envisions the potential for aesthetic mitigation through an *Adjacent Landowner Financial Benefit Package* to residences that have a direct line-of-sight within 500 feet.[28] In the event the Board grants a certificate to the Applicant, Staff's recommended landscaping condition requires that the Applicant also consult with a certified professional landscape architect. Specifically, in coordination with the landscape architect, Staff also recommends that the Applicant adjust its landscape and lighting plan to incorporate appropriate planting measures such as shrub planting or enhanced pollinator plantings, to address impacts to the traveling public, nearby communities, and recreationalists.

In addition to vegetative screening mitigation measures, Staff is concerned about aesthetic impacts related to the project's perimeter fencing. The Applicant had initially proposed a chain-link design that has previously elicited many negative public comments and concerns from adjacent residents living near proposed solar facilities. These concerns center on the concepts that chain-link fences generally are more aesthetically intrusive, out-of-character in rural settings, and less wildlife friendly than fencing options such as *deer fences* and wooden fences. In response to public and landowner feedback, the Applicant has committed to installing a cedar post farm fencing design. In the event the Board grants a certificate to the Applicant, Staff recommends that the Applicant ensure that the perimeter fencing is both small-wildlife permeable and aesthetically fitting for a rural location. In the event the Board grants a certificate to the Applicant, with implementation of

27. Application Exhibit U, p. 9.
28. Application Exhibit V. p.4.

Staff's landscape and lighting and fencing condition, the overall expected aesthetic impact would be minimal.

Cultural Resources[29]

To assess potential impacts to cultural resources, the Applicant's cultural resources consultant reviews Ohio Historic Preservation Office (OHPO) records through an on-line literature review. This historical literature review identifies known above ground resources (significant architectural properties and buildings, historic districts, historic parks, land features of historical note and cemeteries). The literature review also researches results of previous archaeological studies that were performed in the vicinity. Information on cemeteries is obtained from Ohio genealogical records. Resource records are categorized in Ohio's Architecture Inventory and/or Ohio Archaeological Inventory. The records indicate whether a property is listed on the National Register of Historic Places (NRHP), or if the property could potentially qualify for the register. This initial collection of data is the Phase I review.

Factors such as the amount of previous documentation, quality of known resources and weighted significance of sites is used to evaluate the need for further study. Based upon the initial literature review, the consultant prepares a submittal to the OHPO documenting that no further study is warranted or proposing a work plan for further cultural resources investigation. The OHPO will review and approve the proposed work plan or propose modifications. The Applicant's consultant will also identify the proposed limits of architectural review and document results of the study on Ohio architectural inventory forms.

Phase II archaeological studies involve surface collection efforts, systematic shovel tests and rigorous preservation and documentation of artifacts. The consultant then prepares a report documenting the historical background of the studied area and an analysis of whether the site(s) are eligible for the national register. Where an applicant has not completed its Phase II archaeological studies, it is able to seek a Programmatic Agreement with OHPO outlining the upcoming steps (and anticipated completion dates) for its future study work.

Based upon a review of the consultant's analysis, the OHPO may: concur, require further study, or recommend a Phase III recovery of the site (where artifacts are recorded in place, then removed for preservation and future scientific study).

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 OHPO online geographic information system mapping, Ohio Historic Inventory, the Ohio Archaeological Inventory, and National NRHP files. Reconnaissance level

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

architectural history surveys were conducted for all structures greater than 50 years old, within an approximate two-mile radius of the project area.

To assess the potential for impacts to archaeological resources, the project partially underwent site surface collection, shovel test unit excavations, and visual inspection of the project area. At the time of the application submittal, the Applicant's consultant did not complete 37 percent of its archaeological investigation. Currently, the Applicant has identified 18 new unrecorded archaeological sites. Based upon the consultant's preliminary analysis, the Applicant states these resources are not likely to be eligible for the NRHP. However, a final archaeological report has not yet been submitted to the OHPO for review, nor has the Applicant obtained final concurrence from the OHPO on potential impacts to archaeological resources. The Applicant has entered into a Programmatic Agreement with the OHPO to outline next steps in its investigation, followed by evaluation of potential impacts to archaeological resources and steps to ensure adequate avoidance, minimization or mitigation measures will be employed. The Applicant executed this Programmatic Agreement with the OHPO on February 22, 2021. However, the Applicant is unable to comply with the Programmatic Agreement at this time because a complete analysis of potential impacts to archaeological resources has not yet been performed. Staff also notes its concern that the term of this Programmatic Agreement expires on February 1, 2022, with a significant portion of the project area left to be surveyed at this time.

The Applicant's historical survey identified 486 architectural/historical above-ground resources within the Area of Potential Effects of the project. Of these resources, four properties and a potential historic district were deemed to be eligible for the NRHP. On May 13, 2021, the OHPO provided a letter of concurrence regarding required mitigation for these above-ground architectural resources. The OHPO recommends that the Applicant enter into a Memorandum of Agreement (MOU) to avoid, minimize and/or mitigate adverse impacts to affected historic properties, as agreed to by the Programmatic Agreement. In the event the Board grants a certificate to the Applicant, Staff concurs with the OHPO recommendation. To date, the Applicant has not provided a mitigation plan to the OHPO to address adverse impacts to historic properties; therefore, Staff is unable to determine if such mitigation is sufficient to address known adverse impacts to historic resources.

In Staff's opinion, the Applicant has not sufficiently established the presence or absence of archaeological resources within the project boundary. Staff is recommending that the Board not approve any construction within the project area, due to the vast quantity (37 percent) of un-surveyed land that may contain significant archaeological resources as well as the Applicant's failure to provide final survey results for the remaining 63 percent of the project area. However, should the Board issue a certificate for the proposed facility, Staff recommends that the Applicant shall finalize a MOU with the OHPO to mitigate for and/or avoid cultural resources that are determined to experience potential adverse effects.

Economic Impact

The Applicant states that it would be responsible for the ownership and construction of the proposed project. The Applicant has obtained the necessary landowner agreements for the project. The proposed facility will not change the ownership status within the project area.

Total cost comparisons between the proposed facility and other comparable facilities are to be provided in the application. The Applicant referenced a 2020 study conducted by the U.S. Energy

Information Administration (USEIA) which states that the capacity-weighted average installed costs of solar PV projects was around $1,848/ kilowatt AC (kWAC) in 2018. Staff notes that a 2021 report published by the Lawrence Berkeley National Laboratory states that utility-scale solar capital costs fell to $1,400/kWAC in 2020. The Applicant states that the capital costs for the proposed Birch Solar project will be between $1,050- $1,200/kWAC.[30]

Operation and maintenance expense comparisons between the proposed facility and other comparable facilities are to be provided in the application. The Applicant referenced a 2018 report published by the U.S Department of Energy's National Renewable Energy Laboratory (NREL) that stated that, on average, utility scale solar operations reported O&M costs totaling $9.1/kW/year for fixed-tilt PV facilities and $10.4/kW/year for facilities using tracking systems, but Staff notes these figures exclude the cost of inverter replacements, which can be a significant cost. Staff also notes that NREL, in its 2021 update on utility-scale solar costs, reports that O&M costs were $16/kW/year for fixed-tilt PV facilities and $17/kW/year for facilities using tracking systems. The Applicant stated that the O&M costs for the proposed Birch solar project would be between approximately $11.67 and $16.67/kWAC/year.

The Applicant provided its estimates of the cost of delays in permitting and construction of the proposed facility. The Applicant stated that delays during the permitting stage can result in costs associated with project financing, equipment costs, and potential power purchase agreement milestones ranging from $20-$27 million. At this time, the Applicant has not entered into a power purchase agreement with any entity. The Applicant's characterization of its estimated costs of delays appears reasonable to Staff.

Birch Solar retained the services of Stantec Inc. (Stantec) to report on the economic impact of the Birch Solar project.[31] Stantec used the NREL Jobs and Economic Development Impact (JEDI) model, the IMPLAN regional economic modeling system, as well as data from the Ohio Department of Taxation, to estimate the economic impact of the construction and operation of the solar facility. Staff verified that the methodology of the JEDI and IMPLAN models were appropriate for this study and that the estimated impacts reported by the Applicant are reasonable.

In this model, "earnings" are comprised of direct (on-site) wages, indirect (supply-chain labor) wages, and induced (through spending by persons in the first two categories). "Output" in this model refers to the value of goods and services produced by direct, indirect, and induced labor. The JEDI model was run using both ends of the estimated capital costs and the O&M costs provided by the Applicant to provide a range for the potential economic output. Based on the results of the JEDI model analysis conducted by Stantec, the Birch Solar project is expected to have the following impacts:

Jobs

- Between 792 - 956 construction related jobs for the state of Ohio.
- Between 24 - 43 long-term operational jobs for the state of Ohio.

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

31. Stantec Inc. is a firm that offers consulting services in areas such as environmental sciences, project management, and project economics for infrastructure and facilities projects.

Earnings

- Between $57.4 - $69.2 million in annual earnings during construction for the state of Ohio.
- Between $797,000 - $1.6 million in annual earnings during facility operations for the state of Ohio.

Output

- Between $68.4 - $84.6 million in local output during construction for the state of Ohio.
- Between $1.5 - $3 million in local annual output during facility operation for the state of Ohio.

The Birch Solar project would generate between $2.1 million and $2.7 million annually for Allen and Auglaize counties. This estimate is based on a potential Payment in Lieu of Taxes (PILOT) plan in which the Applicant would pay between $7,000/MW and $9,000/MW annually for a 300 MW facility. At this time, the Applicant has not entered into a PILOT agreement with either Allen or Auglaize counties.

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, after-image, a safety risk to pilots, or a perceived nuisance to neighbors. The Applicant considered the potential effects of glint and glare in the design of solar array layout and how the panels would be operated.

Solar panels are designed to absorb as much sunlight as possible with minimal reflectivity and include an anti-reflection coating. The Applicant conducted glint and glare analysis to identify any potential impacts along local roads, at nearby residences, a local railroad track, helicopter pilots using nearby helipads, and to local airports.[32] To perform the analysis of glare, the Applicant used the ForgeSolar glare hazard analysis program, formerly known as the Solar Glare Hazard Analysis Tool (SGHAT), which was developed by Sandia National Laboratories to analyze potential glare at sensitive receptor locations. This software is commonly used by solar facility developers to determine the effect of solar glare. Glare is classified in three categories in the ForgeSolar program tool: (1) the green type, which is associated with a low potential for temporary after-image when observed prior to a typical blink response time; (2) the yellow type, which is associated with a potential for temporary after-image when observed prior to a typical blink response time; and (3) the red type, which is associated with the permanent retinal damage when observed prior to a typical blink response time. The Applicant found that no glare (i.e., no minutes of either green or yellow type) from the project is predicted to vehicles using the roadways or the various points around the solar facility. Staff notes that the Applicant did not provide the minutes of red type glare. Also, the Applicant found that no glare is predicted for the approaches to the Allen County or Youngpeter airports that are located within 10 miles of the project area. The Applicant also found that no glare is predicted for pilots hovering above the St. Rita's Medical Center and Lima Memorial hospitals' helicopter pads that are within 10 miles of the project area. Generally, Staff agrees with the study results. Staff notes that aesthetic impact mitigation measures that include

32. Application at Exhibit N and Birch Solar 1, LLC's Response to the Eleventh Data Request from Staff of the OPSB, Data Request #2.

vegetative plantings may also further reduce potential impacts as part of a landscape and lighting plan, which Staff has recommended for this project in the event the Board grants a certificate.

Decommissioning

The Applicant holds land rights to and estimates that the solar facility can operate for 35 years or more. The Applicant has prepared a decommissioning plan and total decommissioning cost estimate of $15,279,794. Staff has reviewed that decommissioning plan.

According to the Applicant's plan, at the end of the useful life of the facility, the solar facility would be decommissioned, and the land be returned to its current use as agricultural land. Prior to the start of any decommissioning activities, the Applicant would apply for and obtain applicable federal, state, and local permits. At this time, the Applicant has identified that during decommissioning, it may need to obtain, at the least, an Ohio EPA Construction Storm Water General Permit and Clean Water Act Sections 401 and 404 permits. At the time of decommissioning, panels would be reused, recycled, or properly disposed in accord with regulations in effect at that time.

The decommissioning sequence consists of, but is not limited to, reinforcing access roads, installing temporary construction fencing and best management practices (BMPs) to protect sensitive environmental resources, de-energizing solar arrays, dismantling panels and racking, removing inverters, removing electrical cables to a depth of at least 36 inches, removing access and internal roads, grading the site, removing the substation, removing overhead transmission lines and poles, de-compacting subsoils and revegetating disturbed land to pre-construction conditions, to the extent practicable. The Applicant may abandon in place any electrical lines that would not impact the restored use and are at least 36 inches below-grade unless required by easement or lease agreement. At the request of the landowner, the Applicant may leave access roads in place, provided that does not violate any permits or legal requirements. The Applicant would also coordinate with the appropriate local agency to coordinate repair of any public roads if damaged or modified during decommissioning. The Applicant may leave in place any electrical infrastructure improvements (e.g., collection substation) pending approval by the Board, the transmission owner (which is currently AEP), and the independent system operator, PJM Interconnection, LLC (PJM). The Applicant would restore the land significantly to its original topography to allow for resumption of the pre-construction agricultural land use. The Applicant stated that it anticipates decommissioning activities and restoration to occur over and be completed in a 12 to 18-month period. Based on the weather dependent nature of site restoration, Staff recommends that the updated decommissioning plan include a requirement to monitor the site to ensure successful revegetation and rehabilitation. Also, Staff recommends a timeframe be included in the draft decommissioning plan where the majority of equipment is removed within a year.

The Applicant states it would repurpose, salvage, recycle or haul off site to a licensed solid waste disposal facility all solar components. Some of those solar components are anticipated to have a resale or salvage value and would be sold to offset the decommissioning cost. Those salvageable items typically are solar modules, tracking system, steel piles, inverters, and transformers. If solar modules are to be disposed, the Applicant intends to conduct the disposal in compliance with federal, state, and local laws and regulations. The Applicant has committed to using only solar

panels that have been certified to comply with the US EPA's TCLP test and meet U.S. EPA definition of non-hazardous waste.[33]

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

The Applicant has considered a scenario where the decommissioning plan may be activated prior to the end of the useful life of the solar facility. In the event panels are damaged during construction or operations, the Applicant commits to recycling those panels.[34]

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

Wind Velocity

In compliance with the Ohio Adm.Code, the Applicant has provided the analysis of high-wind velocities for the area along with a tabulation of the probabilities or relative frequencies of these wind velocities. In response to a data request, the Applicant has further added that the maximum wind speed recorded in 2019 was 44.1 miles per hour (mph). During periods of high winds, the stow mode of the trackers will be activated to place the panels in a position of extreme tilt to minimize uplift forces and to minimize adverse consequences and damage. The Applicant claims this would be a position of 52 degrees from the horizontal. This position would also allow the panels to deflect hail more easily with less force on the panel surface, and more readily remove snow that may accompany the high wind or storm event.

33. Application at page 9.
34. Application at page ix.

The Applicant stated that the facility would be designed in accordance with the American Society of Civil Engineers (ASCE) design guide 7-16 Risk Category I. The full assembly would be rated to withstand the design wind velocity of 100 mph for Lima, Ohio. The manufacturer's specifications of the supporting structures and tracker system under consideration state the ability of the design to withstand three-second wind gusts of 140 mph under the ASCE 07-10.[35]

Roads and Bridges[36]

The Applicant has yet to finalize its delivery route, although it is expected that deliveries to the project site would be by way of I-75 to West Hume Road and Breese Road. The main transportation route to access the project site would be SR 501.

The Applicant conducted a route evaluation study to identify viable means of accessing the project area. Traffic patterns, bridge conditions, culvert conditions, road surface conditions, and potential obstructions were identified and analyzed. According to the Applicant's Transportation Assessment,[37] all bridges are in good/fair condition along the proposed transportation routes. All culverts appeared to be in good condition. Road surface conditions were rated mostly good by the Applicant. No overhead obstructions were identified within the project area. One bridge along S. Kemp Road has load restriction, and delivery routes will have to be adjusted accordingly.

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

Any damaged public roads and bridges would be repaired promptly to their previous or better condition by the Applicant under the guidance of the appropriate regulatory authority. Any temporary improvements would be removed unless the appropriate regulatory authority requests that they remain in place. The Applicant expects to enter into a Road Use Maintenance Agreement with the Allen and Auglaize County Engineers.

Noise

Noise impacts from construction activities would include site clearing, installation of mechanical and electrical equipment, and commissioning and testing of equipment. Many of the construction activities would generate significant noise levels during the construction period which is expected to last from the first quarter of 2022 to the second quester of 2023. 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

35. ASCE reports that this document has been replaced. The most recent version is ASCE 7-16.

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

37. OPSB Case Number 21-0004-EL-BGN, Exhibit J.

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[38] or transformer[39] model is chosen, the Applicant would submit a noise report confirming that no non-participating receptors were modeled to receive noise impacts greater than the daytime ambient noise level plus five dBA.

Geology[40]

Surficial/Glacial[41]

The project area lies within the glaciated margin of the state and includes several Wisconsinan-age glacial features. End moraine, lake-planed moraine and ground moraine features are all present

38. The inverter used for the operational noise model is the TMEIC 3.3 kW. The Applicant plans to use the TMEIC 4.2 kW. The Applicant states the two inverter models have similar noise profiles. In the event the Board determines that a certificate should be granted, the Staff has a recommended condition that would require the Applicant show that the inverter chosen for the project has the same or lower sound power level as the inverter model used in the operational noise model.

39. The substation transformer model used for the operational noise model is a 188 MVA transformer. The Applicant estimated the sound power level of the transformer using the procedures outlined in the "Electric Power Plant Environmental Noise Guide" from the Edison Electric Institute. In the event the Board determines that a certificate should be granted, the Staff has a recommended condition that would require the Applicant show that the substation transformer model chosen for the project has the same or lower sound power level as the substation transformer model used in the operational noise model.

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

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

within the project area. The project area consists of very flat to gently undulating terrain. Glacial drift thickness throughout the study area averages ranges from approximately 25 feet to 95 feet thick.

Bedrock[42]

The uppermost bedrock unit throughout the large majority of the project boundary is the Tymochtee Dolomite. The Greenfield Dolomite is the uppermost bedrock occurring in a small portion of the eastern project area.[43] Due to the glacial drift thickness cited above, bedrock is not expected to be encountered during facility construction.

Karst

Conditions typically necessary for the formation of karst geology features do exist within the project area. The nearest documented (ODNR Geologic Survey confirmed) karst feature is approximately 25 miles southeast of the project area.[44] The application rates karst as a low risk geohazard.[45]

Oil/Gas and Mining[46]

'Prior to 2010 there have been over 264,000 wells drilled in Ohio. The vast majority of those wells (approximately 183,000) were drilled prior to 1965 and the creation of modern oil and gas law and regulation. Beginning during 1884 in northwestern Ohio, a drilling "boom" established the largest U.S. oilfield at the time, known as the Lima Findlay Trenton Field. Over time 71,000 wells were drilled. Of those, nearly 60,000 wells were drilled between the discovery well and 1910. For two years during that period over 5,000 wells were drilled per year – using wooden rigs. At that time, there was no stable understanding of petroleum engineering, well construction or proper production methods – as evidenced by the field's rapid production decline. Certainly, little consideration was given to proper abandonment or plugging procedures. It is a problem that is still with us today and similarly exists in three of the four quadrants of Ohio.'[47]

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

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

43. ODNR Ohio Geology Interactive Map https://gis.ohiodnr.gov/website/dgs/geologyviewer/#

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

45. Application at Exhibit K (Geotechnical Investigation Report by Kleinfelder, Inc.) page 8/24, Table 3-2

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

47. 2018 Proponent Testimony of Mr. Tom Stewart, Interim Chief of Staff, Ohio Oil and Gas Association – Ohio House Bill 225 – Idle and Orphaned Oil and Gas Wells https://cdn.ymaws.com/www.ooga.org/resource/resmgr/_new-site/advocacy/pdfs/ooga_hb_225_senate_testimony.pdf.

The disconnection between the beginning of oil and gas exploration in Ohio versus when it was regulated in the state has led to incomplete or absent records of abandoned wells. For instance, according to the disclaimer that precedes searching the ODNR oil and gas well locator, the accuracy of the locations depicted is not guaranteed.[48] This lack of complete historic record necessitates that an applicant conduct survey work to provide field evidence for well locations where documentation is lacking.

Idle and orphan oil and gas wells pose a degree of environmental risk (e.g. methane emissions, ground water contamination).[49] Per the ODNR Orphan Well Program "proper plugging of orphan wells is necessary to protect public health and safety, conserve natural resources, and allow the efficient development of Ohio's oil and gas resources." If these wells exist within the project area, and specifically those hidden from the surface but within the subsurface footprint of the project area, these wells must be identified and their condition evaluated prior to initiation of construction.

This project is partially located within the mapped boundary of the Lima Consolidated Oil Field, which is a portion of aforementioned Lima Findlay Trenton Field.[50] The project's proximity to this field is of importance due to the many orphan wells associated with the 1800's oil and gas drilling and development which took place during a period of no regulatory oversight.[51] The Applicant began with consultation of ODNR's oil and gas locator, which indicates the ODNR's record of 271 oil and gas wells within one mile of the project area. The Applicant has indicated that there are 60 oil and gas wells within the project area. All the wells within the project area are currently inactive historic production wells or plugged and abandoned wells.[52] In relation to the 56 historic production wells, there are no records indicating the wells have been properly plugged and abandoned. In relation to the four plugged and abandoned wells, the ODNR records are incomplete, unconfirmed, or absent in addition to the fact that plugging methods utilized in prior centuries would not comply with current requirements and indeed could lead to ineffective well abandonment.

No evidence of the historic well locations remain at the surface. The top of any remaining evidence (i.e. well casing(s), production pipe) is likely just below the standard plough depths (generally no more than 12 inches) for the agricultural activity that has been prevalent throughout the project area for several years. The Applicant is still in the process of attempting to locate these historic well sites. A preliminary report and plans to do additional surveys are discussed in further detail below within the Geotechnical Report section.

In completing survey efforts, an applicant can undertake various technological approaches, including, but not limited to: electromagnetic, seismic induction, ground penetrating radar, lidar, and infrared/thermal imaging cameras. The Applicant has completed a ground based electromagnetic survey to better understand the location of the potential wells and any associated

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

49 See, e.g., https://www.nrdc.org/stories/ohio-gains-ground-hidden-hazard-more-centurys-worth-abandoned-oil-and-gas-wells

50. Application at Exhibit R - United States Fish and Wildlife Service and Ohio Department of Natural Resources Correspondence – Geological Survey Review.

51. See, e.g., https://checksandbalancesproject.org/ohio-100000-abandoned-oil-and-gas-wells/.

52. Application at page 51.

infrastructure in order to site project facilities to avoid these buried features. The Applicant has proposed a 50-foot panel setback from wells and gathering locations.[53]

The ODNR records indicate six gas storage wells are located within four miles of the project area and seven Class I injection wells are located within five miles of the project area.[54]

No active mining occurs within the project area. The nearest mine is the Buckland Site Mine operated by The National Lime and Stone Company located approximately three miles south of the project boundary. No known abandoned underground mines are located within several miles of the project area.

Seismic Activity[55]

Ten earthquakes have been documented within 11 miles of the project area.[56] The nearest event epicenter occurred approximately three miles northeast of the project area. This February 2021 event registered a 2 magnitude. Another seismic event registering a 2.5 magnitude was recorded in January 2021 just northeast of the February 2021 epicenter. The project area represents a portion of the Anna Seismic Zone where several faults associated with seismic activity in the region have been identified.[57] Although the region is considered seismically active, the Applicant has concluded the risk of damage to structures caused by seismic activity is low.[58]

Based on boring/coring data down to 42 feet below ground level (BGL), and the Applicant's geotechnical team's knowledge of the area geology, the application assigns a Class D Seismic Site Classification in accordance with ASCE 7-16.[59]

The Applicant has indicated that no blasting activities are needed for the construction or operation of the proposed solar facility, and therefore no blasting-induced seismic activity is anticipated.[60]

53. Application at page 51.

54. Class I injection wells are used to inject a variety of liquid waste products. INEOS in Lima uses four Class I Hazardous injection wells to dispose of unwanted wastewater. Lima Refining Company, immediately north and east of INEOS, uses three Class I non-hazardous waste wells to dispose of waste water.

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

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

57. ODNR Geological Survey Report - Mapping Bedrock Topography and Drift Thickness of the Preglacial Teays River within the Anna Seismic Zone, Ohio https://ohiodnr.gov/static/documents/geology/OFR2018_2_Blake_2018.pdf.

58. Applicant's April 28, 2021 response to Staff's fifth data request.

59. Page 15 of Exhibit C (Preliminary Geotechnical Engineering Report) and https://www.asce.org/publications-and-news/asce-7.

60. Application at Page 45.

Soils[61]

According to the United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) Web Soil Survey, the project area consists primarily of soils derived from glacial till, outwash and alluvium. Blount, Pewamo, Westland, Glynwood, Thackery, Sarnac and Gallman are the most common soil series found within the boundaries of the project area. Together, these soils make up over 90 percent of the project area. There is a low to moderate risk of shrink-swell potential in these soils. Other limiting factors include seasonal saturation and poor drainage in some soils. Slope is relatively flat, rarely exceeding a 12 percent grade. Highly erodible soils are present within a small portion of the western project area.[62]

Geotechnical Report

The Applicant's geotechnical investigation report discusses the geotechnical work performed to date. To further evaluate soil properties, 29 borings were advanced to a depth of 20 feet BGL. One boring was advanced to a depth of 42 feet BGL. Ten test pits were excavated, 15 in-situ electrical resistivity tests were completed, soil samples were sent for laboratory analyses for physical and engineering properties, and pile load testing of 78 piles was conducted.

The report findings indicate the soils and geology at the site appear to be suitable for the foundations proposed. The report recommends all mat foundations have a minimum size of two feet by two feet in dimension to evenly support the weight of electrical equipment, such as inverters and transformers. The report also recommended that the foundation have a minimum embedment depth of 36 inches to prevent damage from frost. These mat foundations are also known as slab or footer foundations and are typically used as the support base for inverters and transformers.

Near surface soils exhibited fair to poor characteristics for access road subgrade construction. The Applicant may use a subgrade stabilization material such as lime or fly-ash, or a geotextile separation fabric to improve support qualities. The geotechnical report recommends an 11-inch aggregate wearing surface during construction and a minimum of six inches for post construction.[63]

In addition to the geotechnical data submitted within the application, on September 27, 2021 the Applicant provided preliminary results of its study efforts to locate historic oil and gas wells within the project area that could potentially conflict with the proposed construction. The study used well coordinates from the ODNR's oil and gas well locator as the foundation of the study. The Applicant intends to complete its well locating survey by the end of 2021. It is unknown at this time when a final report would be submitted to Staff for review and consideration.

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

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

62. Application at Figure 8-4.

63. Application at Exhibit K (Geotechnical Investigation Report by Kleinfelder, Inc.) page 21/24.

This preliminary report indicates 60 oil and gas wells were identified as being potentially located within the project area. Electromagnetic ground surveys were conducted at these locations and up to a 150-foot radius from the targets. In some cases, however, the survey area may not have had access suitable for achieving a 150-foot survey radius. Access limitations included fencing, structures, and crops.[64] Seventy-six magnetic anomalies that could suggest the presence of oil and gas well features were detected. In addition, 21 horizontal anomalies that could suggest the presence of oil and gas well related infrastructure (i.e. gathering/collection lines) were identified. To date, the Applicant has hydro-excavated ("potholed") 38 of the discovered magnetic anomalies a minimum of eight feet BGL up to a maximum of 10 feet BGL. With the exception of cast iron pipe fragments found at one of the excavation sites, the Applicant has not found evidence of oil and gas wells and/or associated infrastructure. Investigation of the remaining magnetic anomaly sites is ongoing.

Following discussions with the ODNR and Staff, the Applicant has chosen to perform an electromagnetic aerial survey of the project area in order to further ascertain the presence of subsurface oil and gas well features.[65]

Conclusion

The geotechnical investigation report discussed above recommends that the steel piles (posts) be driven to a minimum depth of 7.5 feet. Six to nine inches is typical pile diameter. The project, in its current form, will require installing approximately 142,000 posts.[66] Several miles of underground collection lines in addition to mat foundation structures are proposed to be installed three to four feet BGL. Given the historic oil and gas activity in the project area, the possibility of encountering one of these wells or associated infrastructure exists. The Applicant has provided Staff with a draft Unanticipated Discovery Plan (UDP) which could be used to address the event of encountering an oil and gas well during construction. However, it's important that a UDP not be used in lieu of sound geotechnical investigation work prior to construction.

Based on the data and considerations provided within the application submittal to date, no particular geological features within the project area that are incompatible with construction and operation of the proposed solar facility have been identified. However, the geotechnical investigation to identify historic oil and gas well features is ongoing. Therefore, at this time and pursuant to R.C. 4906.10(A)(2) and Ohio Adm.Code 4906-4-08(A)(5)(a), the Applicant has not demonstrated whether the proposed project is compatible with the potential subsurface oil and gas well features within the project area.

In the event the Board determines that a certificate should be granted, Staff recommends that the Applicant complete its oil and gas well assessment as soon as possible, but in any event, no later than 60 days prior to the preconstruction conference. Coordination with both the ODNR and Staff is strongly recommended. A final report summarizing the findings including procedures necessary to remedy any oil and gas well inadequacies shall be submitted for Staff review. In the event the Board determines that a certificate should be granted, Staff recommends that the final detailed engineering drawings of the final project design shall account for geological features and include the identity of the registered professional engineer(s), structural engineer(s), or engineering

64 Applicant's October 14, 2021 response to Staff's tenth data request.
65 Applicant's October 14, 2021 response to Staff's tenth data request.
66. Application at page 11.

firm(s), licensed to practice engineering in the state of Ohio who reviewed and approved the designs. Additionally, in the event the Board determines that a certificate should be granted, Staff recommends that the Applicant complete an engineering constructability report no later than 60 days prior to the preconstruction conference, as further detailed in Staff's recommended conditions below. Finally, in the event the Board determines that a certificate should be granted, Staff recommends that the Applicant provide a final geotechnical engineering report to Staff at least 30 days prior to the preconstruction conference.

Ecological Impacts

Public and Private Water Supplies[67]

Groundwater resources throughout the project area are plentiful, sometimes yielding up to 500 gallons per minute (GPM). The ODNR has record of 370 water wells drilled within one mile of the project area. These wells range in depth from 22 to 284 feet deep, with an average depth of 88.5 feet. A sustainable yield of three to 300 gallons per minute is expected from wells drilled in this area based on well log records filed with the ODNR. Based on records from 98 wells within one mile of the project area that contain sustainable yield data, the average sustainable yield from these records was 19.2 gallons per minute.[68]

The western portion of the project is located within the surface water corridor management zone for the City of Lima. Ohio EPA defines a corridor management zone as the surface and subsurface area within a source water assessment area where the potential for drinking water contamination warrants delineation, inventory, and management.[69]

Ohio EPA defines source water protection areas (SWPAs) as the area that supplies water to a public water supply well within a five-year time-of-travel.[70] Three drinking water (ground sourced) supply SWPAs occur within one mile of the project area. They include Lima Rescue Mission/Camp Roberts, Winona Lake Waterpark and Campground, and St. Matthew Lutheran Church. A small portion of Winona Lake Waterpark and Campground SWPA overlaps with the project area but is not within the facility footprint.[71] The three non-community public water

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

68. Application at Exhibit R (U.S. Fish and Wildlife and ODNR Correspondence).

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

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

71. Application at page 49 and Figure 8-2.

systems have a low susceptibility to contamination.[72] The Applicant does not anticipate construction or operation of the proposed solar facility will impact groundwater. However, due to the aforementioned lack of a comprehensive investigation of historic oil and gas well subsurface infrastructure, construction of the proposed facility could impact underground sources of drinking water.

The Applicant has indicated seven private water wells exist within the project area.[73] Further communication with the Applicant indicated that the seven water wells previously noted, were identified via a desktop review of public records. Site investigations suggests there are no known active private water supply wells within the project footprint. Should any wells be discovered during construction, the Applicant has committed to a 50-foot setback.[74] This setback would be consistent with ODH regulations which establish setbacks from potential contaminant sources to private water supplies. Although solar facilities are an unlikely potential source of contamination, the 50-foot "setback" or isolation radius from private water supply wells as established by Ohio Adm.Code 3701-28-7(F) should be followed. This setback will require the Applicant to "ground-truth" all water well locations within or immediately adjacent to the project area.

Conclusion on Public and Private Water Supplies

In the event the Board determines that a certificate should be granted, Staff recommends that the final detailed engineering drawings of the final project design shall account for and accommodate the setbacks discussed above.

Based on the data and considerations provided within the application submittal to date, including implementation of a Spill Prevention, Control, and Countermeasure (SPCC) Plan, and based on Staff assessment and implementation of the recommended conditions, there appears to be no unreasonable risk posed to public or private drinking water supplies. However, due to the lack of a comprehensive investigation of historic oil and gas well subsurface infrastructure discussed above, construction of the proposed facility could impact underground sources of drinking water.

In consultation with Ohio EPA drinking water staff, in the event the Board determines that a certificate should be granted, communication between the Applicant and SWPA owners/operator(s) is strongly recommended. This communication helps ensure the SWPA owner/operator(s) are informed thereby allowing these parties to take steps they may deem necessary (e.g., drinking water advisories) in the event of a spill or significant panel damage. In the event the Board determines that a certificate should be granted, Staff recommends that at least 30 days prior to the preconstruction conference, the Applicant submit its final emergency response plan. This plan shall include provision(s) to keep the Winona Lake Waterpark and Campground and Shawnee Township officials informed of the status of any spills, significant panel damage, and associated repair/remediation schedule.

72 Ohio EPA Source Water Protection Areas Interactive Map https://oepa.maps.arcgis.com/apps/webappviewer/index.html?id=3b39e11ba7fc43c3b41801e3580e6d21

73. Applicant at page 49.

74. April 28, 2021 Applicant response to Staff's fifth and sixth data request.

Surface Waters[75]

The Applicant delineated 14 streams and three wetlands within the project area.[76] All facility components have been sited to avoid wetlands. Further, all facility components except underground collection lines have been sited to avoid streams. Impacts to streams associated with underground electrical installation would be avoided via 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 also recommends that the Applicant have an environmental specialist on site during construction activities where HDD activities may impact surface waters. The environmental specialist should have authority to stop HDD activities to ensure that any impacts related to a frac-out are addressed.

The Applicant states that the boundaries of streams and wetlands within and immediately adjacent to the construction limits of disturbance would be demarcated with flagging prior to construction. Specifics about how surface waters would be further protected from indirect construction stormwater impacts using erosion and sedimentation controls would be further outlined in the Applicant's stormwater pollution prevention plan (SWPPP). The Applicant would obtain an Ohio National Pollutant Discharge Elimination System 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.

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

76. 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.

The project does not overlap with a 100-year floodplain.

Listed Species[77]

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

MAMMALS				
Common Name	**Scientific Name**	**Federal Status**	**State Status**	**Presence in Project Area**
Indiana bat	*Myotis sodalis*	Endangered	Endangered	Historical range includes the project area.
northern long-eared bat	*Myotis septentrionalis*	Threatened	Endangered	Historical range includes the project area.
tricolored bat	*Perimyotis subflavus*	N/A	Endangered	Historical range includes the project area.
little brown bat	*Myotis lucifugus*	N/A	Endangered	Historical range includes the project area.

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

One of the missions of the ODNR is to "conserve and improve the fish and wildlife resources and their habitats and promote their use and appreciation by the public so that these resources continue to enhance the quality of life for all Ohioans." In carrying out this mission, the ODNR considers the "status of native wildlife species [to be] very important" and therefore lists wildlife species needing protection. (ODNR, *State Listed Species,* https://ohiodnr.gov/wps/portal/gov/odnr/discover-and-learn/safety-conservation/about-ODNR/wildlife/state-listed-species).

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

BIRDS				
Common Name	**Scientific Name**	**Federal Status**	**State Status**	**Presence in Project Area**
lark sparrow	*Chondestes grammacus*	N/A	Endangered	Historical range includes the project area. Nests in grassland habitats with scattered shrub layers, disturbed open areas, as well as patches of bare soil. Applicant has committed to avoid potential habitat during nesting period of May 1 through June 30.
upland sandpiper	*Bartramia longicauda*	N/A	Endangered	Historical range includes the project area. Due to the location, and the type of habitat within the project area, this project is not likely to impact this species.
FISH				
Common Name	**Scientific Name**	**Federal Status**	**State Status**	**Presence in Project Area**
pirate perch	*Aphredoderus sayanus*	N/A	Endangered	Known Range. Potentially located in perennial streams within the project area. No in-water work proposed.
greater redhorse	*Moxostoma valenciennesi*	N/A	Threatened	Known Range. Potentially located in perennial streams within the project area. No in-water work proposed.
MUSSELS				
Common Name	**Scientific Name**	**Federal Status**	**State Status**	**Presence in Project Area**
Pondhorn	*Uniomerus tetralasmus*	N/A	Threatened	Known Range. Potentially located in perennial streams within the project area. No in-water work proposed.
clubshell	*Pleurobema clava*	Endangered	Endangered	Known Range. Potentially located in perennial streams within the project area. No in-water work proposed.
northern riffleshell	*Epioblasma torulosa rangiana*	Endangered	Endangered	Known Range. Potentially located in perennial streams within the project area. No in-water work proposed.

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.

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

The project is within the range of the state endangered upland sandpiper (*Bartramia longicauda*). Nesting upland sandpipers utilize dry grasslands including native grasslands, seeded grasslands, grazed and ungrazed pasture, hayfields, and grasslands established through the Conservation Reserve Program. The Applicant stated that the project area currently does not contain suitable habitat for this species. However, this type of habitat to may develop over time. In the event the Board determines that a certificate should be granted, 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 as no in-water work is proposed, seasonal habitat avoidance as recommended by ODNR and USWFWS has been committed to by the Applicant, and a lack of proposed impacts to suitable habitats are proposed for the project.

Vegetation

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

APPROXIMATE VEGETATIVE COMMUNITIES WITHIN PROJECT AREA	
Vegetation Community Type	**Total (Acres)**
Old Field	1
New Field	71
Forestland	105
Agricultural Lands	2133

Permanent vegetative impacts would occur primarily within agricultural lands. Forestland impacts are not proposed.

The Applicant proposes the implementation and maintenance of native pollinator-friendly plantings in selected locations in and around the solar fields. Plantings have been selected in consultation with the Ohio Pollinator Habitat Initiative. These features would enhance the visual appeal of the project, enrich local wildlife habitat, and benefit the local farming community. Pollinator plantings would: help reduce erosion; reduce fertilizer, herbicide, and pesticide use; discourage invasive species; and improve water quality. This would generally represent a reduced environmental impact when compared to the current land use of agricultural plant production. This is due to the elimination of frequent tilling, fertilizer and pesticide application, and increased plant diversity. To further assure that these benefits would be realized, Staff recommends that the Applicant take steps to prevent establishment and/or further propagation of noxious weeds identified in Ohio Adm.Code Chapter 901:5-37 during implementation of any pollinator-friendly plantings and vegetation reestablishment. Staff notes that vegetation reestablishment and weed control may take several growing seasons.

Recommended Findings

Staff recommends that the Board find that the Applicant has not determined the nature of the probable environmental impact for the proposed facility, and therefore does not comply with the requirements specified in R.C. 4906.10(A)(2).

Should the Board determine the Applicant has met the requirements specified in R.C. 4906.10(A)(2) subject to modification, Staff recommends the Board provide 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 four main criteria: transmission access to the bulk power transmission system, compatible agricultural land use, landowner support and market opportunity. Once the Applicant chose an interconnection point for the facility, the Applicant identified land use constraints such as ecological species of concern and specific parcels with landowner interest. Based upon public input, the Applicant then refined and reduced the final facility footprint to approximately 1,400 acres situated upon 2,300 acres of leased land. Specific avoidance constraints were applied to areas of concern such as utility easements, flood plains and forested areas. The Applicant also established specific buffers for existing infrastructure such as pipelines, identified oil wells, sewer mains and residences.

Minimizing Impacts

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.

No impacts are proposed to wetlands and significant impacts to surface waters are not anticipated.[78] 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 threatened and 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 ambient plus five dBA noise levels during facility operation. In the event the Board determines that a certificate should be granted and if the Applicant chooses an inverter or transformer model with a higher sound output, 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

78. Although no impacts are directly proposed to wetlands or surface waters, Staff reiterates that impact to an oil or gas well in the project area could have collateral damage and direct effects on wetlands and surface waters.

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 expects to enter into a Road Use Maintenance Agreement with the Allen and Auglaize County Engineers.

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. To reduce impacts in areas where an adjacent, non-participating parcel contains a residence with a direct line of sight to the project, in the event the Board determines that a certificate should be granted, Staff recommends a condition requiring a final landscape and lighting plan that addresses the potential aesthetic impacts of the facility. In the event the Board determines that a certificate should be granted, Staff would also recommend that the Applicant adjust its landscape and lighting plan to address potential aesthetic impacts to the traveling public, nearby communities, and recreationalists. In addition, in the event the Board determines that a certificate should be granted, Staff concurs with the use of the Applicant's suggested agricultural perimeter fencing to further minimize overall aesthetic concerns. Finally, in the event the Board determines that a certificate should be granted, Staff would also recommend a condition to provide more wildlife friendly access for small animals.

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

The Applicant has prepared a decommissioning plan to decommission the solar facility. The Applicant would provide 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. In the event the Board determines that a certificate should be granted, Staff has recommended a condition requiring that the draft decommissioning plan be updated to include improved financial assurance and a decommissioning cost estimate, among other things.

Failure to Demonstrate Minimization of Impacts

Oil and Gas Wells

The uncertainty of the location of historic oil and gas production wells in the project area has implications for the constructability and compatibility of the solar facility. Uncertainty originates from the electromagnetic transect analysis which found 76 individual anomalies plus 21 potential horizontal anomalies indicating the presence of metallic features in the project area, yet when 38 of those anomalies were hydro-excavated, the results only verified well components at one location. The remaining anomalies have not received hydro-excavation or additional analysis. The Applicant also intends to perform an aerial based survey of the project area to determine the location of oil and gas production wells.

The potential adverse environmental impact from excavation or construction activity that would cause damage to historic oil and gas wells is the potential release of petroleum or brine affecting vegetation, ground water, or surface water; odors; gas vapors; or oil leakage.[79] The location of the historic oil and gas wells needs to be determined so the Board is able to determine whether the Applicant's proposed locations for electrical infrastructure necessary for construction and operation of the solar facility have avoided, mitigated, or minimized any adverse environmental impacts. More specifically, the following electrical infrastructure would require excavation or underground construction work and has the potential to interfere with a historical oil and gas well location: solar array support piles, inverters, underground electric collection lines, overhead collection line support structures, 345 kV gen-tie transmission line support structures, meteorological towers, facility substation, and the onsite O&M facility. Therefore, Staff concludes that the Applicant has failed to demonstrate the minimization of adverse environmental impacts from construction of the proposed solar facility.

In the event the Board determines that a certificate should be granted, Staff recommends that the Applicant provide to Staff and file on the public docket an Engineering Constructability Report, which shall include but is not limited to the following: (a) name of the engineering firm, or technical expert writing the report; (b) an explanation of what oil/gas wells are and the potential adverse environmental impacts (such as: brine release affecting vegetation, odors, vapors, oil leakage) that could result from damage to an oil/gas well and why these require special construction consideration; (c) a statement on the Applicant's coordination and consultation effort with ODNR; (d) an Inventory and map of the oil/gas wells within the project area, including their status (i.e. plugged, not plugged); (e) a determination of whether that oil/gas well poses a risk to public health, safety, or the environment; (f) an explanation of construction techniques to be employed when working around the oil/gas well (e.g., avoidance, plugging, setbacks); (g) a revised project site layout map; (h) the UDP if other oil/gas wells are discovered during construction; (i) if the Applicant discovers the need to plug wells (prior to construction, during operation, or at the end of solar facility's life), include an analysis of the probable costs of construction or decommissioning; and (j) a cost estimate to properly plug and abandon an oil/gas well.

Cultural Resources

Additionally, the Applicant has also failed to provide sufficient analysis to determine the nature of (and to provide for) the mitigation of potential adverse impacts to cultural resources. Staff recommends that if the Board certificates the project, then the Applicant shall finalize a MOU with the OHPO to mitigate for and/or avoid cultural resources that are determined to experience potential adverse effects, in addition to a requirement that the Applicant not construct the facility in the 37 percent area of un-surveyed archaeological resources.

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, recreational resources, or wildlife. However, Staff opines that the Applicant has not established sufficient and/or compelling evidence to evaluate the geologic suitability of the proposed project. Additionally, Staff opines that the Applicant has not established the existence or

79. Birch Solar 1, LLC's Response to the Fifth Data Request from Staff of the OPSB, page 10 of Attachment 2.

absence of cultural resources of historic significance in the proposed project area. For these reasons, Staff recommends denial of the application. The Applicant is unable to determine the nature of the probable environmental impact of the proposed facility and thus is unable to conclude that the project represents the minimum adverse environmental impact.

Recommended Findings

Staff recommends that the Board find that the proposed facility does not represent the minimum adverse environmental impact, and therefore does not comply with the requirements specified in R.C. 4906.10(A)(3).

Should the Board determine that the Applicant has met the requirements specified in R.C. 4906.10(A)(3) subject to modification, Staff recommends the Board provide that any certificate issued by the Board for the proposed facility include the conditions specified in the section of this *Staff Report of Investigation* entitled Recommended Conditions of Certificate.

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

ELECTRIC GRID

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

The Applicant proposes to construct a solar-powered electric generation facility, capable of producing 300 MW. The proposed facility would interconnect from the project substation to a newly proposed gen-tie connection to the existing AEP Southwest Lima 345 kV substation. Energy would be injected to the BPS via AEP's existing Southwest Lima-Marysville 345kV circuit.

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.[80]

PJM Interconnection

The Applicant submitted a generation interconnection request for the proposed facility to PJM on September 20, 2019. PJM assigned the project queue position AF1-164.[81] The Applicant requested an energy injection of 300 MW, of which 195 MW could be available in the PJM capacity market.[82] PJM has completed the feasibility and system impact study (SIS) and is processing the facilities study.[83, 84]

PJM Network Impacts

PJM analyzed the proposed facility interconnected to the BPS. A 2023 summer peak power flow model was used to evaluate the regional reliability impacts. The studies revealed no reliability criteria violations. The below chart displays the results of the PJM SIS for the PJM regional footprint.

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80. PJM Interconnection, LLC is the regional transmission organization charged with planning for upgrades and administrating the generation queue for the regional transmission system in Ohio. Generators wanting to interconnect to the bulk electric transmission system located in the PJM control area are required to submit an interconnection application for review of system impacts. The interconnection process provides for the construction of expansions and upgrades of the PJM transmission system, as needed to maintain compliance with reliability criteria with the addition of generation in its footprint.

81. PJM Interconnection, "New Services Queue," Queue ID: AF1-164, accessed September 21, 2021, https://pjm.com/planning/services-requests/interconnection-queues.aspx.

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

83. PJM Interconnection, "New Services Queue," Feasibility Study for Queue ID: AF1-164, accessed September 21, 2021, https://pjm.com/pub/planning/project-queues/feas_docs/af1164_fea.pdf

84. PJM Interconnection, "New Services Queue," System Impact Study for Queue ID: AF1-164, accessed September 21, 2021, https://pjm.com/pub/planning/project-queues/impact_studies/af1164_imp.pdf .

PJM REGIONAL SYSTEM IMPACTS (Summer Peak)	
Generator Deliverability - System Normal & Single Contingency Outage	
Plant Output: Capacity Level – 195 MW	No problems identified

Category C and D - Multiple Contingency Outages	
Plant Output: 300 MW	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 no network impacts which may impact energy deliverability.

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)(5)

AIR, WATER, SOLID WASTE AND AVIATION

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

Air[85]

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 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[86]

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

The Applicant states the project as currently designed avoids all impacts to streams and wetlands but if final site were to change and wetland and/or stream impacts would be anticipated 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.

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

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

- Ohio EPA Water Quality Certification under Section 401 of the Clean Water Act.
- Ohio Isolated Wetland Permit

The Applicant will develop and implement an SPCC plan to avoid, minimize, and mitigate release of hazardous substances.

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[87]

Debris generated from construction activities would include items such as plastic, wood, cardboard, metal packing/packaging materials, construction scrap, and general refuse. Construction of the project would generate approximately 6,000 to 7,000 cubic yards of solid waste. The Applicant stated that all construction-related debris would be disposed of at an authorized solid waste disposal facility.

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 O&M 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[88]

The height of the tallest above ground structures would be the gen-tie support structures and lightning mast at the collection substation at from 70 to 120 feet tall.[89] Those heights are under the height requirement from the Federal Aviation Administration (FAA), pursuant to 14 CFR Part 77.9(a), for filing a Form 7460-1. The Applicant evaluated two points around the solar facility footprint through FAA's online notice criteria screening tool; results from the analysis indicated that notice criteria were not exceeded.

According to the Applicant, there are no public airports or heliports within five miles of the project area.[90] Staff confirmed through the FAA, that the closest public-use airport is the Lima Allen County (AOH) airport which is approximately seven miles from the proposed solar facility. However, Staff identified and found that the St. Rita's Medical Center has a helicopter pad, located

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

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

89. Birch Solar 1, LLC's Response to the Second Data Request from Staff of the OPSB, Data Request #14.

90. Application at page 54.

at the northwest corner of the intersection of Spring and Collett streets, that is 4.89 miles from the project area. Staff contacted St. Rita's Medical Center personnel who confirmed that the hospital has two helicopter pads, and that this helipad is a necessary backup location. Staff notes that Ohio Adm.Code 4906-4-07(E)(1) and 4906-5-08(E) generally require that the Applicant list all helicopter pads within five miles of the project area and provide confirmation that the owners of the airports (within that distance) have been notified of the proposed facility and any impacts it will have on airport operations. The Applicant has not provided notice of the proposed solar facility or associated 345 kV gen-tie transmission line to the owner of the helicopter pad, St. Rita's Medical Center.[91]

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

In the event the Board determines that a certificate should be granted, Staff recommends that the Applicant provide confirmation that the owner of the helicopter pad, St. Rita' Medical Center, has been notified of the proposed solar facility and 345 kV gen-tie transmission line and any impacts they will have on helicopter pad operations.

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.

91. Birch Solar 1, LLC's Response to the Eleventh Data Request from Staff of the OPSB, Data Request #1.

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

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

PUBLIC INTEREST, CONVENIENCE, AND NECESSITY

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

Safety

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

The Applicant intends to use warning signs, fencing, and gates to restrict access to the potential hazards within the solar project area. Additionally, the Applicant intends to design its facility with setbacks to non-participating property and public roads. Specifically, the Applicant would implement the following setbacks: 300 feet from the solar panels to a non-participating residence and 300 feet from solar panels to Breese Road and portions of Wapakoneta Road.

The Applicant indicated that it intends to restrict public access to the facility by enclosing the project area with fencing that would comply with NESC requirements. The Applicant has proposed fencing that would be made of seven feet tall cedar farm fencing with access through gates. The substation and interior portions of the facility will have six feet tall chain link fence topped with an additional one foot of barbed wire strand. Staff finds this approach is becoming common for Ohio solar facilities and has recommended that, in the event the Board determines that a certificate should be granted, except for the substation fencing, the solar panel perimeter fence type be both wildlife permeable and aesthetically fitting for a rural location.

Prior to construction, the Applicant also intends to develop and implement an emergency response plan and further consultation with potentially affected emergency response personnel. The Applicant would provide the plan to Staff at least 30 days prior to the preconstruction conference. The Applicant has provided an example emergency response plan, which Staff has reviewed.[93]

Electromagnetic Fields

Electric transmission lines, when energized, generate electromagnetic fields (EMF). Laboratory studies have failed to establish a strong correlation between exposure to EMF and effects on human health. There have been concerns, however, that EMF may have impacts on human health. The gen-tie transmission line is not within 100 feet of an occupied residence or institution, therefore calculation of the production of EMF during operation of the proposed gen-tie transmission line is not warranted per Ohio Adm.Code 4906-5-07(A)(2).[94] The Applicant states that the transmission facilities would be designed and installed according to the requirements of the NESC.

Public Interaction

The Applicant hosted virtual and in-person public informational meetings for the project. Attendees were provided the opportunity to listen to a presentation about the project, ask questions,

93. Birch Solar 1, LLC's Response to the Second Data Request from Staff of the OPSB, Data Request #17 and Attachment 2.

94. Birch Solar 1, LLC's Response to the Second Data Request from Staff of the OPSB, Data Request #12.

and provide feedback. According to the Applicant, attendees shared comments and questions on topics including health and safety, the payment in lieu of taxes (PILOT) program, decommissioning, environmental concerns, agricultural impacts, and impacts to the community.[95]

The Applicant has offered adjacent landowners a neighboring landowner financial benefit from $10,000 to $50,000 depending on proximity, for any home located within 500 feet of the project. The Applicant has also offered a home value agreement for the residences located closest to the project.[96]

The Applicant has drafted a complaint resolution plan to handle complaints during the construction and operation of the facility.[97] In the event the Board determines that a certificate should be granted, Staff recommends that a final version of this plan be filed on the docket no later than 30 days prior to the start of construction. The Applicant has committed to notify, by mail, affected property owners and tenants at least seven days prior to the start of construction. In the event the Board determines that a certificate should be granted, Staff recommends that this notice also be mailed to all residents, airports, schools, and libraries, located within one mile of the project area, parties to this case, county commissioners, township trustees, and emergency responders, as well as anyone who as requested updates regarding the project. Again, in the event the Board determines that a certificate should be granted, Staff also recommends that a similar notice be mailed to the same recipients at least seven days prior to the start of facility operation. The Applicant has committed to provide the OPSB with quarterly complaint summary reports through the first five years of operation. In the event the Board determines that a certificate should be granted, Staff recommends that these reports be filed on the public docket.

The Administrative Law Judge scheduled a public hearing and an adjudicatory hearing for this proceeding. The public hearing will be held on November 4, 2021, at 6:00 p.m., at the Allen County Fairgrounds Youth Activities Building, 2750 Harding Highway, Lima, Ohio 45804. The adjudicatory hearing is scheduled for November 30, 2021, at 10:00 a.m.

To date, the following entities have filed to intervene in this case:

- Board of County Commissioners of Auglaize County;
- Board of Township Trustees of Logan Township, Auglaize County;
- Against Birch Solar LLC;
- Ohio Farm Bureau Federation;
- Ryan and Michelle Kalnins;
- Allen Auglaize Coalition for Reasonable Energy;
- International Brotherhood of Electrical Workers, Local Union 32; and
- Board of Township Trustees of Shawnee Township, Allen County.

95. Application at Exhibit E.
96. Application at page 21.
97. Application at Exhibit H.

Public Comments

As of October 20, 2021, the OPSB has received 174 documents filed in the public comments of the case record. These documents include, among other things:

- Email correspondence from a Shawnee Township (Allen County) trustee filed on November 20, 2020 indicating that the Shawnee Township Board of Trustees unanimously passed a resolution opposing the project. Copies of Shawnee Township Resolution 91-20 and the Shawnee Township Comprehensive Plan were also filed in the public comments on November 20, 2020.

- A copy of a Logan Township (Auglaize County) resolution opposing the project, filed on November 20, 2020.

- Correspondence signed by the Allen County commissioners, engineer, auditor, and treasurer filed on June 30, 2021 and supplemented on July 6, 2021. The correspondence expresses the county officials' concerns regarding where energy from the project will be used, local zoning regulations and comprehensive land use planning, property valuation, decommissioning, drinking water resources, road use and maintenance, drainage, and the PILOT program.

Staff acknowledges the significance of the public input received to date – both in favor and in opposition to the proposed project. Of particular note, Staff is concerned that local elected officials voiced formal positions against the proposed project. Commenters in opposition to the project have expressed concerns with subjects including aesthetic and visual impacts, health and safety, impacts to agricultural land residential land uses, drainage and runoff, wildlife, property value, fencing and lighting, setbacks, drinking and surface water, decommissioning, and population density. Those supportive of the project, including the Lima/Allen County Chamber of Commerce and the Allen Auglaize Coalition for Reasonable Energy, have emphasized the importance of landowner property rights and the potential clean energy, economic, and revenue benefits of the project.

All public comments are available for Board members and the public to view online in the case record at http://dis.puc.state.oh.us. Many of these subjects are addressed through Staff's investigation, as detailed in sections of this report. Several subjects are described in more detail below.

To address concerns regarding possible property devaluation, the Applicant has provided an example of a relevant property value impact study in response to Staff's fourth data request (docketed April 12, 2021). The Applicant reviewed the study "Property Value Impact Study" performed by Patricia McGarr at Cohn Reznick LLP Valuation Advisory Services in 2018. The Applicant provided this study as an example as it best fits the Birch Solar Project's specifics in size and population density (i.e., 418 people per square mile vs. Birch Solar's proposed project with areas between 46 and 249 people per square mile). According to the study, no consistent negative impact occurred in nearby properties that could be attributed to the proximity to the adjacent solar facility. Given the speculative nature of property values and lack of statutory requirement to evaluate this topic, Staff does not opine on this issue.

Citizens have inquired as to whether panels contain hazardous materials or could the panels leach chemicals into the groundwater. The Applicant indicates that the solar modules do not contain

hazardous materials.[98] The Applicant does not expect impacts to runoff. Also, Staff notes that the existing private water wells would be outside the project's fence-line. The Applicant has committed for this project that it would use solar panels that are considered non-toxic and would be compliant with the US EPA's Toxicity Characteristics Leaching Procedure (TCLP) testing protocol.

The Board has received comments and concerns regarding the introduction of the project into an area of low population density and conversely locating the proposed solar facility adjacent to areas of higher population densities. Based upon the Applicant's collective data responses and Staff's examination of existing land uses, Staff opines that the proposed project would reinforce the continued low population density levels in the project area. Solar projects maintain the existing agricultural land's typical low population densities by physically limiting other types of concurrent land use development on the leased properties (with the notable exception of some continuing agricultural activities) and employing very few operations personnel to burden community services. This continuation of low population density also benefits the adjacent higher population density areas as increased high density land uses are not able to be physically adjacent and adverse aesthetic impacts are mitigated by landscape screening.

Effect of R.C. 4906.10(A)(2) and (A)(3) Review

Finally, in reviewing all eight prongs listed in R.C. 4906.10(A), Staff notes that the statutory obligation imposed on the Board is conjunctive – all criteria must be met – and therefore Staff's review of one criterion often affects its review of another criterion. In keeping with this concurrent criteria review, for the reasons stated above, the Applicant has not satisfied R.C. 4906.10(A)(2) and (3). It is unlikely that a major utility facility, unable to satisfy either the nature of the probable environmental impact, as described in 4906.10(A)(2), or that the facility represents the minimum adverse environmental impact, described in 4906.10(A)(3) will serve the public interest, convenience and necessity.

Recommended Findings

While Staff is concerned with the Applicant's satisfaction of the requirements specified in R.C. 4906.10(A)(6), pending the submission of information, analyses, and processes in this case, 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.

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

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

AGRICULTURAL DISTRICTS AND AGRICULTURAL LAND

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

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

Approximately 1,405 acres of agricultural land will be disturbed by the proposed project. The Applicant identified 15 parcels within the project area that are enrolled in the Agricultural District Program. Agricultural District parcels total 1,290 acres of the project area and the Facility will be located on 784 acres of that total. The Applicant states that the repurposed land could be restored for agricultural use and redesignated for Agricultural District land when the project is decommissioned. No Agricultural structures will be disturbed because of the project.

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

The Applicant utilized aerial imagery, the records of landowners, and field surveys to identify the locations of existing drain tiles within the project area. The Applicant has supplied a Drainage Tile Maintenance Plan with its OPSB application (Exhibit W). This report discusses avoidance, repair, and mitigation details of all known drain tile locations. The Applicant has committed to repair any drain tile found to be damaged by the project during the operational life of the project.

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

Recommended Findings

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

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

WATER CONSERVATION PRACTICE

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

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

Operation of the proposed facility would not require the use of significant amounts of water. Sanitary water discharge would occur only if an O&M building is included in the final design. The Applicant has stated that no appreciable amounts of water would be utilized in project operations.

Recommended Findings

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

V. RECOMMENDED CONDITIONS OF CERTIFICATE

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

However, should the Board choose to issue a certificate for the proposed facility, Staff recommends that a number of conditions become part of such certificate. These recommended conditions may be modified as a result of public or other input received subsequent to the issuance of this report. At this time, Staff recommends the following conditions:

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

(2) The Applicant shall conduct a preconstruction conference prior to the commencement of any construction activities. Staff, the Applicant, and representatives of the primary contractor and all subcontractors for the project shall attend the preconstruction conference. The conference shall include a presentation of the measures to be taken by the Applicant and contractors to ensure compliance with all conditions of the certificate, and discussion of the procedures for on-site investigations by Staff during construction. Prior to the conference, the Applicant shall provide a proposed conference agenda for Staff review and shall file a copy of the agenda on the case docket. The Applicant may conduct separate preconstruction conferences for each stage of construction.

(3) Within 60 days after the commencement of commercial operation, the Applicant shall submit to Staff a copy of the as-built specifications for the entire facility. If the Applicant demonstrates that good cause prevents it from submitting a copy of the as-built specifications for the entire facility within 60 days after commencement of commercial operation, it may request an extension of time for the filing of such as-built specifications. The Applicant shall use reasonable efforts to provide as-built drawings in both hard copy and as geographically referenced electronic data.

(4) Separate preconstruction conferences may be held for the different phases of civil construction and equipment installation. At least 30 days prior to each preconstruction conference, the Applicant shall submit to Staff, for review and acceptance, one set of detailed engineering drawings of the final project design for that phase of construction and mapping in the form of PDF, which the Applicant shall also file on the docket of this case, and geographically referenced data (such as shapefiles or KMZ files) based on final engineering drawings to confirm that the final design is in conformance with the certificate. Mapping shall include the limits of disturbance, permanent and temporary infrastructure locations, areas of vegetation removal and vegetative restoration as applicable, and specifically denote any adjustments made from the siting detailed in the application. The detailed engineering drawings of the final project design for each phase of construction shall account for geological features and include the identity of the registered professional engineer(s), structural engineer(s), or engineering firm(s), licensed to practice engineering in the state of Ohio who reviewed and approved the designs. All

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

(5) At least 30 days prior to the preconstruction conference, the Applicant shall provide the status (i.e. avoidance, mitigation measures, or capping) of each water well within the project area. The Applicant shall indicate to Staff whether the nearest solar components to any uncapped well within the project area meets or exceeds any applicable minimum isolation distances outlined in Ohio Adm.Code 3701-28-7 and denote the water well on construction drawings. The Applicant shall relocate the solar equipment at least 50 feet from a water well or seal and abandon the water well with landowner consent. The Applicant shall also verify that any abandoned water wells within the project area have been properly decommissioned.

(6) At least 30 days prior to each preconstruction conference, the Applicant shall submit to Staff, for review and acceptance, one set of detailed engineering drawings of the final project design for that phase of construction and mapping in the form of PDF, which the Applicant shall also file on the docket of this case, and geographically referenced data (such as shapefiles or KMZ files) based on final engineering drawings to confirm that the final design is in conformance with the certificate. Mapping shall include the limits of disturbance, and permanent and temporary infrastructure locations, and specifically denote any adjustments made from the siting detailed in the application. The detailed engineering drawings shall 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.

(7) At least 30 days prior to the preconstruction conference, the Applicant shall submit its Emergency Response Plan on the case docket for Staff for review an acceptance. That plan shall include a provision(s) to keep the appropriate representatives of Winona Lake Waterpark and Campground, and appropriate Shawnee Township officials informed of the status of any spills, significant panel damage, and associated repair/remediation schedule.

(8) 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.

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

(10) Prior to the commencement of construction activities in areas that require permits or authorizations by federal or state laws and regulations, the Applicant shall obtain and comply with such permits or authorizations. The Applicant shall provide copies of permits and authorizations, including all supporting documentation, to Staff within seven days of issuance or receipt by the Applicant and shall file such permits or authorizations on the public docket. The Applicant shall provide a schedule of construction activities and acquisition of corresponding permits for each activity at the preconstruction conference.

(11) 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.

(12) At least 30 days prior to the preconstruction conference, the Applicant shall file a copy of the grazing plan on the public docket for Staff review and acceptance. The grazing plan shall include: (a) a map of the area to be utilized for sheep grazing; (b) seed mix selected for the site; (c) times of year when sheep grazing would occur; (d) stocking rate; (e) how manure and deceased livestock would be managed; (f) and the Applicant's plan to comply with Condition 11 in relation to sheep grazing.

(13) 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.

(14) The facility shall be operated in such a way as to assure that no more than 300 megawatts would at any time be injected into the Bulk Power System.

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

(16) Prior to commencement of any construction, the Applicant shall prepare a landscape and lighting plan in consultation with a landscape architect licensed by the Ohio Landscape Architects Board that addresses the aesthetic and lighting impacts of the facility with an emphasis on any locations where an adjacent non-participating parcel contains a residence with a direct line of sight to the project area. The plan shall also address potential aesthetic impacts to nearby communities, the travelling public, and recreationalists by incorporating appropriate landscaping measures such as shrub plantings or enhanced pollinator plantings. The plan shall include measures such as fencing, vegetative screening, or good neighbor agreements. Unless alternative mitigation is agreed upon with the owner of any such adjacent, non-participating parcel containing a residence with a direct line of sight to the fence of the facility, the plan shall provide for the planting of vegetative screening designed by the landscape architect to enhance the view from the residence and be in harmony with the existing vegetation and viewshed in the area. The Applicant shall maintain vegetative screening for the life of the facility and the Applicant shall replace any failed plantings so that, after five years, at least 90 percent of the vegetation has survived. The Applicant shall maintain all fencing along the perimeter of the project in good repair for the term of the project and shall promptly repair any damage as needed. Lights shall be motion-activated and designed to narrowly focus light inward toward the facility, such as being downward-facing and/or fitted with side shields. The Applicant

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

(17) Construction in upland sandpiper preferred nesting habitat types shall be avoided during the species' nesting period of April 15 through July 31 unless coordination by the Applicant with the ODNR allows a different course of action during that period. Absent coordination with the ODNR that allows a different course of action, mapping of these habitat areas shall be provided to the construction contractor along with instructions to avoid these areas during the restricted dates.

(18) The Applicant shall have an environmental specialist on site during construction activities that may affect sensitive areas, to be mutually agreed upon by the Applicant and Staff. Sensitive areas which would be impacted during construction shall be identified on a map provided to Staff, and shall include wetlands, 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 mutually agreed upon by Staff and the Applicant shall be authorized to report any issues simultaneously to Staff and the Applicant. To allow time for the Applicant and Staff to respond to any reported issues, the environmental specialist shall have authority to stop construction activities for up to 48 hours if the construction activities are creating unforeseen environmental impacts in the sensitive areas identified on the map.

(19) The Applicant shall contact Staff, the ODNR, and the USFWS within 24 hours if state or federal listed species are encountered during construction activities. Construction activities that could adversely impact the identified plants or animals shall be immediately halted until an appropriate course of action has been agreed upon by the Applicant, Staff and the appropriate agencies.

(20) The Applicant shall conduct no in-water work in perennial streams from April 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat, unless coordination efforts with the Ohio Department of Natural Resources allows a different course of action.

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

(22) The Applicant shall take steps to prevent establishment and/or further propagation of noxious weeds identified in Ohio Adm. Code Chapter 901:5-37 during implementation of any pollinator-friendly plantings and other revegetation. The Applicant shall provide annual proof of weed control for the first four years of operation, with the goal of weed eradication significantly completed by year three of operation.

(23) 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 8. The Applicant shall avoid impacts to these species and explain how impacts would be avoided during construction.

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

(25) The Applicant shall obtain transportation permits prior to the commencement of construction activities that require them. The Applicant shall coordinate with the appropriate authority regarding any temporary road closures, road use agreements, driveway permits, lane closures, road access restrictions, and traffic control necessary for construction and operation of the proposed facility. 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.

(26) 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 traffic plan submitted to Staff prior to the preconstruction conference for review and confirmation by Staff that it complies with this condition. The Applicant shall update the traffic plan with any transportation permits received after the pre-construction conference.

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

(28) 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. HDD operations if started during general construction activities hours may continue until the completion of the HDD activity. 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.

(29) 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.

(30) The Applicant shall avoid, where possible, or minimize to the extent practicable, any damage to functioning field tile drainage systems and soils resulting from the construction, operation, and/or maintenance of the facility in agricultural areas. Damaged field tile systems shall be promptly repaired or rerouted to at least original conditions or modern equivalent at the Applicant's expense to ensure proper drainage. However, if the affected landowner agrees to not having the damaged field tile system repaired, they may do so only if the field tile systems of adjacent landowners remain unaffected by the non-repair of the landowner's field tile system.

(31) The Applicant shall ensure that nearby parcels are protected from unwanted drainage problems due to construction and operation of the project. The Applicant shall ensure this by either 1) documenting benchmark conditions of surface and subsurface drainage systems prior to construction, including the location of laterals, mains, grassed waterways, and county maintenance/repair ditches. The Applicant will make efforts to conduct a perimeter dig utilizing a tile search trench and consult with owners of all parcels adjacent to the property, the county soil and water conservation district, and the county to request drainage system information over those parcels. The Applicant shall consult with the county engineer for tile located in a county maintenance/repair ditch, or 2) locate and replace all field tile drainage systems, or 3) agree to compensate parcels owners affected by damage to functioning field tile drainage systems and soils resulting from the

construction, operation, and/or maintenance of the facility in agricultural areas for damage to crops or other agricultural activities.

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

(33) The Applicant shall not construct within the 37 percent of un-surveyed project land identified in its Programmatic Agreement with the OHPO (signed on February 22, 2021) where potential archaeological resources remain to be surveyed.

(34) At least 30 days prior to the preconstruction conference, the results of the oil and gas well location survey shall be presented to both the ODNR Division of Oil and Gas and to Staff for review and comment.

(35) Separate preconstruction conferences may be held for the different phases of civil construction and equipment installation. At least 30 days prior to each preconstruction conference, the Applicant shall submit to Staff, for review and acceptance, one set of detailed engineering drawings of the final project design for that phase of construction and mapping in the form of PDF, which the Applicant shall also file on the docket of this case, and geographically referenced data (such as shapefiles or KMZ files) based on final engineering drawings to confirm that the final design is in conformance with the certificate. Mapping shall include the limits of disturbance, permanent and temporary infrastructure locations, areas of vegetation removal and vegetative restoration as applicable, and specifically denote any adjustments made from the siting detailed in the application. The detailed engineering drawings of the final project design for each phase of construction shall account for geological features and include the identity of the registered professional engineer(s), structural engineer(s), or engineering firm(s), licensed to practice engineering in the state of Ohio who reviewed and approved the designs. All applicable geotechnical study results shall be included in the submission of the final project design to Staff.

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

(37) At least 30 days prior to the preconstruction conference, the Applicant shall provide Staff, for review and acceptance, the final Unanticipated Discovery Plan. This shall include detailed plans for remediation of any oil and gas wells within the project area.

(38) All facility components shall be setback a minimum of 50 feet from any oil and gas well or oil and gas well related features.

(39) Any well identified as an unplugged idle or orphan shall be managed in accordance with the applicable laws established by the ODNR Division of Oil and Gas. Construction at an unplugged idle or orphan well site must include set back considerations that would

allow well access by standard service equipment, and be at least 14 feet wide leading to the well with the setback established in Condition 4 above.

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

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

(42) At the time of solar panel end of life and if the Applicant is unable to recycle the panels, retired panels marked for disposal shall be sent to an engineered landfill with various barriers and methods designed to prevent leaching of materials into soils and groundwater.

(43) At least 30 days prior to the preconstruction conference, the Applicant shall submit proof that the owners of the helicopter pad located at the northwest corner of the intersection of Spring and Collett Streets in Lima, Ohio have been notified of the proposed solar facility and any impacts that the solar facility and 345 kV gen-tie transmission line will have on the helicopter pad operations.

(44) At least 60 days prior to the preconstruction conference, the Applicant shall provide to Staff and file on the public docket an Engineering Constructability Report, which shall include but is not limited to the following:

a. Name of the engineering firm, or technical expert writing the report;

b. An explanation of what oil/gas wells are and the potential adverse environmental impacts (such as: brine release affecting vegetation, odors, vapors, oil leakage) that could result from damage to an oil/gas well and why these require special construction consideration;

c. A statement on the Applicant's coordination and consultation effort with Ohio Department of Natural Resources (ODNR);

d. An Inventory and map of the oil/gas wells within the project area, including their status (i.e. plugged, not plugged);

e. A determination of whether that oil/gas well poses a risk to public health, safety, or the environment;

f. An explanation of construction techniques to be employed when working around the oil/gas well (e.g., avoidance, plugging, setbacks);

g. Include a revised (Project Site Layout Map)

h. The Unanticipated Discovery Plan to describe the plan if other oil/gas wells are discovered during construction;

i. If the Applicant discovers the need to plug wells (prior to construction, during operation, or at the end of solar facility's life), include an analysis of the probable costs of construction or decommissioning; and

j. A cost estimate to properly plug and abandon an oil/gas well.

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