Staff Report of Investigation

Angelina Solar Farm
Angelina Solar I, LLC

Case No. 18-1579-EL-BGN

April 15, 2019

Ohio | Power Siting Board

Mike DeWine, Governor | **Sam Randazzo,** Chairman

In the Matter of the Application of Angelina Solar I, LLC for a Certificate of Environmental Compatibility and Public Need.	**)))**	**Case No. 18-1579-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 Angelina Solar I, LLC for a Certificate of Environmental Compatibility and Public Need	**)))**	**Case No. 18-1579-EL-BGN**

Chairman, Public Utilities Commission
Director, Department of Agriculture
Director, Development Services Agency
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 Development Services Agency, the Ohio Department of Natural Resources, and the Ohio Department of Agriculture. In addition, Staff coordinated with the Ohio Department of Transportation, the Ohio Historic Preservation Office, the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, and the U.S. Coast Guard.

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 and 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,

Tamara S. Turkenton
Director, Rates and Analysis
Public Utilities Commission of Ohio

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I. POWERS AND DUTIES

OHIO POWER SITING BOARD

The authority of the Ohio Power Siting Board (Board) is prescribed by Ohio Revised Code (R.C.) Chapter 4906. R.C. 4906.03 authorizes the Board to issue certificates of environmental compatibility and public need for the construction, operation, and maintenance of major utility facilities defined in R.C. 4906.01. Included within this definition of major utility facilities are: electric generating plants and associated facilities designed for, or capable of, operation at 50 megawatts (MW) or more; electric transmission lines and associated facilities of a design capacity of 100 kilovolts (kV) or more; and gas pipelines greater than 500 feet in length and more than nine inches in outside diameter, and associated facilities, designed for transporting gas at a maximum allowable operating pressure in excess of 125 pounds per square inch. In addition, pursuant to R.C. 4906.20, the Board authority applies to economically significant wind farms, defined in R.C. 4906.13(A) as wind turbines and associated facilities with a single interconnection to the electrical grid and designed for, or capable of, operation at an aggregate capacity of 5 MW or greater but less than 50 MW.

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

NATURE OF INVESTIGATION

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

Application Procedures

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

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

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).

official filing date of the completed application.[4] At the public hearing, any person may provide written or oral testimony and may be examined by the parties.[5]

Staff Investigation and Report

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

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

Board Decision

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

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

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4. R.C. 4906.07(A) and Ohio Adm.Code 4906-3-08.
5. R.C. 4906.08(C).
6. R.C. 4906.07.
7. Ohio Adm.Code 4906-3-06(C).
8. R.C. 4906.07(C) and 4906.10.
9. R.C. 4906.09 and 4906.12.
10. R.C. 4906.10(A).
11. R.C. 4906.10.
12. R.C. 4906.11.
13. R.C. 4906.10(C).
14. R.C. 4903.10 and 4906.12.
15. R.C. 4903.11, 4903.12, and 4906.12.

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 sections 1501.33, 1501.34, and 4561.32 of the Revised Code. In determining whether the facility will comply with all rules and standards adopted under section 4561.32 of the Revised Code, the board shall consult with the office of aviation of the division of multi-modal planning and programs of the department of transportation under section 4561.341 of the Revised Code;
>
> (6) That the facility will serve the public interest, convenience, and necessity;
>
> (7) In addition to the provisions contained in divisions (A)(1) to (6) of this section and rules adopted under those divisions, what its impact will be on the viability as agricultural land of any land in an existing agricultural district established under Chapter 929 of the Revised Code that is located within the site and alternative site of the proposed major utility facility. Rules adopted to evaluate impact under division (A)(7) of this section shall not require the compilation, creation, submission, or production of any information, document, or other data pertaining to land not located within the site and alternative site; and
>
> (8) That the facility incorporates maximum feasible water conservation practices as determined by the board, considering available technology and the nature and economics of the various alternatives.

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II. APPLICATION

APPLICANT

Angelina Solar I, LLC (Applicant) is owned by Blue Planet Renewable Energy, LLC, which is a joint venture partnership between MAP Energy, Inc. and Open Road Renewables, LLC.

MAP Energy, Inc. is a private renewable energy investment firm with a portfolio consisting of over 6,000 MWs of operating wind and solar projects. Open Road Renewables, LLC develops utility scale solar projects and is responsible for over 565 MWs of renewable energy projects currently operating or under construction. Staff has found that these developers currently have three other projects in various development stages with the Board (Alamo Solar, Hillcrest Solar, and Willowbrook Solar).

MAP and Open Road have collaborated on a variety of utility-scale renewable energy projects over the past eight years. The Applicant intends to select another entity to construct and operate the solar farm through a competitive process.

HISTORY OF THE APPLICATION

On October 22, 2018 (and corrected on October 29, 2018), the Applicant filed a Pre-Application Notification Letter regarding the proposed solar electric generation project.

On November 15, 2018, the Applicant held a public informational meeting regarding the proposed solar electric generating project.

On December 3, 2018, the Applicant filed the Angelina Solar Farm application.

Also, on December 3, 2018, the Applicant filed motion for waivers from the requirements to submit the manufacturers' safety manuals or similar documents, to submit a description of its plan for test borings, request to delay submittal of the System Impact Study, and request to reduce the size of the study area regarding the impact on landmarks.

Also, on December 3, 2018, the Applicant filed a motion for protective order to keep portions of its application confidential.

On January 17, 2019, the Administrative Law Judge (ALJ) granted the Applicant's motions for waivers and motion for protective order. The ALJ clarified that the Applicant must provide such plans for test borings at least 30 days prior to the commencement of the field work and after the Project's layout has been finalized.

On February 1, 2019, the Director of the Rates and Analysis Department of the PUCO, issued a letter of compliance regarding the application to the Applicant.

On March 11, 2019, the Preble County Commissioners filed a notice of intervention.

On March 13, 2019, the Preble County Planning Commission filed a notice of intervention.

On March 13, 2019, the Dixon Township Board of Trustees filed a motion to intervene.

On March 13, 2019, the Israel Township Board of Trustees filed a motion to intervene.

On March 13, 2019, the Preble Soil & Water Conservation District filed a motion to intervene.

On March 13, 2019, the Preble County Engineer, Kyle Cross, filed a motion to intervene.

On March 21, 2019, the Eaton Community School District filed a motion to intervene.

On March 26, 2019, the Ohio Farm Bureau Federation filed a motion to intervene.

On March 29, 2019, the Concerned Citizens of Preble County LLC, Mr. Robert Black, Ms. Marja Brandly, Campbell Brandly Farms LLC, Mr. Michael Irwin, Mr. Kevin Jackson, Ms. Tina Jackson, Vonderhaar Family ARC LLC, and Vonderhaar Farms Inc. filed petitions for leave to intervene.

A local public hearing has been scheduled for April 30, 2019 at 6:00 p.m. at Eaton Fire Division Station #2, 391 West Lexington Road, Eaton, Ohio 45320. The adjudicatory hearing will commence on May 14, 2019, at 10:00 a.m., on the 11th floor in Hearing Room 11-D, at the offices of the PUCO, 180 East Broad Street, Columbus, Ohio, 43215.

This summary of the history of the application does not include every filing in case number 18-1579-EL-BGN. The docketing record for this case, which lists all documents filed to date, can be found online at http://dis.puc.state.oh.us.

PROJECT DESCRIPTION

The Applicant intends to build the Angelina Solar Farm as an 80 MW solar-powered generating facility in Israel and Dixon Townships, Preble County, Ohio. The project would consist of large arrays of ground-mounted photovoltaic (PV) modules, commonly referred to as solar panels. The project also includes associated support facilities, such as access roads, up to four meteorological stations, pyranometers, buried electrical collection lines, inverter pads, and a substation. The project would occupy up to 827 acres within a 934 acre project area. The proposed facility layout is shown on the map in this report.

Solar Panels and Racking

The solar panels would be attached to metal racking. The racking would include piles driven or screw rotated into the ground. The solar panel arrays would be grouped in large clusters that would be fenced, with locked gates at all entrances. For equipment security and public safety, the fencing would be topped with barbed wire.

The project's arrays may use either of two types of racking: fixed-tilt or tracking. Fixed-tilt racking is stationary and would align the solar panel arrays to the south. Tracking arrays would consist of racking placed in a north-south direction and would be equipped with electric motors that would slowly rotate the panels throughout the day to keep them perpendicular to the direction of sunlight. Tracking arrays would face east at sunrise, rotate westward during the day, face west at sunset, and then reset to the east.

The Applicant has not yet selected the final solar panel technology to be utilized for this project, but has limited its consideration to two commonly used solar panel technologies that are substantially similar in design: crystalline or thin-film. Both racking systems would accommodate either crystalline or thin-film solar panel modules. According to the Applicant, crystalline modules are more efficient but cost more to manufacture than thin-film modules. Both solar panel technologies are comparable, and the Applicant plans to submit the final project designs to the Board Staff for review prior to construction.

The Applicant has not selected the specific module vendor, but indicated that it intends to use a manufacturer that has the capability and experience to provide approximately 213,333 to 320,000 modules for this project. The Applicant estimates the project would occupy a maximum of 827 acres of the project area.

DC Collector System, Inverters, and AC Collector System

The Applicant would install an underground collector system made up of a network of electric and communication lines that would transmit the electric power from the solar arrays to a central location. The Applicant proposes to install up to 10.6 miles of buried cable. Installation of the cable would require an approximately 20-foot wide temporary work area along its entire length.

The electricity from the solar panels would be generated in direct current (DC). DC power from the solar panels would be delivered to circuits, which would be routed through cable trays, then to combiner boxes. Power from the combiner boxes would be transmitted to groups of components, collectively called an inverter, which would include a DC-to-alternating current (AC) inverter, a step-up transformer that would increase the voltage to 34.5 kV, and a cabinet containing power control electronics. The facility would include approximately 40 inverters.

Each inverter would deliver AC power to a common substation through a system of buried electric lines and associated communication lines. The Applicant intends for each portion of the AC collector system to originate in one of the solar fields and terminate at the substation. The Applicant has committed that those portions of the AC collector system outside the fenced solar fields and fenced substation would be buried at least 36 inches below grade. The Applicant stated that it will use warning tape and register the underground facilities with Ohio Utilities Protection Service.

Substation and Transmission Line

The facility substation would occupy approximately three acres of land adjacent the existing AEP College Corner substation. The major components of the Applicant's substation would be collection line feeders and breakers, a 34.5 kV bus, a main power transformer to step up the voltage to 138 kV, a high-voltage breaker, metering/relaying transformers, disconnect switches, an equipment enclosure containing power control electronics, and a lightning mast.

A 138 kV electric transmission line, approximately 700 feet in length, would connect the project substation to the existing AEP College Corner substation. This gen-tie electric transmission line and the tap would be filed separately with the Board at a later date.

Roads

The Applicant proposes use up to 6.2 miles of access roads for construction, operation, and maintenance of the solar farm. The access roads would consist of aggregate material and/or grass. The access roads would be up to 25 feet wide during construction and then reduced to 16 feet wide during operation.

Laydown Areas

The Applicant proposes up to approximately 15 acres of temporary equipment laydown area within the project area, in one to five acre blocks. Approximately three acres of the laydown areas would be maintained as permanent gravel-covered areas for vehicle parking and equipment storage.

Meteorological Stations

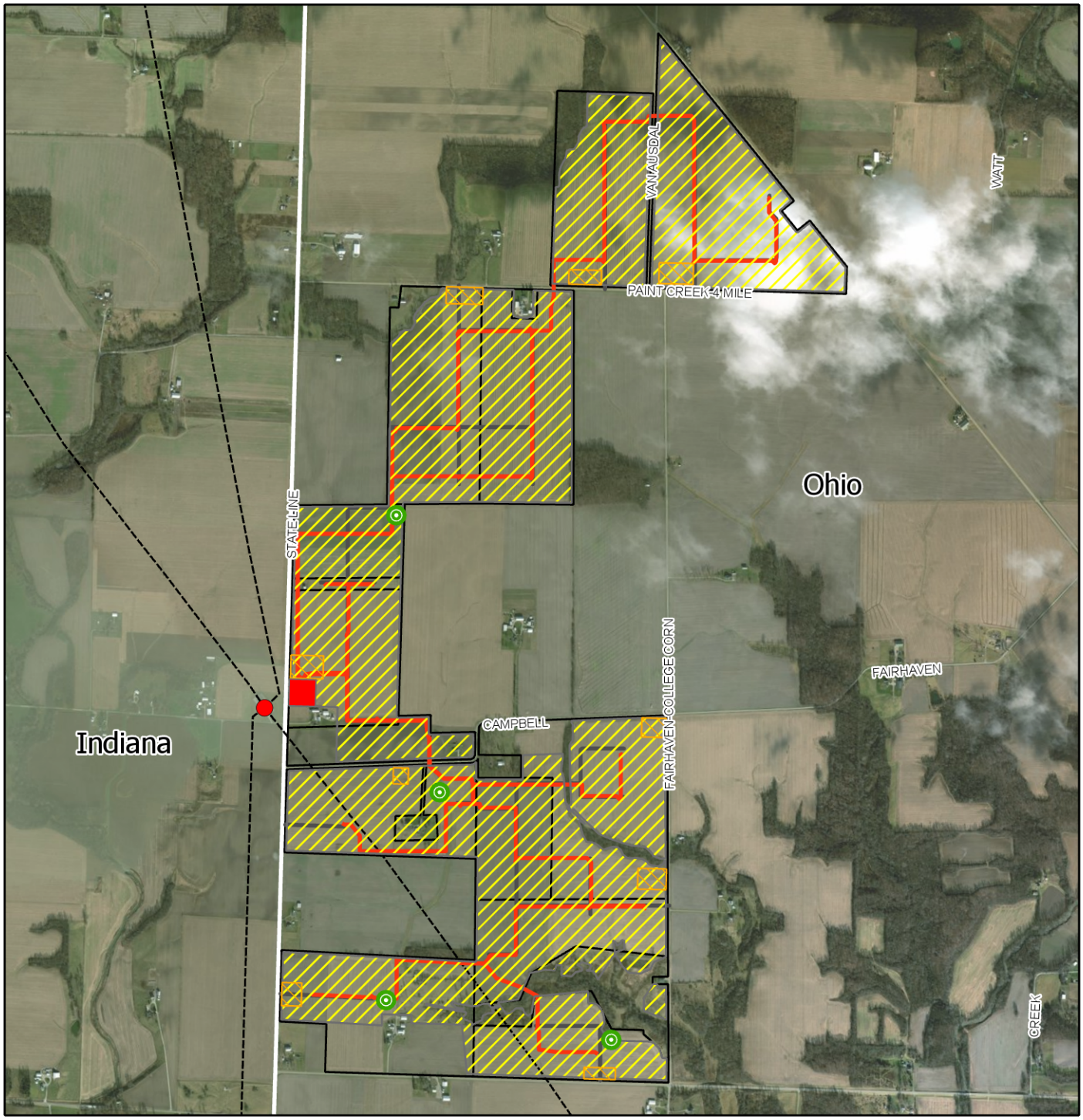
The project would include up to four meteorological stations that would be up to 15 feet tall, and enclosed with a gated fence. The meteorological stations would include pyranometers, which measure the solar resource. Meteorological stations would typically include an anemometer, a wind vane, a barometer, a rain gauge, a thermometer, and communications equipment.

Lighting

The project would include permanent lighting only at gates, inverters, and the collection yard. All lights would be shielded, downward- or inward-facing and motion-activated. There would be no permanent lighting associated with the solar panels themselves, the access roads, or any other components of the project.

Project Schedule

The Applicant expects to finalize design and commence construction of the solar farm in the fourth quarter of 2019, and complete construction in the fourth quarter of 2020. The Applicant stated that postponement of the start of construction could affect the project's eligibility for certain financial incentives, such as the full value of the federal Investment Tax Credit.



Preble County

N

0 1,250 2,500

Feet

1:24,000

NAD 83 SP Ohio South (Feet)

- Pyranometer
- POI Substation
- Collection Line
- Access Road
- Transmission Line
- Substation
- Laydown Yard
- Potential Solar Array
- Project Area
- State Boundary

Overview Map

18-1579-EL-BGN

Angelina Solar Electric Generating Facility

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.

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III. CONSIDERATIONS AND RECOMMENDED FINDINGS

In the Matter of the Application of Angelina Solar I, LLC for a Certificate for a Certificate of Environmental Compatibility and Public Need to Construct an Electric Generation Facility in Preble County, Ohio, Staff submits the following considerations and recommended findings pursuant to R.C. 4906.07(C) and 4906.10(A).

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

BASIS OF NEED

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

Recommended Findings

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

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

NATURE OF PROBABLE ENVIRONMENTAL IMPACT

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

Socioeconomic Impacts

Land Use and Planning

Preble County has adopted a land use plan which includes support for the agricultural economy, and preservation of agricultural land from encroachment of urban-type uses.

The proposed solar farm would not interfere with surrounding agricultural land use and the development of the project could preserve land for future viable farming operations. After the life cycle of this project, once the panels and posts are removed, the majority of land could be returned to farming, or developed for other uses.

The project is located in Preble County in Dixon and Israel Townships, bounded to the west by the Ohio/Indiana border. It is located 4 miles north of College Corner, Ohio. The Applicant proposes to construct the facility on up to 827 acres. Of the land acreage for the project, the majority is presently used for agricultural production. There are smaller segments presently utilized as rural residential (at the time of this report the nearest non-participating residence was 50 feet from a solar panel) or containing woodlots and farm buildings. The facility will consist of solar arrays, buried electric collection lines, meteorological stations, and inverters, and a project substation.

The majority of land use to be utilized for the project is agricultural in nature. There are no agricultural districts within the Project Area. The project footprint does not include any major population centers or industries other than farming.

Staff recommends that the Applicant limit the hours of construction and have a complaint resolution plan in place to address potential construction and operational related concerns from nearby residents. Staff recommends that the Applicant screen the facility from adjacent residences with a view of the facility by providing an opaque perimeter fence, as well as adding vegetative landscaping where feasible.

There are no national scenic trails, national wildlife refuges, or state wildlife management areas located within 5 miles of the project area.

Cultural Resources

The Applicant enlisted a consultant to complete a cultural resources record review for the area within two miles of the project boundary. The Applicant conducted a literature review and an evaluation of cultural resource surveys previously performed in the area. This literature review was based on data provided by the Ohio Historic Preservation Office's (OHPO) online GIS mapping, as well as other map collections and resources. The consultant found that two prior cultural resource surveys were performed within two miles of the project, one of which overlaps the project area.

From the literature review, the cultural resources consultant determined that there is one National Register of Historic Places (NRHP) listed property within 2 miles of the project boundary (located 1.2 miles east). There were 30 Ohio Historic Inventory (OHI) structures that were identified within the two mile radius of the project area, none of which are located in the project area, with the closest one being an estimated 0.9 miles from the project area. It should be noted that the Applicant also identified historic sites and structures in Indiana within of the two mile project area.

The Applicant's consultant also identified that no Ohio Archaeological Inventory (OAI) sites were located within the two mile radius of the project boundary. There are five mapped cemeteries within two miles of the project area, one of which is within one mile. This cemetery is 0.1 mile from the project boundary.

The Applicant's cultural resources consultant states that there would be no anticipated direct physical impacts to known cultural resources as a result of this project. However, because there would likely be indirect visual impacts to cultural resources within 2 miles, and to verify that the site does not contain unknown cultural resources, a Phase I cultural resource survey should be performed, including an archeological survey limited to areas of significant ground disturbance, and a reconnaissance survey for architectural resources in the 2 mile viewshed should be developed, in coordination with OHPO and OPSB Staff.

Aesthetics

The Applicant included a Visual Resource Assessment (VRA), with the project application. The VRA utilized a panel component height for the project at a maximum height of 14 feet.[16] Based on the results of the Applicant's VRA, the views of the solar panels would be screened in 36.7% of the 5-mile study area based upon topography alone, and 83.2% from topography, vegetation and existing structures. The VRA states that the project would not likely be visible at locations beyond 2.5 miles of the project. [17]

The VRA further notes that the project would be predominately visible within 0.5 mile.[18] Due to the potential impacts on non-participating residences surrounding the facility, Staff recommends the Applicant incorporate a landscape and aesthetics plan to reduce impacts in areas where an adjacent non-participating parcel contains a residence with a direct line of sight to the project area.

The Applicant has stated that it may be appropriate for vegetative screening to be employed in some areas of the project, including the use of shrubs, native hedges, low-growing vegetation, and native pollinator habitat. The Applicant stated that this will come into consideration when developing a landscape plan for the project.

16. Application at Exhibit I, "Visual Resource Assessment" at p. 6.
17. Application at Exhibit I, "Visual Resource Assessment" at p. 36.
18. Application at Exhibit I, "Visual Resource Assessment" at p. 40.

Economics

The Applicant states that it would own all of the assets that would comprise the project or that would be used to construct, own, and operate the project. The Applicant currently owns all of the land development rights for 90 percent of the project area and rights of access to the remainder. The Applicant stated that it would own the facility but plans to hire a third party for construction and operation.

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

Total cost comparisons between the proposed facility and other comparable facilities have been provided in the application. The Applicant referenced Lazard's *Levelized Cost of Energy Analysis* (2016) which states that the average capital costs for utility scale solar PV projects range between $1,300 to $1,450 per kW and that Applicant's costs fall in this range. Staff reviewed a later version of Lazard's *Levelized Cost of Energy Analysis* and found a downward trend in these capital costs. Also, recent solar PV projects of comparable scale undertaken by the Applicant's partners report similar capital costs. Staff verified the Applicant's assertion that the reported average cost of the similar facilities is not substantially different from Applicant's estimated costs for the proposed facility. Also, Staff verified that the reported average cost of similar facilities is not substantially different from Applicant's estimated costs for the proposed facility.

Operation and maintenance expense comparisons between the proposed facility and other comparable facilities were provided in the application. The Applicant referenced a 2015 report published by Sandia National Laboratories that stated that, on average, utility scale solar operations reported O&M costs ranging between $20.50/kW for fixed-tilt crystalline silicon facilities to $21.50/kW for facilities using thin film solar modules.

The Applicant provided its estimates of the cost of delays in permitting and construction of the proposed facility, although the estimated costs were filed under seal. The Applicant characterized permitting stage delay costs as being associated with the time value of delayed revenue payments. The Applicant also stated that delays could prevent the project from meeting federal Investment Tax Credit deadlines which could result in the loss of those benefits to the Applicant. Additionally, delays could result in contract penalties to the extent that they would prevent the Applicant from meeting delivery deadlines under a potential power purchase agreement. The Applicant's characterization of its estimated costs of delays appears reasonable to Staff.

Angelina Solar I, LLC retained the services of the Economics Center of the University of Cincinnati to report on the economic impact of the Angelina Solar Farm project.[19] The Economics Center used the National Renewable Energy Laboratory's (NREL) Jobs and Economic Development Impact (JEDI) model, as well as data from the Ohio Department of Taxation, to estimate the economic impact of the construction and operation of the solar farm. Staff verified that the methodology of the JEDI model was appropriate for this study and independently

19. The Economics Center has been a part of the University of Cincinnati since 1977 and provides economic impact analysis for non-profit organizations, government agencies, and corporate stakeholders.

evaluated the impacts observed by the Applicant using a solar PV JEDI model from the NREL website. Staff believes that the estimated impacts reported by the Applicant are reasonable.

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

Jobs

- 352 new construction related job impacts for Preble County
- 13 long-term operational jobs for Preble County
- Between 518 and 1,076 construction related jobs for the State of Ohio
- Between 19 and 22 long-term operational jobs for the state of Ohio

Earnings

- $18.4 million in local earnings during construction for Preble County
- Between $25.4 million and $55.6 million in local earnings during construction for the State of Ohio
- $630,000 in annual earnings during facility operations for Preble County
- Between $857,000 and $1 million in annual earnings during facility operations for the State of Ohio

Output

- $24.8 million in local output during construction for Preble County
- Between $50.2 million and $161.8 million in local output during construction for the State of Ohio
- $786,000 in local annual output during facility operations for Preble County
- Between $1.5 million and $2.3 million in local annual output during facility operation for the State of Ohio.

The Angelina Solar Farm project would generate an estimated $560,000 annually for the Preble County taxing district, Eaton Community Schools, as well as Israel and Dixon Townships. This estimate is based on a Payment in Lieu of Taxes (PILOT) plan in which Open Road Renewables would pay $7000/MW annually for an 80MW facility. The Applicant states that this revenue would be distributed pro rata to the Preble County taxing district, Eaton Community Schools, as well as Israel and Dixon Townships.

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 could be a brief reduction in visibility, afterimage, a safety risk to pilots, or a perceived nuisance to neighbors.

The Applicant stated the project will have a low reflectivity. The Applicant may also use an anti-glare coating and a tracking array system, both of which would reduce the potential for glare. Staff

notes that aesthetic impact mitigation measures that include native vegetative plantings would also further reduce potential impacts as part of a landscape and lighting plan.

Decommissioning

The Applicant holds land rights to and expects to operate the solar farm for up to 40 years. The Applicant states it will prepare a comprehensive decommissioning plan for the Board. The plan will specify the responsible parties, outline a 9 month or less decommissioning schedule, outline projected decommissioning/restoration costs, require restoration of the project area, and require proper disposal of all project components.

The Applicant will also provide for financial security to ensure that funds are available for decommissioning/land-restoration. The Applicant states that prior to construction it will retain an independent and registered professional engineer to calculate the net decommissioning costs to decommission the solar farm as outlined in the plan.[20] The cost estimates will be recalculated approximately every five years over the life of the project. The applicant will post a surety bond or similar financial assurance instrument in the amount of the net decommissioning cost.

All Staff recommendations for the requirements discussed in this section of the *Staff Report of Investigation* are included under the **Socioeconomic Conditions** heading of the Recommended Conditions of Certificate section.

Ecological Impacts

Public and Private Water Supply

The Applicant does not anticipate significant adverse impacts to public or private water supplies. Solar energy facilities are constructed and generate electricity without impacts to surface or groundwater. While the homes within the project area reside in a rural section of Preble County and derives its water source from private groundwater wells, there are no Source Water Protection Areas (SWPAs) located within the project area.

There is one Groundwater Protection Area located 7 miles downstream, outside of the project area. The Applicant would not impact the private groundwater wells because the construction in the project area would not likely extend beyond 10 feet below the surface. Constructing solar energy facilities does not generate any wastewater discharges. The Applicant review of SWPA rules and regulations indicates that the construction of the solar energy facility would not be considered an activity that would be restricted within either a surface water or groundwater SWPA.

Geology and Seismology

Preble County is located within the Till Plains Section of the Central Lowlands Physiographic Province. Rocks that outcrop in the county belong to relatively flat-lying sedimentary rocks of Ordovician and Silurian age consisting of limestone, dolomite, and calcareous shales.

The surface topography within the project area is Wisconsin-age glacial till, glacial outwash, and loess of variable thickness. Karst limestone occurs principally south of the project area. The Applicant did not identify any karst features within the proposed project area.

20. Application at p. 39

The Applicant has not identified any active Oil and Gas operations within the project area. The Applicant researched the records at the Ohio Department of Natural Resources, Division of Geological Survey to determine if there are any active surface or underground mines in the project area. Their findings indicate there are not any active or abandoned coal or industrial mineral surface or underground mines in the project area. Staff concurs with this analysis.

There is no record with the Division of Geological Survey of any seismic activity within the project area. Staff concludes there are no geological features that exist within the project area that would restrict or limit the construction of the solar energy facility.

Slopes and Soil Suitability

The Applicant has noted that the solar facility would primarily cross soil types described as silt loam. A much smaller portion of the project area would be classified as clay loam. In the project area these soils are generally considered to be poorly to moderately drained, moderately slow permeability, and a somewhat high water capacity. The water table is shallow and fluctuates seasonally. The Applicant noted that there are no slopes in the project area greater than 6 percent.

The Applicant would conduct a geotechnical drilling investigation at the project site to obtain further site-specific detailed information and engineering properties for the soils for design and construction purposes. The subsurface drilling would also ensure that the structures would be installed in locations that are suitable, based upon soil and/or rock properties.

The Applicant in addition would implement a stormwater pollution and prevention plan to ensure both during and after construction, the long-term stability of the solar facility. Although there are potential land use limitations related to surface water drainage, erosion, and moisture content, with the proper design and construction methods such as adequate surface water run-off drainage controls, undercutting, chemical stabilization, geogrid reinforcement, mechanical compaction, etc. These limitations should not adversely affect or restrict the construction of this facility.

Surface Waters

The Applicant delineated six streams within the project area, including three perennial streams, one ephemeral stream, and two intermittent streams. Installation of collection lines may result in stream crossings. The Applicant states all collection line stream crossings would be conducted via horizontal directional drilling (HDD). Because the project would use HDD, Staff recommends that, prior to construction, the Applicant provide a frac-out contingency plan detailing monitoring, containment measures, cleanup, and restoration in the event of an inadvertent return.

The Applicant delineated seven wetlands within the project area, including three Category 2 wetlands and four Category 1 wetlands. The Applicant states no wetlands would be impacted by the construction, operation, or maintenance of the project.

No ponds or lakes would be impacted by the facility during construction or operation.

Specifics about how surface waters would be further protected from indirect construction stormwater impacts using erosion and sedimentation controls would be outlined in the Applicant's Stormwater Pollution Prevention Plan (SWPPP). Direct impacts, including a proposed access road crossings, would be covered under the U.S. Army Corps of Engineers (USACE) Nationwide Permit Program. The project would not impact any 100-year floodplains.

Threatened and Endangered Species

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

MAMMALS				
Common Name	**Scientific Name**	**Federal Status**	**State Status**	**Presence in Project Area**
Indiana bat	*Myotis sodalis*	Endangered	Endangered	Historical range includes the project area. Presence within project area has been documented.
northern long-eared bat	*Myotis septentrionalis*	Threatened	Threatened	Historical range includes the project area. Presence within project area has been documented.
INVERTEBRATES				
Common Name	**Scientific Name**	**Federal Status**	**State Status**	**Presence in Project Area**
Sloan's crayfish	*Orconectes sloanii*	N/A	Threatened	Historical range includes the project area. No in-water work proposed
REPTILES				
Common Name	**Scientific Name**	**Federal Status**	**State Status**	**Presence in Project Area**
Eastern massasauga	*Sistrurus catenatus*	Threatened	Endangered	Historical range includes the project area. Impacts not anticipated.

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 a final access plan to be provided to Staff prior to the preconstruction conference.

The project area is within the range of state and federal endangered Indiana bat (*Myotis sodalis*) and the state and federal threatened northern long-eared bat (*Myotis septentrionalis*). As tree roosting species in the summer months, the habitat of these species may be impacted by the project. In order to avoid impacts to the Indiana bat and northern long-eared bat, Staff recommends the Applicant adhere to seasonal tree cutting dates of October 1 through March 31 for all trees three inches or greater in diameter, unless coordination efforts with the ODNR and the USFWS reflects a different course of action.

The Applicant has proposed up to 0.07 acre of tree clearing. As a best management practice, Staff recommends that the Applicant leave narrow areas of woodlot-connecting trees and shrubs intact unless the clearing would be a small area needed for installation of collection lines or access roads.

In these instances, the corridors would retain some functionality due to the small size of gaps in habitat.

Vegetation

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

VEGETATION	
Vegetation Community Type	**Total (Acres)**
Forestland	29
Grassland/Open Land	41
Agricultural Lands	864
Total	934

The estimated vegetative impact includes the entire project area presented within the application. However, the entire project area would not be developed as part of this project. As a result, permanent impacts associated with this project would be less than the amount shown. Permanent vegetative impacts would occur primarily within agricultural lands. The estimated impact to forestland of 0.07 acre is the result of geographic information system (GIS) calculations and actual forest clearing may be more or less. Further, Staff's recommendation to preserve wooded corridors would reduce total tree clearing.

Staff recommends that the Applicant be required to provide a vegetation management plan for review prior to the preconstruction conference. The plan would identify all areas of proposed vegetation clearing for the project, specifying the extent of the any clearing, and describing how such clearing work would be done as to minimize removal of woody vegetation. Staff recommends that the plan also include the implementation and maintenance of native pollinator-friendly plantings in selected locations along the outside border of the solar fields and incorporate plantings of legumes and wildflowers in areas between the solar panels. Plantings should be 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.

All Staff recommendations for the requirements discussed in this section of the *Staff Report of Investigation* are included under the **Ecological Conditions** heading of the Recommended Conditions of Certificate section.

Public Services, Facilities, and Safety

Wind Velocity

The Applicant stated that components of the proposed facility are not susceptible to damage from high winds except for tornado-force winds. To minimize and mitigate any potential damage from high wind velocities, the Applicant proposes to install the project support equipment at sufficient depths based on the site-specific soil conditions to preclude any adverse influence from high wind velocities.

Road and Bridges

The principal impact on public services would be increases in truck traffic on routes leading to the project area. Some traffic management during the construction phase may be necessary in the immediate vicinity of the project area to ensure safe and efficient maintenance of existing traffic patterns and usages. The Applicant has committed to coordinating with local officials to ensure that impacts associated with the increase in traffic would be minimal.

During operation, facility related traffic would be minimal and would not be expected to significantly impact local roadways. Potential emergency service requirements would be coordinated with local officials during construction and operation.

There are numerous delivery routes possible for the transportation of equipment to the project site. These possible delivery routes to the project area include Interstate 70 and US Route 127 from the north and State Route 725 from the east. Other portions of the project area will be accessed through local County and Township roads. A final delivery route has not been finalized.

The Applicant stated that its contractor will obtain all necessary permits from ODOT and the County Engineer prior to construction. The County Engineer may require a Road Use and Maintenance Agreement for construction activities.

Staff recommends a requirement for the Applicant to develop a final transportation management plan that, if necessary, would include a road use agreement. Any damaged public roads and bridges would be repaired promptly to their previous condition by the Applicant under the guidance of the appropriate regulatory agency.

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 year of construction. However, the adverse impact of construction noise would be temporary and intermittent, would occur away from most residential structures, and would be limited to daytime working hours. The Applicant would use mitigation practices such as maintaining engines and mufflers in good operating order, limiting construction activities to daylight hours, and establishing a complaint resolution process.

Operational noise impacts for a solar generation facility would be relatively minor and occur only during the day. Operational noise sources include inverters and transformers located within a group of solar panels, the step up transformer at the new substation, and tracking motors.

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 was modeled. The model showed that operational noise impacts would be approximately the same as or less than ambient noise levels. No non-participating receptors were modeled to receive noise impacts greater than the daytime ambient noise level plus 5 dBA. Therefore the project would be expected to have minimal adverse noise impacts on the adjacent community.

All Staff recommendations for the requirements discussed in this section of the *Staff Report of Investigation* are included under the **Public Services, Facilities, and Safety Conditions** heading of the Recommended Conditions of Certificate section.

Recommended Findings

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

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

MINIMUM ADVERSE ENVIRONMENTAL IMPACT

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

Site Selection

According to the Applicant, southwestern Ohio presents several factors that are favorable to solar generation projects – a significant regional demand for electricity, a strong transmission grid, and some of the best solar resource in the state. Within the southwestern Ohio region, the study area was chosen primarily due to its proximity to the existing utility substation selected as the point of interconnection. Siting the project adjacent to an existing substation reduces the length of new electric transmission line between the solar facility substation and the existing transmission system substation.

The Applicant determined the specific location of the project by using the following four criteria: (1) land needed to be relatively level, previously disturbed, and dry; (2) parcels to be used for the project needed to be contiguous to or in proximity to other, similarly suitable parcels; (3) minimal impacts to sensitive features such as streams, wetlands, and potential wildlife habitat; and (4) willingness of property owners to lease land for solar panels and other components of the project.

During the public informational meeting, the Applicant solicited written comments from attendees but only received verbal comments. These comments, related to aesthetics, displacement of farming activities and wildlife, and the mitigation of visual impacts, are addressed in the application.

Minimizing Impacts

Of the approximately 934 acres of leased land, approximately 827 acres would be occupied by permanent facilities. Agricultural land accounts for approximately 98 percent of all land that would be impacted by the proposed facility.

Relatively few previously recorded cultural resources were identified in the immediate vicinity of the project. The Applicant is currently in the process of designing a systematic Phase I survey program for the project, in conjunction with input from the OHPO, to assure impacts to cultural resources are minimized.

The proposed facility would have an overall positive impact on the local economy due to the increase in construction spending, wages, purchasing of goods and services, annual lease payments to the local landowners, and potential PILOT revenue. The Applicant estimates that the results of a forthcoming arrangement with Preble County would produce annual PILOT revenue of approximately $560,000 for the surrounding communities and school district.

To minimize impacts to wetlands and streams, the Applicant has committed to using HDD to install the underground electric collection cable under all streams. Construction of the facility would not require work within mapped 100-year floodplains.

Impacts to any state and federal listed wildlife species can be avoided by following best management practices and seasonal restrictions for construction in certain habitat types, as detailed by the USFWS and the ODNR.

Noise impacts are expected to be primarily limited to construction activities. 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.

During the construction period, local, state, and county roads would experience a temporary increase in truck traffic due to deliveries of equipment and materials. A final delivery route plan and road use agreement would be developed through discussions with local officials.

Due to the low profile of the project combined with vegetation in the area, the visual impacts would be most prominent to landowners in the immediate vicinity of the facility. Through measures committed to by the Applicant, as well as the landscape and aesthetics plan recommended by Staff, aesthetic impacts would be minimized.

The Applicant will submit a plan to decommission the solar farm. The plan will accurately calculate the costs to properly dispose of the project's components at the end of their useful life, restore the land to original conditions, and financial instruments to fund the decommissioning of the solar farm.

Conclusion

Staff concludes that the proposed project would result in both temporary and permanent impacts to the project area and surrounding areas. Due to the nature of potential impacts to land use, cultural resources, surface water resources, wildlife, and Staff's recommended conditions to further mitigate these impacts, Staff concludes that the project, implementing the conditions set forth in this report, represents the minimum adverse environmental impact.

Recommended Findings

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

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

ELECTRIC GRID

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

The facility proposed by the Applicant is a solar photovoltaic generating facility located in Preble County, capable of producing 80 MW. The proposed facility would interconnect the to American Electric Power's (AEP) College Corner 138 kilovolt (kV) substation located in Union County, Indiana.

NERC Planning Criteria

The North American Electric Reliability Corporation (NERC) is responsible for the development and enforcement of the federal government's approved reliability standards, which are applicable to all owners, operators, and users of the BPS. As an owner, operator, and/or user of the BPS, the Applicant is subject to compliance with various NERC reliability standards. NERC reliability standards are included as part of the system evaluations conducted by PJM Interconnection, LLC (PJM).[21]

PJM

The Applicant submitted its generation interconnection request for the proposed facility to PJM on March 16, 2017. PJM gave the application a queue position of AC2-111. The System Impact Study (SIS) was released by PJM in March 2019.

PJM studied the interconnection as an injection into AEP's electric grid via the College Corner 138 kV substation. The Applicant requested an injection of 80 MW, of which 30.4 MW could be available in the PJM capacity market. The capacity market ensures the adequate availability of necessary generation resources can be called upon to meet current and future demand.[22]

PJM Network Impacts

PJM analyzed the proposed facility interconnected to the BPS. A 2020 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.[23]

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21. 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.

22. PJM Interconnection, LLC, "System Impact Study, Queue Number AC2-111," accessed April 1, 2019, https://www.pjm.com/planning/services-requests.aspx.

23. PJM Interconnection, LLC, "System Impact Study, Queue Number AC2-111," accessed April 1, 2019, https://www.pjm.com/planning/services-requests.aspx.

PJM REGIONAL SYSTEM IMPACTS (Summer Peak)	
Generator Deliverability - System Normal & Single Contingency Outage	
Plant Output: Capacity Level – 30.4 MW	No problems identified

Category C and D - Multiple Contingency Outages	
Plant Output: 80 MW	No problems identified

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 are at the discretion of the Applicant. The results identified no energy delivery impacts.

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.

Conclusion

PJM analyzed the bulk electric system, with the Facility interconnected to the BPS, for compliance with NERC reliability standards and PJM reliability criteria. The PJM system studies indicated that no reliability violations would occur during single and multiple contingencies. In addition, no potential violations were found during the short circuit analysis.

The facility would provide additional electrical generation to the regional transmission grid, would be consistent with plans for expansion of the regional power system, and would serve the interests of electric system economy and reliability.

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

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 hiring a licensed construction firm with knowledge and experience in dust minimization, ensuring construction vehicles are in proper working condition, and using water and/or dust suppressant. 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

Neither construction nor operation of the proposed facility would require the use of significant amounts of water. Therefore, the requirements under R.C. 1501.33 and 1501.34 are not applicable to this project.

Although the project area is large, storm water pollution from the project's construction activities would be limited in scope and controlled as described below. The Applicant would obtain coverage under the Ohio EPA General NPDES permit. Sedimentation in the local watercourse may occur because of construction activities, but would be minimized through BMP such as silt fences or diversion berms. BMP would be outlined in the Applicant's SWPPP, which is required as part of the NPDES permit.

If the following permits or authorizations would be needed after the finalization of project engineering design, then the Applicant anticipates obtaining the following environmental permits. The Applicant would mitigate potential water quality impacts associated with aquatic discharges by:

- Obtaining NPDES Construction Storm Water General Permits from the Ohio EPA
- Pursuing the USACE Section 404 or nationwide permit for limited stream crossings
- Preparing a SWPPP that identifies potential sources of pollution and describes and ensures the implementation of BMP

The Applicant does not anticipate that it would need to implement a Spill Prevention, Control, and Countermeasure Plan (SPCC).

During operation of the facility, the project would not need a NPDES permit, because solar panels generate electricity without water discharge. Water would be used for occasional cleaning of the solar panels a few times per year as needed.

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

The project area is located in a rural setting with very little to no solid waste present. The Applicant would, however, retain the services of an experienced and qualified firm to perform a Phase 1 Environmental Site Assessment survey of the project area (Phase 1 ESA) prior to construction. The Applicant stated that the final design of the project would avoid any recognized environmental condition identified by the Phase 1 ESA.

Debris generated from construction activities would include items such as crates, nails, boxes, containers, and packing materials, damaged/unusable parts, litter, and miscellaneous debris. The Applicant stated that materials with reuse or salvage value will be removed for such use. The Applicant stated that all construction-related debris would be disposed of at a licensed municipal landfill.

Operation of the project would generate small amounts of non-hazardous solid waste, which would be reused, recycled, or disposed of in accordance with federal, state, and local requirements.

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

Aviation

The height of the tallest above ground structure, a single narrow lightning mast, would be approximately 70 feet.

There are no public use airports, helicopter pads, or landing strips within five miles of the project area. According to the Federal Aviation Administration (FAA), the closest public-use airport is the Richmond, Indiana Municipal Airport (RIC) which is just over six miles from the proposed solar farm project. There are no private use airports or helicopter pads within or adjacent to the project area but there is one private use airstrip just west of the project in Indiana.

Glare

Because the solar farm is well outside three nautical miles of Richmond Indiana Municipal Airport an aeronautical study regarding glare is not warranted (14 CFR 77.17(a)(2)).

In accordance with R.C. 4906.10(A)(5), Staff contacted the ODOT Office of Aviation during the review of this application in order to coordinate review of potential impacts of the facility on local airports. As of the date of this filing, no such concerns have been identified.

All Staff recommendations for the requirements discussed in this section can be found under the **Air, Water, Solid Waste, and Aviation Conditions** heading of the Recommended Conditions of Certificate.

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.

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 comply with those safety standards applicable to commercial scale solar farms set by the Occupational Safety and Health Administration and National Fire Protection Association. In addition, the Applicant has indicated that it would use equipment compliant with applicable Underwriters Laboratories, Institute of Electrical and Electronics Engineers, National Electrical Code, National Electrical Safety Code, and American National Standards Institute standards.

The Applicant intends to use warning signs, fencing, and locked gates to restrict access to the potential hazards within the solar project area. Additionally, the Applicant intends to design its facility with setbacks from the fence to public roads, from the above-ground equipment to public roads, from its fence and adjacent property lines, from the above-ground equipment to public roads, and from above-ground equipment and habitable residences.

Most of the construction activities would occur on private land far from roads and residences. The Applicant would work with local fire departments and other emergency responders to provide training for response to emergencies related to a solar farm. The Applicant stated that it intends to restrict public access to the facility during construction by enclosing the project area with a seven feet tall chain-link fence. The Applicant also intends to develop and implement an emergency response plan and consult with potentially affected local officials and emergency response personnel.

Public Interaction and Participation

The Applicant hosted a public informational meeting for this project. Attendees were provided the opportunity to view maps of the project, speak with representatives of the Applicant, and provide written comments.

The Applicant served copies of the complete application on the Preble County Commissioners, the Dixon and Israel township trustees, the Preble County Planning Commission, the Preble Soil and Water Conservation District, and the Preble County Engineer. The Applicant sent a copy of the complete application to the Preble County District Library – Eaton Branch. Copies of the complete application are also available for public inspection at the offices of the PUCO and on the PUCO online Docketing Information System website.

The Applicant has committed to notify, via mail, affected property owners and tenants who were provided notice of the public informational meeting, as well as anyone who requests updates regarding the project, no later than seven days prior to the start of construction. This notice will provide information about construction and will include the contact information of a representative who will receive complaints, concerns, or comments about the project. Staff recommends that a similar notice be mailed to these same individuals at least seven days prior to the start of facility operation.

The Applicant stated that, during facility operation, it will ensure that a point of contact would be established for complaints, concerns, or comments, and that reasonable efforts would be made to resolve complaints. Staff recommends that the Applicant formalize a complaint resolution process for use during the construction and operation period.

The Administrative Law Judge scheduled a local public hearing and an adjudicatory hearing for this proceeding. The local public hearing, at which the Board will accept written or oral testimony from any person, is scheduled for April 30, 2019, at 6 p.m. at the Eaton Fire Division Station #2, 391 W. Lexington Rd., Eaton, Ohio 45320. The adjudicatory hearing is scheduled for May 14, 2019, at 10 a.m., in Hearing Room 11D at the offices of the Public Utilities Commission of Ohio, 180 E. Broad St., Columbus, Ohio 43215.

The Preble County Commissioners; the Preble County Planning Commission; the Preble County Engineer; the Preble Soil and Water Conservation District; the Israel Township Trustees; the Dixon Township Trustees; Eaton Community School District; the Ohio Farm Bureau Federation; and Concerned Citizens of Preble County, LLC and Robert Black, Marja Brandly, Campbell Brandly Farms, LLC, Michael Irwin, Kevin and Tina Jackson, Vonderhaar Family ARC, LLC and Vonderhaar Farms Inc. have filed notices or motions to intervene in this case. As of the filing of this Staff Report, the Board has received six public comments regarding this project. Public comments are made available for Board members and the public to view online in the case record at http://dis.puc.state.oh.us.

All Staff recommendations for the requirements discussed in this section of the *Staff Report of Investigation* are included under the Recommended Conditions of Certificate section.

Recommended Findings

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

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

AGRICULTURAL DISTRICTS AND AGRICULTURAL LAND

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

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

No agricultural district parcels would be impacted by the construction of the proposed facility. The construction of the proposed facility would result in the loss of 732 acres of cultivated lands and 52 acres of pasture. However, the repurposed land could be restored for agricultural use when the project is decommissioned.

The construction and operation of the proposed facility would disturb the existing soil and could lead to broken drainage tiles. The Applicant has committed to take steps in order to address such potential impacts to farmland, including: repairing all drainage tiles damaged during construction and restoring temporarily impacted land to its original use. In order to avoid impacts to drain tiles, the Applicant stated that it would locate drain tiles as accurately as possible prior to construction. Also, the Applicant has committed to promptly repair any drain tile found to be damaged by the project during the operational life of the project. Excavated top soil would be separated during construction and returned as topsoil after construction, unless otherwise requested by the landowner. Restored topsoil would be seeded after construction to prevent erosion.

The decommissioning plan for the proposed project calls for returning the affected land to original or similar conditions. This plan includes repairing any drainage tiles and the de-compaction of soil.

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 control during earthwork activities as needed.

Operation of the proposed facility would not require the use of significant amounts of water. No water is needed for any function, and no water or wastewater discharge is expected. Therefore, the requirements under R.C. 1501.33 and 1501.34 are not applicable to this project.

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(A)(8). Further, the Staff recommends that any certificate issued by the Board for the certification of the proposed facility include the conditions specified in the section of this *Staff Report of Investigation* entitled Recommended Conditions of Certificate.

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IV. RECOMMENDED CONDITIONS OF CERTIFICATE

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

GENERAL CONDITIONS

Staff recommends the following conditions to ensure conformance with the proposed plans and procedures as outlined in the case record to date, and to ensure compliance with all conditions listed in this Staff Report:

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

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

(3) The Applicant shall submit one set of detailed engineering drawings of the final project design to Staff at least 30 days before the preconstruction conference. This final design shall include all conditions of the certificate and references at the locations where the Applicant and/or its contractors must adhere to a specific condition in order to comply with the certificate. The final project layout shall be provided in hard copy and as geographically-referenced electronic data.

(4) If any changes to the project layout are made 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 to ensure compliance with all conditions of the certificate, prior to construction in those areas.

(5) 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.

(6) The certificate shall become invalid if the Applicant has not commenced a continuous course of construction of the proposed facility within five years of the date of journalization of the certificate, unless the Board grants a waiver or extension of time.

(7) As the information becomes known, the Applicant shall file in this proceeding the date on which construction will begin, the date on which construction was completed, and the date on which the facility begins commercial operation.

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

SOCIOECONOMIC CONDITIONS

Staff recommends the following conditions to address the impacts discussed in the **Socioeconomic Impacts** section of the Nature of Probable Environmental Impact:

(9) Prior to construction, the Applicant shall prepare a Phase I cultural resources survey program for the project area in conjunction with Staff and the Ohio Historic Preservation Office (OHPO). If the resulting survey work discloses a find of cultural, archaeological, or architectural significance, or a site that could be eligible for inclusion on the National Register of Historic Places, then the Applicant shall submit a modification, or mitigation plan detailing how such site(s) will be avoided or impacts minimized. Any such mitigation effort, if needed, shall be developed in coordination with the OHPO and submitted to Staff for review and acceptance.

(10) 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. Monday through Friday; hoe ram and blasting operations, if required, shall be limited to the hours between 10:00 a.m. and 4:00 p.m., Monday through Friday. Construction activities that do not involve noise increases above ambient levels at sensitive receptors are permitted outside of daylight hours when necessary. The Applicant shall notify property owners or affected tenants within the meaning of Ohio Adm. Code 4906-3-03(B)(2) of upcoming construction activities including potential for nighttime construction.

(11) Prior to commencement of any construction, the Applicant shall prepare a landscape and lighting plan that addresses the aesthetic and lighting impacts of the facility where an adjacent non-participating parcel contains a residence with a direct line of sight to the project area. The plan shall include measures such as opaque fencing, vegetative screening or good neighbor agreements. The Applicant shall provide the plan to Staff for review and confirmation that it complies with this condition.

(12) At least 30 days before the preconstruction conference, the Applicant shall provide Staff with a copy of its public information program, for confirmation that it complies with this

condition, that informs affected property owners and tenants of the nature of the project, and that provides specific contact information of Applicant personnel who are familiar with the project, the proposed timeframe for project construction, and a schedule for restoration activities.

(13) At least 30 days before the preconstruction conference, the Applicant shall provide Staff with a copy of a complaint resolution process, for confirmation that it complies with this condition, to address potential public complaints resulting from facility construction and operation. The resolution process must describe how the public can contact the facility and how the facility would contact anyone issuing a complaint.

(14) At least seven days prior to the start of facility operation, the Applicant shall notify via mail affected property owners and tenants who were provided notice of the public informational meeting, as well as anyone who has requested updates regarding the project. This notice will provide information about the start of operation and describe how the public can contact the facility.

(15) 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 for the first five years of operation. The report should include a list of all complaints received through the Applicant's complaint resolution process, a description of the actions taken toward a resolution of each complaint, and a status update if the complaint has yet to be resolved.

(16) 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. Unless otherwise agreed to by the landowner, damaged field tile systems shall be promptly repaired to at least original conditions or modern equivalent at the Applicant’s expense.

(17) Within 30 days after issuance or receipt, the Applicant shall provide Staff a copy of any arrangement or resulting resolution adopted by Preble County relating to the Payment in Lieu of Taxes (PILOT) program.

ECOLOGICAL CONDITIONS

Staff recommends the following conditions to address the impacts discussed in the **Ecological Impacts** section of the Nature of Probable Environmental Impact:

(18) Prior to the preconstruction conference, the Applicant shall submit a vegetation management plan to Staff for review and confirmation that it complies with this condition. The plan would identify all areas of proposed vegetation clearing for the project, specifying the extent of the clearing, and describing how such clearing work would be done as to minimize removal of woody vegetation. The plan shall describe how trees and shrubs along access routes, at construction staging areas, during maintenance operations, and in proximity to any other project facilities would be protected from damage. The plan shall also describe the implementation and maintenance of pollinator-friendly plantings and describe any planned herbicide use.

(19) The Applicant shall adhere to seasonal cutting dates of October 1 through March 31 for the removal of trees three inches or greater in diameter to avoid impacts to Indiana bats and northern long-eared bats, unless coordination with the Ohio Department of Natural Resources (ODNR) and the U.S. Fish and Wildlife Service (USFWS) allows a different course of action.

(20) The Applicant shall have an environmental specialist on site during construction activities that may affect sensitive areas as shown on the Applicant's final approved construction plan as approved by Staff. Sensitive areas include, but are not limited to, areas of vegetation clearing, designated wetlands and streams, and locations of threatened or endangered species or their identified habitat. 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.

(21) 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.

(22) The Applicant shall file on the record in this case a construction access plan for review prior to the preconstruction conference. The plan would consider the location of streams, wetlands, wooded areas, and sensitive wildlife and plant species, and explain how impacts to all sensitive resources will be avoided or minimized during construction, operation, and maintenance. The plan would include the measures to be used for restoring the area around all temporary access points, and a description of any long-term stabilization required along permanent access routes.

(23) Prior to the use of horizontal directional drilling, the Applicant shall file on the record in this case a frac-out contingency plan detailing monitoring, environmental specialist presence, containment measures, cleanup, and restoration.

(24) Except for the areas necessary for access road and collection line installation, the Applicant shall not clear wooded areas, including scrub/shrub areas, that would lead to fragmentation and isolation of woodlots or reduce connecting corridors between one woodlot and another.

PUBLIC SERVICES, FACILITIES, AND SAFETY CONDITIONS

Staff recommends the following conditions to address the impacts discussed in the **Public Services, Facilities, and Safety** section of the Nature of Probable Environmental Impact:

(25) Prior to commencement of construction activities that require transportation permits, the Applicant shall obtain all such permits. The Applicant shall coordinate with the appropriate authority regarding any temporary road closures, 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.

(26) The Applicant shall provide the Board's Staff a copy of the transportation management plan and any road use agreement(s) 30 days prior to the preconstruction conference.

(27) 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.