

# Staff Report of Investigation

Oak Run Solar Project  
Oak Run Solar Project, LLC

Case No. 22-0549-EL-BGN  
Case No. 22-0550-EL-BTX

March 27, 2023



Power Siting  
Board

Mike DeWine, Governor | Jenifer French, Chair

In the Matter of the Application of Oak Run Solar, LLC for )  
a Certificate of Environmental Compatibility and Public )  
Need. )

Case No. 22-0549-EL-BGN  
Case No. 22-0550-EL-BTX

### **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 Oak Run Solar, LLC for  
a Certificate of Environmental Compatibility and Public  
Need.**

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**Case No. 22-0549-EL-BGN**  
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Chair, Public Utilities Commission  
Director, Department of Agriculture  
Director, Department of Development  
Director, Environmental Protection Agency  
Director, Department of Health

Director, Department of Natural Resources  
Public Member  
Ohio House of Representatives  
Ohio Senate

To the Honorable Power Siting Board:

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

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

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

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

Sincerely,



Michael Williams  
Executive Director  
Ohio Power Siting Board

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## **I. EXECUTIVE SUMMARY**

The authority of the Ohio Power Siting Board (Board or OPSB) is prescribed by Ohio Revised Code (R.C.) Chapter 4906. R.C. 4906.10 specifies that the Board shall not grant a certificate for the construction, operation, and maintenance of a major utility facility, either as proposed or as modified by the Board, unless it finds and determines eight specified criteria. Staff investigated the application presented by Oak Run Solar, LLC (Applicant) and recommends that the Board approve the Applicant's request for a certificate of environmental compatibility and public need subject to the proposed conditions contained in this report. The solar generation and battery storage case number is 22-0549-EL-BGN and the transmission line case number is 22-0550-EL-BTX. The Applicant presented the information for both cases in one application and this one Staff report is the result of the investigation and recommendations of both cases.

## **II. POWERS AND DUTIES**

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

Membership of the Board is specified in R.C. 4906.02(A). The voting members include: the Chairperson of the Public Utilities Commission of Ohio (PUCO or Commission) who serves as Chairperson of the Board; the directors of the Ohio Environmental Protection Agency (Ohio EPA), the Ohio Department of Health (ODH), the Ohio Department of Development (ODOD), the Ohio Department of Agriculture (ODA), and the Ohio Department of Natural Resources (ODNR); and a member of the public, specified as an engineer, appointed by the Governor from a list of three nominees provided by the Ohio Consumers' Counsel. Additionally, in certain cases including the present matter, voting members include two ad hoc members: one county commissioner or designee and one township trustee or designee. Non-voting Board members include four members of the Ohio General Assembly (with alternates) selected by leadership 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 Chairperson 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 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 Chair 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

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1. R.C. 4906.04 and 4906.20.

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

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

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

5. R.C. 4906.08(C).

6. R.C. 4906.07.

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

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 any time.<sup>9</sup>

### **Board Decision**

The Board may approve or deny an application for a certificate of environmental compatibility and public need as filed, or modify and approve it upon such terms, conditions, or modifications as the Board considers appropriate.<sup>10</sup> 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 the Board decision to be unlawful or unreasonable may submit within 30 days an application for rehearing.<sup>14</sup> An entry on rehearing would then be issued by the Board within 30 days and may be appealed within 60 days to the Supreme Court of Ohio.<sup>15</sup>

### **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

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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.

systems serving this state and interconnected utility systems and that the facility will serve the interests of electric system economy and reliability;

- (5) That the facility will comply with Chapters 3704, 3734, and 6111 of the Revised Code and all rules and standards adopted under those chapters and under section 4561.32 of the Revised Code. In determining whether the facility will comply with all rules and standards adopted under section 4561.32 of the Revised Code, the board shall consult with the office of aviation of the division of multimodal planning and programs of the department of transportation under section 4561.341 of the Revised Code;
- (6) That the facility will serve the public interest, convenience, and necessity;
- (7) In addition to the provisions contained in divisions (A)(1) to (6) of this section and rules adopted under those divisions, what its impact will be on the viability as agricultural land of any land in an existing agricultural district established under Chapter 929 of the Revised Code that is located within the site and alternative site of the proposed major utility facility. Rules adopted to evaluate impact under division (A)(7) of this section shall not require the compilation, creation, submission, or production of any information, document, or other data pertaining to land not located within the site and alternative site; and
- (8) That the facility incorporates maximum feasible water conservation practices as determined by the board, considering available technology and the nature and economics of the various alternatives.



### **III. APPLICATION**

#### **APPLICANT**

The application for the facility (Oak Run Solar Project) was submitted by Oak Run Solar, LLC (Applicant), which is a subsidiary of Savion, LLC (Savion). Savion is a part of Shell group. Savion was founded in 2019 and is headquartered in Kansas City, Missouri. Savion has developed more than approximately 2.5 gigawatts of solar and energy storage projects across the United States. The Oak Run Solar Project would be constructed, operated, and maintained by the Applicant.

#### **HISTORY OF THE APPLICATION**

On June 7, 2022, the Applicant filed a pre-application notification letter regarding the project.

On June 22, 2022, the Applicant held a public informational meeting for the project.

On July 18, 2022, the Applicant filed a second pre-application notification letter regarding the project.

On July 20, 2022, the Madison County Commissioners filed a resolution appointing Mark Forrest to the Board as an ad hoc voting member.

On August 2, 2022, the Applicant held a second public informational meeting for the project.

On September 2, 2022, the Applicant filed the Oak Run Solar Project application. The Applicant also filed a motion for protective order regarding certain information provided with the application.

On September 29, 2022, the Monroe Township Board of Trustees filed a resolution appointing Jim Moran to the Board as an ad hoc voting member.

On October 7, 2022, the Deercreek Township Board of Trustees filed a resolution appointing Jim Moran to the Board as an ad hoc voting member.

On November 1, 2022, the Executive Director of the OPSB issued a letter of compliance regarding the application to the Applicant.

On November 21, 2022, the Applicant filed a supplement to the application providing a Phase I archaeological survey.

On December 7, 2022, a motion to intervene was filed by the Deercreek Township Board of Trustees.

On December 7, 2022, a motion to intervene was filed by the Monroe Township board of Trustees.

On December 7, 2022, a motion to intervene was filed by the Somerford Township board of Trustees.

On December 13, 2022, a motion to intervene was filed by the Madison County board of County Commissioners.

On January 20, 2023, a corrected motion to intervene was filed by the Madison County board of County Commissioners.

On February 13, 2023, a motion to intervene was filed by the Madison County Soil and Water Conservation District board of County Commissioners.

On March 6, 2023, the Ohio Farm Bureau Federation requested to intervene in this proceeding.

On March 7, 2023, a motion to intervene was filed by the International Brotherhood of Electrical Workers, Local Union 683.

On March 7, 2023, a motion to intervene was filed on behalf of John Boeckl.

On March 7, 2023, a motion to intervene was filed by the Ohio Partners for Affordable Energy.

A local public hearing has been scheduled for April 11, 2023, at 5:00 p.m. An evidentiary hearing is scheduled to commence on May 15, 2023 at 10:00 a.m.

This summary of the history of the application does not include every filing in case numbers 22--0549-EL-BGN and 22-0550-EL-BTX. The docketing record for this case, which lists all documents filed to date, can be found online at <http://dis.puc.state.oh.us>.

### **PROJECT DESCRIPTION**

The Applicant intends to construct, own, operate, and maintain the Oak Run Solar Project, an 800 MW solar-powered generating facility, a 300 MW alternating current (AC) battery energy storage system (BESS), and two 3.45 mile-long transmission lines in Monroe, Somerford, and Deercreek Townships in Madison County. The project would consist of large arrays of photovoltaic (PV) modules, commonly referred to as solar panels, ground-mounted on a tracking rack system, battery energy storage containers, and two 3.45 mile-long transmission lines. The project would occupy approximately 4,400 acres within an approximate 6,050-acre project area comprised of private land secured by the Applicant through executed purchase options or pending sale contracts with the landowners. The project would include associated facilities such as access roads, underground and overhead electric collection lines, weather stations, inverters and transformers, a collector substation, and 230 kV electric transmission lines. The project would be secured by perimeter fencing which would be seven-feet tall and accessed through gated entrances. The Applicant would ensure that solar modules are set back a minimum of 300 feet from non-participating sensitive receptors and 150 feet from non-participating property boundaries and roads.

#### **Solar Panels and Racking**

The solar panels would be attached to metal racking. The racking would include steel piles driven into the ground to a depth of approximately 10 feet. PV modules have not yet been procured for

the project.<sup>16</sup> The Applicant would only utilize solar modules demonstrated as nonhazardous and that pass the U.S. Environmental Protection Agency's (USEPA) Toxicity Characteristics Leaching Procedure ("TCLP") testing protocol. In addition, the Applicant would select panel manufacturers that qualify as Bloomberg New Energy Finance tier 1 supplier. Panel models under consideration are mono-crystalline or thin-film modules.<sup>17</sup> Depending on the module selected, the facility would include approximately 1,553,000 to 2,391,000 panels. The solar arrays would be grouped in large clusters that would be fenced in with gated entrances. The highest point of each module would be approximately 9 to 12 feet, and the fence would not exceed seven feet. The project's arrays would be mounted on a single-axis tracking system that would rotate east-west to track the sun as it moves through the sky each day. The Applicant estimates the solar field would occupy approximately 3,532 acres of the project area.

### **Battery Energy Storage System (BESS)**

The Applicant proposes to construct and install a 300 MW BESS consisting of approximately 328 battery containers, similar in size to a shipping container, as well as 82 inverters and 82 transformers. The Applicant's current layout design proposes that the BESS would consist of two BESS equipment areas of 150 MW each that occupy approximately 11 acres each within the project area.

The Applicant plans to utilize lithium-ion battery technology for the facility.<sup>18</sup> The Applicant is currently considering the Tesla Megapack model; however, the final technology supplier and model selection would depend on product availability and pricing closer to the commencement of construction. Staff has found that this is a commonly used battery technology and would be reasonable to use at this proposed facility. The dimensions of the battery containers currently under consideration are approximately about 29 feet long by 5.5 feet wide by 9 feet high. These battery containers would then be connected to an inverter and be connected to switchgear, a medium voltage transformer, inverter electrical cabinets, and a heating and cooling system. The BESS would then connect to the collector substations. The BESS would remain within the proposed 22-acre total footprint shown in the application.

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

Information on Staff's consideration of potential health impacts of each type of solar panel technology can be found in the ODH fact sheet entitled *Solar Farms and Photovoltaic Technologies Summary and Assessment* available on the ODH website at <https://odh.ohio.gov/know-our-programs/health-assessment-section/resources/chemical-factsheets>.

17. The Applicant is considering using one of the following Tier 1 module manufacturers: First Solar, Canadian Solar, Trina, JA Solar, Jinko Talesun, Longi, and NE Solar.

18. There are several battery technologies. Ohio Department of Health (ODH) has assessed three common types: lithium ion, lead acid, and sodium sulfur batteries. ODH has found that information to date does not indicate a public health burden from the use of lithium-ion batteries operating under normal conditions. "ODH Battery Energy Storage Summary and Assessments", Updated April 11, 2022, <https://odh.ohio.gov/know-our-programs/healthassessment-section/media/summary-batteries> (Accessed August 30, 2022).

The BESS facility would be able to discharge at 300 MW over four hours and deliver 1,200 MWh of energy within that timeframe. After the 1,200 MWh is fully discharged, the BESS would then need to be recharged.

### **Electric Collection System**

The Applicant would install an underground collector system made up of a network of electric and communication lines that would transmit the electric power from the solar arrays and BESS to central locations (i.e., the collector substations and then the project step-up substation detailed below). The Applicant proposes to install approximately 933,000 feet of buried cable.

The underground lines would be installed by direct burial method or horizontal directional drilling (HDD). The below grade portion of the collector system would be buried at a minimum depth of 36 inches.

The electricity from the solar panels would be generated in direct current (DC) and would be transmitted to a centralized location through a DC combiner harness. Power from the DC collection would be transmitted to a group of components, collectively called an inverter, which would include a DC-to-AC inverter, a step-up transformer that would increase the voltage to 34.5 kV, and a cabinet containing power control electronics. This would be housed in a power conversion station mounted on a steel skid and set on a steel pile or concrete pad foundation. This facility would include up to 243 inverter pads.

### **Collector Substations**

The facility would have two collector substations that would each occupy approximately 15 acres of land. The major components of the Applicant's collector substations would be a two 34.5 kV to 230 kV transformers, circuit breakers, surge arrestors, insulators, site security fencing, control house, and a lightning mast. One of the transformers would be for the solar array and one for the BESS. The collector substations are denoted on the maps in this report.

### **230 kV Electric Transmission Lines**

The Applicant would also install two approximately 3.45-mile-long 230 kV electric transmission lines to transfer the power from each collector substation to the Applicant's project step-up substation. The 230 kV electric transmission line would consist of a single and double circuit conductor supported on monopoles approximately 120 feet tall. The Applicant provided a preferred and alternate route for the combined part of the transmission lines. The applicant states that the preferred route has the most landowner support and offers the least social, economic, and environmental impacts, including 2.4 less acres of tree clearing. Staff agrees and recommends the preferred route.

### **Project Step-up Substation**

The Applicant would also construct one approximately 17.6-acre step-up substation. This substation would transform the voltage from 230 kV to 765 kV to deliver it to the grid. The major components of the Applicant's step-up substation would be a four 230 kV to 765 kV transformers, circuit breakers, insulators, site security fencing, a control house, and a concrete barrier. The Applicant would construct a concrete sound barrier on two sides of the transformers to mitigate

for noise. The step-up substation and 230 kV electric transmission lines are denoted on the maps in this report.

#### **AEP Point of Interconnection (POI) 765 kV Switchyard Substation and 765 kV transmission lines**

The facility would then interconnect to a new future POI 765 kV switchyard substation. This POI 765 kV switchyard would be near the proposed project step-up substation and adjacent to the existing AEP-owned portion of the Marysville-Flatlick 765 kV transmission line. The POI 765 kV switchyard would include three 765 kV circuit breakers, associated protection and control equipment, 765 kV line risers, Supervisory Control and Data Acquisition equipment, 765 kV revenue metering, support structures, conductors, and short 765 kV transmission lines. The short 765 kV electric transmission lines may be needed to enter and exit the project step-up station and POI 765 kV switchyard necessary for interconnection with the adjacent existing transmission line. AEP would construct and own the POI 765 kV switchyard and short 765 kV transmission lines.

The POI 765 kV switchyard and short 765 kV electric transmission lines would be separate future filings with the OPSB.

#### **Access Roads**

The Applicant proposes to construct approximately 44 miles of new access roads for construction, operation, and maintenance of the solar facility.

#### **Construction Laydown Area**

The Applicant proposes to use up to 12 temporary construction laydown areas with a maximum total area of 25 acres. The laydown areas would be used for material staging, equipment storage, parking, and construction trailers. The laydown areas would be located within the project fence and would be restored at the end of construction.

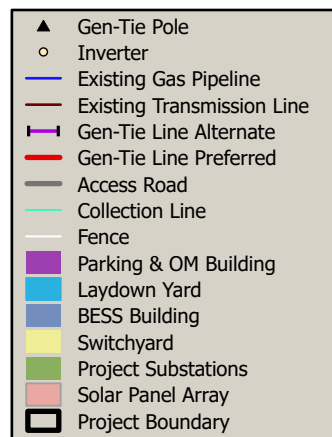
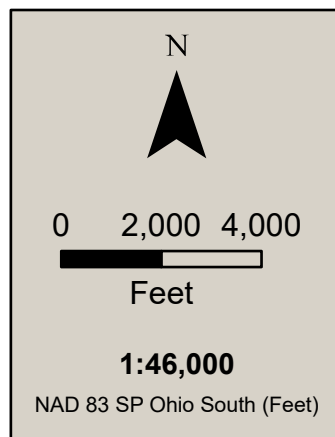
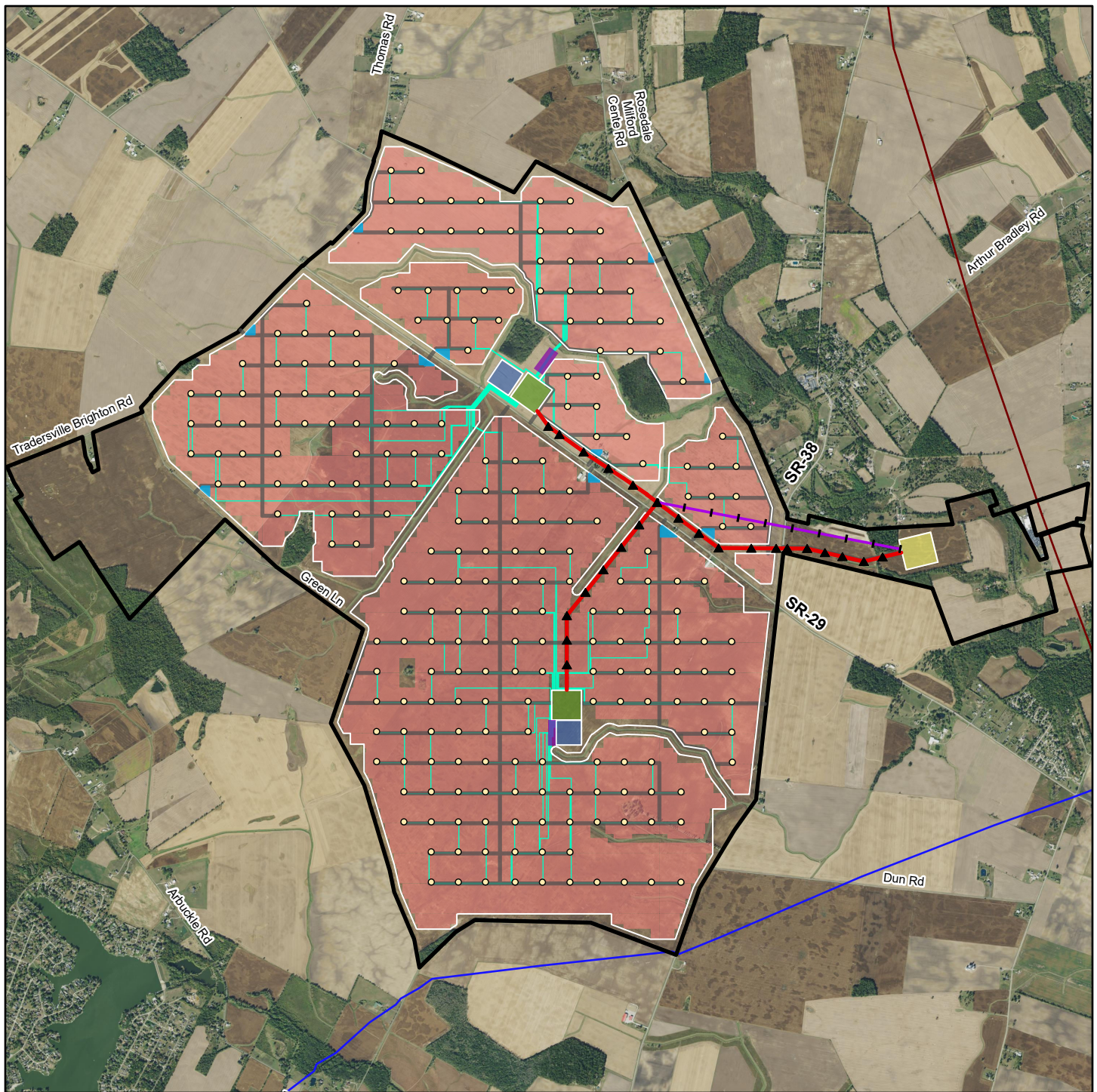
#### **Weather Stations**

The project would include up to 32 weather stations. These stations would contain devices to measure solar irradiance and other related meteorological data. The stations would be located in conjunction with other meteorological measuring equipment such as temperature sensors, pyranometers, and anemometers. These stations would be approximately 14 feet in height.

#### **Operations and Maintenance (O&M) Building**

The Applicant proposes to construct two O&M buildings, adjacent to the two collection substations. The buildings' purpose would be to provide a workspace for operations personnel as well as a place to house items necessary for the O&M of the facility. The buildings would include an on-site water storage tanks and septic system.





## Overview Map

**22-0549-EL-BGN**  
**22-0550-EL-BTX**

### Oak Run Solar

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

## **IV. CONSIDERATIONS AND RECOMMENDED FINDINGS**

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

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

#### **BASIS OF NEED SOLAR FACILITY/BESS**

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 solar and BESS part of 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 the solar electric generation and BESS parts of the facility, because these parts of the facility are neither an electric transmission line nor a gas pipeline.

#### **BASIS OF NEED TRANSMISSION GEN-TIE LINE**

##### **Purpose of the Proposed Facility**

Pursuant to R.C. 4906.10(A)(1), the Board must determine the basis of need of the facility if the facility is an electric transmission line or gas pipeline. Staff has found the following with regard to the basis of need for the facility.

The Applicant proposes to construct two 3.45 mile long 230 kV transmission lines in Madison County, Ohio. The proposed tie lines would assist with the connection of the Oak Run Solar Facility to the bulk power system (BPS) through AEP's existing Marysville-Flatlick 765 kV transmission line.

##### **System Economy and Reliability**

The Applicant states that it has submitted interconnection requests to PJM to determine that the facility can be safely connected to the interconnection, without creating negative network impacts. The PJM system impact studies showed that the facility can be safely connected to the PJM regional system, provided the upgrades and contingency overloads identified in the studies are addressed.

##### **Long-Term Forecast Report**

The Applicant states that it is not an electric utility or distribution company, so it need not file a long-term forecast report.

#### **Recommended Findings**

Staff recommends that the Board find that the basis of need for the transmission line project has been demonstrated and therefore complies with the requirements specified in R.C.

4906.10(A)(1), 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)(2)**

### **NATURE OF PROBABLE ENVIRONMENTAL IMPACT**

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

#### **Overview**

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

#### **Community Impacts<sup>19</sup>**

##### *Land Use*

The Applicant states the primary land use within the project area is agricultural, at 93 percent. The remaining seven percent is comprised of forest, grassed swales/lawns, scrub shrub, wetlands, and industrial and existing roadways land uses. The total permanent impact to agricultural land would be approximately 4,293 acres. Permanent impacts refer to those for the life of the project. The land would be able to be returned to agricultural use at the end of the project and decommissioning. Impacts to land use would be contained to the footprint of the project.

The Applicant designed the project such that there would be no disturbance of or impacts to the wetlands and streams within the project area during both the construction and operation of the project. The Applicant states however, if impacts to these become unavoidable due to changes to the final design of the project, it will obtain the necessary permits for impacts to wetlands and streams.

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

The Applicant designed the layout to include setbacks from the project fenceline of 300 feet from non-participating residences, 150 feet from non-participating parcel boundaries, and 150 feet from the edge of adjacent roads. Upon the end of the project lifespan and decommissioning, the Applicant states the land would be able to be returned to agricultural land use.

The Applicant is investigating the possibility of implementing an agrivoltaic program for vegetation or crops to be planted in the rows between panels. A subsidiary of the Applicant company, Between the Rows, LLC was formed to work with The Ohio State University College of Food, Agricultural, and Environmental Sciences on researching the feasibility of agricultural production at utility-scale solar facilities. The Applicant states it would utilize a combination of options for the project, which might include bee keeping with native pollinator plantings, sheep grazing, and ground cover plantings. The Applicant cites community concern regarding the loss of prime farmland and agricultural use of the land as a factor in choosing to utilize agrivoltaics.

### *Regional Planning*

Comprehensive land use plans provide citizens, elected officials, and developers with a conceptual planning framework. These plans may be utilized by governmental actors (such as planning boards) to aid in land use decisions; however, it is important to note that comprehensive plans are primarily authored to provide generalized guidance on market-based growth trends and many areas of these plans are deliberately not written with any binding force.

The Applicant reviewed the Madison County 2014 Land Use Plan. This plan does not put forth any proposed changes to the land the project would be located on, which is currently zoned for agriculture. The project would contribute to the goal of improving the quality of the living environment through an assortment of land uses that are compatible. The Applicant states the development of the project would not hinder any potential future development in adjacent areas.

The proposed solar facility would be expected to support the local economy by providing local farmers/landowners supplemental income for their leased land and increasing local tax revenues through the PILOT program which will contribute to the local county school districts of Deercreek, Monroe, and Somerford Townships. The project is consistent with the protection and preservation of the agricultural industry in that the facility would provide supplemental income to farmers/landowners, the land would be protected from permanent industrial or residential development, and the land could be returned to agricultural land use upon decommissioning. Staff agrees this project would not directly conflict with local land use plans and would be likely to align with goals set forth in the county's land use plan. This project would contribute to local municipal tax revenues without increasing permanent demand for public resources such as water and sewage, roads, and schools.

### *Recreation*

The Applicant identified 14 recreational areas within five miles of the project. These areas include five wetland reserve programs, two preserves, three Clean Ohio Farmland locations, a scenic river, a lake, a metro park, and a scenic byway. Visibility of the project is limited to seven of the eight recreational resources that would be located within 1.6 miles of the project. These seven

recreational resources would have partial (75-25 percent) or limited (<25 percent) visibility of the project. Staff asserts any visibility of the project from recreational resources would be unlikely to be in such a manner that would negatively affect recreational land use or the ability to use any of these recreational resources.

### *Aesthetics*

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

Staff reviewed the Applicant's Visual Resources Technical Report in Exhibit X and the Visual Impact Mitigation and Lighting Plan in Exhibit Y. The maximum height of the solar panels would be 12 feet. Based on the results of the Applicant's visual analysis, there are four view categories: (1) first encounter views which would be those traveling near or into the project area, (2) residential views which would be static views from residences, (3) gen-tie views which would be of the project's transmission infrastructure, and (4) distant views which would be those at or beyond 1 mile from the project. First encounter views along adjacent roads where there would be setbacks of 150 feet for solar panels, viewers would experience visibility of panels from 0.1 to 0.4 mile away. First encounter and residential view types would experience views of panels in a majority of the farmland within the foreground (0.25 mile), adding a more mechanized visual character to the rural agricultural landscape. Gen-tie lines would be visible to all four view types, though primarily within the gen-tie view type in the central and eastern areas of the project area along Highways 29 and 38 which have existing overhead utility infrastructure populating the visual landscapes. There are however areas which do not have this existing overhead infrastructure and therefore would be the dominant features in those visual landscapes. Distant views of the project beyond a mile would be indistinguishable from the surrounding agricultural landscape. Factors including flat topography, intervening structures and vegetation, and visual decay of human sight contribute to this limited visibility. The project area is spotted with woodlots and windrows that the Applicant has designed the layout of the project to largely avoid clearing in order to preserve their natural screening function.

The Applicant designed the facility to include setbacks from the project fenceline of 300 feet from non-participating residences, 150 feet from non-participating parcel boundaries, and 150 feet from the edge of adjacent roads. The Applicant stated in response to Staff data request questions that it has and continues to work with adjacent residences on individualized plans for visual screening (location, vegetation types, height, and spacing) and good neighbor agreements. The Applicant stated that this correspondence and engagement is ongoing and that the Applicant is still working on acquiring feedback from adjacent residences, and therefore a draft landscaping mitigation plan has not yet been developed. The Applicant stated this outreach started with an initial contact through mail or phone to the 59 adjacent residences within 1,500 feet from any project components. In the case of residences that are unable to be reached or do not provide

feedback, the Applicant proposes to implement targeted vegetative screening that would be located within the project footprint outside of the fenceline.

Lighting onsite would be minimal and designed to minimize light pollution impacts outside of the facility, such as being downward facing and pointed away from roads and residences when possible. The Applicant plans to utilize a seven-foot-tall agricultural style fence that is aesthetically fitting for a rural location and allows for the passage of small mammals. Staff recommends this fencing have gaps of at least six inches by six inches.

Staff's proposed landscaping condition requires that the Applicant also consult with a certified professional landscape architect in development of its landscaping mitigation plan. Staff is recommending that the Applicant's landscape and lighting plans incorporate design features to reduce visual impacts of the solar facility and associated infrastructure in areas where an adjacent non-participating parcel contains a residence with a direct line of sight to the project's infrastructure, as well as the travelling public, nearby communities, and recreationalists. Staff recommends that aesthetic impact mitigation include good neighbor agreements or other methods in consultation with affected landowners such as what the Applicant has already been engaging in, and subject to Staff review. With implementation of Staff's landscape-lighting and fencing condition, the overall expected aesthetic impact of the facility would be minimal.

#### *Cultural Resources*<sup>20</sup>

The Applicant enlisted a consultant, Commonwealth Heritage Group (Commonwealth), who performed a literature review and Phase I cultural resource management investigation (archaeology and history/architecture) for the project. The archaeological cultural resources studies were completed in two phases. The first phase was surveyed in May 2022 and the second phase in December 2022. The first phase surveyed approximately 5,850 acres. The second phase surveyed approximately 204 acres. The report of the first phase was created and filed in November 2022. The report of the second phase was filed on March 22, 2023 but OHPO has not commented on it as of the filing of this report. From the literature review, the consultant identified 4 NRHP archaeological districts, 31 NRHP sites, and 6 sites eligible for listing on the National Register of Historic Places (NHRP). During the first Phase I survey, the consultant identified 488 new archaeological sites within the project area. The consultant recommended that of the 488 sites 15 require avoidance or further study due to potential eligibility for listing on the NHRP. An additional cemetery is also recommended for avoidance and additional screening. From the first report, Commonwealth recommended that of the 488 identified archaeological sites identified, no sites are eligible for listing in the NHRP. OHPO, in a letter dated December 9, 2022, concurred with Commonwealth's recommendation. Concerning the second

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

survey of 204 acres, the consultant identified 14 new archaeological sites within the 204 acres. The consultant recommended that of the 14 sites none require avoidance or further study due to potential eligibility for listing on the NHRP. The Applicant has committed to avoid or further study any archaeological resources recommended by Commonwealth or OHPO to be eligible for listing on the NHRP. Staff is recommending a condition that the Applicant implement the work plan included in *Supplement to Application-Addendum to Phase I Archaeology Survey and Phase II Archaeology Work Plan* filed on March 22, 2023 to avoid or further study the 15 potentially eligible sites and any sites recommended by OHPO if OHPO does not concur with the Consultant's recommendation concerning the second survey.

With OHPO's concurrence of Commonwealth's recommendations concerning potentially eligible sites and the Applicant's commitment to avoid or further study any sites discovered and recommended to be eligible for listing in the NHRP Staff has determined that minimal adverse environmental impacts to archaeological cultural resources would be achieved.

Commonwealth also gathered background information and completed historical/architectural cultural resources studies for this project, which included a historic architecture survey of the area of potential effect. Four previously identified resources, which are cemeteries, were reidentified. These four cemeteries require additional research to determine eligibility for list in the NHRP. Commonwealth identified 221 properties 50 years or older within the area of potential effect. Of the 221 properties surveyed five properties are recommended as eligible for listing on the NHRP, and three are recommended as needing additional research to determine eligibility for listing on the NHRP. Concerning the four previously identified cemeteries and eight other resources recommended as eligible or in need of further research are all recommended as having no potential effect from the project because they have a limited or non-existing view of the project. In addition, one of the four cemeteries in located within the project boundary will be avoided and have a 100-foot buffer created during construction. With this avoidance and buffer, Staff has determined that minimal adverse environmental impacts to historical/architectural cultural resources would be achieved.

#### *Economic Impact*

The Applicant states that it would be responsible for the construction of the proposed project and ownership of all structures and affiliated equipment. The Applicant plans to acquire all necessary permissions, permits, and voluntary lease agreements.

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

Total cost comparisons between the proposed facility and other comparable facilities are to be provided in the application. The Applicant cited a 2021 report published by the Lawrence Berkeley National Laboratory (Berkeley Lab) which states that utility-scale solar capital costs fell to \$1,114/kilowatt AC (kWAC) in 2020. Staff confirmed that the Applicant's proposed capital costs are consistent with those reported by the Berkeley Laboratory.

O&M expense comparisons between the proposed facility and other comparable facilities are to be provided in the application. The Applicant cited a report from the Berkely Laboratory that O&M costs for utility scale solar projects were \$16/kWAC-year for projects constructed in 2020. Staff also notes that the National Renewable Energy Laboratory (NREL), in its 2021 update on utility-scale solar costs, reports that O&M costs were \$16/kW/year for fixed-tilt PV facilities and \$17/kW/year for facilities using tracking systems. Staff confirms the Applicant's costs are below this range.

The Applicant provided its estimates of the cost of delays in permitting and construction of the proposed facility, although the estimated costs were filed under seal. The Applicant stated that delays could result in idle construction crews and equipment. The Applicant's characterization of its estimated costs of delays appears reasonable to Staff.

The Applicant retained the services of Strategic Economic Research (SER) to report on the economic impact of the project.<sup>21</sup> SER used the NREL Jobs and Economic Development Impact (JEDI) model, the IMPLAN regional economic modeling system, as well as data from the Ohio Department of Taxation, to estimate the economic impact of the construction and operation of the solar facility.

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 and IMPLAN model analysis conducted by SER, the project is expected to have the following impacts:

#### Jobs

- 3,033 construction related jobs for the state of Ohio.
- 63 long-term operational jobs for the state of Ohio.

#### Earnings

- \$209 million in local earnings during construction for the state of Ohio.
- \$3.3 million in annual earnings during facility operations for the state of Ohio.

#### Output

- \$421 million in output during construction of the facility for the state of Ohio.
- \$8.3 million in annual output during facility operations for the state of Ohio.

The project is estimated to generate \$7.2 million annually for the Madison County taxing district. This estimate is based on a proposed payment in lieu of taxes (PILOT) plan in which the Applicant would pay \$9,000/MW annually for a total of 800 MW. At this time, the Applicant has not entered into a PILOT agreement with Madison County.

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

### *Communications*

Staff has found that radio interference can be experienced in the AM broadcast band (535-1605 kilohertz [kHz]) and FM band (88-108 megahertz [MHz]), caused by transmission line gap-type discharge (1-1000 MHz). Staff has also found that gap-type discharge, such as that emitted by loose or defective transmission hardware, typically is localized and can be readily detected and corrected. Also, there are additional mitigation measures (e.g., corona rings) that can be applied to eliminate the Interference source.

The Applicant performed an electromagnetic transient study to evaluate potential AM, FM, and television interference.<sup>22</sup> Based upon the results of that study, the Applicant does not anticipate any television or radio interference from the 230 kV electric transmission lines.

### *Glare*

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

Solar panels are designed to absorb as much sunlight as possible with minimal reflectivity and include an anti-reflection coating. The Applicant conducted a glint and glare analysis to identify any potential impacts along local roads, airports within 10 miles of the project area, and at nearby residences.<sup>23</sup> To perform the analysis of glare, the Applicant used the ForgeSolar software formerly known as the Solar Glare Hazard Analysis Tool (SGHAT) which was developed by Sandia National Laboratories to analyze potential glare at sensitive receptor locations. This software is commonly used by solar facility developers to determine the effect of solar glare. Glare is classified in three categories in the SGHAT tool: (1) the green type, which is associated with a low potential for temporary after-image when observed prior to a typical blink response time; (2) the yellow type, which is associated with a potential for temporary after-image when observed prior to a typical blink response time; and (3) the red type, which is associated with permanent retinal damage when observed prior to a typical blink response time. The Applicant found that no glare (i.e., no minutes of green, yellow, or red type) from the project is predicted to vehicles using the roadways or nearby residences. The Applicant also found that no glare from the project is predicted for local flightpaths for Madison County Airport and Darby Airport (Union County) nor for a helicopter hovering at the Madison Health Center helipad.

Staff notes that the results are contingent on the use of an anti-reflective coating. The Applicant stated that when the module is selected the front glass will include an anti-reflective coating. Staff further recommends that the solar panel model utilized for the project chosen must have an anti-reflective coating. Staff notes that aesthetic impact mitigation measures that include

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22. Supplement to Sixth data request from Staff response filed March 20, 2023 (Questions #24, #25, and Attachment 2).

23. Application at Exhibit P.

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

### *Decommissioning*

The Applicant holds land rights for the project area. The Applicant estimates that the solar facility can operate for 30 years or more. The Applicant has prepared a decommissioning plan and total decommissioning cost estimate of \$33,334,643 for the solar facility plus an additional \$11,260,228 to decommission the BESS facility. Staff has reviewed that decommissioning plan.<sup>24</sup>

According to the Applicant's plan, at the end of the useful life of the facility, the solar facility and BESS would be decommissioned, and the land be returned to its current agricultural land use as cultivated cropland. Prior to the start of any decommissioning activities, the Applicant would apply for and obtain applicable federal, state, and local permits. At this time, the Applicant has identified that just prior to decommissioning, it may need to obtain, among other things at the least, an Ohio EPA Construction Storm Water General Permit including implementation of a stormwater pollution prevention plan, USACE water quality permits, and a road use maintenance agreement (RUMA). At the time of decommissioning, panels and BESS components would be reused, salvaged, recycled, or properly disposed in accord with regulations in effect at that time.

The decommissioning sequence consists of but is not limited to reinforce access roads for component removal, disconnect and de-energize of solar and BESS facilities from the bulk electric system, dismantling panels and racking, removal of inverters and transformers, removing electrical cables to a depth of at least 36 inches, remove BESS components, remove fencing, removing access and internal roads, grading the site, removing the substations if decommissioned, and revegetating disturbed land to pre-construction conditions, to the extent practicable. The Applicant has committed to completely remove vertical steel support piles. At the request of the landowner, the Applicant may leave access roads or fencing in place.

The Applicant has also committed to coordinate with the appropriate local agency, i.e., the county engineer, to coordinate repair of any public roads if damaged or modified during decommissioning likely via a RUMA. The Applicant would restore the land significantly to its original topography to allow for resumption of the preconstruction agricultural land use. The Applicant stated that it anticipates decommissioning activities and restoration to occur over and be completed in a 12 to 18-month period. The equipment removal would take approximately 12 to 18 months and additional time may be necessary for seasonal restoration and revegetation activities. Due to the weather dependent nature of site restoration, Staff recommends that the Applicant monitor the site to ensure successful revegetation and rehabilitation.

The Applicant intends to remove underground solar and BESS facility infrastructure to a minimum depth of 36 inches below ground surface, except that all vertical steel support piles would be completely removed. The Applicant would repair the drain tile network such that after decommissioning, whether cabling is required to be removed or remains in place, the new drain tile design would be built functional to whatever layout is required to return the tile to current

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24. Application at Exhibit D.



drainage capacities or better.<sup>25</sup> Staff agrees and therefore recommends that underground equipment be removed to the extent that allows for future drain tile repairs and installation to be completed after the site has been decommissioned.

The Applicant states it would repurpose, salvage, recycle or haul offsite to a licensed solid waste disposal facility all solar and BESS components. Some of those solar and BESS components are anticipated to have a resale or salvage value and could be sold to offset the decommissioning cost. Those salvageable items typically are solar modules, tracking system, steel piles, inverters, and transformers. The currently proposed BESS layout would consist of the following major components: 328 battery containers, 82 power conversion systems (consisting of an inverter, medium voltage transformer, switchgear, etc.).

According to the Ohio EPA, the Resource Conservation and Recovery Act (RCRA) regulates the generation, transportation, treatment, storage, and disposal of the batteries as hazardous solid waste. For those battery containers that are intact with no leaks or damage, the Applicant would manage according to Ohio's equivalent of the USEPA's universal waste regulations. The universal waste regulation framework streamlines the hazardous waste management standards for certain categories of hazardous waste, such as batteries, to encourage recycling of those waste materials. For those battery containers that are not intact, the Applicant would likely need to evaluate and manage the batteries as hazardous waste in order to properly collect, treat, recycle, or dispose of them. This would entail removal, transportation to a recycle station, use of a skilled workforce required to handle the system, recordkeeping, testing/sampling, basic remediation and contingency for minor contamination. If the batteries could not be recycled or returned to the manufacturer, the Applicant would need to dispose of the batteries at a RCRA permitted treatment, storage, and disposal facility.

If solar modules are to be disposed, the Applicant intends to conduct the disposal in compliance with federal, state, and local laws and regulations. The Applicant is considering panels and intends to use only panels that have been certified or analyzed with the USEPA's TCLP test protocol and meet the USEPA definition of non-hazardous waste. Staff recommends that at the time of solar panel end of life disposal, any retired panel material that is not recycled and that is marked for disposal, shall be sent to an engineered landfill with various barriers and methods designed to prevent leaching of materials into soils and groundwater, or another appropriate disposal location at the time of decommissioning approved by Staff.

During construction of the facility, the Applicant would perform minimal grading and would ensure that topsoil and subsoil are appropriately segregated during excavation activities. Specifically, the Applicant intends that where grading is necessary, existing topsoil will be temporarily stripped and stockpiled, then the grading would be performed. After grading, the

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25. Sixth data request from Staff response filed November 25, 2022 (Question #31) and Second data request from Staff response filed October 14, 2022 (Question #12).

original topsoil would be replaced and reseeded with a seed mix to stabilize exposed soils in accordance with the Applicant's vegetation management plan.<sup>26</sup>

Staff recommends that the Applicant submit a final agricultural protection plan which demonstrates that the project would minimize impacts to future agricultural land use. Staff recommends as part of the plan that grading would be limited to the extent practicable and would not exceed more than five percent of the surface area of agricultural land within the project area. Also, the plan should include mapping and best management practices for graded soils.

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

Staff recommends that at least 45 days prior to the preconstruction conference, the Applicant shall submit an updated decommissioning plan and total decommissioning cost estimate without regard to salvage value on the public docket that includes: (a) a provision that the decommissioning financial assurance mechanism include a performance bond where the company is the principal, the insurance company is the surety, and the Ohio Power Siting Board is the obligee; (b) a timeline for removal of the equipment; (c) a provision to monitor the site for at least one additional year to ensure successful revegetation and rehabilitation; (d) a provision where the performance bond is posted prior to the commencement of construction; (e) a provision that the performance bond is for the total decommissioning cost and excludes salvage value; (f) a provision to coordinate repair of public roads damaged or modified during the decommissioning and reclamation process; (g) a provision that the decommissioning plan be prepared by a professional engineer registered with the state board of registration for professional engineers and surveyors; (h) a provision stating that the bond shall be recalculated every five years by an engineer retained by the Applicant; and (i) a provision that underground equipment will be removed to the extent that allows for future drain tile repairs and installation to be completed. And lastly, Staff recommends that the Applicant implement and comply with the decommissioning plan as approved by Staff.

#### *Wind Velocity*

In compliance with the Ohio Administrative Code, the Applicant has provided a tabulation of ranges of wind speeds and the frequency or probabilities of daily occurrences in Columbus, Ohio for the 2021 calendar year. The data were obtained from the Ohio State University College of Food, Agricultural and Environmental Sciences, the weather station located closest to the project area. The maximum average of the daily windspeeds recorded was 10.5 mph and the maximum

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26. Application at pages 134 to 135.

wind speed recorded over the 2021 year was 21.8 mph. The Applicant states that the project would be designed in accordance with the standards set forth by the American Society of Civil Engineers (ASCE), Standard 7-16, and will include wind speeds based on the building code wind speed maps for the project area. Accordingly, the three-second gust, and the sustained wind speed for which the project would be designed would be 100 mph and 80 mph, respectively. The ASCE 7-16 publication is the standard by which dead, live, soil, flood, earthquake, and wind loads are determined for structural design across the United States. Applicant also states that the facility would be designed using the wind speeds for Risk Category I buildings with exposure Category C, in compliance with ASCE 7-16. The racking systems would be driven to a depth sufficient to ensure stability to the solar panels during high wind events, and this depth is expected to be six to ten feet below grade. The Applicant has also stated that there would be an Ohio-licensed structural engineer as the engineer of record for the development, review, and approval of any design, and structural drawings for the project.

The Applicant states that design of single-axis active tracker, including terrain following trackers, which are also single-axis trackers, would be the base-case design for the project. The systems under consideration would have an intelligent stow mode that can be activated during occurrences of high winds to provide maximum array stability and sufficient protection to avoid adverse consequences and damage to the panels. Anemometers placed throughout the facility would measure wind speed, and whenever the wind speed reaches a particular value, the panels would be placed in the stow mode. The stow mode of the trackers for flood conditions would be zero degrees, which is parallel to the horizon. The stow for hail would be -45 to +45 degrees, depending on the direction of the hail. For high winds the stow would be 30 degrees if smaller panels are selected but may be 45 degrees for larger panels.

#### *Roads and Bridges<sup>27</sup>*

The Applicant has yet to finalize its delivery route, although it is expected that deliveries to the project site would be by way of Interstate 70 to State Route 29.

The Applicant conducted an evaluation of transportation infrastructure to identify any possible restrictions to accessing the site. Bridge conditions, pavement conditions, vertical changes, overhead obstructions, and culvert conditions were evaluated. According to the Applicant's evaluation<sup>28</sup>, the transportation infrastructure is in sufficient condition to carry the necessary construction traffic. The bridge on Green Lane at the south end of the project has posted reduced load limits and should be avoided during construction. The Applicant expects minimal negative impact on roadway surfaces.

Conventional heavy equipment which does not require special permitting would make up the majority of construction traffic. Some substation gear such as transformers and switch gear are likely to be overweight and would require special permitting and route coordination for delivery. Staff notes that an increase in truck traffic would be anticipated during construction for the

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

28. OPSB Case Number 22-0549-EL-BGN, Exhibit L.

purpose of project area equipment access and equipment and material deliveries but does not anticipate significant changes to traffic patterns. Post construction and operation of the solar facility, Staff does not anticipate any additional traffic for the project beyond routine maintenance. The Applicant expects to enter into a RUMA with Franklin County and Madison County. Any damaged public roads and bridges would be repaired by the Applicant under the guidance of the appropriate regulatory authority.

### *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 period of construction. However, the adverse impact of construction noise would be temporary and intermittent, would occur away from most residential structures, and would be limited to daytime working hours. The Applicant would use mitigation practices such as limiting construction activities to daylight hours, keeping equipment in good working condition and establishing a complaint resolution process.

Operational noise impacts for a solar generation facility would be relatively minor and occur only during the day. Operational noise sources include inverters and tracking motors. The step-up transformer at the new substation and the inverters may operate at night but the noise impact would also be relatively minor.

Operational noise impacts for a battery generation facility would be relatively minor. Operational noise sources include transformers, battery storage and cooling systems, and inverters. The facility has two operational modes, charge/discharge and idle, and can operate in either mode day or night.

The Applicant conducted an ambient noise level study in order to understand the existing noise levels near the proposed facility. Noise impacts to non-participating receptors were modeled using the proposed solar inverter, BESS inverter, BESS storage container and transformer models.<sup>29</sup> The model showed that operational noise impacts would be less than ambient noise levels plus five dbA. The Applicant chose to comply with a proposed rule, which defines ambient as L50 instead of the current rule which define ambient noise as Leq. L50 is a more conservative metric, so noise impacts would be less. No non-participating receptors were modeled to receive noise impacts greater than the daytime or nighttime ambient noise levels plus five dBA. Therefore, the project would be expected to have minimal adverse noise impacts on the adjacent community. If an inverter, transformer, or battery storage model with a higher sound power level than the proposed inverter, transformer, or battery storage model is chosen, the Applicant would submit a noise report confirming that no non-participating receptors were modeled to receive

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29. For the sound propagation model, the solar array model used for tracker is Nextracker NV Horizon, the inverter/transformer is a Power Electronics HEM FS3510M 3,510 kVA model, and for the substation transformer is a 125 MVA transformer and sound level determined by the NEMA TR 1-2013 standard. For the sound propagation model, the BESS equipment modeled are a Sungrow ST4200KWH-2000 cell/inverter storage system.

noise impacts greater than the daytime and nighttime ambient noise level, respectively, plus five dBA.

### **Geology<sup>30</sup>**

The uppermost bedrock unit throughout the project area is the Salina Undifferentiated. This predominantly dolomite unit also contains anhydrite/gypsum zones and is known to be susceptible to karst feature development.<sup>31</sup> However, no known karst features have been identified within 10 miles of the project area per ODNR's Ohio Karst Geology Interactive Map.<sup>32</sup> Bedrock is not unlikely to be encountered during any portions of the proposed construction due to the glacially deposited overburden depth thickness of 18 to 224 feet. In addition, "the significant drift deposits throughout the project area makes the formation of sinkholes unlikely."<sup>33</sup>

The Applicant does identify limitations of the project area's native soils. Although the geotechnical engineering report indicates the soils are suitable, a large portion of the project area includes hydric soil and as a result is frequently ponded from December through May which may inhibit construction. In addition, the soils have been identified as corrosive to steel and concrete. "The mitigation that the Applicant would use to for corrosion potential on steel would be to galvanize or increase the steel thickness. The mitigation efforts for concrete would be to introduce an admixture into the concrete mix if cast in place or apply a coating to the outside of the concrete if pre-cast".<sup>34</sup>

The application also indicates "due to the high plasticity soils located onsite, the soils are not recommended to be used as engineered fill."<sup>35</sup> The geotechnical engineering report indicates "Engineered fill should extend a distance laterally beyond the structure or road perimeter at least

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

31. Karst terrain is formed within carbonate (e.g. limestone or dolomite) or evaporite (e.g. anhydrite or gypsum) rocks through mineral dissolution caused by movement of water. Most common karst features include the formation of underground caves or channels, or the formation of depressions and sinkholes at the surface. Generally, karst features, and the likelihood of karst development are most prevalent in areas where the carbonate bedrock is overlain by 20 feet or less of glacial till material. Limestone and dolomite are the most common carbonate bedrock. Generally, limestone is more prone to dissolution than dolomite.

32. ODNR Karst Viewer Interactive Map [https://gis.ohiodnr.gov/website/dgs/karst\\_interactivemap/](https://gis.ohiodnr.gov/website/dgs/karst_interactivemap/).

33. Applicant's October 27, 2022 response to Staff's fourth data request - Agency Correspondence - ODNR Geologic Survey Review.

34. Applicant's October 5, 2022 response to Staff's first data request.

35. Application at page 91.

equal to twice the depth of the fill. Imported engineered fill should consist of pre-approved environmentally clean soils, and should be free of organic matter, frozen soil clods, or other harmful material. Engineered fill should have a liquid limit less than 40 percent and a plasticity index of less than 12 percent.”<sup>36</sup>

The geotechnical engineering report discusses the use of lime and/or geogrid material to support the project’s 44 miles of access roads. “The addition of lime will increase the soil pH to +12 and decrease the soil electrical resistivity. Since the lime treatment should be limited to access road alignments, it is not expected that the lime treated soil will impact adjacent soil areas more than a few feet laterally.”<sup>37</sup>

The Applicant completed both a preliminary and interim level geotechnical investigation. Further geotechnical studies that were initially planned for the fall of 2022 were postponed due to lack of access. These studies are now planned to occur in April 2023.<sup>38</sup> Staff expects the study methodology to parallel that of the geotechnical evaluation conducted to date.

### *Conclusion*

In the event the Board grants a certificate Staff recommends that the final detailed engineering drawings of the final project design shall account for geological features and include the identity of the registered professional engineer(s), structural engineer(s), or engineering firm(s), licensed to practice engineering in the state of Ohio who reviewed and approved the designs. In accordance with the anticipated scope of investigation as the Applicant outlines in its Staff data request responses, Staff recommends that the Applicant conduct additional geotechnical studies and provide a final geotechnical engineering report to Staff at least 30 days prior to the preconstruction conference. These study areas include but are not limited to the following project features: proposed switchyard, point of interconnection (“POI”) substation, project substation locations, the two BESS locations, and along the proposed transmission line route. In addition, Staff recommends a final Unanticipated Discovery Plan be submitted prior to the pre-construction meeting.

Based on the data and considerations provided within the application submittal to date and based on Staff assessment (with consideration and input from ODNR), and implementation of the recommended conditions, there appears to be no particular geological features within the project area that are incompatible with construction and operation of the proposed facility.

### **Ecological Impacts**

#### *Public and Private Water Supplies*<sup>39</sup>

Groundwater resources are mostly plentiful throughout the project area. According to the ODNR correspondence letter dated August 18, 2022, a total of 118 water wells occur within one mile of

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36. Application at Exhibit N – Geotechnical Engineering Reports by G2 Consulting Group.

37. Applicant’s October 5, 2022 response to Staff’s first data request.

38. Applicant’s February 3, 2023 response to Staff’s seventh data request.

39. “The Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters.” (USEPA, Summary of Clean

the project area according to Ohio EPA records obtained by the Applicant. A total of 12 of these wells occur within the project area. These wells range in depth from 30 to 290 feet, with an average depth of 103 feet. These wells indicate a sustainable yield range of five to 200 gallons per minute based on well log records. The average sustainable yield from these records was 14 gallons per minute. This is based on records from 51 wells within one mile of the project area that contain sustainable yield data.<sup>40</sup> The Applicant states, if necessary, wells that are determined to potentially be impacted would be capped in accordance with county and state requirements.

Ohio EPA defines source water protection areas (SWPA) as the area that supplies water to a public water supply (PWS) well within a five-year time-of-travel.<sup>41</sup> In order to protect PWS, Ohio EPA has established regulations that restrict certain activities which may impact groundwater quality. Construction and operation of solar power facilities is not among those restricted activities. A total of five SWPA occur within 1 mile of the project area. Two of the SWPA, the Jehovah Witness Assembly Hall and the Jehovah Witness Kingdom, are within the project area but do not overlap with any of the proposed infrastructure for the project.

Although solar facilities are an unlikely potential source of contamination, Staff recommends that at least 30 days prior to the preconstruction conference, the Applicant provide the status (i.e., avoidance, mitigation measures, or capping) of each water well within the project fenced-in area. The Applicant shall indicate to Staff whether the nearest solar components to any uncapped water well within the project area meets or exceeds any applicable minimum isolation distances outlined in Ohio Adm.Code 3701-28-07 and denote the well(s) on construction drawings. The Applicant shall relocate the solar equipment at least 50 feet from that water well or demonstrate that the well is for non-potable use and relocate solar equipment at least 10 feet from that well, or seal and abandon the water well.

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Water Act, <<https://www.epa.gov/laws-regulations/summary-clean-water-act>>). The Ohio EPA Division of Surface Water “ensures compliance with the federal Clean Water Act and works to restore and enhance the integrity of Ohio’s waters.” (Ohio EPA, Division of Surface Water, <<https://www.epa.ohio.gov/dsw/Surface-Water/LiveTabId/113292#:~:text=Ensures%20compliance%20with%20the%20federal,the%20integrity%20of%20Ohio's%20waters.&text=We%20issue%20permits%20to%20regulate,aimed%20at%20improving%20polluted%20streams>>). In carrying out this mission, among other things, the Revised Code generally provides for the Ohio EPA to administer and enforce most laws and regulations regarding water pollution control and safe drinking water. See R.C. Chs. 6111 and 6109. The Ohio EPA states: “Division of Drinking and Ground Waters ensures compliance with the federal Safe Drinking Water Act and evaluates potential threats to source waters that supply Ohio’s more than 4,800 public drinking water systems. The division has a lead role for statewide ground water protection in cooperation with other state and federal agencies, implements a ground water quality monitoring program and provides technical assistance to the Agency’s waste management divisions.” (Ohio EPA, Division of Drinking and Ground Waters, <<https://www.epa.state.oh.us/ddagw/>>). “The Division of Drinking and Ground Water’s (DDAGW) Drinking Water Program manages the federally delegated drinking water program and implements both state and federal Safe Drinking Water statutes and rules adopted under these laws.” (Ohio EPA, Division of Drinking and Ground Waters, <<https://www.epa.ohio.gov/ddagw/#116665774-about-the-drinking-water-program>>); Private water systems are regulated by the Ohio Department of Health under R.C. 3701.344 to 3701.347 and Ohio Adm.Code 3701-28.

40. Application at Exhibit T – Threatened and Endangered Species Habitat Survey Report by Stantec - Agency Correspondence - ODNR Geologic Survey Review.

41. Ohio EPA Drinking Water Area Source Delineation Manual  
[https://epa.ohio.gov/static/Portals/28/documents/swap/swap\\_delin\\_guidance.pdf](https://epa.ohio.gov/static/Portals/28/documents/swap/swap_delin_guidance.pdf)

The Applicant indicates that it plans to construct two O&M buildings which would potentially be serviced by onsite water wells and septic systems.<sup>42</sup> One of the O&M buildings would primarily be utilized as an additional storage space.<sup>43</sup> Installation and operation of these facility components must comply with all applicable regulations. To ensure compliance with Ohio Adm.Code 3745--34--07(A), no waste other than sanitary waste may be disposed of through the septic system.<sup>44</sup>

The application indicates “to provide protection for water resources within the Project Area and the surrounding area, a Storm Water Pollution Prevention Plan (SWPPP) and Spill Prevention Control and Countermeasures (SPCC) Plan will be implemented during construction to minimize and prevent the potential for discharges to surface waters, which can also protect groundwater resources through the implementation of best management practices (BMP) to limit the extent of any spills. Given the limited amount of excavation and the planned controls on discharges, no adverse impacts to public and private water supplies due to construction and operation of the proposed Project are anticipated.”<sup>45</sup>

#### *Surface Waters*<sup>46</sup>

The Applicant delineated three ephemeral streams, four intermittent streams, and six perennial streams within the project area. The Applicant has designed the project to avoid all streams during and after construction. The Applicant states that stream crossings by underground collection lines would be accomplished via horizontal directional drilling (HDD). HDD is typically preferred to open-cut trenching when crossing surface water resources as impacts can be

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42. Application at pages 21 and 73.

43. 6th data request response letter filed in the case docket on November 25, 2022.

44. Ohio Adm.Code 3745-34-01(S)(2) defines sanitary waste as: liquid or solid waste originating solely from humans and human activities, such as wastes collected from toilets, showers, wash basins, sinks used for cleaning domestic areas, sinks used for food preparation, cloths washing operations, and sinks or washing machines where food and beverage serving dishes, glasses, and utensils are cleaned. Sources of these wastes may include single or multiple residences, hotels and motels, restaurants, bunkhouses, schools, ranger stations, crew quarters, guard stations, campgrounds, picnic grounds, day-use recreational areas, other commercial facilities, and industrial facilities provided the waste is not mixed with industrial waste.

45. Application at page 88.

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



avoided in most cases. However, the HDD process includes the risk of a frac-out. A frac-out occurs when the drilling lubricant, typically water or a non-toxic, fine clay bentonite slurry, is forced through cracks in bedrock and/or surface soils. The Applicant included a frac-out contingency plan as part of the application. Staff also recommends that the Applicant have an environmental specialist on site during construction activities where HDD activities may impact surface waters. The environmental specialist should have authority to stop HDD activities to ensure that any impacts related to a frac-out are addressed. No impacts to streams are anticipated.

The Applicant delineated sixteen wetlands in the project area. All wetlands are Category 1 and Category 2 wetlands.<sup>47</sup> The Applicant has designed the project to avoid all wetlands during and after construction. No impacts to wetlands would occur.

Staff recommends that streams and wetlands within and immediately adjacent to the construction limits of disturbance would be flagged, staked, or fenced prior to construction. These sensitive areas should also be depicted on construction drawings. All contractors and subcontractors should be provided with training to understand the significance of the types of flagging used and the importance of staying within defined limits of work areas.

The Applicant has committed to several best management practices (BMPs) in order to minimize impacts to wildlife and surface water resources throughout the project. In the responses to data requests from Staff, the Applicant committed to abiding by the ODNR recommended 120-foot buffer to all surface waters where practical, finalizing potential voluntary conservation easements around Spring Fork Creek and other streams in the project area, installing lighting during construction and operation of the project that minimizes light pollution impacts on wildlife, and installing wildlife permeable fencing with 6 inches by 6 inches spacing.

Specifics about how surface waters would be further protected from indirect construction stormwater impacts using erosion and sedimentation controls would be outlined in the Applicant's SWPPP. The Applicant would obtain an Ohio National Pollutant Discharge Elimination System (NPDES) construction stormwater general permit through the Ohio EPA prior to the start of construction. The Applicant would implement Ohio EPA published Guidance on Post-Construction Storm Water Control for Solar Panel Arrays to project construction and operation. A small portion of the project area falls within a 100-year floodplain however no infrastructure would be placed within the floodplain. The project would not impact a 100-year floodplain.

#### *Threatened and Endangered Species<sup>48</sup>*

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

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47. Wetlands falling within the purview of the Clean Water Act are regulated within Ohio by R.C. 6111, et seq. and Ohio Adm.Code 3745-1-50, et seq. Ohio Adm.Code 3745-1-54 establishes wetland categories.

48. Based on agency coordination with the USFWS and ODNR, identified species of concern are, in general, defined as those species that are protected under the federal Endangered Species Act of 1973, as amended (16 U.S.C. §§ 1531-1544) and/or according to the Conservation of Natural Resources within R.C. 1518.01-

through field assessments and review of published ecological information. The following table provides the results of the information requests, field assessments, and document review.

MAMMALS				
Common Name	Scientific Name	Federal Status	State Status	Presence in Project Area
Indiana bat	<i>Myotis sodalis</i>	Endangered	Endangered	Known range
Northern long-eared bat	<i>Myotis septentrionalis</i>	Threatened	Endangered	Known range
Little brown bat	<i>Myotis lucifugus</i>	N/A	Endangered	Known range, presence established in project area.
Tricolored bat	<i>Perimyotis subflavus</i>	N/A	Endangered	Known range
BIRDS				
Common Name	Scientific Name	Federal Status	State Status	Presence in Project Area
Black-crowned night-heron	<i>Nycticorax nycticorax</i>	N/A	Threatened	Known range. No potentially suitable nesting habitat present in project area.

1518.99; 1531.25; and 1531.99. *See also e.g.*, R.C. 1531.08 states, in part: “In conformity with Section 36 of Article II, Ohio Constitution, providing for the passage of laws for the conservation of the natural resources of the state, including streams, lakes, submerged lands, and swamplands, and in conformity with this chapter and Chapter 1533. of the Revised Code, the chief of the division of wildlife has authority and control in all matters pertaining to the protection, preservation, propagation, possession, and management of wild animals and may adopt rules under section 1531.10 of the Revised Code for the management of wild animals.”

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

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

BIRDS				
Common Name	Scientific Name	Federal Status	State Status	Presence in Project Area
Northern harrier	<i>Circus cyaneus</i>	N/A	Endangered	Known range. No potentially suitable nesting habitat present in project area.
Upland sandpiper	<i>Bartramia longicauda</i>	N/A	Endangered	Known range. No potentially suitable nesting habitat present in project area.
Loggerhead shrike	<i>Lanius ludovicianus</i>	N/A	Endangered	Known range. No potentially suitable nesting habitat present in project area.
King rail	<i>Rallus elegans</i>	N/A	Endangered	Known range. No potentially suitable nesting habitat present in project area.
Sandhill crane	<i>Grus canadensis</i>	N/A	Threatened	Known range. No potentially suitable nesting habitat present in project area.

FISH				
Common Name	Scientific Name	Federal Status	State Status	Presence in Project Area
Spotted darter	<i>Etheostoma maculatum</i>	N/A	Endangered	Known range. No in water work planned
Tippecanoe darter	<i>Etheostoma tippecanoe</i>	N/A	Threatened	Known range. No in water work planned

MUSSELS				
Common Name	Scientific Name	Federal Status	State Status	Presence in Project Area
Clubshell	<i>Pleurobema clava</i>	Endangered	Endangered	Known range. No in water work planned
Northern riffleshell	<i>Epioblasma torulosa rangiana</i>	Endangered	Endangered	Known range. No in water work planned
Rayed bean	<i>Villosa fabalis</i>	Endangered	Endangered	Known range. No in water work planned
Snuffbox	<i>Epioblasma triquetra</i>	Endangered	Endangered	Known range. No in water work planned
Rabbitsfoot	<i>Quadrula cylindrica cylindrica</i>	Threatened	Endangered	Known range. No in water work planned
Elephant-ear	<i>Eplliptio crassidens crassidens</i>	N/A	Endangered	Known range. No in water work planned

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*), the state endangered little brown bat (*Myotis lucifugus*), and the state endangered tricolored bat (*Perimyotis subflavus*). The Applicant conducted a summer acoustic survey from August 2-4, 2022, to determine the presence or absence of listed bat species within the project area. The plan was approved by the ODNR and the USFWS. The presence of the little brown bat was established in the project area. In order to avoid impacts to listed bat species, 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 committed to following the seasonal tree cutting dates. The Applicant stated in a data request response docketed in the case docket on February 6, 2022, that tree clearing would be reduced to a total of 2.2 acres for the solar generation project, with either an additional 0.8 acre of tree clearing for the preferred route for the tie-in transmission line, or 3.2 acres total for the alternate route. The project would not impact any hibernacula. No impacts to these species are anticipated.

This project is within range of several other listed species. Due to lack of in-water work, the avoidance of surface waters, and lack of suitable habitat, impacts to these species are not anticipated.

### *Vegetation*

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

<b>VEGETATIVE COMMUNITIES WITHIN PROJECT AREA</b>	
<b>Vegetation Community Type</b>	<b>Total (Acres)</b>
Agricultural Land	5,624
Forestland	154
Scrub Shrub	37
Grassland/Maintained Lawn	191
Open water/wetlands	6.2

Current land use of the project area is mainly agricultural. Permanent vegetative impacts would occur primarily within agricultural lands. The Applicant states minimal tree clearing would be necessary.

The Applicant has developed a vegetation management plan in which it would incorporate pollinator-friendly habitat in accordance with the recommendations of the Ohio Pollinator Habitat Initiative. This habitat would enhance the visual appeal of the project, enrich local wildlife habitat, benefit the local farming community, increase plant diversity, and discourage invasive species. To assure that these benefits would be realized, Staff recommends that the Applicant prepare an updated vegetation management plan in consultation with the ODNR, which the Applicant has committed to. The plan shall include planting a minimum of 70 percent of the impacted project area in beneficial vegetation, utilizing plant species listed in Attachment A of ODNR Recommended Requirements for Proposed Solar Energy Facilities in Ohio, and shall follow the Ohio Solar Site Pollinator Habitat Planning and Assessment Form with a minimum score of 80 points. The plan shall include a narrative on how the project proposes to establish and maintain beneficial vegetation and pollinator habitat in accordance with the guidelines provided above. The plan shall include mapping of the areas where pollinator habitat would be established and maintained. The plan shall include that routine mowing would be limited to fall/spring seasons, as needed, to allow for natural reseeding of plantings and reduce impacts to ground-nesting birds. Staff also recommends that the Applicant take steps to prevent establishment and/or further propagation of noxious weeds identified in Ohio Adm.Code 901:5-37 and invasive plant species identified in Ohio Adm.Code Rule 901:5-30-01 during implementation of any pollinator-friendly plantings. Staff notes that vegetation reestablishment and weed control may take several growing seasons. Additionally, the Applicant is coordinating with the Darby Creek Association, the Madison County Soil and Water Conservation District, and the ODNR Scenic Rivers Office in

order to implement the recommendations the entities have given to protect the Darby Creek Watershed.

**Recommended Findings**

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

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

### **MINIMUM ADVERSE ENVIRONMENTAL IMPACT**

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

#### **Site Selection**

The Applicant's site selection process focused on the following criteria: solar resources, access to the bulk power transmission system, area topography and geology, land use characteristics, population density, and landowner interest. Prior to submitting the application, the Applicant engaged local officials and the public.

#### **Minimizing Impacts**

Several archaeological sites within the project area were identified as potentially eligible for listing on the NRHP. However, the Applicant has agreed to avoid or further study all potentially eligible sites. With Staff's condition, the project is not expected to have any adverse effect on historic or archaeological properties.

The proposed facility would have an 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 potential PILOT revenue.

The geology of the project site does not appear to present conditions that would limit or negatively impact the construction and future operation of the proposed facility. Staff recommends that the Applicant submit a final geotechnical engineering report prior to construction. Additionally, Staff recommends that the final detailed engineering drawings of the final project design account for geological features and that the Applicant develop a final Unanticipated Discovery Plan to account for any previously unknown conditions or features discovered during the proposed construction.

It appears unlikely that the proposed solar facility, BESS, and transmission lines construction or operation would adversely impact public or private drinking water supplies.

No impacts are proposed to wetlands or streams. Impacts to any state or federal listed species can be avoided by following seasonal restrictions for construction in certain habitat types, as detailed by the USFWS and the ODNR. The Applicant did not identify any listed plant or animal species during field surveys.

Adverse noise impacts are expected to be limited to construction activities. The adverse impact of construction noise would be temporary and intermittent and would occur away from most residential structures. Staff recommends that the Applicant limit the hours of construction to address potential construction and operational related concerns from any nearby residents. No non-participating receptors were modeled to receive noise impacts greater than the daytime or nighttime ambient noise levels plus 5 dBA. Further, the Applicant has developed a complaint resolution plan which would be implemented throughout construction and operation.

During the construction period, local, state, and county roads would experience a temporary increase in truck traffic due to deliveries of equipment and materials. The Applicant may enter into a road use agreement with the county. Any damaged public roads and bridges would be repaired by the Applicant under the guidance of the appropriate regulatory authority.

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 has recommended a condition requiring a final landscape and lighting plan that addresses the potential impacts of the facility. Further, the Applicant has committed to a minimum setback from the project's solar modules and BESS components of at least 150 feet from non-participating parcel boundaries, at least 300 feet from non-participating residences, and at least 150 feet from the edge of any state, county, or township road within or adjacent to the project area.

The Applicant has committed to take steps to address such potential impacts to farmland, including repairing all drainage tiles damaged during construction and operation and restoring temporarily impacted land to its original use. The Applicant has consulted landowners and county records, to determine the locations of drain tile mains. To avoid impacts to drain tiles, the Applicant stated that it would locate drain tiles as accurately as possible prior to construction. The Applicant has committed to ensure that adverse impacts to drain tile systems will not extend outside the project area. Following decommissioning of the facility, land can be restored for agricultural use.

The Applicant has prepared a draft plan to decommission the solar facility and BESS facility. The Applicant would provide for financial security to ensure that funds are available for decommissioning/land restoration. Staff has recommended a condition requiring that the draft decommissioning plan be updated to include financial assurance and a decommissioning cost estimate, among other things.

The Applicant has committed to use panels that have been certified to comply with the USEPA's TCLP test and meet USEPA definition of non-hazardous waste.

## **Conclusion**

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

## **Recommended Findings**

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



## **Considerations for R.C. 4906.10(A)(4)**

### **ELECTRIC GRID**

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

The purpose of this section is to evaluate the impact of integrating the proposed facility into the existing regional transmission grid. The Applicant proposed to construct a solar-powered electric generation facility, capable of producing 800 MW. The Applicant also proposed a BESS capable of storing electrical energy available to the PJM capacity market of up to 300 MW. The facility would not inject more than 800 MW of electricity at any one time into the grid. The project will connect to the regional transmission grid from the facility substation through a gen-tie line to a new Point of Interconnection (POI) switching station to the American Electric Power (AEP) Flatlick-Marysville 765 kV transmission line. The new switching station will be a three-breaker ring bus configuration and would be located approximately 22 miles from the Marysville Substation and approximately 87 miles from the Flatlick Substation. A 765 kV extension line would also be needed to connect the solar facility to the new 765 kV switching station.

### **NERC Planning Criteria**

The North American Electric Reliability Corporation (NERC) is responsible for the development and enforcement of the federal government's approved reliability standards, which are applicable to all owners, operators, and users of the BPS. As an owner, operator, and/or user of the BPS, the Applicant is subject to compliance with various NERC reliability standards. The NERC reliability standards are included as part of the system evaluations conducted by PJM Interconnection, LLC (PJM).<sup>49</sup>

### **PJM Interconnection**

The Applicant submitted two generation interconnection requests for the proposed facility to PJM. For the initial request of August 31, 2020, PJM has assigned the queue ID AG1-125 under the name "Marysville-Flatlick 765 kV" which requested an injection of 400 MW. The second request of August 31, 2020 was assigned queue ID AG1-126, also under the name of "Marysville-Flatlick 765 kV", and requested an increase of 400 MW. PJM has completed and issued the

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

Feasibility Study reports for both AG1-125 and AG1-126 in January 2021.<sup>50</sup> PJM has completed and issued the System Impact Study reports (SIS) for both AG1-125 and AG1-126 in August 2021.<sup>51</sup> The Applicant also submitted two additional requests for storage and PJM capacity, AG2--106 and AG2-107, on January 29, 2021, but the feasibility studies have not been completed. Although the Applicant may have a 300 MW storage facility, increasing the PJM capacity of the facility, the power output from the facility would not exceed 800 MW.

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

<b>PJM QUEUES: OAK RUN SOLAR I FACILITY</b>			
<b>Queue ID</b>	<b>Queue Date</b>	<b>Power Output (MW)</b>	<b>Capacity (MW)</b>
AG1-125	8/31/2020	400.0	234.9
AG1-126	8/31/2020	400.0	234.9
AG2-106	1/29/2021	0.0	150.0
AG2-107	1/29/2021	0.0	150.0
<b>Totals</b>		800.0	769.8

PJM studied the interconnection as an injection into the BPS using the Marysville-Flatlick 765 kV transmission line. The Marysville Substation and the Flatlick Substation are both owned by AEP. The Applicant requested a total injection of 800.0 MW, of which 469.8 MW could be available in the PJM capacity market. The capacity could increase to 769.8 MW if the queue positions AG2--106 and AG2-107 receive executed Interconnection Service Agreements and Interconnection Construction Service Agreements. The capacity market ensures that there is an adequate availability of generation resources that can meet current and future demand. In terms of total output, the facility shall not exceed an injection of 800 MW to the BPS.

### **PJM Network Impacts**

PJM analyzed the proposed facility interconnected to the BPS. PJM used the 2024 summer peak power flow model to evaluate regional reliability impacts for queue project AG1-125 and AG1--126 each as a 400.0 MW into the Marysville-Flatlick 765 kV line in the AEP Ohio area with a commercial probability of 100 percent. The project was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, Transmission Operators, etc.). The PJM studies identified overload concerns in the contribution to previously identified overloads and also in the

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50. PJM Interconnection, "New Services Queue", Feasibility Study for Queue IDs: AG1-125 and AG1-126, [https://www.pjm.com/pub/planning/project-queues/feas\\_docs/ag1125\\_fea.pdf](https://www.pjm.com/pub/planning/project-queues/feas_docs/ag1125_fea.pdf) and [https://www.pjm.com/pub/planning/project-queues/feas\\_docs/ag1126\\_fea.pdf](https://www.pjm.com/pub/planning/project-queues/feas_docs/ag1126_fea.pdf) (Accessed May 12, 2022).

51. PJM Interconnection, "New Services Queue", System Impact Study for Queue IDs: AG1-125 and AG1-126, [https://www.pjm.com/pub/planning/project-queues/impact\\_studies/ag1125\\_imp.pdf](https://www.pjm.com/pub/planning/project-queues/impact_studies/ag1125_imp.pdf) and [https://www.pjm.com/pub/planning/project-queues/impact\\_studies/ag1126\\_imp.pdf](https://www.pjm.com/pub/planning/project-queues/impact_studies/ag1126_imp.pdf) (Accessed May 12, 2022).

contribution due to local energy deliverability, and the details are provided in the appropriate sections below.

### **Generation Deliverability**

PJM requires mitigation of contingencies that cause reliability violations which are initially caused by the addition of the Applicant's project. These would be single or N-1 contingencies for the capacity portion only of the interconnection. The 2024 summer peak power flow model was used by PJM to evaluate regional reliability impacts for queue project AG1-125 and AG1-126, and no problems were identified for either project.

### **Multiple Facility Contingency**

PJM reliability planning criteria requires that the system be tested for all bulk electric system single contingency outages and all common mode outages. These would consist of all line faults coupled with stuck breakers that result in multiple facility outages, double circuit tower line outages, and bus faults in the PJM system. The 2024 summer peak power flow model was used by PJM to evaluate regional reliability impacts for queue project AG1-125 and AG1-126, and no problems were identified for either project.

### **Contribution to Previously Identified Overloads – Network Impacts**

PJM studied the Project for possible overloading where the proposed facility may affect earlier generation or transmission projects in the PJM queue. The PJM studies identified an increase in the contribution to previously identified overloads for both the AG1-125 and the AG1-126 queue positions.<sup>52</sup>

### **Potential Congestion due to Local Energy Deliverability**

PJM also studied the delivery of the energy portion of this interconnection request. Problems identified here would likely result in operational restrictions for the project. Network upgrades under this section would allow for the delivery of energy with operational restrictions. The studies revealed operational restrictions or contingencies for both the AG1-125 and the AG1-126 queue positions.<sup>53</sup> Only the most severely overloaded conditions are listed here. A subsequent analysis would be performed which would study all overload conditions associated with the overloaded elements, following the transmission interconnection request.

### **New System Reinforcements**

PJM requires mitigation of contingencies that cause reliability violations which are initially caused by the addition of the Applicant's project. The injection into the BPS for the queue positions AG1-125 and AG1-126 would require the replacement of two 345 kV circuit breakers at the

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52. AEP\_P1-3\_#7222\_05MALIS 765\_1 Single 168107805 from Bus# 242928 05MARYSV to Bus# 242939 05MARYSV and AEP\_P1-2\_#711\_6224 Single 168107806 from Bus# 242928 05MARYSV to Bus# 242939 05MARYSV both under 2024 Sumer Peak Load Flow, page 11/23 of the PJM System Impact Study. (Accessed May 12, 2022).

53. AEP\_P1-3\_#7222\_05MALIS 765\_1 Operation 168107803 from Bus# 242928 05MARYSV to Bus# 242939 05MARYSV and AEP\_P1-3\_#7222\_05MALIS 765\_1 Operation 168107936 from Bus# 242939 05MARYSV to Bus# 243458 05HYATT both under 2024 Sumer Peak Load Flow, page 12/23 of the PJM System Impact Study. (Accessed May 12, 2022).

Marysville Substation to provide protection to the Marysville 765 kV to Marysville 345 kV circuit number 2.

### **Short Circuit Analysis**

The short circuit analysis, which is part of the SIS, evaluates the interrupting capabilities of circuit breakers that would be impacted by the proposed generation addition. PJM performed a short circuit analysis for the queue positions AG1-125 and AG1-126, and no additional problems were identified for either queue position.

### **Recommended Findings**

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

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

### **AIR, WATER, SOLID WASTE AND AVIATION**

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

#### **Air<sup>54</sup>**

Air quality permits are not required for construction or operation of the proposed facility. However, fugitive dust rules adopted under R.C. Chapter 3704 may be applicable to the construction of the proposed facility. The Applicant would control temporary and localized fugitive dust by using BMP, such as the use of water or other dust suppressants, containment of excavated material, and the implementation of rock pads at construction exits.

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

#### **Water<sup>55</sup>**

The Applicant anticipates obtaining environmental permits if and where necessary, which are detailed below.

Stream and wetland impacts are not anticipated. These impacts would be covered by a Nationwide Permit (NWP) under Section 404 of the Clean Water Act from the U.S. Army Corps of Engineers. An NWP is a general permit which authorizes a wide variety of activities which may impact waters of the United States. When required, solar site construction activities are typically

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

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

covered under NWP 51 - Land-Based Renewable Energy Generation Facilities and/or NWP 57 – Electric Utility Line and Telecommunications Activities.<sup>56</sup>

The Applicant would submit a Notice of Intent for coverage under the Ohio NPDES construction stormwater general permit, Ohio EPA Permit No. OHC000005. This permit is required by the Ohio EPA for facilities that wish to discharge water to a surface water of the State, including construction stormwater runoff. All construction sites which result in ground disturbance of one acre or more are required to obtain coverage under an NPDES Construction Storm Water general permit.<sup>57</sup> The permit regulates wastewater discharges by limiting the quantities of pollutants to be discharged and imposing monitoring requirements or conditions.<sup>58</sup> Coverage under the NPDES construction general permit also requires the development of an SWPPP, which outlines BMP for soil erosion control. BMP are outlined in the Ohio EPA Rainwater and Land Development Manual, which defines Ohio's standards and specifications for stormwater management practices implemented during land development. The Rainwater and Land Development Manual includes pre-, during, and post-construction practices and measures to be taken to ensure compliance with Ohio's water quality laws, rules, and regulations and policy.<sup>59</sup>

The Applicant would also apply and obtain the Madison County Erosion, Sediment, and Stormwater Control Permit pursuant to Ohio Revised Code 307.79 from the Madison County Engineer's office.<sup>60</sup> That permit requires, but is not limited to the following, a completed SWPP, stormwater calculations, grading details, and cost estimates of erosion and sediment controls.

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<sup>61</sup>**

Debris generated from construction activities would include items such as wood, cardboard, metal, packaging materials, replaced parts, used oil, general refuse, universal waste, and used antifreeze. Additionally, there are two residential structures, three barns, and six silos on property owned by the Applicant that may be removed to facilitate construction within the project area. The Applicant stated that all waste would be handled, managed, and disposed of in accordance with federal, state, and local regulations.

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56. US Army Corps of Engineers, "2021 Nationwide Permit Information", <https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/Nationwide-Permits/>.

57. See R.C. 6111.04(A)(1) and Ohio Adm.Code 3745-39-04(B)(14).

58. Ohio EPA, "NPDES General Permits", <https://epa.ohio.gov/divisions-and-offices/surface-water/permitting/npdes-general-permits>.

59. Ohio EPA, "Rainwater and Land Development", <https://epa.ohio.gov/divisions-and-offices/surface-water/guides-manuals/rainwater-and-land-development?msclkid=cb5f60f4b48d11ec8b5ece1ef5e16d3c>.

60. 8<sup>th</sup> data request response filed March 3, 2023.

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

During operation of the project, the O&M building would generate small amounts of waste in the form of paper products and used office supplies. The Applicant's solid waste disposal plans must comply with solid waste disposal requirements set forth in R.C. Chapter 3734.

### **Aviation<sup>62</sup>**

The tallest above ground structures would be the 230 kV electric transmission line support structures at approximately 120 feet tall.<sup>63</sup> The Applicant currently estimates that the substation lightning mast(s) and dead-end support structures located at those substations may be from 85 to 115 feet tall. Those heights are under the height requirement from the Federal Aviation Administration (FAA), pursuant to 14 CFR Part 77.9(a), for filing a Form 7460-1.

According to the Applicant, there are no public use airports or heliports within five miles of the project area.<sup>64</sup> Staff confirmed through the FAA that the closest public-use airport is the Madison County (UYF) airport which is approximately 2.5 miles south of the proposed solar facility project area.

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.<sup>65</sup> As of the date of this filing, no such concerns have been identified.

### **Recommended Findings**

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

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

63. Application at page 16 and Sixth data request from Staff response filed November 22, 2022 (Questions #51 and #52).

64. Application at page 95.

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

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

### **PUBLIC INTEREST, CONVENIENCE, AND NECESSITY**

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

#### **Safety**

The Applicant stated that it would use reliable equipment. The current equipment under consideration is compliant with applicable Underwriters Laboratories (UL) and IEEE standards.<sup>66</sup> The Applicant intends to select from leading suppliers, particularly a Tier 1 level solar module manufacturer. Also, the Applicant would select only solar modules that do not exhibit the characteristic of toxicity through analysis with the USEPA's TCLP test.

The Applicant has also planned for the expenses of O&M for the solar facility to keep the facility in a safe and reliable status.<sup>67</sup> However, the Applicant admits that these costs are below the national average and has not presented information about O&M of the BESS in its preliminary estimates. Staff recommends that the Applicant provide a budget for O&M for the BESS facility prior to construction of the BESS so that it is also properly maintained safely and reliably.

The Applicant would have several systems and controls in place to prevent electric damage and overloading during the charging cycle to the BESS. Notably, the NESC and Underwriters Laboratory (UL) standard 9540 require lightning and surge protection. Specifically, the collector substations would have circuit breakers to protect the project from a grid fault and the grid from a fault at the project. The inverters would meet UL 1741 protection requirements and the batteries would have a battery management system with alarms for operation personnel.

The Applicant intends to use warning signs, fencing, and gates to restrict access to the potential hazards within the solar facility, substations, and BESS project area. Additionally, the Applicant intends to design its facility with setbacks from its fence line or solar panels to non-participating sensitive receptors, non-participating properties, and public roads. Specifically, the Applicant would implement the following setbacks: 150 feet from the property line of any non-participating property, 300 feet from any non-participating residences, and 150 feet from the public road.<sup>68</sup>

The Applicant would identify any applicable manufacturer recommended setbacks into consideration for its final site plan.<sup>69</sup> Staff recommends that the Applicant adhere to and implement any applicable equipment manufacturer recommended setbacks into its final site plan.

The Applicant stated that the BESS would conform to National Fire Protection Association's (NFPA) standard number 855 entitled "Standard for the Installation of Stationary Energy Storage Systems." The Applicant would incorporate several fire protections measures into the design,

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66. Application at Exhibit E.

67. Application at pages 49.

68. Application at page 1.

69. Sixth data request from Staff response filed November 25, 2022 (Question #54).



notably, NFPA 855. The Applicant has also committed that a fire protection engineer will review the fire protection design of the facility. Staff recommends that the Applicant provide the documentation of the fire protection engineering review and compliance with the current Ohio Fire Code at least 30 days prior to the preconstruction conference for the BESS. Staff further recommends that prior to construction of the BESS, the Applicant provide the fire and emergency responders with proper firefighting equipment as reasonably required to enable them to respond to emergency situations at the BESS.

The Applicant stated that it intends to restrict public access to the facility by enclosing the project area with a perimeter fence. The Applicant has proposed an approximately seven-foot-tall woven wire agricultural fence for the solar panel array area. The Applicant intends that fencing around the collector substations, Step-up Substation, and BESS would be eight-foot-tall fence (i.e., seven-foot-tall chain link fence topped with an additional one-foot tall, barbed wire strand).<sup>70</sup> These perimeter fences would comply with applicable electrical code requirements. Staff has recommended that, except for the collector substations, Step-up Substation, and BESS fencing, that the solar panel perimeter fence type be both wildlife permeable and aesthetically fitting for a rural location.

Prior to construction, the Applicant also intends to develop and implement an emergency services and response plan in further consultation with potentially affected emergency response personnel. The Applicant has provided an example what would be in the emergency services and response plan, notably site overview mapping, access location, and types of equipment, facility specific fire protection and safety protocols; BESS fire suppression and protocols, contact information, potential hazards during construction and operation, detailed provisions for site security and access, and emergency response recommendations., which Staff has reviewed.<sup>71</sup> Staff recommends that the Applicant submit the final emergency services and response plan, which incorporates local emergency responder's consultation, at least 30 days prior to the preconstruction conference.

### **Electromagnetic Fields**

Electric transmission lines, when energized, generate electromagnetic fields (EMF). Laboratory studies have failed to establish a strong correlation between exposure to EMF and effects on human health. There have been concerns, however, that EMF may have impacts on human health.<sup>72</sup> The proposed 230 kV transmission lines are not within 100 feet of an occupied residence or institution, therefore calculation of the production of EMF during operation of the proposed gen-tie transmission lines is not warranted per Ohio Adm.Code 4906-5-07(A)(2).<sup>73</sup> The Applicant states that the equipment including transmission facilities would be designed and installed according to best utility practices and standards of PJM, NEC, NESC, and the IEEE. Further, the

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70. Application at page 15.

71. Application at page 81.

72. Information on Staff's consideration of potential health impacts of EMF can be found in the ODH fact sheet entitled Electromagnetic Fields (EMF) Summary and Assessments available on the ODH website at <https://odh.ohio.gov/know-our-programs/health-assessment-section/media/summary-emf>

73. Sixth data request from Staff response filed November 25, 2022 (Questions #16, #17, and #18).

Applicant states that the electrical system design including the 230 kV transmission lines would be certified by a professional engineer.

### **Public Interaction and Participation**

The Applicant hosted public informational meetings for the project on June 22, 2022 and August 2, 2022. Attendees were provided the opportunity to review information about the project, ask questions, and provide comments. The Applicant maintains a website at <https://www.oakrunsolarproject.com>.

The Applicant has drafted a complaint resolution plan to handle complaints regarding the facility. Staff recommends that a final version of the complaint resolution plan be filed on the docket no later than 30 days prior to the start of construction.

The Applicant has committed to notify, by mail, landowners surrounding the project area prior to the start of construction and again prior to the start of commercial operations. Staff recommends that these notification letters be mailed to affected property owners and tenants who were provided notice of the public informational meeting and OPSB hearings; local officials who received a copy of the application; residences located within one mile of the certificated boundary; schools, libraries, and emergency responders that serve residents in the project area; and any other person who has requested updates regarding the project.

The Applicant will document all complaints received, generate a quarterly report based on the information recorded, and file the report with the OPSB on January, April, July, and October of each year through the first five years of operation.

The Administrative Law Judge scheduled public and evidentiary hearings for this proceeding. The local public hearing will be held April 11, 2023, at 5:00 p.m., at Jonathan Alder High School, 9200 US-42, Plain City, Ohio 43064. The evidentiary hearing is scheduled to commence on May 15, 2023, at 10:00 a.m., at the offices of the Public Utilities Commission of Ohio, 180 East Broad Street, 11th floor, Columbus, Ohio 43215. Nine groups and one individual have filed to intervene in this case: the Madison County Board of Commissioners; Deercreek, Monroe, and Somerford township trustees; Madison County Soil and Water Conservation District; Ohio Farm Bureau; Ohio Partners for Affordable Energy; International Brotherhood of Electrical Workers; and Mr. John Boeckl.

### **Senate Bill 52**

The passage of Senate Bill 52 (SB 52) provides new opportunities for county commissioners and township trustees to participate in the siting of solar projects in their community. The Oak Run Solar project is grandfathered under SB 52 except for the ad hoc board member provision. County commissioners may choose one commissioner, or a designee, to serve as an ad hoc board member. In addition, township trustees may choose one trustee, or a designee, to serve as their ad hoc board member representative. Local government boards must designate ad hoc members within 30 days of notice of application completion.

The Madison County Commissioners appointed Commissioner Mark Forrest, and the Deercreek, Monroe, and Somerford Township Trustees appointed Somerford Township Trustee Jim Moran, as the ad hoc board members for this project.

### **Public Comments**

As of the date of this report, more than 500 documents have been filed in the public comments section of the case record for the generation case, and 35 documents have been filed in the public comments section of the case record for the transmission case. Comments filed in opposition to the project include resolutions passed by the Deercreek, Monroe, and Somerford township boards of trustees, a resolution from the Oak Run Township Board of Trustees opposed to solar projects in Madison County, a resolution from the Madison County Township Association outlining the association's opposition to "current and future solar projects in excess of 50 megawatts in Madison County," and letters from area and Ohio residents. Comments filed in support of the project include letters from area and Ohio residents, Ohio Chamber of Commerce, Indiana/Kentucky/Ohio Regional Council of Carpenters and Joiners, Ohio Land & Liberty Coalition, Ohio Conservative Energy Forum, Jefferson Local School District, Ohio Representatives William Seitz and Jim Hoops, and First Solar, Inc.

Public comments are available for Board members and the public to view in the record for each case at <http://dis.puc.state.oh.us>.

### **Recommended Findings**

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

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

### **AGRICULTURAL DISTRICTS AND AGRICULTURAL LAND**

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

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

Approximately 4,320 acres of agricultural land would be disturbed by the proposed project. None of the parcels within the project area are currently enrolled in the Agricultural District program. The repurposed land could be restored for agricultural use when the project is decommissioned. However, topsoil once disturbed and/or removed is unlikely to retain its productivity. Because of the loss of potential productivity Staff is recommending a condition that would limit the amount of grading that could be done during construction.

The Applicant may continue to use part of the project area for agricultural purposes. The Applicant has proposed the possibility of planting crops between the rows of solar panels, using sheep to control vegetation, and the establishment of bee keeping.

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

The Applicant coordinated with a landowners and county officials to identify the locations of existing drain tiles within the project area. The Applicant has supplied a Drainage Tile Assessment and Construction Impact Report with its application (Exhibit Z). This report discusses avoidance, repair, and mitigation details of all known drain tile locations. A map of possible drain tile locations has been created as the Applicant continues to procure drain tile location data.

The Applicant has outlined a drain tile repair protocol in the Drainage Tile Assessment and Construction Impact Report. The Applicant has committed to take steps to address potential impacts to farmland, including repairing drainage tiles damaged during construction and operation and restoring temporarily impacted land to its original use. Excavated topsoil would be separated during construction and returned as topsoil after construction unless otherwise specified by landowners. Disturbed areas upon decommissioning would be restored for agricultural use.

### **Recommended Findings**

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

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

### **WATER CONSERVATION PRACTICE**

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

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

Operation of the proposed facility would not require the use of significant amounts of water. The Applicant anticipates that it would need two O&M buildings. Those buildings would require and include an on-site well, water storage, and septic system. The Applicant intends to install and properly maintain modern, efficient water fixtures. So, water or wastewater would be generated from the project during operations similar in quantity to small offices.

The Applicant stated that area's precipitation should sufficiently clean the panels and no panel washing is anticipated. However, if it were necessary to clean certain solar modules, the Applicant anticipates that only targeted arrays would receive cleaning and not a significant onsite water use at any one time. The Applicant anticipates that water would be obtained from one of the existing onsite wells or from an offsite source where no more than one liter per module would be used.

### **Recommended Findings**

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

## **V. RECOMMENDED CONDITIONS OF CERTIFICATE**

Staff has generally listed the below conditions in chronological order for ease of reference and review. The inclusion of a condition within a specified section is not intended to waive its potential application to other stages of a project and the specific language of each condition controls its application within the project.

### **GENERAL CONDITIONS**

- (1) The Applicant shall install the facility, including the preferred route of the transmission line, 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 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.
- (3) As the information becomes known, the Applicant shall file on the public docket the date on which construction will begin, the date on which construction was completed, and the date on which the facility begins commercial operation.
- (4) The certificate authority provided in this case shall not exempt the facility from any other applicable and lawful local, state, or federal rules or regulations nor be used to affect the exercise of discretion of any other local, state, or federal permitting or licensing authority with regard to areas subject to their supervision or control.

### **PRECONSTRUCTION CONDITIONS**

- (5) The Applicant shall only use solar panel modules that do not exhibit the characteristic of toxicity verified through analysis or documentation with the USEPA's Toxicity Characteristics Leaching Procedure test. Prior to the preconstruction conference, the Applicant shall file confirmation that panels were analyzed through the USEPA's Toxicity Characteristics Leaching Procedure test.
- (6) 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 planned phase of construction and the conditions of the certificate, the measures to be taken by the Applicant and contractors to ensure compliance with all conditions of the certificate, and discussion of the procedures for on-site investigations by Staff during construction. Prior to the conference, the Applicant shall provide a proposed conference agenda for Staff review and shall file a copy of the agenda on the case docket. The Applicant may conduct separate preconstruction conferences for each stage of construction.

- (7) In the event that the federal requirements for a SPCC doesn't apply to the proposed facility, the Applicant shall develop and implement a Spill Prevention Plan or comparable plan that will address prevention of, response to, and notification to the appropriate authorities in the event of any spills. This plan shall be filed prior to the preconstruction conference.
- (8) The Applicant shall coordinate with the appropriate authorities regarding traffic and transportation requirements necessary for construction and operation of the proposed facility. To assure compliance with this condition, prior to the preconstruction conference, the Applicant shall file a final transportation management plan, this plan shall include (but not be limited to) the following:
- (a) A summary of coordination with appropriate authorities regarding traffic and transportation requirements, including temporary road closures, road use agreements, driveway permits, lane closures, road access restrictions, and traffic control necessary for construction and operation of the proposed facility.
  - (b) Documentation of this coordination, with copies of applicable permits or authorizations, or schedule for obtaining permits or authorizations not yet applicable.
  - (c) A description of best management practices that would be implemented to maintain clean roads free of construction debris and excess mud.
  - (d) Details summarizing signage and other best management practices that would ensure construction vehicles only use designated transportation routes.
  - (e) Mapping of roads to be used for construction. This shall include identifying any anticipated permitting/authorization requirements in their respective locations.
  - (f) A plan to either avoid or have an engineer evaluate the use of the bridge on Green Lane at the South end of the project with posted reduced load limits.
- (9) Prior to the commencement of construction activities in areas that require permits or authorizations by federal, state, or local laws and regulations, the Applicant shall obtain and comply with such permits or authorizations. The Applicant shall provide copies of permits and authorizations, including all supporting documentation, to Staff within seven days of issuance or receipt by the Applicant and shall file such permits or authorizations on the public docket. The Applicant shall provide a schedule of construction activities and acquisition of corresponding permits for each activity at the preconstruction conference(s). Any permit violation received by the Applicant from the permitting agency shall be provided on the case docket within seven days of receipt.
- (10) The Applicant shall not commence any construction of the solar powered electric generation facility until it has as executed an Interconnection Service Agreement and



Interconnection Construction Service Agreement with PJM Interconnection, LLC, which includes construction, operation, and maintenance of system upgrades necessary to integrate the proposed solar powered electric 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.

- (11) Prior to construction, the Applicant shall docket in the case record the System Impact Study for queue positions AG2-106 and AG2-107.
- (12) The Applicant shall upgrade the bulk power system if PJM Interconnection generation interconnection studies identify that the capacity portion is not fully deliverable for queue positions AG2-106 and AG2-107 absent upgrades.
- (13) The Applicant shall not commence commercial operation of the battery energy storage system until it has executed an Interconnection Service Agreement and Interconnection Construction Service Agreement with PJM Interconnection, which includes construction, operation, and maintenance of system upgrades necessary to integrate the proposed battery energy storage system facility into the regional transmission system reliably and safely. The Applicant shall docket in the case record a letter stating that the Agreements have been signed or a copy of the executed Agreements for queue positions AG2-106 and AG2-107.
- (14) Prior to commencement of construction, the Applicant shall file a landscape and lighting plan in consultation with a landscape architect licensed by the Ohio Landscape Architects Board that addresses the aesthetic and lighting impacts of the facility with an emphasis on any locations where an adjacent non-participating parcel contains a residence with a direct line of sight to the project area. The plan shall include measures such as fencing, vegetative screening or good neighbor agreements. Unless alternative mitigation is agreed upon with the owner of any such adjacent, non-participating parcel containing a residence with a direct line of sight to the fence of the facility, the plan shall provide for the planting of vegetative screening designed by the landscape architect to enhance the view from the residence and be in harmony with the existing vegetation and viewshed in the area. The plan shall incorporate planting design features or measures to address aesthetic impacts to the traveling public, nearby communities, sensitive institutional land uses and recreationalists. The Applicant shall maintain vegetative screening for the life of the facility and the Applicant shall substitute or replace any failed plantings so that, after five years, at least 90 percent of the vegetation has survived. The Applicant shall maintain all fencing along the perimeter of the project in good repair for the term of the project and shall promptly repair any significant damage as needed. Lights shall be motion-activated and designed to narrowly focus light inward toward the facility, such as being downward-facing and/or fitted with side

shields. The Applicant shall provide the plan to Staff for review and confirmation that it complies with this condition.

- (15) At least 30 days prior to the preconstruction conference, the Applicant shall provide proof that the solar panels used for the project utilize an anti-reflective coating.
- (16) At least 30 days prior to the preconstruction conference, the Applicant shall demonstrate that it has a complete copy of the solar panel, inverter, and battery energy storage system manufacturer's safety manual or similar document and has incorporated any recommended setbacks from those manufacturers into its final design site plan.
- (17) At least 30 days prior to the preconstruction conference, the Applicant shall file on the docket for Staff's review and acceptance the emergency services and response plan, which it shall develop in consultation with the local fire and emergency services.
- (18) The Applicant shall provide documentation to Staff, and file on the docket in this case, the fire protection engineering review of the BESS facility at least 30 days prior to the preconstruction conference for the BESS. This documentation shall address at least, but is not limited to, the following: number of fire hydrants for the BESS area, long-term supply of water for firefighting, compliance with current Ohio Fire Code, and the firefighting equipment necessary to extinguish a fire at the BESS.
- (19) Prior to construction of the BESS, the Applicant shall provide the fire and emergency responders with proper firefighting equipment as reasonably required to enable them to respond to emergency situations at the BESS.
- (20) At least 30 days prior to the preconstruction conference, the Applicant shall provide to Staff for its acceptance the annual O&M budget for the BESS facility.
- (21) Prior to the preconstruction conference, the Applicant shall file drawings with dimensions of the solar panel perimeter fence type. Fencing shall be both small-wildlife permeable and aesthetically fitting for a rural location. Fencing around panels should incorporate gaps or spaces of at least six inches by six inches to allow passage of small mammals. The Applicant shall maintain all fencing along the perimeter of the project in good repair for the term of the project and shall promptly repair any damage as needed. Barbed wire shall not be utilized for the perimeter fence. This condition shall not apply to substation or BESS fencing.
- (22) The Applicant shall avoid, where possible, or minimize to the extent practicable, any damage to functioning field tile drainage systems resulting from the construction, operation, and/or maintenance of the facility. To assure that impacts are minimized, 30 days prior to the preconstruction conference, the Applicant shall docket a field tile avoidance and repair plan including the following:

- (a) Documentation of benchmark conditions of surface and subsurface drainage systems prior to construction, including the location of laterals, mains, grassed waterways, and county-maintained ditches.
  - (b) The Applicant shall consult with the following to request locations of drainage systems:
    - (i) County records.
    - (ii) The county engineer.
    - (iii) The local soil and water conservation district.
    - (iv) Owners of all parcels adjacent to the property.
    - (v) Any other sources known to the Applicant to have this information.
  - (c) Results of this consultation shall be mapped in the plan and avoided to the extent practicable
  - (d) Damaged field tile systems shall be promptly repaired or rerouted to at least original conditions or modern equivalent at the Applicant's expense to ensure proper drainage. However, if the affected landowner(s) agrees to not having the damaged field tile system repaired, they may do so only if:
    - (i) The field tile systems of adjacent landowners remain unaffected by the non-repair of the landowner's field tile system; and
    - (ii) The damaged field tile does not route directly onto or into an adjacent parcel. The Applicant shall design the project to ensure that nearby parcels are protected from unwanted drainage problems due to construction and operation of the project.
  - (e) Mapping (PDF and georeferenced electronic data) of discovered and repaired drain tile systems shall be filed in the case docket once construction is complete.
- (23) At least 60 days prior to the preconstruction conference, the Applicant shall file an agricultural protection plan that is designed to minimize impacts to agricultural land use during construction, operation, maintenance, and decommissioning. The plan shall be comprised of a narrative and detailed mapping that includes, but is not limited to, the following:
- (a) Implements a program for the collection of baseline data establishing pre-construction soil conditions for the production of row crops for the agricultural areas within the project area. The program shall establish the relevant characteristics of both topsoil (defined as the upper most part of the soil commonly referred to as the plow layer, the A layer, or the A horizon, which typically is 5 to 10 inches in depth in Ohio) and subsoil (defined as the soil material that starts at the bottom of the topsoil, which typically is approximately 36 inches in depth in Ohio, unless fractured or hard bedrock is encountered first). The

baseline data shall be derived from field and laboratory testing of soil conditions; including depth, density and quality from representative locations. Laboratory testing shall be conducted by an accredited laboratory. Parameters for assessing soil quality shall include, at a minimum, the following: infiltration rate, bulk density, water holding capacity, pH, percent organic matter, cation exchange capacity, Phosphorous/Phosphate (P), Nitrogen (N), and Potassium/Potash (K). After 30 years of operation and again after 35 years of operation, soil conditions shall be determined for the same sampling locations using the same parameters and the results used to plan soil restoration activities. After equipment is removed as part of decommissioning, soil conditions shall be determined for the same sampling locations using the same parameters. Soil restoration activities shall be performed as necessary to return soil conditions to at least baseline conditions. Staff will be provided with data of soil conditions within 30 days after the receipt of results.

- (b) The Applicant shall seek to achieve a goal of grading no more than 5 percent, but firmly limits grading to no more than 20 percent, of the agricultural lands within the Project Area, as defined in the application. The plan shall minimize grading to the extent practicable and economically feasible, specify the percentage of agricultural lands within the Project Area for which grading is anticipated and, if applicable, provide the reason(s) that the 5-percent goal is not practicable or economically feasible for the Project Area. For purposes of this condition only, grading is defined as earth-moving activities incidental to building roads, equipment pads, substations, and laydown yards, installing buried electric lines and excavating stormwater basins, performing soil removal activities, soil filling activities, and cut-and-fill activities, but shall not include routine ground disturbance incidental to installing piles, drain tile, fences, poles for electric lines, vegetation, landscaping, and temporary erosion and sediment controls, performing soil sampling, geotechnical investigations, and archeological investigations, disking topsoil to promote the growth of vegetation, and raking, smoothing ruts, or otherwise creating a smooth and safe work surface.
- (c) Map(s) and geospatially referenced electronic data including the following:
  - (i) Planned areas of grading.
  - (ii) Agricultural lands within the project area.
  - (iii) Planned locations for topsoil storage or stockpile areas.
- (d) Follows best management practices for preserving agricultural land that include, but may not be limited to, the following:
  - (i) Prior to starting grading in a particular location, topsoil shall be removed and stockpiled separate from subsoil.

- (ii) No stockpiles shall be located in or near drainage ways. Stockpiles shall be stabilized in accordance with the Ohio EPA's NPDES Construction Storm Water General Permit.
  - (iii) Topsoil shall remain in the project area.
  - (iv) Topsoil shall not be re-applied to the surface in excessively wet/moist conditions.
  - (v) For cut-and-fill activities, a profile of the depth and density of the topsoil and subsoil for each area shall be established using representative sampling locations prior to the start of the activity, and a similar profile shall be re-established upon completion of such activity. Topsoil will be removed from the area for which activity is to be performed and separately stockpiled, the subsoil will be excavated and redistributed to lessen the slope, the subsoils will be de-compacted, and then the topsoil will be redistributed over the area.
  - (vi) Existing grassed waterways shall be preserved to the extent practicable. In instances where grassed waterways are to be significantly altered, the Applicant shall submit an analysis that demonstrates how the alteration will not adversely affect drainage of both the project area and neighboring parcels.
  - (vii) Shall sequence construction such that access roads are constructed prior to other grading activities.
  - (viii) Shall instruct construction workers to utilize established access roads and laydown areas for equipment and vehicular traffic, rather than agricultural land, unless installing equipment in the immediate area or as necessary to safely pass other equipment or vehicles.
- (24) At least 45 days prior to the preconstruction conference, the Applicant shall submit an updated decommissioning plan and total decommissioning cost estimate without regard to salvage value on the public docket that includes: (a) a provision that the decommissioning financial assurance mechanism include a performance bond where the company is the principal, the insurance company is the surety, and the Ohio Power Siting Board is the obligee; (b) a timeline for removal of the equipment; (c) a provision to monitor the site for at least one additional year to ensure successful revegetation and rehabilitation; (d) a provision where the performance bond is posted prior to the commencement of construction; (e) a provision that the performance bond is for the total decommissioning cost and excludes salvage value; (f) a provision to coordinate repair of public roads damaged or modified during the decommissioning and reclamation process; (g) a provision that the decommissioning plan be prepared by a professional engineer registered with the state board of registration for professional engineers and surveyors; (h) a provision stating that the bond shall be recalculated every five years by an engineer retained by the Applicant; and (i) a provision that

underground equipment will be removed to the extent that allows for future drain tile repairs and installation to be completed. The Applicant shall implement and comply with the decommissioning plan as approved by Staff.

- (25) Prior to commencement of any construction, the Applicant shall prepare an updated vegetation management plan in consultation with the ODNR. The goals of the plan shall include planting a minimum of 70 percent of the impacted project area in beneficial vegetation, utilizing plant species listed in Attachment A of ODNR Recommended Requirements for Proposed Solar Energy Facilities in Ohio, or other suitable species as approved by the ODNR and shall follow the Ohio Solar Site Pollinator Habitat Planning and Assessment Form with a minimum score of 80 points. The plan shall include a narrative on how the project proposes to establish and maintain beneficial vegetation and pollinator habitat in accordance with the guidelines provided above. The plan shall include mapping of the areas where pollinator habitat would be established and maintained. The plan shall include that routine mowing would be limited to fall/spring seasons, as needed, to allow for natural reseeding of plantings and reduce impacts to ground-nesting birds. The above requirements may be waived if the Applicant is committed to ODNR-approved alternative agricultural uses to control vegetation. To assure land stabilization and to the extent that it does not conflict with the Applicant's ability to comply with other requirements of the certificate, the plan shall also specify that seeding be applied to graded areas, excluding access and laydown areas, and other unvegetated areas subject to infrastructure installation prior to further soil disturbance.
- (26) At least 45 days prior to each preconstruction conference, the Applicant shall submit to Staff, for review and acceptance, one set of detailed engineering drawings of the final project design for the applicable phase of construction and mapping in the form of PDF, which the Applicant shall also file on the docket of this case, and geographically referenced data (such as shapefiles or KMZ files) based on final engineering drawings to confirm that the final design is in conformance with the certificate. Mapping shall include the limits of disturbance, permanent and temporary infrastructure locations, areas of vegetation removal and vegetative restoration as applicable, and specifically denote any adjustments made from the siting detailed in the application. The detailed engineering drawings of the final project design for each phase of construction shall account for geological features and all applicable geotechnical study results shall be included in the submission of the final project design to Staff. All applicable geotechnical study results shall be included in the submission of the final project design to Staff. The engineering drawings shall include the identity of the registered professional engineer(s), structural engineer(s), or engineering firm(s), licensed to practice engineering in the state of Ohio who reviewed and approved the designs.
- (27) At least 30 days prior to the preconstruction conference, the Applicant shall file the final geotechnical engineering report. This report shall include the results and analyses of the additional geotechnical investigation studies the Applicant outlined in its responses to Staff's data requests. This includes investigation of any switchyard or substation

locations, BESS locations, and the 230-kilovolt (kV) transmission line route. These investigations will include subsurface borings and soil data. This report shall include a final summary statement addressing the geologic and soil suitability in addition to addressing any inadequacies found and proposed remedies if applicable.

- (28) If any changes are made to the facility layout after the submission of final engineering drawings, the Applicant shall provide all such changes on the case docket and provide to Staff in hard copy and as geographically referenced electronic data. All changes are subject to Staff review for compliance with all conditions of the certificate prior to construction in those areas.
- (29) At least 30 days prior to the preconstruction conference, the Applicant shall provide Staff, for review and acceptance, the final Unanticipated Discovery Plan.
- (30) The Applicant shall have a Staff-approved environmental specialist on site during construction activities that may affect sensitive areas. Sensitive areas may include, but are not limited to, wetlands and streams, and locations of threatened or endangered species. The environmental specialist shall be familiar with water quality protection issues and potential threatened or endangered species of plants and animals that may be encountered during project construction. The environmental specialist shall have authority to stop construction to assure that unforeseen environmental impacts do not progress and recommend procedures to resolve the impact. A map shall be provided to Staff showing sensitive areas which would be impacted during construction with information on when the environmental specialist would be present.
- (31) At least 30 days prior to the preconstruction conference, the Applicant shall file a copy of the grazing plan on the public docket for Staff review and acceptance. The grazing plan shall include: (a) a map of the area to be utilized for sheep grazing; (b) seed mix selected for the site; (c) times of year when sheep grazing would occur; (d) stocking rate; (e) how manure and deceased livestock would be managed; (f) and the Applicant's plan to comply with Condition 9 in relation to sheep grazing.
- (32) At least 30 days prior to the start of construction, the Applicant shall file a copy of the final complaint resolution plan for construction and operation of the project on the public docket.
- (33) At least seven days prior to the start of construction and at least seven days prior to the start of facility operations, the Applicant shall notify via mail all affected property owners and tenants who were provided notice of the public informational meeting and OPSB hearings; local officials who received a copy of the application; residences located within one mile of the certificated boundary; schools, libraries, and emergency responders that serve residents in the project area; and any other person who has requested updates regarding the project. These notices shall provide information about the project, including contact information and a copy of the complaint resolution program. The start of construction notice shall include written confirmation that the

Applicant has complied with all preconstruction-related conditions of the certificate, as well as a timeline for construction and restoration activities. The start of facility operations notice shall include written confirmation that the Applicant has complied with all construction-related conditions of the certificate, as well as a timeline for the start of operations. The Applicant shall file a copy of these notices on the public docket.

### **CONSTRUCTION CONDITIONS**

- (34) The Applicant shall prepare a quarterly complaint summary report about the nature and resolution of all complaints received in that quarter and file these reports on the public docket during the first five years of operation. The Applicant shall file on the public docket a complaint summary report by the last day of April, July, October, and January of each year during construction and through the first five years of operation. The report shall include a list of all complaints received through the Applicant's complaint resolution program, a description of the actions taken toward the resolution of each complaint, and a status update if the complaint has yet to be resolved.
- (35) If the project scope changes or newly identified cultural resources are discovered during construction, the Applicant shall notify OHPO and Staff concerning the need for mitigation or avoidance. The Applicant shall implement the Phase II cultural resources work plan included in the Supplement to Application-Addendum to Phase I Archaeology Survey and Phase II Archaeology Work Plan filed on March 22, 2023. The Applicant shall also follow any recommendations from OHPO in OHPO's letter of review of the Supplement to Application-Addendum to Phase I Archaeology Survey and Phase II Archaeology Work Plan.
- (36) The Applicant shall construct the facility in a manner that incorporates post construction stormwater management under OHC000005 (Part III.G.2.e, pp. 19-27) in accordance with the Ohio Environmental Protection Agency's Guidance on Post-Construction Storm Water Controls for Solar Panel Arrays.
- (37) 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. The Applicant shall also keep a running list of and notify the OPSB Staff and the ODNR Division of Wildlife if any wildlife mortality or entrapment is discovered in the facility during operation.
- (38) 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 listed bat species, unless coordination with the ODNR and the USFWS allows a different course of action. If coordination with these agencies allows clearing between April 1 and September 30, the Applicant shall docket proof of completed coordination on the case docket prior to clearing trees.



- (39) The Applicant shall take steps to prevent establishment and/or further propagation of noxious weeds identified in Ohio Adm.Code Chapter 901:5-37 and invasive plant species identified in Ohio Adm.Code 901:5-30-01, during construction, operation, and decommissioning. This would be achieved through appropriate seed selection, and a minimum of annual vegetative surveys throughout the project area during the growing season. If noxious weeds and/or invasive plants are found to be present, the Applicant shall remove or treat them with herbicide pursuant to R.C. Section 921.06 as necessary and shall follow all applicable state laws regarding noxious weeds and invasive plant species. The Applicant shall provide annual documentation of weed control for the first four years of operation, with the goal of weed eradication significantly completed by year three of operation.
- (40) General construction activities shall be limited to the hours of 7:00 a.m. to 7:00 p.m., or until dusk when sunset occurs after 7:00 p.m. Impact pile driving shall be limited to the hours between 9:00 a.m. and 6:00 p.m. Impact pile driving may occur between 7:00 a.m. and 9:00 a.m., and after 6:00 p.m. or until dusk when sunset occurs after 6:00 p.m., if the noise impact at non-participating receptors is not greater than daytime ambient Leq plus 10 dBA. If impact pile driving is required between 7:00 a.m. and 9:00 a.m., and after 6:00 p.m. or until dusk when sunset occurs after 6:00 p.m., the Applicant shall install a noise monitor in a representative location to catalog that this threshold is not being exceeded. Hoe ram operations, if required, shall be limited to the hours between 10:00 a.m. and 4:00 p.m., Monday through Friday. Construction activities that do not involve noise increases above ambient levels or light pollution 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.
- (41) Following commencement of construction, the Applicant shall file on the case docket a bi-annual report containing the following information:
- (a) Any modifications to the facility, equipment, construction practices, and mitigation measures as described in the application and as modified and/or clarified in supplemental filings, replies to data requests, and recommendations in the *Staff Report of Investigation*.
  - (b) A list of state and/or federal listed species encountered during construction and documentation of coordination with the appropriate agencies as needed.
  - (c) Dates and noise monitor results when impact pile driving was required between 7:00 a.m. and 9:00 a.m., and after 6:00 p.m. or until dusk when sunset occurs after 6:00 p.m.
  - (d) Any notifications sent to 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.

- (e) If the facility is found to be above the daytime ambient Leq sound level limit level plus five dBA, what additional noise mitigation measures were implemented to maintain compliance with the certificate.
- (f) The Applicant shall file a final report within 60 days of completion of construction and cease any further reporting in accordance with this condition. The Applicant shall file a final report within 60 days of completion of construction and cease any further reporting in accordance with this condition.

### **POST CONSTRUCTION/OPERATION CONDITIONS**

- (42) Within 60 days of commencement of commercial operation of the solar facility and BESS, the Applicant shall submit to Staff a copy of the as-built specifications for that 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.
- (43) The Applicant shall operate a facility that limits sound levels emitted to nonparticipating receptors to no higher than the daytime ambient Leq sound level limit level plus five dBA, as listed in Sound Report Exhibit L Appendix C. If the facility is found to be above these limits, the Applicant shall install additional noise mitigation measures to maintain compliance with this provision.
- (44) At the time of solar panel end of life disposal, any retired panel material that is not recycled and that is marked for disposal, shall be sent to an engineered landfill with various barriers and methods designed to prevent leaching of materials into soils and groundwater, or another appropriate disposal location at the time of decommissioning approved by Staff.
- (45) The facility shall be operated in such a way as to assure that no more than 800 megawatts would be injected into the bulk power system at any time.
- (46) The Applicant shall file an annual operational compliance report for at least 5 years following completion of construction. Annual reports shall contain the following information:
  - (a) Any modifications to the facility, equipment, construction practices, and mitigation measures as described in the application and as modified and/or clarified in supplemental filings, replies to data requests, and recommendations in the *Staff Report of Investigation*.
  - (b) A list of any wildlife mortality or entrapment discovered within the facility fence during operation.

- (c) Documentation of weed control for the first four years of operation, with the goal of weed eradication significantly completed by year three of operation.
- (d) Documentation of compliance with the landscape and lighting plan, including efforts to maintain vegetative screening to at least a 90 percent vegetation survival rate.
- (e) If the facility is found to be above the daytime ambient Leq sound level limit level plus five dBA, what additional noise mitigation measures were implemented to maintain compliance with the certificate.



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Summary: Staff Report of Investigation electronically filed by Mark C. Bellamy on  
behalf of OPSB Staff.