

# Staff Report of Investigation

Alamo Solar Farm  
Alamo Solar I, LLC

Case No. 18-1578-EL-BGN

May 28, 2019



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

**In the Matter of the Application of Alamo Solar I, LLC )  
for a Certificate of Environmental Compatibility and ) Case No. 18-1578-EL-BGN  
Public Need. )**

**Staff Report of Investigation**

Submitted to the  
OHIO POWER SITING BOARD

BEFORE THE POWER SITING BOARD OF THE STATE OF OHIO

**In the Matter of the Application of Alamo Solar I, LLC )  
for a Certificate of Environmental Compatibility and ) Case No. 18-1578-EL-BGN  
Public Need )**

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

To the Honorable Power Siting Board:

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

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

# TABLE OF CONTENTS

<b>I. POWERS AND DUTIES .....</b>	<b>1</b>
Ohio Power Siting Board .....	1
Nature of Investigation.....	1
Criteria.....	3
<b>II. APPLICATION .....</b>	<b>5</b>
Applicant .....	5
History of the Application.....	5
Project Description .....	6
Project Map .....	9
<b>III. CONSIDERATIONS AND RECOMMENDED FINDINGS.....</b>	<b>11</b>
Basis of Need .....	11
Nature of Probable Environmental Impact.....	12
Minimum Adverse Environmental Impact.....	22
Electric Grid .....	24
Air, Water, Solid Waste, and Aviation.....	27
Public Interest, Convenience, and Necessity .....	29
Agricultural Districts and Agricultural Land .....	31
Water Conservation Practice.....	32
<b>IV. RECOMMENDED CONDITIONS OF CERTIFICATE.....</b>	<b>33</b>
General Conditions.....	33
Socioeconomic Conditions.....	34
Ecological Conditions .....	35
Public Services, Facilities, and Safety Conditions .....	36

This page intentionally left blank.

## **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.<sup>1</sup> 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.<sup>2</sup>

Within 60 days of receiving an application, the Chairman must determine whether the application is sufficiently complete to begin an investigation.<sup>3</sup> 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.<sup>4</sup> At the public hearing, any person may provide written or oral testimony and may be examined by the parties.<sup>5</sup>

### **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.<sup>6</sup> The report sets forth the nature of the investigation and contains the findings and conditions recommended by Staff.<sup>7</sup> 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.<sup>8</sup> A record of the public hearings and all evidence, including the Staff Report, may be examined by the public at anytime.<sup>9</sup>

### **Board Decision**

The Board may approve, modify and approve, or deny an application for a certificate of environmental compatibility and public need.<sup>10</sup> 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.<sup>11</sup>

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.<sup>12</sup> 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.<sup>13</sup> 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.<sup>14</sup> 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.<sup>15</sup>

---

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.

This page intentionally left blank.

## **II. APPLICATION**

### **APPLICANT**

Alamo 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 MW of operating wind and solar projects. Open Road Renewables, LLC develops utility scale solar projects and is responsible for over 500 MW of renewable energy projects currently operating or under construction. MAP Energy and Open Road Renewables have collaborated on a variety of utility-scale renewable energy projects over the past eight years. These developers currently have three other projects in various development stages with the Ohio Power Siting Board (Hillcrest Solar, Angelina Solar, and Willowbrook Solar).

The Applicant, Alamo Solar I, would not construct or operate the project but instead would select a company to construct and operate the solar farm.

### **HISTORY OF THE APPLICATION**

On October 22, 2018, the Applicant filed a Pre-Application Notification Letter regarding the proposed solar electric generation project.

On November 13, 2018, the Applicant held a public informational meeting regarding the proposed solar electric generating project.

On December 10, 2018, the Applicant filed the Alamo Solar Farm application as well as a motion for waivers from certain requirements and a motion for protective order to keep portions of its application confidential.

On January 31, 2019, the Applicant filed a supplement to the application.

On February 8, 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 22, 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 April 3, 2019, the Administrative Law Judge granted the motions to intervene filed by the Eaton Community School District and the Ohio Farm Bureau Federation, as well as the motion for waivers and the motion for protective order filed by the Applicant.

On May 9, 2019, the Preble Shawnee Local School District filed a motion to intervene.

On May 13, 2019, the Preble County Engineer, the Board of Trustees of Washington Township, the Board of Trustees of Gasper Township, the Preble Soil and Water Conservation District, and the Preble County Planning Commission filed motions to intervene.

On May 14, 2019 the Preble County Board of Commissioners filed a notice of intervention.

On May 15, 2019, the Concerned Citizens of Preble County, LLC; Eric and Kelly Altom; Mary Bullen; Camden Holdings, LLC; John and Joanna Clippinger; Joseph and Linda DeLuca; Jason and Tonya Heggs; Doris Jo Ann Kolb Revocable Living Trust; Donn E. Kolb Revocable Living Trust; Kenneth and Elaine Kolb; James and Carla Lay; Clint and Jill Sorrell; John and Linda Wambo; John Frederick Winter; and Michael and Patti Young filed a motion to intervene.

A local public hearing has been scheduled for June 12, 2019 at 6:00 p.m. at The Grange, Preble County Area Agency on Aging, 501 Nation Avenue, Eaton, Ohio 45320. The adjudicatory hearing will commence on June 26, 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 18-1578-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 own the Alamo Solar Farm as a 69.9 MW solar-powered generating facility in Gasper and Washington Townships, Preble County. 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 five meteorological stations, pyranometers, buried electrical collection lines, inverter pads, and a substation. The project would occupy up to 919 acres within a 1,002.5 acre project boundary. 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 oriented 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 186,400 to 279,600

modules for this project. The Applicant estimates the project would occupy a maximum of 919 acres within the project boundary.

### **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 20.5 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 inverters, each of 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 38 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 69 kV Gen-Tie Line**

The facility substation would occupy approximately three acres of land adjacent the proposed point of interconnection. The facility substation would be located approximately a half mile west of the intersection of Camden and Antioch roads.

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 69 kV, a high-voltage breaker, metering/relaying transformers, disconnect switches, an equipment enclosure containing power control electronics, and a lightning mast that would be approximately 70 feet in height.

A 69 kV electric gen-tie line, approximately 300 feet in length, would connect the project substation to Dayton Power and Light Company's Camden-Crystal I 69 kV electric line.

### **Roads**

The Applicant proposes to use up to 11.7 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 16 acres of temporary equipment laydown area within the project boundary, 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**

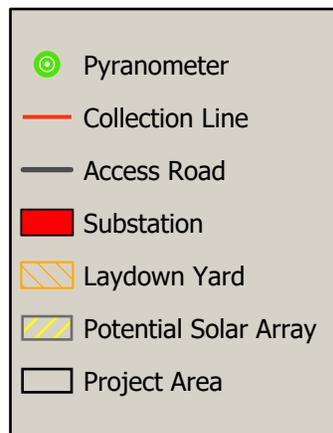
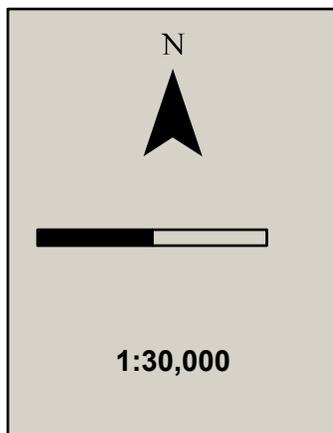
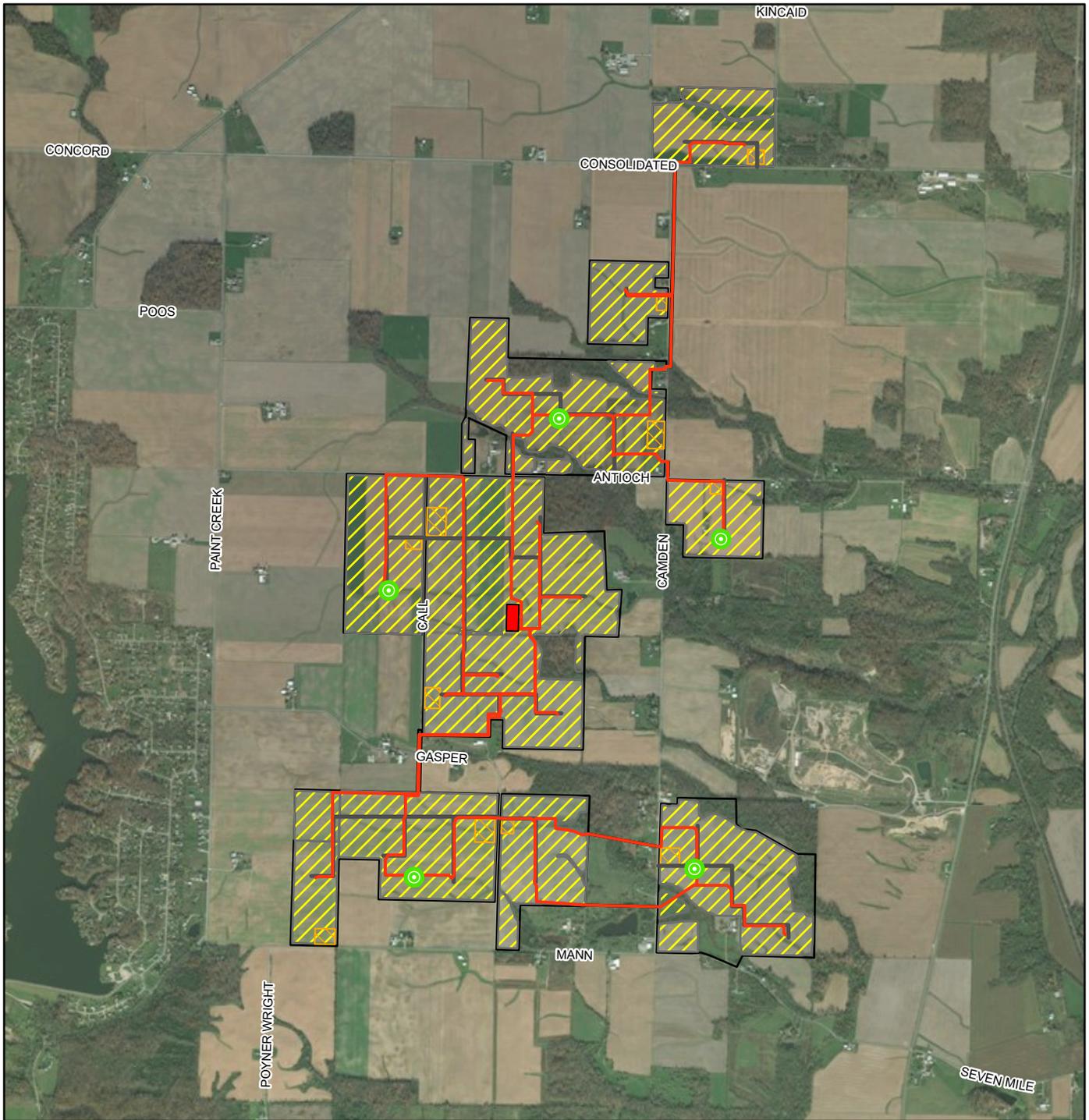
The project would include up to five meteorological stations that would be up to 15 feet tall, and enclosed with a gated fence. The meteorological stations would include pyranometers, which measure the solar resource. Meteorological stations would typically include an anemometer, a wind vane, a barometer, 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 start commercial operations in December 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.



**Overview Map**  
**18-1578-EL-BGN**  
**Alamo 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.

This page intentionally left blank.

### **III. CONSIDERATIONS AND RECOMMENDED FINDINGS**

In the Matter of the Application of Alamo Solar I, LLC 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*

The dominant land use in proximity to the project area is agricultural, along with limited rural residential uses. Due to county-mandated restrictions on parcel sizes (typically between 10 and 40 acres minimum), residential density in the project area is low. No residences would be located within the confines of the fenced project boundaries. As currently designed, the nearest non-participating residence would be 62 feet from the closest solar panel. The Applicant intends to provide a landscape screening plan to mitigate potential visual impacts at non-participating residences. The Applicant intends to relocate one participating landowner residence and potentially remove a few farm-related structures (as needed) on other participating landowner properties.

Woodland Trails is a state wildlife management area located approximately 0.25 mile south of the project boundary. There are no other parks or recreational areas in the project area. Additionally, there are no commercial structures, places of worship, medical facilities, schools or any other institutional land uses located in proximity to the project area.

##### *Aesthetics*

The project area predominantly consists of agricultural land. Traffic volume on roads throughout the project area is typically light, thus abating the potential number of viewers.

An anti-glare coating would be installed on the solar panels to maximize the amount of solar energy captured by the panels, which would also have the aesthetic benefit of glare reduction. The solar panels would be no higher than 15 feet above ground level. Based on the results of the Applicant's Visual Resources Report, the solar panels would not likely be visible at locations beyond two miles of the perimeter of the project.

Whether viewing the solar panels would have a positive or negative impact on the receptor is subjective, and likely to vary by receptor. Steps taken to minimize the visibility of the project would include vegetative screening and using the minimal lighting necessary to satisfy safety requirements.

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. Staff recommends that aesthetic impact mitigation could include native vegetative plantings, alternate fencing, good neighbor agreements, or other methods in consultation with affected properties and subject to Staff review. With implementation of Staff's conditions, the overall expected aesthetic impact would be minimal.

### *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 11 prior cultural resources surveys were performed within two miles of the project, none of which overlaps the project area, although four prior studies were performed within a half mile of the project.

From the literature review, the cultural resources consultant determined that there are four resources listed on the National Register of Historic Places (NRHP) within two miles of the project. The nearest NRHP listed resource is a covered bridge located 1.3 miles from the project area. Additionally, one archaeological site and two bridge structures have previously been determined to be eligible for NRHP listing. There are no designated National Historic Landmarks within two miles of the project.

There were 171 Ohio Historic Inventory (OHI) properties that were identified within two miles of the project area. The Applicant's consultant also identified that 14 Ohio Archaeological Inventory (OAI) recorded sites were located within two miles of the project, with the nearest site being located approximately 0.2 miles from the project area. There are 15 mapped cemeteries within two miles, six of which are within 1 mile. According to the consultant, mapping from the early 1900's indicates that there may be three mound sites within two miles of the project, one of which could be close to the boundary of the project. This site will need to be confirmed and avoided by any component of this project.

The Applicant's cultural resources consultant stated that there are no anticipated direct physical impacts to previously recorded cultural resources as a result of this project. However, because there is the potential for 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 Staff.

### *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 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 affiliate facilities is not substantially different from Applicant's estimated costs for the proposed facility and that the reported average cost of the affiliate facilities is not substantially different from Applicant's estimated costs for the proposed facility.

Operation and maintenance (O&M) expense comparisons between the proposed facility and other comparable facilities have been provided in the application. The Applicant referenced a 2015 report published by Sandia National Laboratories which 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 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.

Alamo Solar retained the services of the Economics Center of the University of Cincinnati to report on the economic impact of the Alamo Solar project.<sup>16</sup> 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 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 Alamo Solar Farm project is expected to have the following impacts:

#### Jobs

- 297 new construction related job impacts for Preble County
- 13 long-term operational jobs for Preble County
- Between 515 and 986 construction related jobs for the state of Ohio
- 17 or 18 long-term operational jobs for the state of Ohio

---

16. 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.

### Earnings

- \$14.8 million in local earnings during construction for Preble County
- Between \$24.3 million and \$49.3 million in local earnings during construction for the state of Ohio
- \$674,000 in annual earnings during facility operations for Preble County
- Between \$802,000 and \$859,000 in annual earnings during facility operations for the state of Ohio

### Output

- \$24.1 million in local output during construction for Preble County
- Between \$58.2 million and \$151 million in local output during construction for the state of Ohio
- \$791,000 in local annual output during facility operations for Preble County
- Between \$1.2 million and \$1.5 million in local annual output during facility operation for the state of Ohio.

The Alamo Solar Farm project would generate an estimated \$490,000 annually for the Preble County taxing district, area schools, as well as Gasper and Washington 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 a 69.9MW facility. The Applicant states that this revenue would be distributed pro rata to the Preble County taxing district, area schools, as well as Gasper and Washington Townships.

In addition to the PILOT plan, the state of Ohio is estimated to receive between \$1 million and \$2.5 million in sales and earnings taxes during construction of the facility. During operation of the facility, the state of Ohio is expected to receive nearly \$40,000 in sales and earnings taxes. The Preble County school district is expected to receive \$200,000 in earnings taxes and local municipalities would be expected to receive nearly \$150,000 in sales and earnings tax revenues during construction. During operation of the facility, local municipalities would be expected to receive \$7,000 and the Preble County school district would be expected to receive \$9,000.

### *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 will 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. The plan would specify

the responsible parties, outline a 9 month or shorter decommissioning schedule, outline projected decommissioning/restoration costs, require restoration of the project area, and require proper disposal of all project components.

The Applicant also stated that it will provide for financial security to ensure that funds are available for decommissioning and land restoration. The Applicant stated 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.<sup>17</sup> The Applicant stated that cost estimates will be recalculated approximately every five years over the life of the project and that it 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. As part of a geotechnical study, the Applicant conducted a well survey and contacted by mail 10 property owners in the project area. The property owners indicated that the wells on their properties were used for potable water and irrigation.

There are no Source Water Protection Areas (SWPA) located within the project area. There is one Groundwater Protection Area located 2 miles southwest of the project area. The Applicant would not impact the private groundwater wells because the construction in the project area would not extend beyond 10 feet below the surface. Constructing solar energy facilities generates very little wastewater discharges at the project site. The Applicant's groundwater, hydrological, and geotechnical review 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. Staff agrees with this analysis.

#### *Geological Features*

Geologically, 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. Depth to bedrock in the project area ranges from 45 to 140 feet below the surface. The Applicant does expect the depth to bedrock to be an issue since the excavation and construction would extend no more than 10 feet below the surface.

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.

---

17. 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 that there are not any active or abandoned coal or industrial mineral surface or underground mines in the project area. Staff concurs with this analysis.

The Division of Geological Survey interactive map does not indicate 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 loams with some gravel. 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 moderately drained, with slow permeability, and with a high potential for frost action. The water table is shallow and fluctuates seasonally. The Applicant noted that the project area is flat lying with little or no relief.

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 would implement a stormwater pollution and prevention plan (SWPPP) to ensure, both during and after construction, the long-term stability of the solar facility. Any drain tile damage incurred during construction or operation of this facility would be repaired or replaced with an equivalent or superior drainage system by the Applicant. Although there are potential land use limitations related to surface water drainage, erosion, shrink/swell and high moisture content, with the proper design and construction methods such as adequate surface water run-off drainage controls, mechanical compaction, etc., these limitations should not adversely affect or restrict the construction of this facility.

#### *Surface Waters*

The Applicant delineated 28 streams, including 11 perennial streams, 11 ephemeral streams, and 6 intermittent streams. Installation of collection lines would result in seven stream crossings. The Applicant states one stream would be crossed via open cut trenching, with the remaining six collection line crossings utilizing horizontal directional drilling (HDD). The Applicant has included in the application a frac-out contingency plan that details the monitoring, containment measures, cleanup, and restoration in the event of an inadvertent return of drilling fluid.

The Applicant delineated 13 wetlands, including nine 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 SWPPP. Direct impacts 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.

<b>MAMMALS</b>				
<b>Common Name</b>	<b>Scientific Name</b>	<b>Federal Status</b>	<b>State Status</b>	<b>Presence in Project Area</b>
Indiana bat	<i>Myotis sodalis</i>	Endangered	Endangered	Historical range includes the project area. Presence within project area has been documented.
northern long-eared bat	<i>Myotis septentrionalis</i>	Threatened	Threatened	Historical range includes the project area. Presence within project area has been documented.
<b>INVERTEBRATES</b>				
<b>Common Name</b>	<b>Scientific Name</b>	<b>Federal Status</b>	<b>State Status</b>	<b>Presence in Project Area</b>
Sloan's crayfish	<i>Orconectes sloanii</i>	N/A	Threatened	Historical range includes the project area. No in-water work proposed
<b>REPTILES</b>				
<b>Common Name</b>	<b>Scientific Name</b>	<b>Federal Status</b>	<b>State Status</b>	<b>Presence in Project Area</b>
Eastern massasauga	<i>Sistrurus catenatus</i>	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 1.37 acres of tree clearing. As a best management practice (BMP), Staff recommends that, at a minimum, 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	37
Residential Properties	64
Agricultural Lands	818
Total	919

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 1.37 acres is the result of geographic information system (GIS) calculations and actual forest clearing may be 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 Applicant has yet to finalize its delivery route, although it is expected that deliveries to the project site would be from the north by way of Interstate 70 and US Route 127. The Applicant also would use State Route 725 to access the project from the east. Once near the project site, State Route 177, local township roads, county roads, and a new private gravel access road would be used to deliver equipment and construction materials to the project site.

The Applicant did not identify any active railroads that would be crossed by construction material deliveries. The Applicant stated that of all the bridges in the project area, that the ones to avoid during delivery are the bridges along Antioch Road. The Applicant would also limit traffic on the bridges on Camden, Call, and Gasper Road due to overall poor conditions. 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. Post construction and operation of the solar facility, the Applicant does not anticipate any additional traffic for the project beyond routine maintenance.

The Applicant stated that its contractor would 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 that the Applicant develop a final transportation management plan that, if required, would include any 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 authority. Any temporary improvements would be removed unless the appropriate regulatory authority requests that they remain in place.

### *Noise*

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

The Applicant evaluated key factors such as: regional demand for electricity, statewide transmission line locations, cost effective interconnection availability, landowner interest, community interest, competitive analysis and evaluation of site suitability. Leased agricultural land accounts for all of the land that would be directly impacted by construction of the proposed facility.

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 and the mitigation of visual impacts, are addressed in the application.

#### **Minimizing Impacts**

The Applicant is currently in the process of conducting a systematic Phase I survey program for the project in conjunction with input from the OHPO to assure that potential impacts to cultural resources are minimized.

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

The geology of Preble County does not present conditions that would limit or negatively impact the construction and future operation of this solar energy facility.

No direct wetland impacts are anticipated and no significant in-water work is proposed. 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 project would not impact any 100-year floodplains.

Noise impacts are expected to be limited to construction activities. The adverse impact of construction noise would be temporary and intermittent, would occur away from most residential structures. 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 any nearby residents.

During the construction period, local, state, and county roads would experience a temporary increase in truck traffic due to deliveries of equipment and materials. Due to the location of the project, the Applicant anticipates that components for the entire project would be delivered by

truck. The transportation management plan would be finalized once the engineering layout is determined. A final delivery route plan would be developed through discussions with local officials. The Applicant intends to enter into a road use agreement with the county engineer.

Due to the low profile of the project, combined with existing vegetation in the area, the visual impacts would be most prominent to landowners in the immediate vicinity of the infrastructure itself. In order to reduce impacts in areas where an adjacent non-participating parcel contains a residence with a direct line of sight to the project, Staff further recommends that impacts be minimized by requiring the Applicant to develop an aesthetic and lighting plan that addresses the potential impacts of the facility.

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

### **Conclusion**

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

### **Recommended Findings**

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

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

**ELECTRIC GRID**

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

The facility proposed by the Applicant is a solar photovoltaic generating facility to be located in Preble County, capable of producing 69.9 MW. The proposed facility would interconnect to Dayton Power and Light, Inc. (DPL) Hutchings-Crystal 69 kV transmission line between Crystal and Camden substations.

**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).<sup>18</sup>

**PJM**

The Applicant submitted two generation interconnection requests for the proposed facility to PJM on February 27, 2017. PJM assigned the project queue positions AC2-067 and AC2-068 for a total of 69.9 MW. Although the project had two queue positions, the project was studied for network impacts as a single project. The system impact study (SIS) was released by PJM in February 2019.

<b>PJM INTERCONNECTION</b>		
<b>PJM Queue Position</b>	<b>Energy (MW)</b>	<b>Capacity (MW)</b>
AC2-067	20	7.6
AC2-068	49.9	18.9
<b>Total</b>	<b>69.9</b>	<b>26.5</b>

PJM studied the interconnection as an injection into DPL’s Hutchings-Crystal 69 kV transmission line between Crystal and Camden Substations. The Applicant requested an injection of 69.9 MW, of which 26.5 MW could be available in the PJM capacity market. The capacity market ensures

---

18. 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.

the adequate availability of necessary generation resources can be called upon to meet current and future demand.<sup>19, 20</sup>

**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 SIS for the PJM regional footprint.

<b>PJM REGIONAL SYSTEM IMPACTS (Summer Peak)</b>	
<b>Generator Deliverability - System Normal &amp; Single Contingency Outage</b>	
<i>Plant Output: Capacity Level – 26.5 MW</i>	No problems identified
<b>Category C and D - Multiple Contingency Outages</b>	
<i>Plant Output: 69.9 MW</i>	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 SIS, 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

19. PJM Interconnection, LLC, “System Impact Study, Queue Number AC2-067,” accessed May 13, 2019, <https://www.pjm.com/planning/services-requests.aspx>.

20. PJM Interconnection, LLC, “System Impact Study, Queue Number AC2-068,” accessed May 13 2019, <https://www.pjm.com/planning/services-requests.aspx>.

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.

The Applicant anticipates obtaining the following environmental permits. The Applicant would mitigate potential water quality impacts associated with aquatic discharges by:

- Obtaining national pollutant discharge elimination system (NPDES) construction storm Water general permits from the Ohio EPA with submittal of a stormwater pollution prevention plan to direct the implementation of construction related storm water BMP.
- Pursuing the U.S. Army Corps of Engineers Section 404 or nationwide permit for stream crossings and wetland impacts.

The Applicant does not anticipate that it would need to implement a spill prevention, control, and countermeasure plan (SPCC). Staff agrees that the requirement of an SPCC would be unlikely.

The project would not require an NPDES permit for operation of the facility, 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 solid waste present. However, the Applicant would retain the services of an experienced and qualified firm to perform a phase 1 environmental site assessment (ESA) of the project area prior to construction. The Applicant also 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 would 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 lightning mast, would be approximately 70 feet.

There are no public use airports, helicopter pads, or landing strips within five miles of the project. According to the Federal Aviation Administration (FAA), the closest public-use airport is the Richmond, Indiana Municipal Airport (RIC) which is just over nine miles from the proposed solar farm project. There are no private use airports or helicopter pads within or adjacent to the project boundary, but there are two private use airstrips west of the project. The Mite Airport and Morningstar North airstrips are located between two and five miles from the proposed project.

Because the solar farm is well outside the vicinity of Richmond Indiana Municipal Airport, an aeronautical study regarding glare is not warranted (14 CFR 77.17(a)(2)). The Applicant further states that the project will not be visible to, and will present no risk of glare, to pilots making final approaches to the Richmond Indiana Municipal Airport.

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 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 project. Additionally, the Applicant states it will 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 property lines, and from above-ground equipment and habitable residences.

Most construction activities would occur on private land away 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 with a seven foot 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 Gasper and Washington 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. The Applicant stated that this notice will provide information about construction and will include the contact information of a representative who will receive complaints, concerns, or comments during construction. 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 June 12, 2019, at 6 p.m. at the Eaton Fire Division Station #2, 391 West Lexington Road., Eaton, Ohio 45320. The adjudicatory hearing is scheduled for June 26, 2019, at 10 a.m., in Hearing Room 11D at the offices of the PUCO, 180 East Broad Street, Columbus, Ohio 43215.

The Eaton Community School District and the Ohio Farm Bureau Federation have been granted intervention in this case. The administrative law judge has not yet ruled on the remaining motions and notice to intervene. As of May 23, 2019, the Ohio Power Siting Board has received 17 public comments regarding this case. 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 boundary 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.

Eight 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 802 acres of cultivated lands and 39 acres of pasture, including the loss of 505 acres of agricultural district land. 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, and nearly no water or wastewater discharge is expected. The project will use water for occasional cleaning of panels a few times each year as needed. 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.

## **IV. RECOMMENDED CONDITIONS OF CERTIFICATE**

Following a review of the application filed by the Alamo 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 commencement of any construction activities. Staff, the Applicant, and representatives of the primary contractor and all subcontractors for the project shall attend the preconstruction conference. The conference shall include a presentation of the measures to be taken by the Applicant and contractors to ensure compliance with all conditions of the certificate, and discussion of the procedures for on-site investigations by Staff during construction. Prior to the conference, the Applicant shall provide a proposed conference agenda for Staff review. The Applicant may conduct separate preconstruction conferences for each stage of construction.
- (3) 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.
- (9) 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.
- (10) 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.
- (11) 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.
- (12) 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.

### **SOCIOECONOMIC CONDITIONS**

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

- (13) 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.

- (14) Prior to commencement of 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. Additionally, the possible mound site near the project area shall be identified, fenced off, and avoided throughout construction and operation of the facility.
- (15) Prior to commencement of 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. 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.
- (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. Damaged field tile systems shall be promptly repaired to at least original conditions or modern equivalent at the Applicant's expense. If the affected landowner agrees not to have the field tile system repaired, they may do so only if the field tile systems of adjacent landowners is unaffected by the non-repair of the landowner's field tile system.
- (17) Within 30 days after issuance or receipt, the Applicant shall provide Staff a copy of any arrangement or 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 provide 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) Except for the areas necessary for access road and collection line installation, the Applicant shall not clear wooded areas, including scrub/shrub areas, which 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:

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

- (25) 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.
- (26) The Applicant shall not commence any construction of the facility until it has as executed an Interconnection Service Agreement and Interconnection Construction Service Agreement, if applicable, 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.
- (27) The facility shall be operated in such a way as to assure that no more than 69.9 megawatts would at any time be injected into the Bulk Power System.



*An Equal Opportunity Employer and Service Provider*

[www.OPSB.ohio.gov](http://www.OPSB.ohio.gov)  
(866) 270-OPSB (6772)

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

**This foregoing document was electronically filed with the Public Utilities**

**Commission of Ohio Docketing Information System on**

**5/28/2019 3:27:47 PM**

**in**

**Case No(s). 18-1578-EL-BGN**

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