VORYS
Vorys, Sater, Seymour and Pease LLP
Legal Counsel

52 East Gay Street
P.O. Box 1008
Columbus, Ohio 43216-1008

614.464.6400 | www.vorys.com

Founded 1909

Michael J. Settineri
Direct Dial (614) 464-5462
Direct Fax (614) 719-5146
Email mjsettineri@vorys.com

July 21, 2020

Ms. Tanowa Troupe, Secretary
Docketing Division
Ohio Power Siting Board
180 E. Broad Street, 11th Floor
Columbus, OH 4321

Re: Case No. 20-0972-EL-BGN
Yellowbud Solar, LLC

Dear Ms. Troupe:

Accompanying this letter is the application by Yellowbud Solar, LLC for a Certificate of Environmental Compatibility and Public Need for the Yellowbud Solar Project, an up to 274 megawatt solar-powered electric generation facility to be located in Pickaway County and Ross County, Ohio. The original application was electronically filed.

In accordance with Rule 4906-2-04 of the Ohio Administrative Code, I would like to make the following declarations:

Name of the applicant:

Yellowbud Solar, LLC
c/o Geronimo Energy, LLC
8400 Normandale Lake Blvd, Suite 1200
Bloomington, MN 55437

Name and location of the proposed facility:

Yellowbud Solar Project
Wayne and Deer Creek Townships in Pickaway County, Ohio
Union and Deerfield Townships in Ross County, Ohio

Name of the authorized representative:

Michael J. Settineri
Vorys, Sater, Seymour and Pease LLP
52 East Gay Street
Columbus, Ohio 43215
614-464-5462
mjsettineri@vorys.com

Notarized Statement:

See attached Affidavit of Jeffrey Ringblom
Officer of Yellowbud Solar, LLC

Information about the facility that was presented in the Pre-Application Notification Letter filed June 5, 2020 has not been revised. The Applicant's July 6, 2020 motion for waiver related to this application was granted by Entry dated July 9, 2020.

Very truly yours,

/s/ Michael J. Settineri

Michael J. Settineri
Attorney for Yellowbud Solar, LLC

Enclosure

BEFORE
THE OHIO POWER SITING BOARD

In the Matter of the Application of Yellowbud Solar, LLC for a Certificate of Environmental Compatibility and Public Need	))))	**Case No. 20-0972-EL-BGN**

OFFICER'S AFFIDAVIT

STATE OF MINNESOTA)
COUNTY OF HENNEPIN) SS:

Now comes Jeffrey Ringblom, Chief Financial Officer of Yellowbud Solar, LLC and an officer of Yellowbud Solar, LLC, having been first duly sworn, declares and states as follows:

1. I am an executive officer for the Yellowbud Solar Project to be located in Wayne and Deer Creek Townships in Pickaway County, Ohio and in Union and Deerfield Townships in Ross County, Ohio.

2. I have reviewed the Application of Yellowbud Solar, LLC for a Certificate of Environmental Compatibility and Public Need to Construct an Electric Generating Facility in Case No. 20-0972-EL-BGN.

3. To the best of my knowledge, the information and statements contained in the Application are true and correct.

4. To the best of my knowledge, the Application is complete subject to any the request for waiver.

Signature: _____
Jeffrey Ringblom
Chief Financial Officer
Yellowbud Solar, LLC

Sworn to before me and signed in my presence this 20th day of July, 2020.

BRIANA MEGHAN SCHNAIBLE
Notary Public
Minnesota
My Commission Expires
Jan 31, 2025

_____
Notary Public
My Commission Expires 1-31-2025

APPLICATION

TO THE

OHIO POWER SITING BOARD

FOR A

CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED

FOR THE

Yellowbud Solar Facility

Pickaway County and Ross County, Ohio

Case No. 20-0972-EL-BGN

July 2020

Prepared by: Yellowbud Solar, LLC
8400 Normandale Lake Blvd, Suite 1200
Bloomington, MN 55437
Contact: William Risse, Lead Permitting Specialist
Tel: 952.300.9476

With Assistance From: Environmental Design & Research, Landscape Architecture, Engineering & Environmental Services, D.P.C.
217 Montgomery Street, Suite 1000
Syracuse, New York 13202

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ACRONYMS AND ABBREVIATIONS

AC	Alternating Current
AEP	AEP Ohio Transmission Company, Inc.
ANSI	American National Standards Institute
BMP	Best Management Practices
CAUV	Current Agricultural Use Value
dBA	Decibels (A-Weighted)
DC	Direct Current
DSM	Digital Surface Model
EAP	Emergency Action Plan
EDR	Environmental Design and Research
EMF	Electromagnetic Fields
EPA	Environmental Protection Agency
ERIS	Environmental Risk Information Services
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FTE	Full Time Equivalent
gen-tie	Generation Interconnection
GIS	Geographic Information System
gpm	Gallons Per Minute
HASP	Health and Safety Plan
HMMH	Harris Miller Miller & Hanson
IEEE	Institute of Electrical and Electronics Engineers
JEDI	Jobs and Economic Development Impact
kV	Kilovolt
kW	Kilowatt
MW	Megawatt
MWh	Megawatt-hour
NLCD	National Land Cover Database
NEC	National Electrical Code
NESC	National Electric Safety Code
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NREL	National Renewable Energy Laboratory
NRHP	National Register of Historic Places
O&M	Operations and Maintenance
OAC	Ohio Administrative Code
ODOT	Ohio Department of Transportation
ODNR	Ohio Department of Natural Resources
OGS	Ohio Genealogical Society
OHI	Ohio Historic Inventory
OHPO	Ohio Historic Preservation Office
OPSB	Ohio Power Siting Board
OW/OS	Overweight/Oversize
PJM	PJM Interconnection, LLC
POI	Point of Interconnection
PV	Photovoltaic
ROW	Right(s)-of-Way
RSG	Resources Systems Group, Inc
SCADA	Supervisory Control and Data Acquisition
SPCC	Spill Prevention Control and Countermeasures
SR	State Route
SWPA	Source Water Protection Area
SWPPP	Storm Water Pollution Prevention Plan
US	U.S. Route
USACE	U.S. Army Corps of Engineers
USDA	U. S. Department of Agriculture
USDOE	U.S. Department of Energy
USFWS	U.S. Fish and Wildlife Service
USGS	U. S. Geological Survey
VRA	Visual Resource Assessment
VSA	Visual Study Area
WA	Wildlife Area
WPA	Wildlife Production Area

4906-4-01 PURPOSE AND SCOPE

(A) REQUIREMENTS FOR FILING OF CERTIFICATE APPLICATIONS

Yellowbud Solar, LLC, (the Applicant or Yellowbud) is proposing to construct the Yellowbud Solar Facility (the Project), an up to 274 megawatt (MW) solar-powered electric generation facility (the Facility). The materials contained herein and attached hereto constitute the Applicant's submittal (the Application) for a Certificate of Environmental Compatibility and Public Need (the Certificate), prepared in accordance with the requirements for the filing of standard certificate applications for electric generation facilities, as prescribed in Chapter 4906-4 of the Ohio Administrative Code (OAC). This Application has been prepared by the Applicant, with support from Environmental Design & Research, Landscape Architecture, Engineering, & Environmental Services (EDR) of Syracuse, New York. EDR has 20 years of experience with siting and permitting renewable energy facilities.

(B) WAIVERS

The Ohio Power Siting Board (OPSB) may, upon an application or motion filed by a party, waive any requirement of this chapter other than a requirement mandated by statute. By motion filed separate from this Application, the Applicant requested a waiver, in part, from the provisions of OAC 4906-4-08(D), which requires the study of impacts to cultural resources within 10 miles of the Project Area. The waiver request seeks to reduce this study area to 2 miles, and the visual impact study area to 5 miles, due to the reduced visual impact of solar facilities in comparison to wind turbines or other tall facilities. The waiver was granted on July 9, 2020.

4906-4-02 PROJECT SUMMARY AND APPLICANT INFORMATION

(A) PROJECT SUMMARY

The Applicant is proposing to construct an up to 274 MW solar-powered electric generation Facility. The Facility will consist of the fenceline, photovoltaic (PV) panel arrays, belowground or hybrid with both belowground and aboveground electrical collection lines, inverters, access roads, a substation (which includes transformers), an operations and maintenance (O&M) building, weather stations, and laydown yards. The Facility will deliver power to a single point of interconnection on the existing Biers Run - Circleville 138 kilovolt (kV) transmission line. The point of interconnection will consist of a short gen-tie line from the Facility substation to a switchyard with a line loop to make the final connection to the existing 138 kV transmission line (collectively, the POI). The POI will be the subject of a separate filing to the OPSB.

(1) General Purpose of the Facility

The general purpose of the Facility is to maximize energy production from solar resources in order to deliver clean, renewable electricity to the Ohio bulk power transmission system to serve the needs of electric utilities and their customers. The electricity generated by the Facility will be transferred to the transmission grid operated by PJM Interconnection, LLC (PJM).

(2) Description of the Facility

The Facility will be located on approximately 2,040 acres of private land in Union and Deerfield townships in Ross County, and Wayne and Deer Creek townships in Pickaway County, Ohio (Project Area). The total generating capacity of the Facility will not exceed 274 MW. The Facility is expected to operate with an average annual capacity factor of 22% to 24%, generating a total of approximately 525,000 to 575,000 megawatt-hours (MWh) of electricity each year, depending on the final equipment models selected for the Facility. Figure 03-2 depicts an overview of the Facility. A detailed description of the Facility, including each Facility component, can be found in section 4906-4-03(B) of this Application.

(3) Description of the Suitability of the Site for the Proposed Facility

An analysis of the Project Area concluded that it meets all factors necessary to support a viable solar energy facility. The proposed site possesses strong solar resources, manageable access to the bulk power transmission system, sufficiently low population density, positive feedback from landowners and local officials, highly compatible land use, and few environmentally sensitive areas. For more details regarding the suitability and selection of the site, refer to section 4906-4-04(A).

(4) Project Schedule

Acquisition of land and land rights began in 2017 and were completed prior to submittal of this Application. During this time, meetings were held with local stakeholders, and outreach was conducted to landowners near the Project Area. A public information meeting was held on June 22, 2020 to facilitate public interaction with the Applicant and expert consultants, and included information about the Applicant, the Facility, and solar technology. Final design will be completed prior to construction, as early as the first quarter of 2021. Construction is anticipated to begin shortly thereafter and be completed in the fourth quarter of 2022, at which point the Facility will be placed in service. Additional information about the Project schedule can be found in section 4906-4-03(C)(1) of this Application.

(B) APPLICANT INFORMATION

(1) Plans for Future Generation Capacity at the Site

The Applicant currently has no future plans for additional capacity at this site. This POI has a maximum capacity of 274 MW.

(2) Description of Applicant and Operator

Yellowbud Solar, LLC is a wholly owned subsidiary of Geronimo Energy, LLC (Geronimo), a National Grid Company. Geronimo is a full-service renewable energy development company headquartered in Minneapolis, Minnesota. Founded in 2005, Geronimo has developed a multi-gigawatt renewable energy portfolio of projects that are either currently under construction or in operation throughout the United States. As a farmer friendly and community-driven company, Geronimo develops projects for corporations and utilities that seek to repower America's grid by reigniting local economies and reinvesting in a sustainable future. Geronimo offers solar energy power to utilities, municipalities, cooperatives, and corporate customers, demonstrating their financial stability and development success. The Applicant currently plans to develop, construct, and operate the Facility for the life of the Project.

4906-4-03 PROJECT DESCRIPTION AND SCHEDULE

(A) PROJECT AREA DESCRIPTION

The following sub-sections provide information on the Project Area's geography, topography, population centers, major industries, and landmarks.

(1) Geography and Topography Map

Figure 03-1 depicts the geography and topography within a 2 mile radius of the Project Area, including the following features:

(a) The Proposed Facility

The preliminary Facility layout (Exhibit A) includes the fenceline, PV panel arrays, belowground or hybrid electrical collection lines, inverters, access roads, substation, O&M building, weather stations, and laydown yards contained within the Project Area. While the Applicant expects that the final layout will remain substantially similar to the preliminary Facility layout, due to ongoing technological innovations in the solar industry, continuing detailed engineering and survey work, public feedback, and communications during the OPSB certification process, the precise location of these features within the Project Area is subject to change. While the layout is subject to change, all Facility components will be located within the Project Area and will be subject to the various conditions and constraints laid out in this Application, and any conditions that are incorporated by the OPSB into the Certificate.

(b) Population Centers and Administrative Boundaries

The Facility is located in Wayne and Deer Creek townships in Pickaway County, and Deerfield and Union townships in Ross County, Ohio. The nearest population center is the unincorporated community of Yellowbud, near the eastern edge of the Project Area. The Project Area is located approximately 4 miles east of the Village of Clarksburg, 5 miles southeast of the Village of Williamsport, 8 miles southwest of the City of Circleville, 10 miles north of the City of Chillicothe, and 20 miles east of the City of Washington Court House. The closest metropolitan area is Columbus, Ohio, located approximately 30 miles north of the Project Area.

(c) Transportation Routes and Gas and Electric Transmission Corridors

The Project Area is bounded by State Route (SR) 104 on the east, Williamsport Pike on the south, Westfall Road on the west, and Dungan Road on the north. Other nearby major routes include U.S. Route (US) 23 to the east and SR 207 to the southwest. The two airports located within 5 miles of the Project Area, Pickaway County Memorial Airport and Ross County Airport, are also included on this Figure. The

Biers Run – Circleville 138 kV transmission line runs along the western edge of the Project Area. There are no gas transmission pipelines near the Project Area (USDOT, 2020).

(d) Named Rivers, Streams, Lakes, and Reservoirs

There are seven named rivers and streams located within 2 miles of the Project Area. One of these streams, Wolf Run, traverses the northwestern corner of the Project Area. Yellowbud Creek runs just north of the Project Area, and Deer Creek lies to the south. Hay Run and Waugh Run both extend from Deer Creek, with Hay Run located 1.3 miles southwest of the Project Area and Waugh Run located approximately 0.8 mile south of the Project Area. The Scioto River is approximately 1 mile to the east of the Project Area. Scippo Creek terminates at the Scioto River approximately 1.7 miles northeast of the Project Area.

(e) Major Institutions, Parks, and Recreation Areas

Two Ohio Department of Natural Resources (ODNR) identified points of interest are near the Project Area. These include two canoe launches along Deer Creek, 0.1 mile southwest and 1.6 miles southeast of the Project Area (ODNR, 2017b). A bike route spans the eastern boundary of the Project Area along SR 104 (ODOT, 2018). One publicly accessible conservation easement is located 1.5 miles north of the Project Area (ODNR, 2017a).

(2) Area of All Owned and Leased Properties

Table 03-1 shows the number and approximate area of properties leased or purchased for the Project Area. The land purchased for the Facility will be utilized for construction of the Facility substation. Ownership and easement rights for the POI will be described in detail in a separate filing to the OPSB. Refer to section 4906-4-03(B)(2)(g) for more information regarding the substation. All other portions of the Project Area will be leased for the life of the Facility.

Table 03-1. Area of Property Used for Project

	Number of Properties	Area (acres)
Leased	20	2,040
Purchase Options[1]	2	16.7

1. Property(ies) will be purchased following acquisition of permits. Purchase options are contained within leased parcels.

(B) DETAILED DESCRIPTION OF PROPOSED FACILITY

A detailed description of the Facility is provided in the sub-sections below. The equipment specifications presented in this Application are representative of the options that will be selected for the final procurement of Facility components and materials. Final equipment specifications, characteristics, and dimensions will be provided to

OPSB Staff prior to construction. Any changes in equipment specifications from what is presented here are not expected to increase potential impacts.

(1) Description Details for the Project

(a) Type and Characteristics of Generation Equipment

Generation equipment is anticipated to include approximately 833,000 monocrystalline-bifacial PV panels, mounted on single axis trackers and installed in linear arrays. Polycrystalline or thin film panels may be utilized dependent on final procurement of equipment and equipment availability prior to construction. Representative solar panels under consideration are provided in Exhibit B. The representative facility components in Exhibit B have been filed under seal as they could provide undue advantage to industry competitors and could also affect future contract negotiations during the equipment procurement process. Improving technologies could dictate the use of an alternative panel as identified during the final procurement process. The panels will operate continuously but will not produce electricity during nighttime hours. The annual net capacity factor for the Facility is estimated to be 22% to 24%. Based on the total generating capacity of 274 MW and an annual capacity factor of 24%, the Facility will generate approximately 575,000 MWh of electricity each year. Heat rate is not applicable to solar energy facilities.

(b) Turbine Dimensions

This section is not applicable to the Facility.

(c) Fuel Quantity and Quality

Solar panels generate electricity without burning fuels. Therefore, this section is not applicable to the Facility.

(d) List of Pollutants Emissions and Quantities

Solar panels generate clean, emission free electricity without releasing airborne pollutants. Therefore, this section is not applicable to the Facility.

(e) Water Requirement, Source, and Discharge Information

Solar panels generate electricity without the use of water. Therefore, no water is treated or discharged, and this section is not applicable to the Facility.

(2) Description of Major Equipment

The primary steps for Facility construction include the following: (1) installation of storm-water, erosion control, and vegetation protection measures, (2) securing the perimeter of the construction area, (3) vegetation

clearing, (4) minor earthwork and grading as necessary, (5) construction of access roads, and (6) installation of equipment such as pilings, racking, panels, inverters, weather stations, the substation, and fencing to secure the site. Additional details on construction, site preparation, and reclamation methods are included in the sub-sections below, and in section 4906-4-07 and section 4906-4-08 of this Application.

Inset 03-1 below outlines the process of converting solar energy and connecting it to the transmission grid. The process begins with solar panels converting energy from the sun into direct current (DC) electrical power. Sets of panels are electrically connected in a series and terminated at an inverter. The inverters will convert the DC power (approximately 1,500 volts) from the panels to alternating current (AC) power (650-950 volts depending on the inverter specifications). Next, a transformer will step up the AC voltage of generated electricity from the inverter output voltage to 34.5 kV. From the transformers, electrical cable will be buried belowground to the substation, where the electricity will be stepped up from 34.5 kV to 138 kV to interconnect to the existing transmission infrastructure.

Inset 03-1. Harvesting Solar Energy

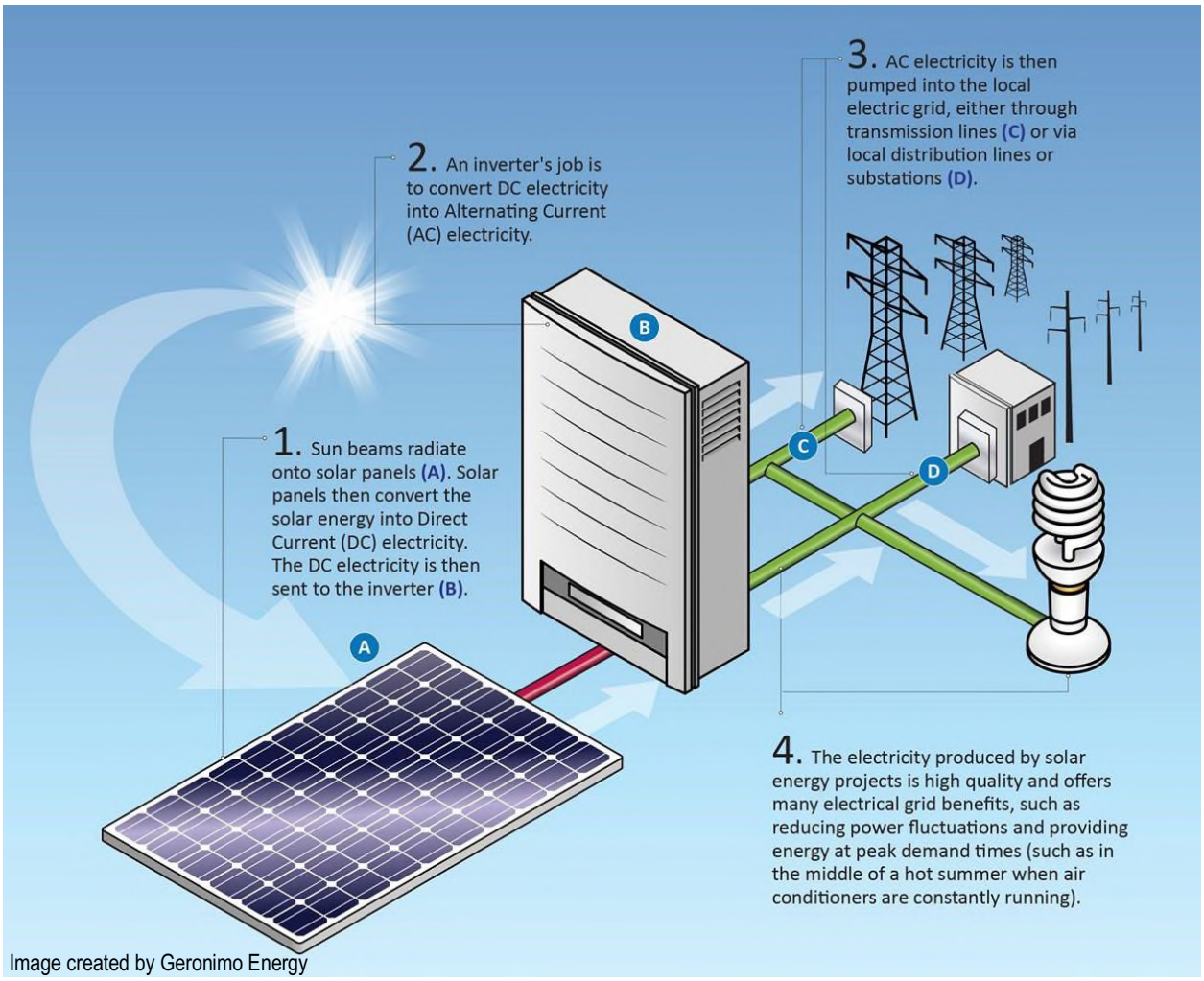


Image created by Geronimo Energy

(a) Electric Power Generation Equipment

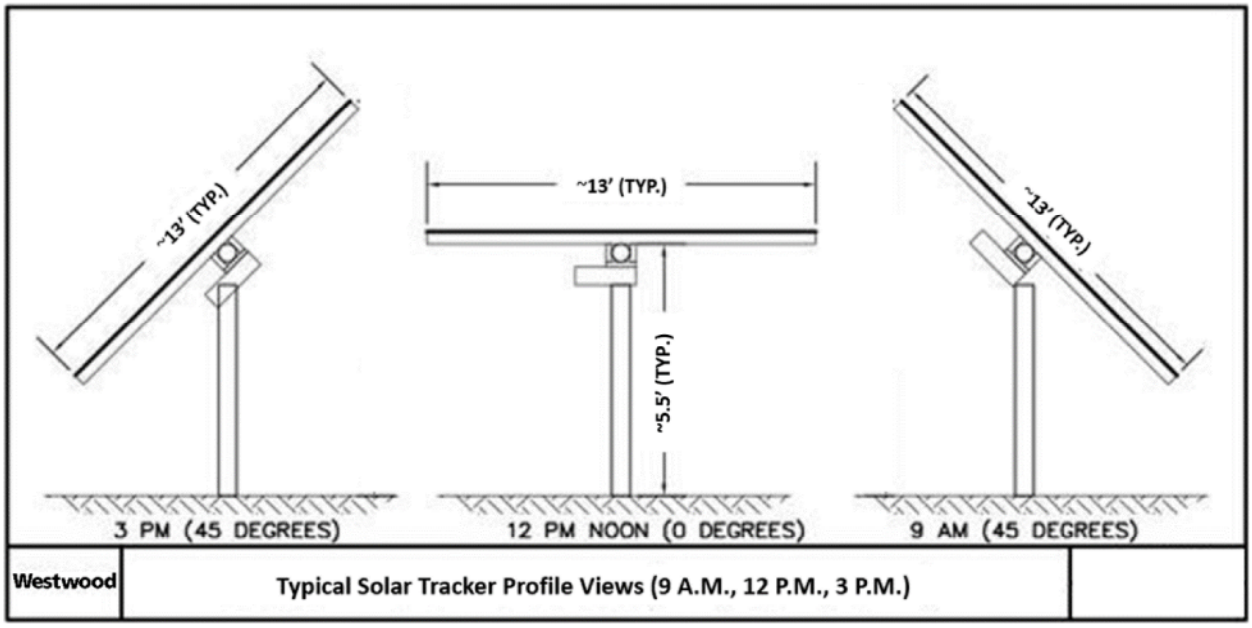
Following installation of access roads, construction of PV panels will commence. Some site preparation may be necessary to accommodate PV panel installation via grading due to localized variability in topography. Where grading is necessary, topsoil will be segregated and redistributed following grading activities to maintain soil productivity.

PV panel modules will be approximately 6.5 feet wide by 3.5 feet long. The panels will be secured on a single axis tracker racking system, with up to two modules stacked end-to-end, centered on the horizontal crossbar of the tracker, for a total width of approximately 13 feet. The panels will rotate up to 60 degrees in either direction from horizontal, centered along the horizontal crossbar of the tracker. The height of the crossbar will be approximately 5.5 feet, giving the panels a ground clearance of approximately 3 feet at their highest position. Under flat conditions found across most of the Project Area, panels will reach approximately 15 feet off the ground when tilted to their highest position. See Inset 03-2 for a representation of the panels and tracking rack system that is similar to what will be used for the Facility.

Inset 03-2. Representative Panel and Tracking Rack System

Single axis tracker designs vary by manufacturer, but generally consist of a series of mechanically linked horizontal steel support beams known as torque tubes, with a drive train system usually located in the center of the rows, dividing the array into two sides. Rows are aligned north to south and the PV panels pivot, tracking the sun's motion from east to west throughout the day. Manufacturer's specifications for representative PV panels and racking systems under consideration are provided in Exhibit B, which is submitted under confidential seal. Improving technologies could dictate the use of an alternative racking system as identified during the final procurement process. Approximate dimensions of the racking system are shown in Inset 03-3 below.

Inset 03-3. Approximate Tracking Rack System Dimensions



The racking and panels are supported on steel piles that will be pile-driven into the ground to a depth generally between 10 and 15 feet. Geotechnical test borings have confirmed the adequacy of this pile depth (see Exhibit C). Based on test borings, it is anticipated that piles will be driven across the site. Single pile lengths are anticipated for pile driving that do not require welding of pile sections. Inset 03-4 below illustrates standard steel pile foundations that are representative of what will be used for the Facility.

Inset 03-4. Standard Steel Pile Foundations

Upon completion of the installation of access roads, piles, racking, and panels, disturbed soils will be decompacted via tilling to prepare for the establishment of vegetation. Vegetation will be established per the Vegetation Management Plan in Exhibit D. All permanent or temporary stabilization associated with the Facility will be completed to meet the requirements of Ohio EPA Permit No. OHC000005 (Ohio EPA, 2018).

(b) Fuel, Waste, Water, and Other Storage Facilities

PV panels generate electricity without the use of fuel or water, and without generating waste. During construction, contractors will likely be utilizing temporary fuel tanks at some laydown yards for re-fueling of construction equipment.

Oil utilized for the cooling and insulation of transformers at the Facility substation may be stored within an aboveground storage tank within the substation footprint which will likely exceed 1,320 gallons. Per federal regulations (40 CFR Part 112), should the tank exceed 1,320 gallons, a Spill Prevention Control and Countermeasures Plan (SPCC Plan) will be prepared for the storage tank prior to its placement onsite. Oil that is removed from the transformers during maintenance activities will be disposed of per the

applicable local, state, and federal regulations. Other onsite storage at the O&M building may include hydraulic oil stored in a plastic or poly tote or 55-gallon drums on secondary containment pallets and potentially a fuel tank, for maintenance vehicles, that would be a double walled tank with additional secondary containment.

(c) Fuel, Waste, Water, and Other Processing Facilities

PV panels generate electricity without the use of fuel or water, and without generating waste. Therefore, the proposed Facility does not include any fuel, waste, water, or other processing facilities.

(d) Water Supply, Effluent, and Sewage Lines

No Facility components will use measurable quantities of water or discharge measurable quantities of wastewater.

(e) Associated Electric Transmission and Distribution Lines and Gas Pipelines

The Facility will interconnect to the Biers Run – Circleville 138 kV transmission line, which is directly across Westfall Road from the substation. The POI, which will consist of a short gen-tie line, a switchyard and final line loop to the existing 138 kV transmission line, will be described in detail in a separate filing to the OPSB. There are no electric distribution lines or gas pipelines associated with the Facility.

(f) Electric Collection Lines

The electrical collection system will be installed belowground or a hybrid of belowground and aboveground. Electrical collection technology is rapidly evolving and will be site specific depending on ongoing detailed design and constructability considerations, costs, and availability of materials. Final engineering and procurement will help determine the construction method for the electrical collection system. The electrical cables that would be used for each type of electrical collection system are described below. A total of approximately 20.6 miles of belowground 34.5 kV collection line will be installed for the Facility.

Belowground Electrical Collection System

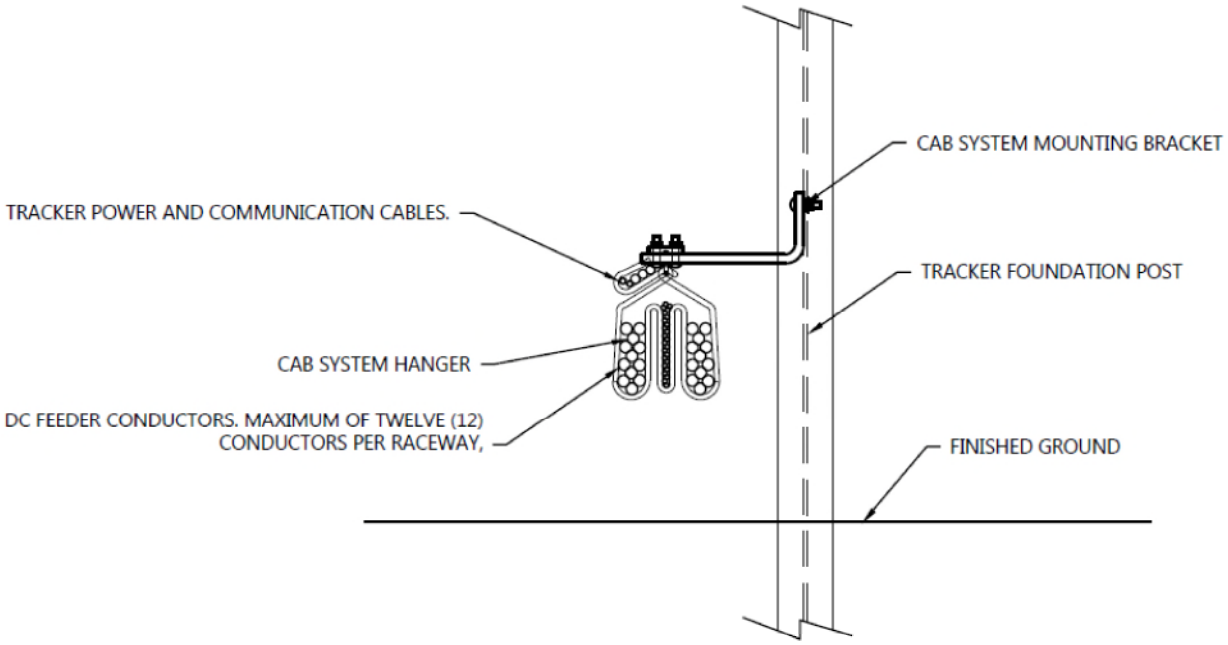
Belowground AC collection systems from the inverter skids to the substation will be installed in trenches or ploughed into place at a depth of at least 36 inches below grade. During all trench excavations, the topsoil and subsoil will be removed and stockpiled separately. Once the cables are laid in the trench, the area will be backfilled with subsoil, followed by topsoil. Trenching or ploughing via these methods are the preferred method of installation for buried collection lines. If these methods are not feasible for installation due to site conditions, trenching via backhoe may be utilized in some circumstances. Installation of

collection lines via backhoe will result in soil disturbance averaging approximately 15 feet in width to accommodate machinery and backfill/spoil storage, with the other methods disturbing a smaller area.

Hybrid Electrical Collection System

A hybrid aboveground and belowground electrical system is being considered for several reasons, including ease of access for operations and maintenance, reduced ground disturbance, and cost considerations. If aboveground cabling is utilized, the DC collection cables will be strung under each row of panels on steel arms and a steel cable attached to the piles. At the end of each row, hanging brackets would connect several racks/rows of cables to a common collection point near their assigned inverter skid, where the cables will be routed belowground at a minimum depth of 36 inches below grade to the inverter. The current is then converted to AC and voltage is stepped up to 34.5 kV. A typical drawing of the hanging brackets at the end of each row is provided below in Inset 03-5. No power poles would be necessary to accommodate this configuration, as the aboveground portion of the collection system would only run along the PV panel arrays and would be attached to the same piles as the panels. From the inverter, the AC collection cables would be belowground to the substation, as described above for the belowground collection system.

Inset 03-5. Typical Aboveground DC Collection Hanging Bracket



Under both electrical collection system scenarios in agricultural areas, all topsoil within the work area will be stripped and segregated from excavated subsoil. Replacement of spoil material will occur immediately after installation. Subgrade soil will be replaced around the cable, and topsoil will be replaced at the surface. Any damaged drain tile lines will be assessed for repair per the Drain Tile Mitigation Plan in

Exhibit E. All areas adjacent to the open trench will be restored to original grades and surface condition. Revegetation of these areas will commence per the Vegetation Management Plan (Exhibit D).

(g) Substations, Switching Substations, and Transformers

The preliminary Facility design identifies 91 inverters throughout the Project Area. Inverters will be placed on a skid that provides the foundation for the inverter, transformer, equipment cabinet, and Supervisory Control and Data Acquisition (SCADA) system. This skid will be placed on a gravel inverter pad of approximately 40 feet wide by 30 feet long. Inverters will be approximately 40 feet long, 11 feet wide, and 10 feet tall, and is represented in Inset 03-6 below. Manufacturer's specifications for representative inverters under consideration are provided in Exhibit B, which is submitted under confidential seal.

Inset 03-6. Example Inverter and Transformer Station

This medium voltage electricity from the inverters is transmitted via the belowground collection lines to the substation. The substation will be located within an 8.1 acre parcel under purchase option agreement with a participating landowner. It is currently anticipated that the footprint of the substation will be approximately 550 feet by 300 feet wide and is anticipated to be approximately 65 feet in height. This footprint will house the transformers and necessary infrastructure to step up the medium voltage electricity from 34.5 kV to 138 kV. This electricity will then connect to existing transmission infrastructure via the POI. The POI will be described in detail in a separate filing to the OPSB.

The substation will be designed according to regional utility practices, PJM Standards, ReliabilityFirst Organization Standards, the National Electrical Code (NEC), and the Rural Utility Service Code. The area within the substation will be graveled to minimize vegetation growth in the area and reduce fire risk. The substation will be enclosed by a 7 foot tall chain-link fence with 1 foot barbed wire strand. Fence panels will typically be 10 feet wide and made from galvanized steel. The substation will contain concrete

foundations for large equipment, circuit breakers, surge arrestors, insulators, and lighting necessary to meet various electric codes and standards.

(h) Weather Stations

The Facility will include up to nine weather stations, which will be mounted adjacent to the inverters. These weather stations will be up to 20 feet in height. See Inset 03-7 for a photograph of a weather station that is representative of what will be installed for the Facility. These weather stations measure various aspects of the weather such as solar irradiance and wind speed.

Inset 03-7. Representative Weather Station

(i) Transportation Facilities, Access Roads, and Crane Paths

The Facility will require the construction of approximately 27.6 miles of access roads. Access roads will be gravel surfaced and up to 16 feet wide along straight portions of the roads, and wider along curves and at internal road intersections.

During construction, access road installation and use could result in temporary soil disturbance of approximately 25 feet in width. Road construction will involve topsoil stripping, and stripped topsoil will be stockpiled along the road corridor for use in site restoration. Following removal of topsoil, subsoil will be graded, compacted, and surfaced with gravel or crushed stone at a depth to be determined on a case

by case basis. A geotextile fabric or grid will be installed beneath the road surface, if necessary, to provide additional support. Once construction is complete, temporarily disturbed areas will be restored and revegetated. During construction, rock pads will be utilized at access road entrances and exits to reduce the tracking of dirt or sediment onto area roads.

(j) Construction Laydown Areas

Twenty-two laydown yards ranging in size between 0.2 and 2.4 acres are proposed for the Facility. Laydown yards are placed throughout the Project Area to accommodate localized construction activities and located within the Project Area. These areas will be utilized until construction crews have completed installation of Facility components in the applicable portion of the Facility. The laydown yards will accommodate material and equipment storage, parking for construction workers, and construction management trailers. The laydown yards will be equipped with temporary erosion and sediment control methods and stripped of topsoil. Woodchips or construction matting may be used to accommodate laydown activities; however, the use of gravel is not anticipated. Following construction, laydown yards will be decompacted, topsoil redistributed, and reseeded per the specifications of the Vegetation Management Plan.

(k) Security, Operations, and Maintenance Facilities or Buildings

The Facility will be surrounded by a 6 foot tall, woven wire fence with 1 foot barbed wire strand. Fence panels will be 10 feet wide and made from galvanized steel, supported on wooden posts. Lighting will be located at Facility entrances, the O&M building, substation, and inverters. The Lighting Plan in Exhibit F provides additional details regarding Facility lighting.

The O&M building will be approximately 100 feet by 50 feet wide and up to 20 feet tall. Adjacent parking and staging, subject to additional design steps, is anticipated to be located in adjacent upland area. This parking is anticipated to be up to 40,000 square feet in size. The O&M building will be made of metal, of similar look and materials of a pole barn. The O&M building will include an on-site well and septic system to accommodate normal business office usage. Construction of the O&M building will follow all applicable building codes.

The Facility will use a SCADA system, which allows remote control and monitoring of the status of the Facility. The monitoring system provides status views of electrical and mechanical data, operation and fault status, meteorological data, and grid station data. For security, the Facility will be fenced and have site security cameras. Access to the Facility will be through lockable gates.

(l) Other Pertinent Installations

Permanent storm water treatment infrastructure will be installed for the Facility to meet all requirements of Ohio EPA Permit No. OHC000005 (Ohio EPA, 2018). Permanent storm water treatment infrastructure is anticipated to be minimal and will primarily consist of infiltration swales and ditches adjacent to access roads. The preliminary Facility design in Exhibit A identifies permanent storm water treatment infrastructure necessary to meet the requirements of Permit No. OHC000005 for the current design. These will be reassessed upon development of a final Facility design.

(3) Need for New Transmission Lines

The Facility will interconnect to the Biers Run – Circleville 138 kV transmission line, which is directly across Westfall Road from the substation. The POI, which will consist of a short gen-tie line, a switchyard and a line loop to the existing 138 kV transmission line, will be described in detail in a separate filing to the OPSB.

(4) Project Area Map

Prepared at a 1:12,000 scale, Figure 03-2 illustrates the following features:

(a) Aerial Photograph

Mapping was developed using Esri World Imagery aerial photographs map service.

(b) The Proposed Facility

The preliminary Facility layout includes components described above in section 4906-4-03(B)(2).

(c) Road Names

Road data was obtained from the Ohio Department of Transportation (ODOT).

(d) Property Lines

Property line data includes all participating parcels and parcels adjacent to the Project Area.

(C) DETAILED PROJECT SCHEDULE

(1) Schedule

The Project schedule in Gantt chart format is provided as Inset 03-8 below.

(a) Acquisition of Land and Land Rights

Acquisition of land and land rights began in 2017 and were completed in May 2020.

(b) Wildlife Surveys/Studies

Ecological surveys/studies were completed in April 2020.

(c) Receipt of Grid Interconnection Studies

Grid interconnection studies were initiated in early 2017 (see section 4906-4-05). The feasibility studies were issued in September 2017, April 2018, and July 2018. The system impact studies were issued in December 2019 and January 2020.

(d) Preparation of the Certificate Application

Preparation of the Application occurred in the first half of 2020 and the public information meeting was held on June 22, 2020.

(e) Submittal of the Application for Certificate

This Application was officially submitted in July of 2020.

(f) Issuance of the Certificate

It is anticipated that the Certificate will be issued in the first quarter of 2021.

(g) Preparation of the Final Design

The Applicant expects that final designs and detailed construction drawings will be completed as early as the first quarter of 2021.

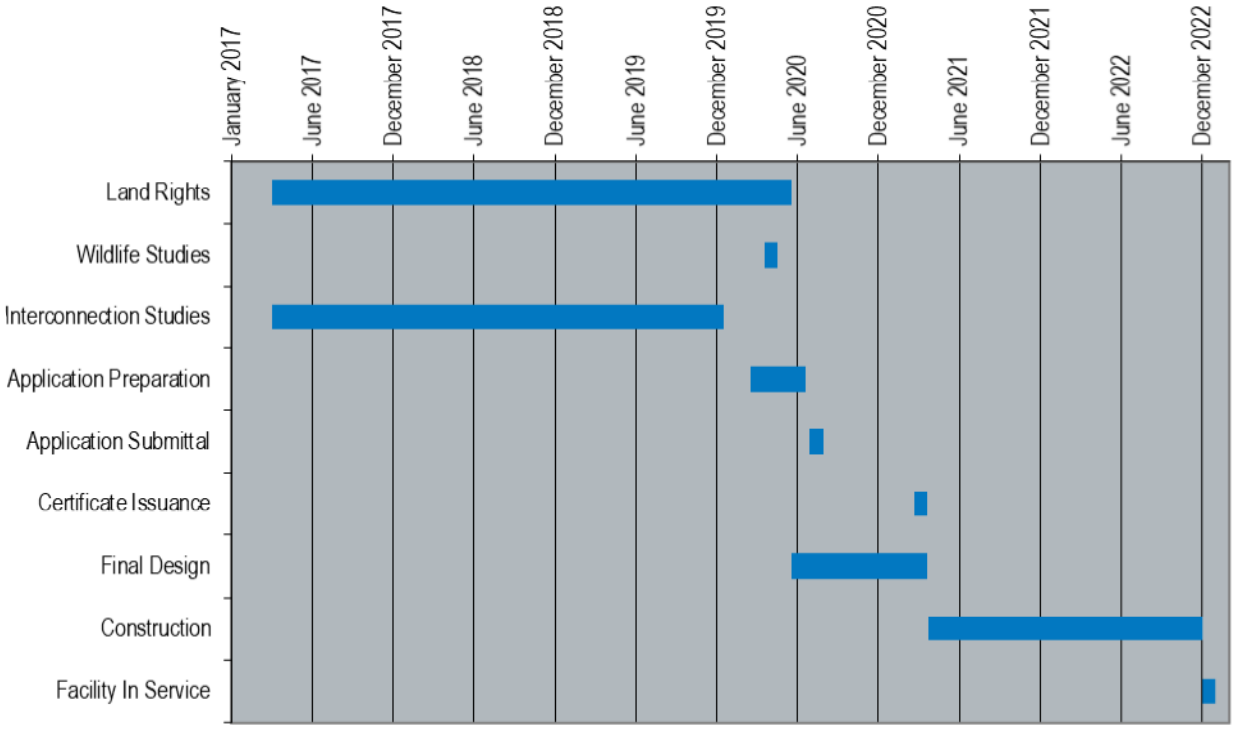
(h) Construction of the Facility

The Applicant expects that construction will begin in the second quarter of 2021 and be completed in the fourth quarter of 2022.

(i) Placement of the Facility in Service

The Facility will be placed in service upon completion of construction, anticipated for the fourth quarter of 2022.

Inset 03-8. Estimated Project Schedule



(2) Construction Sequence

Project construction is anticipated to proceed in the following sequence, with multiple activities being performed concurrently:

- Installation of storm-water and erosion control measures;
- Securing perimeter of the areas in which construction will occur;
- Clearing of the Project Area as necessary, particularly at PV arrays, access roads, laydown yards, and substation locations;
- Grading for access roads, PV arrays, laydown yards, and substation areas;
- Construction of access roads;
- Installation of piles and racking for support of PV panels;
- Installation of PV panels;
- Installation of the electrical collection system;
- Construction and installation of substation;
- Installation of inverters;
- Facility commissioning and energization;
- Final grading and drainage; and
- Restoration activities.

Installation of PV module foundations, access roads, and collection lines is described above in section 4906-4-03(B)(2). Once construction is complete, temporarily disturbed areas will be restored, including

removal of excess road material, decompaction, and rock removal in agricultural areas, and returned to their approximate pre-construction contours. Exposed soils in the Project Area will be stabilized by seeding, mulching, and/or plantings.

(3) Impact of Critical Delays

The in-service date is dependent on the Applicant's ability to timely acquire PV panels, racking, inverters, and transformers. Timely acquisition of these components could affect the in-service date of the Facility. Considerable costs would be incurred if the delays prevented the Facility from meeting deadlines for federal incentive programs such as the Investment Tax Credit for Solar.

4906-4-04 PROJECT AREA SELECTION AND SITE DESIGN

(A) PROJECT AREA SELECTION

The sub-sections below describe the Project Area selection process.

(1) Description and Rationale for Selecting Project Area

The availability and quality of solar resource, proximity to the bulk power transmission system, topography, and identification of willing contiguous participants are the initial site selection criteria utilized for solar power projects. The Applicant's initial evaluation was based on public data, such as the National Renewable Energy Laboratory's (NREL) "U.S. National Solar Radiation Database," along with site visits and capacity analysis for nearby transmission lines. Exhibit G depicts solar resources in Ohio using data obtained from the NREL National Solar Radiation Database (Sengupta, et al., 2018). The data suggests a suitable solar resource throughout much of Ohio, including Pickaway and Ross counties.

Adequate access to the bulk power transmission system is also an important siting criterion. As depicted in Figure 04-1, existing bulk transmission lines are located within the vicinity of the Project Area. The transmission lines in the area are owned and operated by AEP Ohio Transmission Company, Inc., (AEP) within the PJM regional transmission organization footprint. To implement an electric generating facility, the transmission line system must be able to accommodate a new facility's generating capacity via a POI that will transmit power to the greater electric grid. The capacity of the nearby transmission lines and costs of upgrades to accommodate a new POI were evaluated and it was determined that a 274 MW project was viable in the general area of the proposed Facility.

General topography and land use characteristics of the Project Area were also considered. Land use in the area is primarily agricultural and characterized by open spaces suitable for hosting a utility scale solar power project. Initial site visits to the area provided visual verification that the predominate land use in the study area is agricultural, which is compatible with solar project development. Ideal solar development areas are flat with limited variations in topography. Proximity to major transportation routes and supply chains were also reviewed to ensure accessibility. The Project Area is bordered by SR 104 and is located approximately 2 miles west of US 23, 5 miles south of US 22, and 6 miles northeast of US 35. Additional county and township roads surround the Project Area. These roads provide accessibility for the transportation of Facility components, construction equipment, and staff.

(2) Map of Study Area

Willing participants are essential to the success of any solar project. After a suitable geographic area was established, the Applicant pursued willing landowners in the area. Yellowbud was formed with deep roots in

agriculture and an understanding and respect for farming practices. The Yellowbud development team is dedicated to improving the productivity of our landowners' properties by introducing communities to the benefits of renewable energy. The Applicant develops close partnerships with Project participants throughout the life of the Project. The Applicant identified a group of willing Project landowners adjacent to a suitable POI that met the various other siting criteria listed in this section. With a group of willing participants and a viable POI, the study area for the Facility was developed based on the POI. As such, there were no additional sites considered for the Project. A map of the Project Area and 2 mile radius is included as Figure 03-1 and is representative of the area considered.

(3) List and Description of all Qualitative and Quantitative Siting Criteria

Adequate solar resource

The Applicant determined through an initial screening process utilizing the NREL National Solar Radiation Database that global horizontal irradiance was likely to be at a level of 4.15 kW/m^2/day (Sengupta, et al., 2018). Solar irradiance was determined to be adequate to support the development of the Facility.

Adequate access to the bulk power transmission system

The Applicant determined that the system interconnection and upgrades to accommodate the interconnection could be attained at a reasonable cost. This determination was made via internal assessments and subsequent interconnection requests filed with PJM. See section 4906-4-05 of this Application for additional details.

Willing land lease participants and host communities

Solar generation facilities can only be sited on property where the landowner has agreed to allow such construction. The Applicant obtained private lease agreements for contiguous areas of land necessary to support the Facility. See section 4906-4-06(A) of this Application for additional detail on property ownership and lease status. The Applicant has also engaged local community and state stakeholders to educate and share information. See section 4906-4-06(F)(1) of this Application for additional detail on public interaction.

Site accessibility

The Project Area is served by an existing network of public roads, which will facilitate component delivery, construction, and operation and maintenance activities. See section 4906-4-06(F)(3) for more information regarding site accessibility.

Appropriate geotechnical conditions

The Applicant determined that geotechnical conditions were suitable for the development of a solar facility. Preliminary desktop data was used to analyze the site for suitable geotechnical conditions. See section 4906-4-08(A)(5) of this application for additional details regarding geotechnical conditions.

Distance from airports

Solar panels are not incompatible with airports, as many airports have successfully implemented solar panels within airport boundaries. Nonetheless, airports were considered during the siting process. The proposed Facility is sited approximately 2 miles southwest of the nearest airport (Pickaway County Memorial Airport), and 2.5 miles north of the next closest airport (Ross County Airport). These are the only airports located within 5 miles of the Project Area. See section 4906-4-07(E) of this Application for additional detail on aviation facilities.

Limited residential development

The Project Area has a low population and residential development density compared to surrounding areas and statewide averages. Areas with limited residential development generally have more available space for siting solar panels once site specific constraints are taken into account. See section 4906-4-08(C)(3)(e) of this Application for additional detail on demographics in the vicinity of the Project Area.

Compatible land use

The Project Area is predominantly rural agricultural, which is compatible with the proposed Facility. See section 4906-4-08(C) of this Application for more information on land use.

Topography

The Project Area is relatively flat, which more easily accommodates the installation of solar panels.

Limited sensitive ecological resources

Preliminary desktop evaluations indicated that the Project Area has adequate open space available to avoid impacting sensitive ecological resources such as large tracts of forested land, wetlands, or streams. See Section 4906-4-08(B) of this Application for more information on ecological resources.

Cultural resources

The Project Area was shown to have minimal known cultural resources during initial siting efforts. For additional information on cultural resources, see section 4906-4-08(D) of this Application.

Once the Applicant determined that the Project Area was suitable for development of a solar power facility, various siting factors and constraints were identified and evaluated to appropriately site the Facility components. These efforts are discussed in detail below in 4906-4-04(B).

(4) Description of Process by Which Siting Criteria Were Used

The Applicant completed desktop evaluations of the siting criteria to identify the Project Area. As noted in 4906-4-04(2), no other sites were considered for the Project.

(5) Description of Project Area Selected for Evaluation

Based on the criteria in section 4906-4-04(A)(3) of this Application, the Applicant concluded that the site presented herein meets all the factors necessary to support a viable solar energy facility.

(B) FACILITY LAYOUT DESIGN PROCESS

The Applicant considered the siting criteria identified in 4906-04-04(A)(1) when developing the preliminary Facility layout. Due to ongoing technological innovations in the solar industry, continuing detailed engineering and survey work, public feedback, and communications during the OPSB certification process, the precise location of these features within the Project Area is subject to change. The fenceline, PV panel arrays, belowground or hybrid electrical collection lines, inverters, access roads, substation, O&M building, weather stations, and laydown yards are subject to change within the Project Area, but would still be subject to the various constraints identified below.

(1) Constraint Map

A constraint map of the Project Area showing setbacks, public roads, utility corridors, streams, and wetlands is included as Figure 04-1. This illustrative graphic cannot appropriately show all the site specific constraints and considerations, such as landowner preferences, PV panel engineering factors, and access road engineering requirements, all of which are considered within the Project Area.

In addition to the Project Area selection criteria, numerous expert analyses and field studies have been conducted to ensure that the PV panel arrays are sited to minimize environmental impacts to the extent practicable. The siting constraints identified in those studies are discussed in further detail below.

(2) Criteria Used to Determine Site Layout and Comparison of Alternative Site Layouts

The Applicant worked with various consultants to conduct detailed assessments that identified and defined the siting factors and constraints discussed below. Using geographic information system (GIS) tools and consultant assessments, the Applicant performed numerous layout design iterations to develop the proposed Facility layout as presented and described in this Application.

<u>Equipment</u>

As stated in section 4906-4-03, representative models of Facility panels, racking, and inverters have been filed under seal. Improving technologies could dictate the use of an alternative equipment model as identified during the final procurement process. All models selected will be analyzed for suitability of the various siting criteria and constraints listed herein and submitted to OPSB Staff prior to construction. The equipment selection is subject to internal analysis of costs and availability of equipment during the procurement process.

Noise Constraints

No existing national, state, county, or local laws specifically limit noise levels produced by solar energy facilities. The preliminary Facility layout is designed to minimize noise impacts to non-participating sensitive receptors. For additional information on noise, see section 4906-4-08(A)(3) of this Application.

Agricultural Constraints

Agriculture is the predominant land use within the Project Area. The Applicant has designed the Facility footprint to minimize impacts to active agricultural land primarily by co-locating collection lines and access roads when practicable. The Project Area can be fully restored to agricultural use upon decommissioning per the desires of participating landowners. For additional information on agricultural land, see section 4906-4-08(E) of this Application.

The Applicant worked with participating landowners, soil and water conservation districts, and Ross and Pickaway counties to identify known drain tile locations across the site. This data has been aggregated and will be utilized to inform final Facility design. The Facility's Drain Tile Mitigation Plan identifies avoidance measures and procedures for repair of drain tile on the site.

Cultural Resources Constraints

The Applicant has completed field surveys across the Project Area for cultural resources. Sites that were identified to be potentially eligible for the National Register of Historic Places (NRHP) within the Project Area will be avoided during construction and operation of the Facility. Exclusionary fencing will be utilized to avoid impacts to these sensitive features during construction. For additional information regarding cultural resources, see section 4906-4-08(D). These resources are confidential in nature but have been avoided on the preliminary Facility layout.

Ecological Constraints

Per consultation with the ODNR and the U.S. Fish and Wildlife Service (USFWS), and through onsite surveys, no ecologically sensitive areas were identified within the Project Area. Per guidance from the agencies, no tree clearing will occur between April 1 and September 30. Prior to construction, the active work area will be assessed for sensitive species or active bird nests. Tree clearing and wetland/waterbody constraints are discussed further below. For additional information regarding ecological resources and agency consultations, see section 4906-4-08(B).

Geotechnical Considerations

Geotechnical conditions across the site were found to be generally suitable for solar development. Geotechnical conditions will be considered in the final Facility design to ensure the proper engineering of Facility components to accommodate onsite geotechnical conditions. For additional information regarding geotechnical considerations, see section 4906-4-08(A)(5).

Glare Considerations

Form 7460-1 was filed and a Federal Aviation Administration (FAA) Determination of No Hazard has been obtained. A glare study was also completed for the Project. These efforts determined that no impacts to flight paths or nearby airports are anticipated. Additionally, the two primary thoroughfares near the Project, Williamsport Pike and SR 104, were analyzed for potential impacts. No issues associated with glare were noted. To limit reflection and maximize efficiency, solar PV panels are constructed of dark, light absorbing materials that minimize glare impacts to the surrounding area. For additional information regarding glare and aviation, see section 4906-4-07(E).

Hydrologic Constraints

A hydrology study was completed for the Project. This study analyzed risk of flooding and ponding, and their potential to cause scour, which could hinder the integrity of the solar pilings and racking. Low to moderate flood depths were found across the site, with minimal concern for scour. All hydrologic concerns can be addressed via avoidance or through design measures in the final Facility layout. For additional information regarding hydrological resources, see section 4906-4-08(A)(4).

Landowner Considerations

The Applicant will continue to meet with participating landowners to review and finalize the Facility design on their property.

Trees, Shrubs, and Vegetation

Where practicable, the Applicant has committed to protecting core areas of trees that may be most beneficial to sensitive bat species. To maximize the solar resource and for an efficient design, it is not practicable to avoid tree clearing across the entire Project Area due to panel shading and maximization of available land resources. Tree preservation areas have been identified, as discussed in the Tree and Shrub Clearing Plan in Exhibit H. Tree clearing activities elsewhere will follow seasonal clearing requirements. No tree clearing will occur between April 1 and September 30, per agency consultations. Tree and shrub clearing are discussed further in 4906-4-08(B). Per the Vegetation Management Plan, care shall be taken during the nesting season (April 1 to August 1) to avoid the nests of upland grassland birds.

Setbacks

The Applicant used the following setbacks in designing the preliminary Facility layout for placement of panels, inverters, weather stations, and the O&M building. Setbacks were established based on the Applicant's industry knowledge in addition to previously established precedent in the area. Due to constraints in the engineering of the substation, the substation may be placed directly adjacent to the road right-of-way (ROW), nearer than 50 feet from the road centerline, to accommodate the necessary transmission line infrastructure. Setbacks for the Facility are as follows:

- 300 feet from non-participating sensitive receptors
- 50 feet from non-participating properties
- 50 feet from the centerlines of public roads

Wetland and Stream Constraints

On-site investigations were conducted to establish the locations of streams and wetlands, and Facility components were sited to avoid impacts to these resources to the extent practicable. Wetland and stream impacts will be limited to temporary impacts associated with Facility construction, and permanent impacts associated with the installation of collection lines and access roads at select locations. For all identified stream and wetland crossing points, appropriate construction techniques will be used to minimize impacts. As a result, the majority of stream and wetland impacts will be temporary in nature. For additional information on estimated wetland and stream impacts, see section 4906-4-08(B)(2)(a) of this Application.

(3) Description of Number and Type of Comments Received

Written and oral comments were received prior to and during the public informational meeting, which was held on June 22, 2020. The public comments generally focused on impacts to adjacent property values, noise impacts, Facility drainage, glare, visual impacts, impacts to wildlife, and economic benefits. All written comments submitted for the public meeting are attached hereto as Exhibit I.

4906-4-05 ELECTRIC GRID INTERCONNECTION

(A) CONNECTION TO THE REGIONAL ELECTRIC GRID

In order to interconnect new generation facilities to the electric transmission grid, the Facility owner must obtain approval from PJM. PJM is a regional transmission organization that coordinates the movement of wholesale electricity in all of Ohio and all or parts of surrounding states. The interconnection process includes completion of studies by PJM that determine the transmission upgrades required for a project to interconnect to the PJM grid reliably. These studies are completed in a series. The Feasibility Study, the System Impact Study, and the Facilities Study are designed, respectively, to provide developers with increasingly more refined information regarding the scope of required upgrades, completion deadlines, and implementation costs (PJM, n.d.).

The OPSB requires submission of two of these studies with the Application, the Feasibility Study and System Impact Study.

The proposed Facility will connect to the AEP transmission system along the Biers Run – Circleville 138 kV circuit. The interconnection would involve installing a new 138 kV POI switchyard with a new 138 kV breaker circuit. AEP will own and operate the switchyard once constructed. The POI, which will consist of a short gen-tie line, the POI switchyard and a line loop to connect to the existing 138 kV transmission line, will be described in detail in a separate filing to the OPSB.

(B) INTERCONNECTION INFORMATION

(1) Generation Interconnection Request Information

The Applicant has three PJM queue positions related to the Facility, all named "Biers Run-Circleville 138kV." See Table 05-1 below for the queue numbers, dates, and capacities.

Table 05-1. PJM Queue Positions

Queue Number	Queue Date	Output (MW)	Capacity (MW)
AC2-059	2/16/2017	127	62.5
AD1-072	8/31/2017	20	13.73
AD2-016	11/15/2017	127	62.5
	Total	274	138.73

The website for the PJM interconnection queue is https://www.pjm.com/planning/services-requests/interconnection-queues.aspx and the specific queue positions can be found by entering the queue position ID into the search box under the "Queue/OASIS ID" column.

(2) System Studies

The Feasibility Study and System Impact Study are complete for all three queue positions. The Facilities Study is in progress. The completed PJM interconnection studies are included as Exhibit J to this Application.

4906-4-06 ECONOMIC IMPACT AND PUBLIC INTERACTION

(A) OWNERSHIP

The Applicant will construct and own all structures and equipment associated with the Facility. As depicted on Figure 03-2, limited portions of the 34.5 kV electrical collection lines will be located within public road ROW where the collection line route crosses Westfall Road, Swaney Road, Lutz Road, and Ebenhack Road, from one participating parcel to another. All leases between the Applicant and property owners within the Project Area have been executed. For public ROW crossing, the Applicant will work with the applicable local authority to obtain necessary crossing permits and permissions. The proposed Facility will not change the ownership status within the Project Area, with the exception of parcel(s) purchased to accommodate the Facility substation. As noted in section 4906-4-03(A)(2), two parcels have purchase options available to accommodate substation infrastructure. All other components of the Facility will be located entirely on privately owned land, and voluntary lease agreements between the Applicant and private landowners will accommodate the Facility.

(B) CAPITAL AND INTANGIBLE COSTS

(1) Estimated Capital and Intangible Costs by Alternative

Due to the sensitive nature of economic data and the potential advantage it could provide to industry competition, capital and intangible costs are filed under seal with this Application. The total estimated capital and intangible costs of the Facility are **<BEGIN CONFIDENTIAL INFORMATION>** [redacted] **<END CONFIDENTIAL INFORMATION>**. A further breakdown is provided in Table 06-1 below. As described in section 4906-4-04, the Applicant has not proposed alternative project areas. Therefore, no cost comparison between alternatives is available.

<BEGIN CONFIDENTIAL INFORMATION>

Table 06-1. Estimated Capital and Intangible Costs

Facility Expenditure Categories	Estimated Cost
Construction Materials & Equipment Costs	[redacted]
Construction Labor Total Costs	[redacted]
Construction - Other Costs	[redacted]
Total Capital Costs	[redacted]
Operating/Maintenance Labor Costs	[redacted]
Operating/Maintenance Materials and Services	[redacted]
Local Property Tax Payments	[redacted]
Total Annual Intangible Costs	[redacted]

<END CONFIDENTIAL INFORMATION>

(2) Cost Comparison with Similar Facilities

Installed project costs compiled by the U.S. Department of Energy's Lawrence Berkeley National Laboratory (Berkeley Laboratory) in December 2019 indicate that the capital costs of the Facility are in line with recent industry trends. The Berkeley Laboratory compilation shows that capacity-weighted average installed costs in 2018 averaged roughly $\$1,640/kW_{AC}$ (Bolinger, Seel, & Robson, 2019).

By way of further comparison, installed solar project costs in the midwestern region in 2018 had a median of around $\$1,600/kW_{AC}$ (Bolinger, Seel, & Robson, 2019). These costs are slightly higher than the average cost estimated for the Facility, which could be attributed to locational and system size differences. The estimated cost of the Facility is not anticipated to substantially different from other Facilities completed the Applicant.

(3) Present Worth and Annualized Capital Costs

Capital costs will include development costs, construction design and planning, equipment costs, and construction costs. The costs will be incurred within a year or two of start of construction. Therefore, a present worth analysis is essentially the same as the costs presented above **<BEGIN CONFIDENTIAL INFORMATION>** [redacted] **<END CONFIDENTIAL INFORMATION>**. As alternative project areas and facilities were not considered in this Application, the capital cost information in this section is limited to the proposed Facility.

(C) OPERATION AND MAINTENANCE EXPENSES

(1) Estimated Annual Operation and Maintenance Expenses

For the first two years of commercial operation, staffing is estimated to be **<BEGIN CONFIDENTIAL INFORMATION>** [redacted] **<END CONFIDENTIAL INFORMATION>**. O&M costs are estimated at **<BEGIN CONFIDENTIAL INFORMATION>** [redacted] **<END CONFIDENTIAL INFORMATION>**, including staffing costs.

(2) Operation and Maintenance Cost Comparisons

O&M costs are a significant component of the overall cost of solar projects but can vary widely between facilities. The Berkeley Laboratory has compiled O&M cost data for 48 installed utility-scale solar power projects in the United States, totaling 900 MW_{AC} of capacity, with commercial operation dates of 2011 through 2018. In general, facilities installed more recently have incurred lower O&M costs than those installed in 2011. Specifically, capacity-weighted average O&M costs for projects constructed in 2011 equal $\$32/kW_{AC}$-year. The O&M costs dropped to around $\$16/kW_{AC}$-year for projects installed in 2015, and to $\$19/kW_{AC}$-year for projects installed in the 2018 (Bolinger, Seel, & Robson, 2019). According to the Berkeley Laboratory, this

decrease could be the result of utility companies capturing economies of scale as their solar operations grow over time.

The O&M costs for the Facility are estimated to be approximately **<BEGIN CONFIDENTIAL INFORMATION>** [redacted] **<END CONFIDENTIAL INFORMATION>**, depending on the maturity of the project each year of its life cycle. These estimated O&M costs exclude any other ongoing expenses related to environmental monitoring, property taxes, land royalties, reverse power, and insurance. These costs will be consistent with the average costs compiled by the Berkeley Laboratory, as described above. The O&M costs for the Facility are not anticipated to be significantly different from other facilities the Applicant operates.

(3) Present Worth and Annualized Operation and Maintenance

The annual O&M costs will be subject to real and inflationary increases. Therefore, these costs are expected to increase with inflation after the first two years. The net present value of the O&M costs per kW, assuming a 30-year Facility life, and inflation rate of 2% and a 6% discount rate, is approximately **<BEGIN CONFIDENTIAL INFORMATION>** [redacted] **<END CONFIDENTIAL INFORMATION>.** As alternative project areas and facilities were not considered in this Application, the O&M cost information in this section is limited to the Facility.

(D) COST OF DELAYS

Monthly delay costs are dependent on many factors. If the delay were to occur during the permitting process, the losses would be associated with the time value of money resulting from a delay in the timing of revenue payments. If the delay were to occur during construction, costs would include lost construction days and those associated with idle crews and equipment.

Either scenario could also result in penalties associated with the failure to meet a delivery deadline under a potential Power Purchase Agreement. Significant losses would also be incurred if the delays prevented the Facility from meeting deadlines for the existing federal Investment Tax Credit. Prorating these one-time delay costs monthly would not be meaningful, as the lost opportunity is triggered at a single deadline and does not accrue over time.

(E) ECONOMIC IMPACT OF THE PROJECT

Information provided in this section was obtained from the Socioeconomic Report, prepared by EDR (Exhibit K). The proposed Facility is anticipated to have local and statewide economic benefits. Solar power development, like other commercial development projects, can expand the local, regional, and statewide economies through both direct and indirect means.

Operation of the Facility will result in payment to local landowners in association with the lease agreements executed to host Facility components. These annual lease and easement payments will offer direct benefits to participating landowners, which will be in addition to any income generated from the surrounding land use (e.g., agricultural production). The Applicant estimates that these payments will total approximately $58.8 million over 25 years. These lease payments will have a positive impact on the region, to the extent that landowners will spend their revenue locally.

Income generated from direct employment during the construction and operation of the Facility is used to purchase local goods and services, creating a ripple effect throughout the state and county. To quantify the local economic impacts of constructing and operating the Facility, the Photovoltaics Job and Economic Development Impact (JEDI) model (version PV12.23.16) was used, which was created by the NREL, a branch of the USDOE. See the Socioeconomic Report (Exhibit K) for a description of impacts and indicators used in the JEDI model.

(1) Construction and Operation Payroll

Annual estimated construction and operation payroll is provided in Table 06-2 below. For additional discussion of inputs used to calculate these estimates, see the Socioeconomic Report.

Table 06-2. Local Economic Impacts

	Jobs (Full-Time Equivalent)	Earnings (Millions)	Output (Millions)
Construction			
Project Development and Onsite Labor Total	453	$31.6	$32.2
Construction & Installation Labor	442	$30.8	-
Construction and Installation Related Services	11	$0.8	-
Module & Supply Chain Impacts	109	$5.6	$16.9
Induced Impacts	95	$5.0	$14.8
Total Impacts	**657**	**$42.2**	**$63.9**
Annual Operation			
Onsite Labor Impacts	11	$0.7	$0.7
Local Revenue & Supply Chain Impacts	5	$0.3	$1.1
Induced Impacts	13	$0.7	$2.2
Total Impacts	**29**	**$1.8**	**$4.0**

Source: NREL JEDI Model (version PV12.23.16) (USDOE NREL, 2016). Cost values verified by the Applicant in June 2020
Notes: Earnings and Output values are millions of dollars in 2020 dollars. Construction and operating period jobs are full-time equivalent (FTE) for one year (1 FTE = 2,080 hours). "During operating years" represent impacts that occur from system/ plant operations/ expenditures. Impact totals and subtotals are independently rounded, and therefore may not add up directly to the integers shown in this table.

Based on the values above, it is anticipated that construction of the Facility could generate 453 on-site construction and project development personnel FTE positions, with a projected wage rate of $23 per hour

and 45.6% employer payroll overhead. The present worth of construction payroll during the first year of construction is estimated to total $21.7 million. It is anticipated that operation of the Facility could generate 11 FTE jobs with a projected wage rate of $24 per hour and 45.6% employer payroll overhead. The present worth of operation payroll during the first year of operation is estimated to total $549,120.

(2) Construction and Operation Employment

Demand for new jobs will be created during both the initial construction period and the years in which the Facility is in operation. The money injected into the statewide economy through the creation of these jobs will have long term, positive impacts on individuals and businesses in Ohio. Table 06-2 estimates the number of construction and operation jobs created by the Facility in Ohio. General skilled labor is expected to be available in Ohio to serve the Facility's basic infrastructure and site development needs. Specialized labor will be required for the installation of some Facility components, and it may be necessary to import electricians or other skilled laborers from neighboring states. The relatively short construction duration for the Facility may preclude special training of local or regional labor to accommodate these positions.

(3) Local Tax Revenues

The proposed Facility will have a significant positive impact on local tax revenue, including local school districts and other taxing districts in the area. The Applicant assumes that a payment-in-lieu of tax agreement (PILOT) would be executed, which would require annual PILOT payments to Pickaway County and Ross County. These funds would be apportioned to Union Township, Wayne Township, Deerfield Township, Deer Creek Township, Union-Scioto Local School District, Circleville City School District, and Adena Local School District. Based on the maximum payment of $9,000/MW and Facility capacity of 274 MW, the PILOT amount will total approximately $2,466,000 annually for the lifespan of the Facility. The Facility is expected to achieve commercial operations as early as 2022 and have a lifespan of approximately 30 years.

(4) Economic Impacts on Local Commercial and Industrial Activities

The proposed Facility will have a beneficial impact on the local economy. In addition to jobs and earnings, the construction of the Facility is expected to have a positive impact on economic output, a measurement of the value of goods and services produced and sold by backward linked industries. Economic output provides a general measurement of the amount of profit earned by manufacturers, retailers, and service providers connected to a given project. The value of economic output associated with Facility construction is estimated in the Socioeconomic Report to be $63.9 million. Between workers' additional household income and industries' increased production, the impacts associated with the Facility are likely to be experienced throughout many different sectors of the statewide economy.

(F) PUBLIC RESPONSIBILITY

As described above, changes to the current Facility layout may occur, but any such changes will not alter the Project Area, will not require the leasing of additional properties, and will not impact new property owners or create additional impacts for existing adjacent property owners.

(1) Public Interaction

During siting efforts, interactions with the public included face to face interactions with landowners adjacent to the Project Area via door knocking efforts and literature distribution. The Applicant engaged local government officials via presentations, in-person visits, email communications, and phone conversations. Information has also been shared through direct landowner mailings, a web based public information meeting and a teleconference call, both held on June 22, 2020. The Applicant will continue to make general information about solar power, and specific information about the proposed Facility, available to community members, elected officials, the media, and local civic organizations during the Application process. Notifications for public hearings will be distributed as part of the Application process, and pre-construction and pre-operation notification will be distributed at least seven days prior to the commencement of construction or operation per the Public Information Program (Exhibit L). Drafts of these notifications are included as Appendix C and Appendix D of the Public Information Program.

If questions or complaints arise during construction or operation of the Facility, they can be submitted to the Applicant using the Question/Complaint/Concern Resolution Form (Appendix B of Exhibit L) by email, phone, or in-person if an appointment is made. Complaints made via phone will be recorded by an Applicant representative in a Question/Complaint/Concern Resolution Form. The Applicant will follow up with complainants via phone within two business days, excluding holidays. If additional follow-up is needed to address a question or complaint, the Applicant will reach out with weekly updates. Once a complaint or question has been resolved, the Applicant will confirm resolution with the complainant, and will document the resolution on the questionnaire. If an email address was provided, the Applicant will email the complainant a signed copy of the questionnaire, indicating resolution of the complaint. All Question/Complaint/Concern Resolution Forms will be submitted to the OPSB on the 15th of April, July, October, and January of each year. All completed Question/Complaint/Concern Resolution Forms will remain on file with the Applicant and be available upon request at the construction site office or O&M building.

(2) Liability Insurance

The limits of the insurance policy described will, at a minimum, insure against claims of $1,000,000 per occurrence and $2,000,000 in the aggregate. In addition, the Applicant shall acquire and maintain throughout the construction operation, and decommissioning period, at its sole cost, Umbrella Coverage against claims

and liability for personal injury, death, and property damage arising from the operation of the Facility. The limits of the excess liability insurance will, at a minimum, insure against claims of $10,000,000 per occurrence and $10,000,000 in the aggregate.

(3) Roads and Bridges

Information provided in this section was obtained from the Traffic Control Plan and Route Evaluation Study prepared by Hull & Associates, Inc. (Hull) attached hereto as Exhibit M. The Route Evaluation Study identifies vehicles to be used, probable delivery and transportation routes, evaluates existing characteristics of and potential impacts to roadways, bridges, and culverts, identifies mitigation measures for potential impacts, and identifies potential permits required. The Traffic Control Plan identifies safety measures and strategies to manage traffic associated with the Project.

Construction/Delivery Vehicles

During the construction phase, impacts to local traffic are anticipated to be minimal due to the low volume of existing traffic near to the Project Area. Traffic will consist of construction equipment and hauling trucks, fixed bed trucks or semi-trailers, multi-axle dump trucks, and conventional pickup trucks or automobiles for workers. Most vehicles will be of legal weight and dimensions; however, some overweight/oversize (OW/OS) vehicles may be required for the delivery of the switchgear or transformer for the substation. Deliveries of equipment will occur during regular business hours. For additional information regarding equipment and deliveries, refer to Section 4.0 of the Route Evaluation Study and Section 8.0 of the Traffic Control Plan in Exhibit M.

Delivery Route

Delivery routes have not been finalized, but it is likely that the delivery of Facility components to the Project Area will be from the north by way of US 23 to SR 56 then SR 104, located along the eastern border of the Project Area. An alternate route from the south could also be utilized by way of US 35 to SR 104. Once at the Project Area, county and township roads will be utilized. For additional information regarding delivery routes, refer to Section 2.0 and Section 4.0 of the Route Evaluation Study in Exhibit M.

Road Conditions

Hull conducted a visual analysis of roads along potential transportation routes serving the Project Area to identify hazardous conditions. Roadway conditions within the Project Area were categorized as good, fair, or poor. Additional details regarding road conditions are identified in Section 2.0 of the Route Evaluation Study in Exhibit M.

Overhead transmission was also assessed along local roadways. Nothing was noted as posing a hazard. These lines will be assessed again prior to construction. If an obstruction is noted, utility providers can temporarily or permanently raise the cable and/or move the poles. Therefore, overhead cables are not

considered a limiting factor for roadway use. No other obstructions were noted along potential transportation routes to and from the Facility, such as bridges or overhanging structures that could lead to height or width restrictions.

Impacts and Mitigation

As noted above, the Route Evaluation Study found few issues with local road conditions. Should conditions change in the future, mitigation techniques have been identified in the Route Evaluation Study for use on an as-needed basis. Based on Hull's analysis of road conditions, use of Layton Road is not recommended. This road will be avoided by construction related traffic associated with the Facility. Additionally, Hull identifies Ebenhack Road for potential improvements due to its aggregate surface and shallow culverts. Yellowbud will assess conditions of Ebenhack Road prior to and during construction to ensure safe conditions and to monitor any further deterioration. No other issues were noted with local road conditions. Should conditions change in the future, mitigation techniques have been identified in the Route Evaluation Study for use on an as-needed basis.

Once identified, final transportation routes on local roads will be monitored during the construction to ensure safe and drivable conditions for both local and Facility traffic. Following the completion of construction activities, roadways will be repaired to pre-construction conditions. Requirements for roadway repairs and improvements will be coordinated with the Ross County and Pickaway County Engineers. The Applicant will coordinate with the Ross County and Pickaway County Engineers to develop a Road Use and Maintenance Agreement to accommodate Facility construction.

(4) Transportation Permits

Prior to construction, the selected transportation provider will obtain all necessary permits from ODOT, and county engineers. The majority of vehicles used for the construction and operation of the Facility meet current legal dimensions and weight (see Table 2 of Exhibit M). Therefore, very few transportation related permits are anticipated. Special Hauling Permits may be required for vehicles that will transport the switchgears and transformers for the substation. Each vehicle must receive an individual Special Hauling Permit from the ODOT Central Office, as the specifications of the permit depend on the characteristics of the vehicle, its cargo, and duration of the delivery schedule. Additional permits will be required for driveway access along county roads and crossings of roads and county-maintained ditches by buried collection lines. These permits will be obtained from the county engineers or ODOT, as required.

In addition to coordinating with state, county, and township authorities to obtain transportation permits, the Applicant will also coordinate with appropriate authorities regarding necessary traffic control during the

construction of the Facility. A Traffic Control Plan is included in Exhibit M. The plan will be finalized upon receipt of the final Facility design prior to construction.

(5) Decommissioning

A Decommissioning Plan is included as Exhibit N of this Application and includes details on decommissioning activities, site restoration, cost estimates, and financial assurance. The Applicant will notify OPSB Staff 30 days prior to the commencement of decommissioning activities. Decommissioning activities will include the removal of panels, weather stations, inverters, electrical equipment, racking, scrap, piles, access roads, electrical collection lines, fencing and substation. Some components may remain in place such as electrical collection lines buried at least 48 inches underground or the substation if other agreements necessitate its continued use. Additionally, landowner agreements may specify other components that can remain in place (e.g., access roads). Equipment that is removed from the site will be salvaged or recycled to the greatest extent practicable. Other waste material that hold no value or cannot be recycled will be disposed of via a licensed solid waste disposal facility. Following the completion of decommissioning activities, the site will be graded as necessary and decompacted to allow the site to be converted to pre-construction land uses. Decommissioning of the Facility, including the removal of materials and site restoration, will last approximately 12 to 18 months.

The Applicant will post a performance bond with the OPSB as the obligee based on the net costs of decommissioning (taking into account the salvage value of the panels and other equipment), calculated to be $15,657,443, prior to the commencement of commercial operation of the Project. The net cost that was estimated may change slightly upon determination of the final Facility layout, but changes will not be significant. Following commencement of commercial operation, Yellowbud will reevaluate decommissioning costs through an Ohio-licensed engineering firm or professional engineer every five years thereafter during the life of the Project. If this evaluation shows that the net decommissioning cost for the Project has increased, Yellowbud will increase the amount of the performance bond accordingly.

4906-4-07 COMPLIANCE WITH AIR, WATER, SOLID WASTE, AND AVIATION REGULATIONS

(A) PURPOSE

This section provides information regarding air, water, solid waste, and aviation regulations, including potential impacts of the proposed Facility, and any proposed mitigation measures.

(B) AIR

(1) Pre-construction

The Facility does not require any pre-construction air permits. Therefore, this section does not apply.

(2) Plans to Control Air Quality During Site Clearing and Construction

Best management practices (BMPs) will be utilized to minimize dust generated by construction activities. Exposed/disturbed areas will be minimized at any one time to the extent practicable and restored/stabilized per the requirements of Ohio EPA Permit No. OHC000005. During construction activities, water or a dust suppressant such as calcium carbonate will be applied on as needed basis to suppress dust on Facility access roads and on unpaved transportation routes. Any unanticipated construction related dust problems will be identified and immediately reported to the construction manager and contractor. Should any complaints regarding dust generation be received via the complaint resolution process, the Applicant will work to resolve them as quickly as practicable. All construction vehicles will be maintained in good working condition to minimize construction related emissions.

(3) Plans to Control Air Quality During Facility Operation

As per OAC 4906-4-07(B)(3), this requirement does not apply to wind farms. Likewise, the proposed Facility is a renewable energy project that will not produce any air pollution. Therefore, this requirement does not apply to the proposed Facility.

(C) WATER

(1) Pre-construction

Field studies noted that wetlands are scattered throughout the Project Area. One perennial stream was noted in the northwest portion of the Project area and another intermittent stream was noted in the north central portion of the Project Area. Generally, wetland and waterbody features have been impacted by agricultural activities that have traditionally occurred within the Project Area. Existing pre-construction conditions of area waterbodies are discussed in section 4906-4-08(A)(4).

(a) List of Required Permits to Install and Operate the Facility

Prior to the start of construction, the Applicant will obtain the following water-related permits. These permits are discussed in more detail in Section 2 of the Ecological Assessment (Exhibit S):

- The Ohio National Pollutant Discharge Elimination System (NPDES) construction storm water general permit, Ohio EPA Permit No. OHC000005;
- An individual permit or nationwide permit under Section 404 of the Clean Water Act, (if necessary, as determined after final engineering);
- A Water Quality Certification from the Ohio EPA (if necessary, as determined after final engineering);
- An Ohio Isolated Wetland Permit (if necessary, as determined after final engineering).

(b) Water Quality Map

The Facility will not discharge water or waste into streams or waterbodies, nor will Facility operation require the use of water for cooling or any other activities. The Facility will add only small areas of impervious surface in the form of access roads, gravel pads to accommodate inverters, the O&M building, and the substation, which will be dispersed throughout the Project Area. These will have a negligible effect on surface water runoff and groundwater recharge. Therefore, measurable impacts on the quality of surrounding water resources are not anticipated. Since there are no bodies of water likely to be affected by the proposed Facility, this section is not applicable.

(c) Description of Water Monitoring and Gauging Stations

As described above, no waterbodies will be significantly affected by the proposed Facility. Therefore, this section is not applicable.

(d) Existing Water Quality of Receiving Stream

The Facility will not discharge water or waste into streams or waterbodies. Therefore, there will be no receiving streams and this section is not applicable.

(e) Permit Application Data

The Facility will not discharge any water. Therefore, this section is not applicable.

(2) Construction

(a) Water Quality Map

As described above in section 4906-4-07(C)(1)(b), measurable impacts on the quality of surrounding water resources are not anticipated. Since there are no bodies of water likely to be affected by the proposed Facility, this section is not applicable.

(b) Quantity/Quality of Construction Runoff

Construction of the proposed Facility will have minimal, localized impacts to groundwater. Soil compaction from the use of construction equipment could limit the efficiency of surface water infiltration to groundwater. When soils are compressed, the pore spaces within the soil are decreased, which reduces water percolation. Construction of access roads will result in minor increases in storm water runoff that otherwise would have infiltrated into the ground at the road locations.

(c) Mitigation

Yellowbud will obtain a "General Permit Authorization for Storm Water Discharges Associated with Construction Activity" (also known as a Permit No. OHC000005) (Ohio EPA, 2018). To meet NPDES requirements, a qualified engineer will utilize the final Facility layout to develop a Storm Water Pollution Prevent Plan (SWPPP). The SWPPP will identify potential sources of pollution that may reasonably be expected to affect the quality of storm water discharges associated with construction activities. If applicable, the SWPPP will clearly identify all activities that will be authorized under Section 401 of the Clean Water Act and be subject to an anti-degradation review. The SWPPP will also describe and ensure the implementation of BMPs that reduce pollutants in storm water discharges during construction.

The preliminary Facility layout (Exhibit A) identifies BMP locations and typical drawings that are anticipated to be utilized across the site. These controls are based on evaluation of topography and flow direction, and location of soil disturbing activities. BMPs will be used to protect topsoil and adjacent resources and to minimize soil erosion, whether the erosion is caused by water or wind. Practices may include containment of excavated material, protection of exposed soil, stabilization of restored material, implementation of rock pads at construction exits, and treating stockpiles to control fugitive dust. Other BMPs may be implemented as necessary to comply with OHC000005. BMPs will be reassessed upon receipt of the final Facility layout during SWPPP preparation to ensure compliance with Ohio law.

Facility components were sited to avoid temporary and permanent impacts to wetland and waterbody resources to the maximum extent practicable. Panels and inverters will be placed outside of wetland and waterbody features. All impacts associated with collection lines will be temporary in nature. The substation is anticipated to avoid impacts to wetland or waterbody features. Permanent impacts to wetland features from access road crossings are anticipated to be minor and will be permitted in accordance with state and federal regulations, as applicable. See section 4906-4-08(B)(2)(b) for additional details regarding wetlands and waterbodies.

(d) Changes in Flow Patterns and Erosion

As a result of the limited impacts discussed in section 4906-4-07(C)(2)(b) and the mitigation measures discussed above in section 4906-4-07(C)(2)(c), changes to flow patterns are not anticipated.

(e) Equipment for Control of Effluents

Facility operation will not involve the discharge of effluents into streams or water bodies. Therefore, this section is not applicable.

(3) Operation

(a) Water Quality Map

As described above in section 4906-4-07(C)(1)(b), measurable impacts on the quality of surrounding water resources are not anticipated. Since there are no bodies of water likely to be affected by the proposed Facility, this section is not applicable.

(b) Water Pollution Control Equipment and Treatment Processes

The Facility will not require any water pollution control equipment or treatment processes. Storm water measures that will be implemented during Facility operations are described below.

The proposed Facility will not result in wide scale conversion of land to impervious surfaces. While PV panels themselves are impervious, they are disconnected from the ground surface and allow rainwater to fall from the panel and permeate into the underlying surface. Impervious surfaces found at the site will include the substation, O&M building, inverter and inverter pad, and access roads. The Applicant will perform pre- and post-construction storm water calculations to determine if post-construction BMPs are required based on requirements contained in Ohio EPA's Permit No. OHC000005. Per the preliminary Facility layout, post-construction BMPs for the impervious surface across the site are anticipated to include ditches and swales adjacent to Facility access roads. An evaluation of post-construction storm water calculations will be re-evaluated prior to submission of the final Facility layout to ensure compliance with Ohio law.

As noted in 4906-4-03(2)(b), oil utilized for the cooling and insulation of transformers at the Facility substation may be stored within an aboveground storage tank within the substation footprint which will likely exceed 1,320 gallons. Per federal regulations (40 CFR Part 112), should the tank exceed 1,320 gallons, an SPCC Plan will be prepared prior to the tank's placement onsite. Oil that is removed from the transformers during maintenance activities will be disposed of per the applicable local, state, and federal regulations.

(c) NPDES Permit Schedule

As mentioned above, Facility construction will require an Ohio NPDES construction storm water general permit, Ohio EPA Permit No. OHC000005. The Applicant anticipates full and complete compliance with this permit. The Notice of Intent (NOI) and associated fee for Permit No. OHC000005 will be filed at least 21 days prior to commencement of construction activities.

(d) Quantitative Flow Diagram

As explained in the following sub-sections, flow diagram information is not applicable to the proposed Facility.

(i) Sewage

The O&M building will be served by septic system developed to meet the needs of onsite employees. Prior to construction of the septic system, the Applicant will obtain an Ohio EPA wastewater permit-to-install, and any other required state and local permits. No other sewage is anticipated to be produced.

(ii) Blow-down

This section is not applicable, as PV panels do not utilize blow-down equipment.

(iii) Chemical and Additive Processing

The Facility will not require the use of chemical and/or additive processing. Therefore, this section is not applicable.

(iv) Waste Water Processing

The Facility will not process or generate wastewater. Therefore, this section is not applicable.

(v) Run-off and Leachates

The Facility is not expected to generate any run-off or leachates. Therefore, this section is not applicable.

(vi) Oil/water Separators

This section is not applicable because the Facility will not utilize any oil/water separators.

(vii) Run-off from Soil and Other Surfaces

Following completion of construction, temporarily impacted areas will be stabilized and restored and revegetated. Facility operation will not result in further soil disturbance, aside from occasional repair activities. Therefore, this section is not applicable.

(e) Water Conservation Practices

Aside from very limited quantities of water that may be used for the occasional cleaning of solar panels, the only Facility component requiring water sources will be the O&M building. Staff operating out of the O&M building will use water at a rate comparable to a typical small business or office. The Facility will incorporate water conservation practices by including installation of modern, efficient water fixtures for all water usage, and regular maintenance to keep water fixtures in proper working order.

Overall, there are water conservation benefits of solar energy, as compared to conventional coal and nuclear power. According to a study supported by NREL, the total life cycle water use is lower for PV panels than other generation technologies (Meldrum, Nettles-Anderson, Heath, & Macknick, 2013).

(D) SOLID WASTE

(1) Pre-construction

(a) Nature and Amount of Solid Waste

One known agricultural structure for removal (barn) is located east of Ebenhack Road, and will be removed to accommodate the installation of solar panels. The Applicant is not aware of any other structures, large debris, or solid waste within the Project Area that would require removal for Facility development. Should any other waste be encountered, it will be disposed of as described below.

(b) Plans for Waste Removal

Components of the building will be recycled when practicable, and the remainder of solid waste will be disposed of at a licensed area landfill. Waste will be handled, managed, and disposed of in accordance with federal, state, and local regulations.

(2) Construction

(a) Nature and Amounts of Construction Waste

Facility construction will generate some solid waste, primarily plastic, wood, cardboard and metal packing/packaging materials, construction scrap, and general refuse.

(b) Methods for Storage and Disposal of Construction Waste

Construction waste will be collected from PV panel installation sites and other Facility work areas and disposed of in dumpsters located at the laydown yards. A private contractor will empty the dumpsters on an as needed basis and dispose of the refuse at a licensed solid waste disposal facility. Waste materials will be recycled when possible. Used oil, used antifreeze, and universal waste, if any, will be handled, managed, and disposed of in accordance with federal, state, and local regulations.

(3) Operation

(a) Nature and Amounts of Waste

For the most part, Facility operation will not result in significant generation of debris or solid waste. Waste generated from the O&M facilities could include wood, cardboard, metal packing/packaging materials, used oil, general refuse, universal waste, and used antifreeze. The O&M facility offices will generate solid wastes comparable to a typical small business office.

(b) Methods for Storage and Disposal of Waste

The O&M facilities will utilize local solid waste disposal and recycling services. Used oil, used antifreeze and universal waste will be handled, managed, and disposed of in accordance with federal, state, and local regulations.

(4) Licenses and Permits

Facility operation will not require acquisition of waste generation, storage, treatment, transportation, and/or disposal licenses or permits.

(E) COMPLIANCE WITH AVIATION REGULATIONS

(1) Aviation Facilities List and Map

Figure 03-1 illustrates all airports, helicopter pads, and landing strips within 5 miles of the Project Area. This mapping was developed from Esri ArcGIS World Topographic Map map service at a 1:24,000 scale. There are two publicly owned and active airports within 5 miles of the Project Area. Pickaway County Memorial Airport is located approximately 2 miles northeast of the Project Area and Ross County Airport is located approximately 2.5 miles south of the Project Area. No private airstrips were identified within 5 miles of the Facility.

On June 19, 2020, Yellowbud completed notifications to Mr. James Parks (Ross County Airport Manager), and Mr. Jerry Farrington (Pickaway County Airport Manager) via phone conversation. Yellowbud notified the managers of the anticipated height of Project infrastructure, general construction timeline, and indicated that a FAA Determination of No Hazard had been obtained for the Facility. Following the conversation, both airport managers indicated that they did not have any concerns regarding the Facility regarding their respective airports.

(2) FAA Filing Status and Potential Conflicts

The FAA requires notification for objects affecting navigable airspace per 14 CFR Part 77. The Applicant filed Form 7460-1 with the FAA, and received a Determination of No Hazard to air navigation from the FAA on April 30, 2020 (Exhibit O).

In addition to obstruction, reflectivity or glare is a potential concern from the FAA regarding solar facilities. Glare from solar panels has the ability to cause brief loss of vision for pilots during their final approach to a runway or to air traffic controllers (Rogers, et al., 2015). In 2013, the FAA established an Interim Policy that reviewed the impacts of solar energy systems on federally obligated airports. This review states that, in order to receive FAA notice of "no objection," there should be no potential for glare from the solar facility in the Airport Traffic Control Tower or along the final approach path, defined as "two miles from fifty feet above the landing threshold using a standard three-degree glidepath" (FAA, 2013, p. 2).

In order to evaluate the potential impacts of glare, the Applicant contracted with Harris Miller Miller & Hanson (HMMH) to conduct a Glare Analysis (Exhibit P). HMMH analyzed potential glare at sensitive airport receptor locations using GlareGauge, a model developed by the USDOE's Sandia National Laboratories, and reviewed results relative to the FAA Interim Policy detailed above. To assess airport sensitive receptors, the FAA requires an evaluation of potential glare for pilots on final approach and at the air traffic control towers. No air traffic control towers are located at either airport; therefore, glare was only assessed for final approaches to each runway end at the Ross County Airport and Pickaway County Memorial Airport. No glare was detected at any observation points along the flight path at either airport, meaning that the Facility design meets FAA standards for aircraft final approach and glare impacts from the Facility are not anticipated.

4906-4-08 HEALTH AND SAFETY, LAND USE, AND ECOLOGICAL INFORMATION

(A) HEALTH AND SAFETY

(1) Equipment Safety and Reliability

(a) Major Public Safety Equipment

To protect safety of the public, the Applicant will implement various measures to limit access to the Facility during construction. Temporary, highly visible mesh fencing will be used around staging and storage areas. Signage will be utilized around active and inactive construction areas warning of potential dangers and discouraging entrance by the public. Other safety measures will also be employed: The Traffic Control Plan (Exhibit M) identifies safety measures that will be implemented near public roads. For example, personnel exposed to public vehicular traffic shall be provided with and shall wear warning vests or other suitable reflective or high-visibility garments. The Lighting Plan (Exhibit F) identifies the lighting necessary for safe operations of equipment, adequate lighting for active work areas, and security lighting to protect staged Facility components and equipment.

Safety features including perimeter fencing, controlled gate access, and signage will be utilized at the Facility during operation. In addition, electronic security systems, and remote monitoring will be employed. Per the Lighting Plan, motion and switch activated lighting will be implemented at entrances, the O&M building, and inverters. Per the Public Information Program (Exhibit L), the complaint resolution form and contact information will be readily available to address public inquiries, safety concerns, or complaints regarding the Facility.

(b) Equipment Reliability

Equipment reliability is an important criterion when selecting solar equipment. The Applicant will only select reliable, certified equipment for all Facility components, including but not limited to PV modules, inverters, racking systems, wiring, and transformers. All equipment will follow applicable industry code(s) (e.g., Institute of Electrical and Electronics Engineers [IEEE], NEC, National Electric Safety Code [NESC], American National Standards Institute [ANSI]).

(c) Generation Equipment Manufacturer's Safety Standards and Setbacks

Generation equipment manufacturer's safety standards will be provided after PV solar module technology has been selected for the Project. All Project equipment is expected to be compliant with applicable UL, IEEE, NEC, NESC, and ANSI listings. Internal setbacks, defined by the Applicant, are discussed in section 4906-4-08(C)(2) of this Application.

(d) Measures to Restrict Public Access

To further restrict public access, a 6 foot tall woven wire fence with an additional 1 foot of barbed wire strand will be constructed around the Facility. During operation, security of the Project Area will be maintained by a combination of perimeter security fencing, controlled access gates, electronic security systems, and potentially remote monitoring. Additionally, "No Trespassing" and "High Voltage Equipment" signs will be placed around the fence perimeter, warning the public of the potential hazards within the fenced Project Area. Per the Lighting Plan, lighting that is switch or motion activated will be implemented at Facility Entrances, O&M building, and inverters for additional safety and security. Remote monitoring and security cameras will be implemented for the Facility.

(e) Fire Protection, Safety, and Medical Emergency Plans

Prior to construction, a site specific environmental health and safety plan (HASP) will be developed. The HASP identifies preventive measures to reduce the potential occurrence of an emergency. The plan will include an emergency action plan (EAP) that identifies actions to address circumstances such as medical emergencies, fires, or spills. The Applicant will coordinate with first responders prior to construction to ensure that they are familiar with the EAP and the general layout of the Facility. As noted in the Traffic Control Plan, a map denoting the location of safety muster points, office locations, first aid kits, and spill kits will be available onsite for contractor review. Fire suppressants, spill kits, and first aid kits will be available in vehicles and construction equipment in case of inadvertent release of fluids or fire during both Facility construction and operation. All personnel will undergo a safety training program, and depending on their position, training may include site orientation, first aid/CPR/AED, qualified electrical worker (NFPA 70E), and equipment specific training. An operations specific HASP will also be developed for the Facility, which will include an EAP, and the Applicant will maintain communications with emergency responders regarding the EAP throughout the life of the Facility.

(2) Probable Impacts due to Failures of Pollution Control Equipment

Solar panels generate electricity without combusting fuel or releasing pollutants into the atmosphere. Therefore, this section is not applicable.

(3) Noise

Resource Systems Group, Inc (RSG) was retained by the Applicant to conduct a Noise Assessment to evaluate potential noise impacts from the proposed Facility. The study examines current background sound levels, modeled results of sound levels from the Facility on nearby residences, and sound levels from construction activities. The Noise Assessment is included as Exhibit Q and summarized below.

(a) Construction Noise Levels at the Nearest Property Boundary

Table 3 of the Noise Assessment (Exhibit Q) identifies commonly used construction equipment for solar facilities, assuming no attenuation from trees or terrain. This table conservatively identifies the sound level at 15 meters (50 feet) for equipment, which can be applied to Facility construction nearby to property boundaries. The table identifies that the loudest emissions at this distance for any type of equipment used onsite at 50 feet is anticipated to be 85 decibels. Construction of the facility could lead to short durations of these sound levels from construction equipment at nearby to adjacent property boundaries. However, these activities will be short in duration, and most construction will be set back significantly from property boundaries. The Project has also incorporated setbacks of 300 feet from non-participating sensitive receptors to further reduce noise impacts to areas where people are more likely to be present, and these impacts are considered below.

(i) Blasting activities

No blasting activities are anticipated for the construction or operation of the Facility and thus no noise emissions are anticipated.

(ii) Operation of earth moving equipment

Earth moving equipment is not anticipated to exceed 60 A-weighted decibels (dBA) at 100 meters (328 feet), the approximate distance from the nearest solar array to the nearest non-participating sensitive receptors. Equipment could occasionally operate nearer to sensitive receptors but should generally be limited to equipment travel between work areas, or limited grading activities for short durations of time. As panels are set back at least 300 feet from non-participating sensitive receptors, and earth moving equipment in any one area are completed in a relatively short duration, noise impacts from earth moving equipment are anticipated to be minimal.

(iii) Driving of piles, rock breaking or hammering, and horizontal drilling

Pile driving is not anticipated to exceed 60 dBA at 100 meters (328 feet), the approximate distance from the nearest solar panel to sensitive receptors. As panels are set back at least 300 feet from residences, and pile driving activities in any one area are completed in a relatively short duration, noise impacts from pile driving are anticipated to be minimal.

(iv) Erection of structures

Erection of structures such as PV panels, inverters, the O&M building, and substation will utilize equipment such as pickup trucks, man lifts, cranes, and flatbed trucks. None of these are anticipated to exceed 60 dBA at 100 meters (328 feet), the approximate distance from the nearest solar panel to the nearest non-participating sensitive receptors. As panels, inverters, the O&M building, and the

substation are set back at least 300 feet from non-participating sensitive receptors, and pile driving activities in any one area are completed in a relatively short duration, noise impacts are anticipated to be minimal.

(v) Truck traffic

Truck traffic will be necessary to accommodate delivery of Facility components during construction. Deliveries will occur relatively infrequently during regular working hours. Once they have reached the Project Area, transportation of materials will follow access routes that are primarily set back from non-participating sensitive receptors. Noise impacts from deliveries are anticipated to be minimal.

(vi) Installation of equipment

As noted above, the equipment utilized for the installation of the Facility will primarily be set back at least 300 feet from non-participating sensitive receptors. Additionally, this equipment will only operate for the duration necessary to complete installation in any one area of the Project. Therefore, the noise impacts associated with construction activities are anticipated to be minimal.

Table 3 of the Noise Assessment presents the maximum sound pressure levels for various pieces of construction equipment at 15 meters (50 feet) and 100 meters (328 feet) away (represents the approximate distance between the nearest non-participating residence and a solar array) (Exhibit Q). Sound levels for equipment 15 meters (49 feet) from a non-participating residence ranges from 80 dBA to 85 dBA. Sound levels for equipment 100 meters (328 feet) from a non-participating residence ranges from 57 dBA to 60 dBA.

(b) Operational Noise Levels at the Nearest Property Boundary

(i) Operational noise from generation equipment

Sound propagation modeling was performed in accordance with the standard ISO 9613-2 “Acoustics – Attenuation of sound during propagation outdoors, Part 2: General Method of Calculation” using CadnaA modeling software. Modeling inputs used inverters and transformers under consideration with the highest sound emission output. Results from sound modeling showed that all non-participating residences are anticipated to receive sound levels of approximately 42.2 dBA or less, with the highest sound levels occurring at and around the substation. Figure 23 of the Noise Assessment (Exhibit Q) illustrates surrounding residences and anticipated sound levels to be produced by the Facility.

Based on the sound propagation modelling, the highest sound level anticipated at a non-participating property boundary from noise emitting equipment during operation of the Facility is anticipated to be

59 dBA. This sound level is located in the northwest portion of the Project Area, east of Westfall Road, at the nearest point between an inverter and non-participating property boundary. A sound level of 59 dBA is approximately equivalent to noise levels of conversational speech between two persons standing approximately 3 to 6 feet apart. For passersby at this location, this sound level would not significantly alter a conversation in that persons walking by would be unlikely to find it necessary raise their voice to maintain their conversation.

Sound propagation modelling also assessed sound emitting equipment in relation to non-participating sensitive receptors. Representative equipment models for inverters and transformers were assessed for daytime or nighttime ambient sound levels (L_{eq}) at non-participating sensitive receptors, and ambient sound levels are further described below in Section 4906-4-08(3)(e). Modelling conservatively assumed operation of all equipment during both daytime and nighttime, as the substation and inverters could operate at night if the Facility is used to manage reactive power for transmission grid infrastructure. The modelling found that even when all equipment is fully operational during nighttime hours, sound levels are not anticipated to exceed 5 dBA above average nighttime sound levels at non-participating sensitive receptors. Based on the onsite data collected, 5 dBA above average nighttime sound levels was determined to be 42.6 dBA. The highest modelled sound level from noise generating equipment at a non-participating sensitive receptor, the residence located to the north of the substation to the west of Westfall Road, was determined to be 42.1 dBA during both daytime and nighttime conditions. As noted in Appendix A of the Noise Assessment, this sound level is quieter than the noise emitted from a typical field with insects.

As noted above, the transformers at the Facility substation were considered in the noise assessment. Two transformers will be located at the substation. The Applicant selected a model of transformers that is 7 dB below NEMA TR-1 sound levels for the Project.

(ii) Processing equipment

The Facility does not include processing equipment; therefore, this section is not applicable.

(iii) Associated road traffic

Traffic during operations is limited and will primarily be associated with operations personnel traveling to and from the Facility site and will not be a significant source of noise. Traffic inside the Facility will be dispersed from occasional maintenance activities and inspections. Noise from these activities is anticipated to be minimal.

(c) Location of Noise-Sensitive Areas within One-Mile of the Facility

Residences within the immediate vicinity of the Facility are mapped with sound level data in Figure 23 of the Noise Assessment. Residences are mapped out to 25 dBA, a sound level which is equivalent to a quiet winter night, in Appendix A of the Noise Assessment (Exhibit Q). Noise sensitive areas within 1 mile are included on Figure 08-2, although as noted in Figure 23 of the Noise Assessment, sound levels are localized to areas directly adjacent to Facility equipment and impacts to a 1-mile area are anticipated to be negligible. As noted above, the highest modelled sound level from noise generating equipment at a non-participating sensitive receptor, the residence located to the north of the substation to the west of Westfall Road, was determined to be 42.1 dBA during both daytime and nighttime conditions. As noted in Appendix A of the Noise Assessment, this sound level is quieter than the noise emitted from a typical field with insects.

(d) Mitigation of Noise Emissions during Construction and Operation

Construction will occur between the hours of 7:00 a.m. and 7:00 p.m. or until dusk when sunset occurs after 7:00 p.m. Limited construction that does not contribute to excess noise at sensitive receptors may occur outside of these hours. Pile driving operations will be limited to 8:00 a.m. and 7:00 p.m., Monday through Saturday. Extended pile driving hours and the use of Saturdays will increase efficiency and reduce the total number of days necessary for pile driving activities. As most construction occurs during working hours, noise impacts are anticipated to be minimal. Facility setbacks assist in the mitigation of sound during construction as installation will mostly be at least 300 feet from non-participating sensitive receptors. Equipment will be kept in good working conditions to minimize excess noise emissions.

During operations, setbacks have been implemented that will reduce sound impacts from the Facility, including a 300-foot setback from non-participating residences. Representative equipment was modeled and is not anticipated to exceed 5 dBA above daytime and nighttime ambient sound levels (L_{eq}) at non-participating sensitive receptors. Routine maintenance of the facility, such as mowing, will be completed between 7:00 a.m. and 7:00 p.m. Occasional maintenance activities during nighttime hours may be necessary to maximize energy collection during the day. These activities will be limited in nature and scope, and are not anticipated to produce excessive noise or disturbance.

(e) Pre-construction Background Noise Study

Continuous background noise was measured at four locations representative of adjacent residences between May 22 and May 31, 2020, with one location measuring sound to June 2, 2020. Sound level microphones were mounted at a height of 1.5 meters (5 feet) and covered with a 7-inch weather-resistant windscreen. Data was summarized into 10-minute, overall day, overall night, and full monitoring period

length durations. Anomalous data, or data that provided false readings or artificially high levels, were omitted from the sound data. Such events include wind speeds above 5 meters per second, thunderstorms, agricultural operations, a helicopter, and lawn-care equipment.

Table 1 of the Noise Assessment includes the L_{eq}, upper 10th percentile (L_{10}), median (L_{50}), and lower 10th percentile (L_{90}) background noise levels. The nighttime L_{eq} across the Project Area is 37.6 dBA and the daytime L_{eq} across the Project Area is 43.4 dBA.

Though the OAC does not define sound level limits for solar projects, a design goal of 5 dBA over ambient level (L_{eq}) was established. Given the ambient levels referenced above, 5 dBA over those values results in a nighttime L_{eq} of 42.6 dBA and a daytime L_{eq} of 48.4 dBA. Sound levels were modeled at 42.1 dBA, which is below the goal design nighttime L_{eq} of 42.6 dBA.

(4) Water Impacts

(a) Impacts to Public and Private Water Supplies from Construction and Operation

Public and private wells in the vicinity of the Facility are displayed on Figure 08-1. This data was obtained by the ODNR and shows that six water wells are located within the Project Area, all of which are assumed to be private wells. Most of these wells are located in proximity to residences. These wells range in depth from 42 to 83 feet below ground surface. The principal groundwater source for the majority of the Project Area is the Prairie Complex aquifer, with a small section in the northwestern portion located in the Prairie Ground Moraine aquifer. Groundwater yields from these aquifers can range up to 100 gallons per minute (gpm) for properly constructed wells.

According to an Environmental Risk Information Services (ERIS) database list, three water wells are located in the Project Area. A 32 foot deep water supply well located on the east side of the Project Area near the equipment shed, on north side of Swaney Road, produces approximately 15 gpm from a gravel aquifer. A 74 foot deep water supply well located at the equipment shed and house, on the southwest side of the Project Area near the intersection of Westfall Road and Williamsport Pike, produces approximately 15 gpm from a sand and gravel aquifer. A 70 foot deep water supply well located on the east side of the Project Area, on the north side of Swaney Road, produces approximately 12 gpm from a sand and gravel aquifer.

The Applicant will utilize this information from the ODNR and ERIS, and will coordinate with landowners to identify specific well locations, avoidance and mitigation measures, or capping. Given that the Facility will not be constructed within the immediate vicinity of residences, impacts to water wells are not anticipated.

(b) Impacts to Public and Private Water Supplies from Pollution Control Equipment Failures

Solar panels generate electricity without combusting fuel or releasing pollutants into the atmosphere. Therefore, this section is not applicable.

(c) Water Resources Map

Figure 08-1 depicts aquifers and existing water wells in the vicinity of the Project Area. There are no Ohio EPA Source Water Protection Areas (SWPAs) in or around the Project Area.

(d) Compliance with Local Water Source Protection Plans

No SWPAs were identified in the vicinity of the Project Area by the Ohio EPA. There are no local plans protecting local water sources for the area near the Facility. As a result, this section is not applicable.

(e) Prospects of Floods in the Area

A Hydrology Study was completed for the Project Area (Exhibit R). This study analyzed risk of flooding and ponding, and their potential to cause scour, which could hinder the integrity of the solar pilings and racking. Low to moderate flood depths were found across the site, with minimal concern for scour. The Project Area is surrounded by 100-year Federal Emergency Management Agency (FEMA) flood zones from Yellowbud Creek, Deer Creek, and the Scioto River; however, these flood zones are constrained to the floodplains of their respective reaches and the land on which the Facility is sited on has a significantly higher elevation than the extents of the floodplains. Therefore, the Project Area does not contain any FEMA flood zones. All hydrologic concerns can be addressed via avoidance or through design measures in the final Facility layout.

(5) Geological Features Map

Figure 08-1 depicts existing oil and gas wells. Topographic contours are included on the preliminary Facility layout (Exhibit A). Maps of geological features are included in the Geotechnical Report (Exhibit C) and the Ecological Assessment (Exhibit S).

(a) Geologic Suitability

A geotechnical evaluation of the Project Area was completed (Exhibit C). The report provided a geotechnical overview, support design recommendations, frost heave considerations, seismic considerations, electrical earth resistivity, thermal resistivity, corrosivity, and more. Geotechnical considerations noted in the report can be addressed via standard engineering techniques and methods. Recommendations of the report will be considered throughout the engineering and procurement process to ensure selection and construction techniques will be implemented to support the viability of the Facility throughout its operational life.

The Facility is not anticipated to require extensive grading, given the relatively flat nature of the surrounding area. Additionally, borings did not encounter weathered embedded rock that would hinder pile drivability. Groundwater was encountered at a minimum of 6.5 feet, which, in some cases, rose to 2 feet by completion of the boring. Due to potential high groundwater levels, particularly in late summer, dewatering may be required during excavations. Because most activities do not require significant excavations, dewatering activities are anticipated to be minimal. Any dewatering activities onsite would utilize BMPs such as filter bags or straw bale structures to better diffuse water. Dewatering would be directed to a well vegetated upland area, wherever possible, and will be conducted in accordance with all requirements of Ohio EPA Permit No. OHC000005.

The Facility will be designed to meet seismic requirements. According to the U.S. Geological Survey (USGS), seismic hazard levels are relatively low for Ohio, particularly in southern Ohio (USGS, 2008). Historically, Ross and Pickaway counties have each experienced one earthquake. One earthquake occurred in 1899 in Scioto Township, Ross County, with a magnitude of 3.1. The other occurred in 2013 in Jackson Township, Pickaway County, with a magnitude of 2 (ODNR, n.d.). For additional information on geological suitability, see Exhibit C.

(b) Soil Suitability

Soils encountered in the Project Area consist of 2 to 3 inches of topsoil, followed by medium stiff to hard consistency lean clays with varying sand and gravel content, and pockets of loose to dense sand with varying amounts of slay/silt and gravel content to a maximum explored depth of 20 feet. Additional testing was conducted to determine the corrosivity, thermal resistivity, and electrical earth resistivity of the soils. Results for those tests can be found as attachments in Exhibit C.

Soils on site have limited shrink-swell potential due to moderately plastic clayey properties, thereby eliminate that concern for the design and construction of the Facility. Near surface soils are moderately moisture sensitive and subject to degradation in strength and stability when exposed to moisture. As a result, the Applicant will restrict earthwork, including grading, to warmer, drier periods of weather, to the maximum extent practicable. Soils within the Project Area may also be susceptible to frost and frost heave due to the lean and sandy lean soils with fines greater than 15% observed throughout the Project Area. Piles will be installed to depth that counteracts potential freeze heaving forces. Additional foundations will also be designed to account for heave during winter months. Additional design considerations can be found in Exhibit C.

Hydric soils on the site may be subject to increased compaction from construction activities. Prior to seeding, decompaction will be applied across the site. Special care will be taken to ensure adequate

decompaction in hydric areas. Seed mixes were developed to account for both hydric and upland soil conditions across the Project Area.

(c) Plans for Test Borings

As noted above, and to meet the requirements of 4906-04-08(5)(c), test borings were completed throughout the Project Area. Boring logs are included within the Geotechnical Report (Exhibit C). These borings followed the plan set forth in the Exploration and Testing Procedures, included as an Attachment to Exhibit C. Boring closure followed standard procedures and methods and the test bores were backfilled with the auger cuttings following completion. As noted previously, groundwater was encountered at a minimum of 6.5 feet, which, in some cases, rose to 2 feet by completion of the boring. Soil characteristics identified from the geotechnical borings are discussed in 4906-4-08(A)(5)(b). No bedrock was encountered from any of the test borings and shallow bedrock is not anticipated to be encountered during construction. Recovery is provided in the boring log.

As test borings have been provided as part of this Application, and additional borings would inform very specific engineering consideration, it is not proposed that any additional geotechnical boring logs or data will be provided to OPSB staff. If additional borings are determined to be necessary, the onsite contractor will prepare and follow a plan similar to the attachment in Exhibit C and will use standard methods for boring closure. The results of any additional borings are not anticipated to significantly alter the placement of Facility components.

(6) Prospects of High Winds in the Area

The Facility will be engineered and installed to withstand typical high-wind occurrences. The Facility design factors in wind speeds, which are based on building code wind speed maps. The Facility is designed using Risk Category I maps and is based on the maximum expected three-second gust from the building codes.

(7) Blade Shear

Given the nature of the Facility, this section is not applicable.

(8) Ice Throw

Given the nature of the Facility, this section is not applicable.

(9) Shadow Flicker

Given the nature of the Facility, this section is not applicable.

(10) Radio and Television Reception

The Applicant is not aware of any research conducted to date that indicates utility-scale solar generation facilities interfere with communication systems. PV arrays generate weak electromagnetic fields (EMFs) during the day that dissipate at short distances. These EMFs are "generated in the same extremely low frequency range as electrical appliances and wiring found in most homes and buildings" (Massachusetts Department of Energy Resources, 2015, p. 10). In a study of three solar projects in Massachusetts, electric field levels measured along the boundary of each project did not exceed background levels (Massachusetts Clean Energy Center, 2012, p. iv). Accordingly, the Applicant does not anticipate interference with radio or television reception due to weak electric fields produced by the proposed solar facility.

(11) Radar Interference

As stated above, solar facilities produce weak EMF signals that quickly dissipate off site. Additionally, according to the FAA, PV systems represent little risk of interfering with radar transmission due to their low profile (Lawrence & Magnotta, 2018). As a result, the Facility is not anticipated to interfere with radar communication systems.

(12) Navigable Airspace Interference

Due to the low profile of the Facility, where the tallest structure will be the substation support structures, with a height of approximately 65 feet, impacts to navigable airspace are not anticipated. See section 4906-4-07(E) of this Application for a discussion of potential aviation impacts from glare.

(13) Communication Interference

Interference in microwave communication signals occurs when the line-of-sight between two microwave transmitters is blocked (Polisky, 2005). Microwave communication interference is a common concern in development of a wind facility due to the presence of large structures. However, components of this Facility are low in profile with the tallest structure being the substation. Due to the lack of tall structures that may interfere with the line-of-sight of microwave transmitters, interference with microwave communications from the Facility is not anticipated.

(B) ECOLOGICAL IMPACT

(1) Ecological Resources in the Project Area

In support of this Application, Cardno completed on-site ecological surveys and prepared an Ecological Assessment, attached hereto as Exhibit S. The Assessment includes a review of applicable literature and desktop information, summarizes consultations with the ODNR and USFWS, provides results of field studies in the Project Area, and reports anticipated Facility impacts.

(a) Open Spaces and Facility Map

Figure 03-1 shows the proposed Facility and ecological features within 2 miles of the Project Area. Figure 08-3 shows additional ecological features within 10 miles of the Project Area. The features required to be mapped by 4906-4-08(B)(1)(a) are described below, with references to the corresponding figure or exhibit that includes a map of the feature.

(i) The proposed Facility and Project Area boundary

The preliminary Facility layout and Project Area boundary are both depicted on Figure 03-1. Figure 08-3 includes the Project Area boundary.

(ii) Undeveloped or abandoned land such as wood lots or vacant tracts of land subject to past or present surface mining activities

Undeveloped land is mapped in Figure 08-3 and includes woodlots, scrub/shrub communities, and barren land. Of the approximately 6,114 acres that make up the 0.5 mile radius around the Project Area, approximately 367 acres are defined as undeveloped land in the form of woodlots. Undeveloped land data was derived from the USGS National Land Cover Database (NLCD).

(iii) Wildlife areas, nature preserves, and other conservation areas

No wildlife areas were noted within 0.5 mile of the Project Area. Wildlife areas, nature preserves, and other conservation areas are depicted on both Figure 03-1 and Figure 08-3.

(iv) Surface bodies of water

Several waterbodies are located within 0.5 mile of the Project Area, including Yellowbud Creek, Deer Creek, tributaries of the Scioto River. All waterways are illustrated on Figure 03-1 and Figure 08-3.

(v) Highly erodible soils and steep slopes

The Project Area is relatively flat, lacking steep slopes or erodible soils. Soil units, with corresponding descriptions including slope and erodibility, are mapped in Figure 4 of the Ecological Assessment (Exhibit S). Slopes are also provided as curve numbers and are included in Exhibit 5 of the Hydrology Study (Exhibit R). Contour data is also provided in the preliminary Facility layout (Exhibit A).

(b) Field Survey and Map of Vegetative Communities and Surface Waters within 100 Feet of Construction

<u>Vegetative Communities</u>

Vegetative communities were characterized in Section 6 of the Ecological Assessment (Exhibit S) via a desktop analysis of NLCD data and aerial photography, then later field verified during field surveys. Vegetative communities were surveyed within and 0.25 miles beyond the Project Area. The primary communities identified include agricultural land, disturbed/developed land, and clusters of deciduous

forest. As noted at Section 6.1.1 of the Ecological Assessment, all of the major plant communities found within the area are common to Ohio. Vegetative communities within the Project Area were dominated by agricultural monocultures, including soy beans and corn. Limited amounts of forestland remain as isolated woodlots. A map of vegetative communities is included as Figure A.1 of the Ecological Assessment.

Wetland and Stream Delineations

Surface water delineations were completed within the Project Area, and verified the extent of such features out to a 0.25 mile radius. A Wetland and Stream Delineation Report is provided as Appendix D of the Ecological Assessment. A map of delineated wetlands and streams is included as Figure 1.5 in the Ecological Assessment, and are also shown on the preliminary Facility layout (Exhibit A).

A total of 60 wetlands were delineated, comprising approximately 67.5 acres. Of the 60 wetlands, six were identified as palustrine forested wetlands and 54 were identified as palustrine emergent. Based on Cardno's experience, all but one wetland is anticipated to be classified as isolated. A final determination will occur through a Jurisdictional Determination from the United States Army Corps of Engineers (USACE). Based on the preliminary Facility layout, less than 0.06 acre of wetland will be impacted during construction, and less than 0.02 acre of wetland will be permanently impacted during operation. Additional detail on the individual wetlands can be found in the Ecological Assessment.

(c) Literature Review of Plant and Animal Life within 0.25 Mile of Construction

A literature review of plant and animal life within 0.25 mile of the Project Area is included in the Ecological Assessment (Exhibit S). This information is summarized below.

Plants

Aside from crops, there are no known plant species of commercial or recreational value within 0.25 mile of the Project Area. The Applicant consulted with the ODNR regarding state and federally listed plant species that may occur in the vicinity of the Project Area. The ODNR identified one federally and state listed endangered species, the running buffalo clover (*Trifolium stoloniferum*), as potentially occurring in the Project Area. The Project Area does not contain critical habitat for this species; however, its presence is possible as it can occur in disturbed agricultural sites that have shade. No running buffalo clover was observed during Cardno's field surveys.

Animals

Table 4-3 in the Ecological Assessment (Exhibit S) provides a comprehensive table of all state and federal listed species that were identified by the ODNR or USFWS as potentially occurring in the Project Area, and if they were observed during field surveys. For additional information on these species and agency consultation, see the Ecological Assessment.

Federally Listed Species

The Project Area is not known to provide significant habitat for sensitive bird species. No federally listed bird species were identified during field survey efforts. When reviewing publicly available sources and records, Cardno did not identify any known bald eagle or sensitive raptor nests within the Project Area.

The Indiana bat (*Myotis sodalis*) and northern long-eared bat (*Myotis septentrionalis*) were both identified by the ODNR and USFWS as potentially occurring in the Project Area, siting a distribution range for both species that spans the entirety of Ohio. Neither species is anticipated to occur in the Project Area due to the lack of forested areas that could be used for roosting and lack of caves for hibernacula. While neither species is anticipated to occur, tree clearing will adhere to the recommended dates of October 1 to March 31. In accordance with the Tree and Shrub Clearing Plan, core woodlots will be maintained across the Project Area.

A total of six federally listed endangered and one federally threatened bivalve species were identified through agency coordination as potentially occurring in the Project Area. No critical habitat area exists for these species within the Project Area. Additionally, in-water work for the construction or operation of the Facility is not anticipated. Therefore, impacts to these species are not anticipated.

One federally listed endangered fish species, Scioto madtom (*Noturus trautmani*), was identified as potentially occurring in the Project Area; however, no populations of the Scioto madtom have been observed since 1957. Similarly, no Scioto madtoms were observed by Cardno during field surveys. Streams within the Project Area run adjacent to active agricultural lands and likely experience water quality degradation. Therefore, it is not anticipated that streams within the Project Area contain populations of Scioto madtom.

State Listed Species

A total of four bivalve species and five fish species were identified by the ODNR as endangered, state listed species that may occur in the Project Area. Additionally, three bivalve and four fish species are state listed as threatened species that may occur in the Project Area. No critical habitat areas exist for these species within the Project Area. Therefore, impacts to these species are not anticipated.

Four state listed species have the potential of occurring within the Project Area. None of these species were observed during Cardno's field surveys. Additionally, no critical habitat was identified by the ODNR or USFWS within the Project Area. Therefore, impacts to these species are not anticipated.

Game Species

Common game species that are typical of central Ohio could occur in the Project Area. These species are mobile and therefore incidental injury or mortality to these species are not anticipated.

(d) Results of Field Surveys for Plant and Animal Life Identified in Literature Review

No species specific field surveys were conducted for the Project Area; however, special attention was paid to identifying endangered and threatened species during field surveys. No endangered or threatened species were observed in the Project Area while conducting surveys. A Henslow's sparrow (*Ammodramus henslowii*), a bird identified federally and by the state of Ohio as being of conservation concern, was observed during field efforts. No critical habitat for the sparrow is located in the Project Area, and woodlots in the Project Area, determined to be of moderate quality, will be maintained. The Henslow's Sparrow is highly mobile and able to vacate the area during construction activities. The remaining habitat in the Project Area was determined to be of degraded quality and provides limited habitat to rare, threatened, and endangered species. Additional wildlife observations included white-tailed deer, migratory shorebirds, waterfowl, and songbirds.

No additional wildlife surveys are anticipated for the Facility. Based on adherence to agency avoidance and mitigation guidelines, consultation with the ODNR and USFWS did not result in the suggestion of additional surveys. Those guidelines, along with other avoidance and minimization techniques, are provided below in section 4906-4-08(B)(2)(b).

(e) Summary of Additional Ecological Impact Studies

Based on agency consultation and field survey results, no additional ecological studies are proposed.

(2) Construction Impacts

(a) Estimation of Impact of Construction on Undeveloped Areas, Plants, and Animals

Since the Facility is located entirely on leased private land, there will be no construction-related impacts to recreational areas, parks, wildlife areas, nature preserves, or other conservation areas. Impacts to ecological resources may occur during construction of the installation of PV panels, access roads, and electrical collection lines; development and use of the laydown yards; and the construction of the substation. Based on the data obtained during field studies, and via consultations with agencies, these impacts are anticipated to be minimal. Additional details, including acreage of potential impacts, are included in the Ecological Assessment. Minor impacts during construction to ecological resources, including wetland features and vegetated areas, cannot be avoided, and these impacts are discussed in more detail below.

Through careful design and avoidance measures, the Applicant anticipates little impact to delineated wetlands or waterbodies within the Project Area. Detailed tables of anticipated wetland and waterbody impacts are provided in Appendix E of the Ecological Assessment. Less than 0.06 acre of wetland will be

temporarily impacted via access road and collection line installation, and less than 0.02 acre of wetland will be permanently impacted by the installation of access roads.

Permanent impacts to wetlands are associated with the unavoidable crossing of two wetlands on the site via low water crossings to accommodate access to contiguous solar panel arrays. Per the typical drawings provided in the preliminary Facility layout (Exhibit A), low water crossings will be installed to cross the channel as close to 90 degrees as possible. The access road will be at an elevation that allows water to flow through the channel unimpeded and without ponding upstream of the road or on the road surface. Armored surface treatment of the road will extend through the channel bottom and up to the channel side slope to the observed top of the bank of the channel. The remaining wetland impacts are associated with workspace to accommodate installation of access roads, and workspace to accommodate the installation of belowground collection lines. Collection lines are anticipated to be installed via open trench methods described in 4906-4-03(B). Workspace impacts are anticipated to be temporary in nature, as the workspace will be converted to pre-construction contours following installation. During the construction of access roads and collection lines, applicable state and federal wetland permit stipulations will be followed. Measures that may be taken to prevent adverse impacts to wetland resources are dependent on onsite conditions, but generally include BMPs such as silt fence to prevent sedimentation to the surrounding wetland resource, segregation of topsoil and subsoil, placement of construction matting to reduce rutting and compaction, and conversion of workspace to pre-construction contours following construction activities.

The extent of vegetation clearing is included in section 7.2 of the Ecological Assessment. A Tree and Shrub Clearing Plan is included as Exhibit H to this Application and describes measures to minimize clearing of woody vegetation.

Potential impacts to wildlife and their habitat are anticipated to be negligible. These impacts are also discussed further in the Ecological Assessment.

(b) Description of Short-term and Long-term Mitigation Procedures

(i) Site restoration and stabilization of disturbed soils

Restoration activities are anticipated to include the following:

- Belowground collection lines will be restored to pre-construction contours as necessary and allowed to regenerate naturally;
- Disturbed soils within the Facility's fence line will be re-seeded with a low-growth, native seed mix to stabilize exposed soils and control sedimentation and erosion; and

- The laydown yards will be decompacted, topsoil redistributed, and reseeded with a low-growth, native seed mix to stabilize exposed soils and control sedimentation and erosion.

All removed material and demolition debris will be stockpiled in designated locations. Each stockpile will be transported off site to either a recycling center, when feasible, or to an approved landfill depending on the material type. Debris will be broken down into manageable sizes to aid in their transportation.

The objectives of reclamation and revegetation are to allow for the efficient establishment of vegetation on the site, and to ensure that the land can be reverted to pre-construction agricultural uses, per the wishes of the landowners. Segregation of topsoil and subsoil will occur throughout construction, and treatment of soil may be necessary to preserve approximate pre-construction capability.

(ii) Frac out contingency plan

Horizontal directional drilling is not anticipated at this time. If horizontal directional drilling is determined to be necessary for construction after completing final Facility design, a frac out contingency plan will be submitted to OPSB Staff prior to construction.

(iii) Methods to demarcate surface waters and wetlands during construction

As depicted on the preliminary Facility layout (Exhibit A), the boundaries of streams and wetlands within and immediately adjacent to the construction limits of disturbance will be surrounded by silt/exclusionary fencing to demarcate avoidance areas. These will also be marked on final construction documents. Other sensitive resources will be marked as "Environmentally Sensitive Areas" on final construction documents. All contractors and subcontractors working on-site will be provided with training to understand the significance of the types of flagging used, and the importance of staying within defined limits of work areas, especially in and adjacent to marked sensitive resource areas such as wetlands.

(iv) Inspection procedures for erosion control measures

As noted previously, the Applicant will seek coverage for the Facility under Ohio EPA Permit No. OHC000005. The permit requires development of a SWPPP for erosion control and storm water management. This permit requires the regular inspection of erosion control measures, as described below.

Erosion and sediment control measures will be inspected by a qualified individual throughout the construction phase to assure that they are functioning properly. These features will be inspected until

70% permanent vegetated cover has been established across disturbed areas. Disturbed areas and areas used for storage of materials that are exposed to precipitation shall be inspected for evidence of, or the potential for, pollutants entering the drainage system. Locations where vehicles enter or exit the site shall be inspected for evidence of off-site vehicle tracking. Inspections will be conducted at least once every seven calendar days, and within 24 hours after any storm event with 0.5 inch or greater of rain. This inspection frequency may be reduced to once every month if the entire site is temporarily stabilized and runoff is unlikely due to weather conditions such as snow, ice, or frozen ground.

Following each inspection, the qualified inspector will complete and sign a checklist and inspection report. At a minimum, the inspection report shall include:

- the inspection date;
- names, titles, and qualifications of personnel making the inspection;
- weather information for the period since the last inspection (or since commencement of construction activity if the first inspection) including a best estimate of the beginning of each storm event, duration of each storm event, approximate amount of rainfall for each storm event (in inches), and whether any discharges occurred;
- weather information and a description of any discharges occurring at the time of the inspection;
- locations of any BMPs that need to be maintained; and
- any corrective actions recommended.

The inspection report will be distributed to the contractor and any corrective actions will be promptly addressed by onsite staff to ensure permit compliance.

Following site stabilization, a notice of termination form will be submitted to the Ohio EPA, in accordance with NPDES permit requirements. For three years following the submittal of a notice of termination form, the Applicant will maintain a record summarizing the results of the SWPPP inspections described above, including the names(s) and qualifications of personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of the SWPPP, and a signed certification as to whether the facility is in compliance with the SWPPP.

(v) Measures to protect vegetation

Protection of vegetation will be primarily accomplished through careful planning. Most Facility components have been sited on agricultural land, thus avoiding significant impacts to successional grassland, shrubland, forested, and wetland areas. In addition to siting, measures to protect vegetation include: identifying sensitive areas such as wetlands where no disturbance or vehicular activities will be allowed; limiting areas of disturbance to the smallest size practicable; preserving

mature trees to the maximum extent practicable; educating the construction workforce on respecting and adhering to the physical boundaries of off-limit areas; employing best management practices during construction; and maintaining a clean work area within the designated construction sites. Following construction activities, temporarily disturbed areas will be re-established with native vegetation. Seed mixes for the Facility have incorporated suggestions from the ODNR and Ohio Pollinator Habitat Initiative, to reestablish vegetative cover in these areas. Two seed mixes will be used, one within the PV array areas (both underneath and between arrays) and the other for hydric areas. Refer to the Vegetation Management Plan (Exhibit D) for more information.

In addition to re-seeding temporarily disturbed areas, the Applicant will preserve mature trees within the Project Area to the maximum extent practicable. As described in the Tree and Shrub Clearing Plan (Exhibit H), core woodlots have been identified for preservation throughout the life of the Facility. These woodlots are depicted in Appendix A of Exhibit H and consist of approximately 4.2 acres.

(vi) Options for clearing methods and disposing of brush

Scattered trees and shrubs, as well as windrows, will be cleared and grubbed to accommodate construction and operation of the Facility. Disposal of cleared trees and shrubs will likely consist of chipping or grinding, then using as woodchips for temporary ground cover or mulch. Offsite transport of woody material is not anticipated, however if necessary, such disposal will be completed by a qualified contractor in accordance with local, state, and federal regulations. For additional information, see the Tree and Shrub Clearing Plan (Exhibit H).

(vii) Avoidance measures for state or federally listed and protected species and their habitats

Based on consultations with the ODNR and USFWS and field surveys of the Project Area, habitat for state or federal listed species within the Project Area is minimal. Therefore, no post-construction wildlife monitoring is proposed. Coordination letters are included in the Ecological Assessment as Appendix B. Per agency guidance, tree clearing will be completed between October 1 and April 31 to avoid potential impacts to bat species.

The Applicant will contact OPSB Staff within 24 hours if federal or state listed species are encountered during construction activities. Construction activities that could adversely impact the identified plants or animals will be halted until an appropriate course of action has been agreed upon by the Applicant, OPSB Staff, and other applicable administrative agencies.

(3) Operational Impacts

(a) Estimation of Impact of Operation on Undeveloped Areas, Plants, and Animals

Aside from minor disturbances associated with routine maintenance and occasional repair activities, no additional disturbance to plants, vegetative communities, wetlands, or surface waters are anticipated from Facility operation. The Facility will not result in physical disturbance or impacts to recreational areas, parks, wildlife areas, nature preserves, or other conservation areas as identified in section 4906-4-08(B)(1)(a).

(b) Procedures to Avoid/Minimize/Mitigate Short-term and Long-term Operational Impacts

Once operational, the Facility is not anticipated to result in additional ecological impacts. The Applicant has sited the Facility to avoid wetlands and streams to the maximum extent practicable, and no additional impacts to these resources are anticipated following construction.

The Applicant has identified approximately 42 acres of forest that will be preserved for the lifetime of the Facility, thereby reducing impacts from forest fragmentation and habitat loss. Vegetation management efforts such as hand weeding, mowing, and herbicide application will be required for continued maintenance of the Project Area. Mowing activities will occur regularly within the first three years, to discourage the establishment of invasive species. Such activities will be conducted with care, specifically during the nesting period for grassland birds (April 1 and August 1). If herbicide application is required, it will be applied by a licensed applicator. The Applicant is considering grazing as a form of natural vegetation management to restrict the spread of non-native species, prevention of access litter accumulation, improve for age production, and accelerate decomposition and nutrient cycling. Additional information on grazing and other vegetation management methods and impacts are provided in the Vegetation Management Plan provided in Exhibit D. Definitive plans for grazing as vegetation management have not been made and are contingent on a willing community partner, and the development of an amenable agreement between the Applicant and partner.

Direct impacts to wildlife from an operational solar facility in Ohio are low. Solar facilities do not have the same collision risk for avian and bat species as wind facilities due to their low-profile and lack of moving parts. Additionally, the diversity in landscape, vegetation, and topography within Ohio further limits the threat of collision for avian and bat species. Since no significant operational impacts to these resources are anticipated, no mitigation measures are proposed.

(c) Post-Construction Monitoring Plans

The Applicant has no plans for post-construction monitoring of wildlife impacts because no significant impacts from the construction or operation of the Facility are anticipated. The Facility does not include

any large moving parts, and will not result in environmental discharges during operation that may impact wildlife and their habitat.

(C) LAND USE AND COMMUNITY DEVELOPMENT

(1) Land Use

(a) Land Use Map

Land uses within 1 mile of the Facility are shown on Figure 08-2. Among other information, Figure 08-2 shows the following features:

(i) The proposed Facility

The proposed Facility layout PV panels, collection lines, access roads, fenceline, substation, O&M building, laydown yards, and inverters.

(ii) Land use

Land use was mapped within a 1 mile radius of the Project Area. Most of the land use is agricultural and vacant agricultural, with some residential parcels (ReportAll, 2019).

(iii) Structures

Structures within a 1 mile radius of the Project Area primarily include residences, except for three churches and one fire department. Structures were digitized via aerial imagery and confirmed during site visits and through existing databases, and include residences and other buildings where people congregate for extended periods of time.

(iv) Incorporated areas and population centers

The only population center within 1 mile of the Project Area is the unincorporated community of Yellowbud.

(b) Structures Table

(i) Structures and Property Lines within 1,500 Feet of PV Panels

Distances between the PV panels and existing structures within 1,500 feet are shown in Table 08-1 below, which includes the distance to the nearest PV panel and the lease status of the underlying parcel (i.e., participating or non-participating). There are 53 structures within 1,500 feet of a PV panel.

Table 08-1. Structures Within 1,500 Feet of a PV Panel

Structure Type	Distance to PV Panel (Feet)	Lease Status of Underlying Parcel[1]
Residence	178.0	Participating

Structure Type	Distance to PV Panel (Feet)	Lease Status of Underlying Parcel[1]
Residence	187.0	Participating
Residence	190.7	Participating
Residence	194.3	Participating
Residence	224.2	Participating
Residence	241.0	Participating
Residence	311.4	Non-participating
Residence	313.6	Participating
Residence	323.5	Participating
Residence	335.7	Non-participating
Church	340.0	Non-participating
Residence	343.3	Non-participating
Residence	344.4	Non-participating
Residence	346.2	Non-participating
Residence	348.0	Non-participating
Residence	348.8	Non-participating
Residence	349.8	Non-participating
Residence	350.4	Participating
Residence	375.1	Non-participating
Residence	377.8	Non-participating
Residence	390.7	Non-participating
Residence	396.9	Non-participating
Residence	437.1	Non-participating
Residence	472.4	Non-participating
Residence	477.0	Non-participating
Residence	483.7	Non-participating
Residence	485.1	Non-participating
Residence	486.7	Non-participating
Residence	497.3	Participating
Residence	500.4	Non-participating
Residence	518.4	Non-participating
Residence	518.8	Non-participating
Residence	522.0	Participating
Residence	562.5	Non-participating
Residence	599.8	Non-participating
Residence	622.6	Non-participating
Residence	628.0	Non-participating
Residence	648.3	Non-participating
Residence	665.8	Non-participating
Residence	694.7	Participating
Residence	716.7	Non-participating
Residence	762.9	Non-participating
Residence	846.2	Non-participating
Residence	884.3	Participating
Residence	971.8	Non-participating
Residence	1,027.0	Non-participating
Residence	1,041.2	Non-participating
Church	1,076.7	Non-participating

Structure Type	Distance to PV Panel (Feet)	Lease Status of Underlying Parcel[1]
Residence	1,128.2	Non-participating
Residence	1,291.5	Non-participating
Residence	1,295.1	Participating
Residence	1,391.1	Non-participating
Residence	1,445.8	Participating
Residence	1,491.1	Non-participating

1. Parcels anticipated to be under a lease or easement agreement at the time of Facility construction are identified as participating parcels.

Distance between PV panels and property lines within 1,500 feet are shown in Table 08-2, which presents the distance to the nearest PV panel and the lease status of the parcel (i.e., participating or non-participating). There are 122 properties within 1,500 feet of a PV panel.

Table 08-2. Parcels Within 1,500 Feet of a PV Panel

Parcel ID	Distance to PV Panel (Feet)[1]	Lease Status
100705012000	0.0	Participating
370901046000	0.0	Participating
370902001000	0.0	Participating
370902002000	0.0	Participating
370902010000	0.0	Participating
370902011000	0.0	Participating
370902013000	0.0	Participating
370902016000	0.0	Participating
370902017000	0.0	Participating
370902018000	0.0	Participating
370902019000	0.0	Participating
370902021000	0.0	Participating
370902022000	0.0	Participating
370903002000	0.0	Participating
C09-0-001-00-380-01	0.0	Participating
P33-0-001-00-137-00	0.0	Participating
P33-0-001-00-159-00	0.0	Participating
P33-0-001-00-160-00	0.0	Participating
P33-0-001-00-161-00	0.0	Participating
P33-0-001-00-162-01	0.0	Participating
P33-0-001-00-158-00	34.9	Participating
370902012000	36.4	Participating
370901044000	42.6	Participating
370905027000	47.4	Non-participating
370901037000	48.7	Participating
370902042000	52.4	Participating
P33-0-001-00-161-01	52.6	Non-participating
370903003000	52.6	Non-participating

Parcel ID	Distance to PV Panel (Feet)[1]	Lease Status
370902023000	53.1	Participating
P33-0-001-00-131-00	53.4	Non-participating
P33-0-001-00-132-00	53.4	Non-participating
C09-0-001-00-380-00	53.9	Non-participating
P33-0-001-00-162-03	54.0	Non-participating
P33-0-001-00-163-00	54.8	Non-participating
370902007000	55.6	Non-participating
370902044000	58.8	Non-participating
370902025000	59.7	Non-participating
100705017000	61.2	Non-participating
100705010000	62.0	Non-participating
370903001000	62.2	Non-participating
370901043000	62.5	Non-participating
370902026000	63.0	Non-participating
370903009000	81.6	Non-participating
100705007000	98.0	Non-participating
P33-0-001-00-142-00	102.0	Participating
370902020000	102.4	Participating
370902014000	103.2	Non-participating
P33-0-001-00-135-00	104.4	Non-participating
P33-0-001-00-136-00	104.4	Non-participating
370902032000	109.6	Participating
100705011000	109.9	Participating
P33-0-001-00-141-00	116.4	Participating
370902046000	120.1	Non-participating
P33-0-001-00-133-00	121.1	Non-participating
370902047000	121.5	Non-participating
P33-0-001-00-132-01	121.7	Participating
P33-0-001-00-162-02	129.6	Non-participating
370901018000	137.4	Non-participating
370902024000	149.5	Non-participating
370903007000	152.7	Non-participating
370902005000	163.4	Non-participating
370901047000	172.9	Non-participating
100705018000	183.0	Non-participating
370902006000	190.5	Non-participating
370902028000	221.5	Non-participating
C09-0-001-00-375-00	221.6	Non-participating
370903010000	231.8	Non-participating
P33-0-001-00-162-00	237.6	Non-participating
100705021000	242.8	Non-participating
370902030000	246.8	Non-participating
370902043000	251.7	Non-participating
370901045000	255.2	Participating
370902040000	264.2	Non-participating

Parcel ID	Distance to PV Panel (Feet)[1]	Lease Status
370902039000	271.6	Non-participating
370902036000	275.4	Non-participating
370901014600	287.4	Non-participating
370902037000	289.0	Non-participating
370902034000	307.1	Non-participating
370901015600	314.3	Non-participating
100705016000	321.0	Non-participating
370905009000	332.5	Participating
370902033000	336.8	Participating
P33-0-001-00-156-00	349.4	Participating
100705008000	367.0	Non-participating
370905025000	373.2	Non-participating
370902003000	383.3	Non-participating
370903004000	391.1	Non-participating
370903006000	418.7	Non-participating
370902015000	421.4	Non-participating
370902008000	514.4	Non-participating
370902004000	554.2	Non-participating
P33-0-001-00-129-00	569.7	Non-participating
370902027000	588.5	Non-participating
370902009000	589.5	Non-participating
370901048000	595.3	Non-participating
370902029000	607.3	Non-participating
370902045000	690.6	Non-participating
370902038000	703.4	Non-participating
P33-0-001-00-157-00	717.3	Participating
P33-0-001-00-146-00	723.8	Participating
370905011000	777.0	Non-participating
P33-0-001-00-146-01	830.8	Participating
370901016600	832.0	Non-participating
370901013600	832.4	Non-participating
370904016000	833.3	Non-participating
370903008000	857.0	Non-participating
370901017600	936.3	Non-participating
370902035000	1,005.5	Non-participating
370903005000	1,008.4	Non-participating
370901038000	1,010.4	Non-participating
370906011000	1,083.5	Participating
370901030000	1,116.3	Non-participating
C09-0-001-00-376-00	1,229.3	Non-participating
370905022000	1,230.9	Participating
370901035000	1,307.4	Non-participating
370901012000	1,386.1	Participating
P33-0-001-00-163-01	1,393.6	Non-participating
C09-0-001-00-373-00	1,433.9	Non-participating

Parcel ID	Distance to PV Panel (Feet)[1]	Lease Status
370901011000	1,437.7	Non-participating
370922097000	1,444.8	Non-participating
370906012000	1,454.3	Participating
90705009000	1,497.3	Non-participating

1. Distances that equal zero represent parcels that contain PV panels.

(ii) Structures and Property Lines within 250 Feet of Facility Components

Distances between associated facilities and existing structures within 250 feet are shown in Table 08-3. There are 7 structures within 250 feet of a Facility component, including collection line, access road, laydown yard, O&M building, or substation.

Table 08-3. Structures within 250 Feet of a Facility Component

Structure Type	Distance to Facility Component (Feet)	Facility Component	Lease Status of Underlying Parcel[1]
Residence	192.2	Access Road	Non-participating
Residence	245.3	Access Road	Non-participating
Residence	220.7	Collection Line	Participating
Residence	231.5	Access Road	Non-participating
Residence	165.9 188.6	Access Road Collection Line	Participating
Residence	218.7	Access Road	Participating
Residence	171.5	Access Road	Non-participating
Residence	198.9 205.7	Access Road Laydown Yard	Participating
Residence	196.4 210.0	Access Road Laydown Yard	Participating

1. Parcels anticipated to be under a lease or easement agreement at the time of Facility construction are identified as participating parcels.

Distances between the Facility components and property lines within 250 feet are shown in Table 08-4, which presents the distance to the parcel boundary and the lease status of the parcel (i.e., participating or non-participating). There are 61 parcels within 250 feet of a Facility component. This total includes 50 parcels that are within 250 feet of multiple Facility components.

Table 08-4. Parcels Within 250 Feet of a Facility Component

Parcel ID	Distance[1]	Associated Facility Component	Lease Status
C09-0-001-00-380-01	0.0 0.0 98.8	Collection Line Laydown Yard Access Road	Participating

Parcel ID	Distance[1]	Associated Facility Component	Lease Status
P33-0-001-00-158-00	0.0 32.1 55.7	Access Road Laydown Yard Laydown Yard	Participating
P33-0-001-00-159-00 P33-0-001-00-160-00	0.0 0.0 0.0 0.0 155.9	Access Road Laydown Yard Laydown Yard Laydown Yard Collection Line	Participating
P33-0-001-00-161-00	0.0 0.0 0.0 32.8 158.2 216.5 213.7	Access Road Collection Line Laydown Yard Access Road Collection Line Laydown Yard Laydown Yard	Participating
P33-0-001-00-162-01	0.0 0.0 0.0 29.9	Access Road Collection Line Laydown Yard Access Road	Participating
100705012000	0.0 210.7 224.1	Collection Line Collection Line Access Road	Participating
370902022000	0.0 0.0 0.0 24.5 84.1	Access Road Collection Line Laydown Yard Access Road Laydown Yard	Participating
370902018000	0.0 0.0 55.7	Access Road Collection Line Access Road	Participating
370902021000	0.0 0.0 0.0 45.2 63.9 27.1 100.4	Access Road Collection Line Laydown Yard Access Road Collection Line Access Road Collection Line	Participating
370902012000	0.0 29.5 29.5 59.2 45.4 28.2 88.8	Collection Line Access Road Collection Line Laydown Yard Access Road Access Road Laydown Yard	Participating
370902010000	0.0 0.0 96.8	Access Road Collection Line Laydown Yard	Participating

Parcel ID	Distance[1]	Associated Facility Component	Lease Status
370902013000	0.0 0.0 0.0 90.3 223.3	Access Road Collection Line Laydown Yard Access Road Access Road	Participating
370901046000	0.0 165.5	Access Road Collection Line	Participating
370902001000	0.0 0.0 0.0 0.0 40.4 237.2	Access Road Collection Line Laydown Yard Laydown Yard Access Road Laydown Yard	Participating
370902002000	0.0 0.0 0.0 0.0 0.0 0.0 30.5	Access Road Collection Line Laydown Yard Laydown Yard Laydown Yard Laydown Yard Access Road	Participating
370902011000	0.0 0.0 0.0 0.0 19.2 24.8 72.1 81.5	Access Road Collection Line Laydown Yard Laydown Yard Access Road Access Road Laydown Yard Laydown Yard	Participating
370902016000	0.0 0.0 0.0 0.0 0.0 30.7 53.1 40.5 76.2	Access Road Collection Line Substation Laydown Yard O&M Building Collection Line Laydown Yard Access Road Laydown Yard	Participating
370902017000	0.0 0.0 0.0 0.0 0.0 0.0	Access Road Collection Line Laydown Yard Laydown Yard Laydown Yard Laydown Yard	Participating

Parcel ID	Distance[1]	Associated Facility Component	Lease Status
370902019000	0.0 0.0 39.3 58.0 73.2 172.8	Access Road Collection Line Access Road Collection Line Collection Line Access Road	Participating
370903002000	0.0 0.0 0.0 0.0 197.9	Access Road Collection Line Laydown Yard Laydown Yard Access Road	Participating
P33-0-001-00-137-00	233.1 297.7	Access Road Collection Line	Participating
100705011000	77.3 108.8 98.0	Access Road Collection Line Laydown Yard	Participating
370902020000	72.0 81.3 244.6 96.1	Access Road Access Road Access Road Collection Line	Participating
370902032000	74.8 80.4	Access Road Laydown Yard	Participating
370902023000	4.4	Access Road	Participating
370901037000	22.9 49.6 54.6 56.3 116.7	Access Road Collection Line Laydown Yard Laydown Yard Laydown Yard	Participating
370902033000	106.5 156.2	Access Road Laydown Yard	Participating
370901044000	19.3 39.6 43.6	Access Road Collection Line Laydown Yard	Participating
370902020000	102	Access Road	Participating
C09-0-001-00-380-00	88.9	Laydown Yard	Non-participating
P33-0-001-00-162-03	33.6 72.9 139.8	Access Road Collection Line Access Road	Non-participating
P33-0-001-00-162-02	28	Access Road	Non-participating
P33-0-001-00-162-00	201	Access Road	Non-participating
P33-0-001-00-161-01	4.0 40.2 58.8	Access Road Collection Line Laydown Yard	Non-participating
100705018000	125.6 105.7	Access Road Collection Line	Non-participating
100705021000	211.7 237.9	Access Road Collection Line	Non-participating

Parcel ID	Distance[1]	Associated Facility Component	Lease Status
100705017000	17.3 162.0	Collection Line Access Road	Non-participating
100705010000	40.4 41.6 49.0 74.2 105.1 115.0 122.6	Access Road Access Road Substation Laydown Yard Laydown Yard Access Road Collection Line	Non-participating
100705016000	126 184.9	Laydown Yard Access Road	Non-participating
100705007000	41.6 96.4 122.3	Access Road Laydown Yard Collection Line	Non-participating
370902006000	144.9	Access Road	Non-participating
370902044000	233.6	Access Road	Non-participating
370902007000	42.1 52.1 88.7	Access Road Collection Line Access Road	Non-participating
370901047000	171.7 216.9	Access Road Collection Line	Non-participating
370905027000	7.1 103.1 62.4 104.5	Access Road Collection Line Laydown Yard Laydown Yard	Non-participating
370905027000	20.2 29.0	Access Road Laydown Yard	Non-participating
370902025000	40.9 55.1 187.3	Access Road Laydown Yard Collection Line	Non-participating
370901018000	102.6 134.6	Access Road Collection Line	Non-participating
370901043000	40.2	Access Road	Non-participating
370902040000	105.5 157.6	Access Road Laydown Yard	Non-participating
370902039000	152.8 238.6	Access Road Laydown Yard	Non-participating
370902005000	104.6	Access Road	Non-participating
370902030000	103.8 239.9	Access Road Laydown Yard	Non-participating
370902037000	104.4 190.5	Access Road Laydown Yard	Non-participating
370902034000	105.4 134.3	Access Road Laydown Yard	Non-participating
370902036000	105.3 132.5	Access Road Laydown Yard	Non-participating
370902046000	104.1	Access Road	Non-participating

Parcel ID	Distance[1]	Associated Facility Component	Lease Status
370902043000	104.4 217.9	Access Road Laydown Yard	Non-participating
370902026000	26.1	Access Road	Non-participating
370903002000	97.9 135.9 192.5	Laydown Yard Access Road Collection Line	Participating
370903001000	24.6 68.9	Access Road Laydown Yard	Non-participating

1. Distances that equal zero represent parcels that contain associated Facility Components.

(iii) Lease Status of Each Structure

The participation status for each structure and property within 1,500 feet of a PV panel and each structure and property within 250 feet of a Facility component is presented in the tables above.

(c) Land Use Impacts

Agricultural land is the only land use directly impacted by the Facility. As shown on Figure 08-2, some parcels were classified as "vacant" in the parcel data, but appear to have been in active agricultural use recently; therefore, those areas were assumed to be agricultural. Table 08-5 presents the total, temporary, and permanent land use impacts on agricultural/vacant land use by Facility component. For additional detail on agricultural land use impacts, see section 4906-4-08(E).

Facility related impacts to land use were calculated based on the assumptions described in Table 08-5. Facility components were overlain with parcel data, resulting quantifiable impacts associated with each component. The impact areas or lengths for all Facility components were aggregated into a spreadsheet, which was used to calculate temporary and permanent impact areas. For example, all of the land use impacts from PV panels is considered permanent due to the change in potential uses of the PV panel area during the life of the Facility. For linear components such as access roads and collection lines, the appropriate impact widths, as described in Table 08-5, were multiplied by the lengths to create an area of impact. Finally, using the spreadsheet, the separate areas of impact for each Facility component were added together, resulting in the temporary, permanent, and total areas of impact associated with each component.

Table 08-5. Land Use Impacts

Facility Components	Temporary Impact[5] (Acres)	Permanent Impact (Acres)	Total Impact (Acres)
Solar Arrays[1]	0.0	1,320.8	1,320.8
Access Roads[2]	28.8	52.6	81.4
Laydown Yards	21.6	0.0	21.6
Inverter Pads and Weather Stations[3]	8.8	5.8	14.6
Belowground Collection Lines[4]	25.6	0.0	25.6
Substation	0.0	3.7	3.7
O&M Building	0.3	0.1	0.4
Total	**85.1**	**1,383.0**	**1,468.1**

1. Permanent impacts to solar arrays includes the entire area underneath and between the panels, because that area will be taken out of its current use for 30-40 years.
2. Access roads will have a temporary width of 25 feet, and a permanent width of 16 feet.
3. Includes 91 inverter pads with an approximate area of 2,400 square feet, and nine weather stations with an approximate area of 2 square feet.
4. A temporary, 15 foot wide work area will be required for belowground collection line installation.
5. Temporary impact areas represent only the additional impact area during construction and do not include the permanent impact area. The temporary and permanent impact areas are added together in the total impact column.

Changes in agricultural land use are anticipated within the Project Area as a result of Facility operation, and no changes are predicted outside the Project Area. The presence of the PV panels, substation, and other ancillary structures will result in the cumulative conversion of approximately 1,468 acres of land from agricultural use, which represents approximately 72% of the Project Area (approximately 2,040 acres).

Construction impacts will be temporary in nature and confined to the properties of participating landowners. As described in section 4906-4-08(E)(2)(b), the Applicant has developed construction specifications for construction activities occurring partially or wholly on privately owned agricultural land. These specifications, along with special siting considerations, will minimize impacts to agricultural land uses in the Project Area.

(d) Structures That Will Be Removed or Relocated

One barn will be removed for construction of the Facility, east of Ebenhack Road. The landowner has confirmed removal of this structure.

(2) Parcel Status Map

This requirement is not applicable to this Facility because the Facility is not a wind farm.

(3) Setback Waiver

This requirement is not applicable to this Facility because the Facility is not a wind farm.

(4) Land Use Plans

(a) Formally Adopted Plans for Future Use of Site and Surrounding Lands

None of the counties (Pickaway and Ross), townships (Pickaway, Wayne, Deer Creek, Green, Union, Deerfield or Concord) or villages (Williamsport or Clarksburg) within the 5 mile study area have implemented comprehensive plans or land use plans. The Ross County Planning Commission adopted the Ross County/City of Chillicothe Thoroughfare Plan Update (most recently amended in 2012); however, the plan goals and recommendations apply to areas within and surrounding the City of Chillicothe, well outside of the Study Area for this Facility.

(b) Applicant's Plans for Concurrent or Secondary Uses of the Site

Sheep grazing may be used concurrently with the Facility as a form of vegetation management; however, definitive plans for this concurrent use have not been made and are contingent on a willing community partner, and the development of an amenable agreement between the Applicant and partner. No other concurrent uses are anticipated in the Project Area. For additional information on sheep grazing, see the Vegetation Management Plan provided as Exhibit D.

(c) Impact on Regional Development

The regional economy within 5 miles of the Project Area is shaped in large part by both the rural economy of Ross and Pickaway counties and the manufacturing economy of the greater Columbus metropolitan region. As a primarily agricultural economy in proximity to one of the strongest manufacturing hubs in the U.S., this area has made substantial progress toward stabilization and growth as it emerges from the recent recession. The regional context of the Facility, including discussion of the significant revenue increases to the local tax base (schools and public services), positive benefits to the regional economy via increased local spending and investment, and minimal adverse impacts to housing demand is discussed in further detail in the Socioeconomic Report provided as Exhibit K. The need for public services to serve the Facility is minimal, and per the Route Evaluation Study, only minor impacts to area roadways are anticipated, and impacts the regional transportation system are negligible (Exhibit M).

(d) Regional Plan Compatibility

There will be no impacts to regional plans or regional growth as a result of this Facility. As discussed in section 4906-4-08(C)(3)(a), no entities within 5 miles of the Project Area have adopted comprehensive land use plans, strategic downtown plans, and/or economic development plans applicable to development of the Facility. Discussions with the Ross County Commissioners and the Greater Chillicothe Ross County Economic Development Organization further identified that commercial and

industrial development is focused west of the Project Area, nearer to US 23, and the Facility is not anticipated to impact local development initiatives.

(e) Current and Projected Population Data

Population estimates and projections are included in Table 08-6 below. Regionally, the area is growing, with slower rates of growth in Ross County which is located further south from the suburban reaches of Columbus. At a local level, most townships within five miles of the Project Area have experienced population growth, except for Deer Creek, Village of Clarksburg, and Village of Williamsport. The population trends experienced by each community from 2000 to 2018 are expected to continue regardless of whether the Facility is constructed.

Table 08-6. Population of Jurisdictions within 5 Miles

Jurisdiction	2000 Population	2018 Population	Annual Growth Rate (2000-2018)	Projected 2030 Population	Projected Total Growth (2018-2030)	2018 Population Density (people per square mile)
Pickaway County	46,230	57,420	1.3%	67,403	17.4%	113
Ross County	67,916	77,051	0.7%	84,251	9.3%	111
Concord Township	4,052	4,425	0.5%	4,704	6.3%	58
Deer Creek Township	1,615	1,329	-1.0%	1,180	-11.2%	37
Deerfield Township	1,078	1,182	0.5%	1,260	6.6%	39
Green Township	4,446	4,879	0.5%	5,205	6.7%	112
Pickaway Township	1,851	2,203	1.1%	2,499	13.4%	45
Union Township	7,171	12,763	4.3%	21,231	66.4%	191
Wayne Township	565	650	0.8%	718	10.5%	24
Village of Clarksburg	498	478	-0.2%	465	-2.6%	2,988
Village of Williamsport	988	955	-0.2%	934	-2.2%	723

Source: U.S. Census Bureau Decennial Census (2000), ACS 5-Year Estimates (2014-2018), population projections based on respective 2000-2018 growth rates. Note that 2000 institutionalized population numbers are not available for Union Township; however, as of 2010, the institutionalized population (specifically those residing in adult correctional facilities) for Union Township was 5,504.

Although construction employment related to the construction of the Facility will be substantial, this employment is relatively short term and is not expected to result in the permanent relocation of construction workers to the area; therefore, the Facility is not anticipated to generate significant population growth within the Study Area. The number of potential short and long term employment opportunities associated with the construction and operation of the Facility is discussed in section 4906-4-06 and in the Socioeconomic Report (Exhibit K).

(D) CULTURAL AND ARCHAEOLOGICAL RESOURCES

Cardno conducted a Phase I History Architecture Reconnaissance Survey, provided in Exhibit T, within a 0.5 mile study area deemed the area of potential effect, on May 11 and 12, 2020. Prior to the field survey, per Ohio Historic Preservation Office (OHPO) guidance, a 2 mile study area was investigated for cultural resources based on existing databases. Within the 2 mile study area, the following resources were identified: two NRHP archaeological

resources; 18 Ohio Historic Inventory (OHI) structures, three of which are deemed NRHP-eligible; one Ohio Genealogical Society (OGS) cemetery; 13 historic houses on the *Illustrated Atlas of Ross County, Ohio* from 1875; four historic buildings depicted on the *Atlas of Pickaway County, Ohio* from 1871; six buildings depicted on the USGS Era Quadrangle from 1911; 30 buildings depicted on the USGS Roxabell Quadrangle from 1912; and 46 buildings depicted on the USGS Williamsport Quadrangle and Anderson maps from 1961. No national historic landmarks were identified within the 2 mile study area.

During the Phase I History Architecture Reconnaissance Survey, Cardno documented 43 properties over 50 years old within the area of potential effect. These properties are primarily buildings (e.g., farmsteads), with one historic canal site and one cemetery. The buildings identified include houses, agricultural outbuildings, churches, and a schoolhouse. These properties were then evaluated to determine potential eligibility for listing in the NRHP. Of the 43 properties, three were previously surveyed and one of those had been deemed eligible for NRHP listing. An additional five resources are determined to be potentially eligible for listing in the NRHP due to their significance regarding agriculture, religion, or architecture. These five resources have been documented on OHI forms and provided in Appendix C of the Phase I History Architecture Reconnaissance Survey. No direct impacts to these resources are anticipated, and visual impacts are the only anticipated impact. Based on the viewshed analysis prepared for this Project, the five potentially eligible resources will have at least a partial view of the Facility.

The Phase I History Architecture Reconnaissance Survey was submitted to OHPO for review on June 18, 2020. Following OHPO review, and anticipated concurrence of results, the Applicant will coordinate further with OHPO to determine potential visual impacts to nearby potentially eligible or eligible sites along with any necessary mitigation of those impacts. Past projects have implemented strategies such as visual screening to protect the integrity architectural resources, and such measures will be determined on a case by case basis.

Cardno completed a Phase I Archaeological Reconnaissance for the Project Area in April and May of 2020. Due to the sensitive nature of archaeological resources, the study has been filed under seal as Exhibit U. A literature review was completed to identify previously recorded resources, which revealed 22 archaeological sites and 8 cemeteries within 1 mile of the Project Area. Following the literature review, a field survey of the Project Area was completed, using methods consistent with OHPO guidelines and consultations. Additional detail on survey methods can be found in the Phase I Archaeological Reconnaissance.

The study noted three resources within the Project Area that should be avoided, or otherwise would require additional archaeological work. The Applicant anticipates that all three sites can be avoided by all construction and operation activities, and will utilize exclusionary fencing or similar methods to ensure avoidance of these sensitive features during construction. The Phase I Archaeological Reconnaissance was submitted to the OHPO on June 26, 2020, and concurrence of the results is anticipated approximately 30 days following submittal. Following

concurrence of results, the Applicant will consult with the OHPO to confirm the adequacy of onsite avoidance methods.

(1) Landmarks of Cultural Significance Map

Figure 08-3 depicts formally adopted land and water recreation areas, recreational trails, scenic routes or byways, and registered landmarks of historic, religious, archaeological, scenic, natural, or other culturally significant resources within 10 miles of the Project Area.

(2) Impact to Landmarks and Mitigation Plans

Impacts to historic architectural and archaeological resources are summarized in paragraph (D) above, and detailed in Exhibit T and Exhibit U. No direct impacts are anticipated, as all identified resources can be avoided. Based on the viewshed analysis prepared for this Project, the five potentially eligible architectural resources will have at least a partial view of the Facility. The Applicant has submitted the cultural resource studies to the OHPO and continues to coordinate with the OHPO on recommended visual screening and mitigation measures. Impacts to recreational and scenic resources are discussed in paragraphs (3) and (4) below and in the Visual Resource Assessment and Mitigation Plan (Exhibit V).

(3) Impact to Recreational Areas and Mitigation Plans

Existing scenic and recreational areas within a 10 mile radius of the Project Area are depicted on Figure 08-3 and listed in Table 08-7 below. Recreational areas were identified using the following resources: ODNR, ODOT, Esri Topographic Map, Ohio Statewide Imagery Program, and local municipal websites. Additional details on visual impacts to these resources within 5 miles of the Project Area is included in Exhibit V.

Table 08-7. Scenic and Recreational Areas within 10 Miles

Recreational Area	Location	Distance from Project Area (Miles)
Deer Creek Canoe Launch (3 total)	Deerfield Township, Ross County Union Township, Ross County Deer Creek Township, Pickaway County	0.5 1.7 5.8
Wildlife Production Area (WPA) 39	Deer Creek Township, Pickaway County	2.2
Logan Elm State Memorial Park	Pickaway Township, Pickaway County	3.2
Nature Conservancy Land	Green Township, Ross County	3.3
Kinnikinnick Wildlife Area (WA)	Green and Union townships, Ross County	3.3
Circleville Canal WA and Canoe Launch	Wayne Township, Pickaway County	3.7
WPA 34	Deer Creek Township, Pickaway County	3.8
WPA 10	Wayne Township, Pickaway County	4.3
Guy Zurmehly Jr Memorial Park	Deerfield Township, Ross County	4.3
WPA 1	Green Township, Ross County	4.8
WPA 37	Deer Creek Township, Pickaway County	4.8
Calamus Swamp	Wayne Township, Pickaway County	5.3

Pleasant Valley WA	Union Township, Ross County	5.4
WPA 33	Deerfield Township, Ross County	5.7
Hopewell Cultural National Historical Park	Springfield and Union townships, Ross County	6.7
Great Seal State Park and Trails	Green and Springfield townships, Ross County	6.7
Pickaway Plains Nature Preserve	Circleville Township, Pickaway County	7.2
Elmon Richards Scioto River Conservation Area and Boat Ramp	Jackson and Wayne townships, Pickaway County	7.6
Scioto River Canoe Launch (2 total)	Wayne Township, Pickaway County Scioto Township, Ross County	7.6 9.9
WPA 4	Jackson Township, Pickaway County	7.7
Big Darby Creek	Jackson Township, Pickaway County	8.1
Ted Lewis Park	Circleville Township, Pickaway County	8.2
Pickaway County Fairground	Circleville Township, Pickaway County	8.2
Brad Lightle Memorial Park	Concord Township, Ross County	8.4
Big Darby Creek Canoe Launch	Jackson Township, Pickaway County	8.4
Paint Creek Canoe Launches (4 total)	Concord Township, Ross County Concord Township, Ross County Scioto Township, Ross County Concord Township, Ross County	8.7 8.8 9.3 9.5
Yoctangee Park and boat ramp	Scioto Township, Ross County	9.5
Trump Wildlife Habitat Hunting Preserve	Jackson Township, Pickaway County	9.5
Deer Creek WA	Perry Township, Pickaway	9.7
Ross Lake WA	Springfield Township, Ross County	9.8

There are seven Wildlife Production Areas (WPAs) within 10 miles of the Project Area. WPAs are managed by the ODNR to facilitate hunting and trapping activities. Based on the viewshed analysis results, potential visibility of the Facility is only anticipated for WPA 37 and WPA 39, located 4.8 and 2.2 miles northwest of the Project Area, respectively. Based on aerial imagery, both areas consist of primarily of open fields.

Data obtained from the ODNR shows three canoe launches along Deer Creek located 0.5 mile west, 1.7 miles south, and 5.8 miles northwest of the Project Area. These canoe launch sites consist of unpaved creek access from the road, with no visible improvements. Based on the viewshed analysis, visibility of the Facility from these locations are not anticipated.

The Logan Elm State Memorial Park is located approximately 3.2 miles east of the Project Area, in Pickaway County. Home to one of the largest elms in the United States and the site of a historic speech (called “Logan’s Lament”) made by Chief Logan of the Mingo tribe, the site holds numerous historical monuments and plaques, one shelter, and numerous picnic tables scattered throughout (Pickaway County Park District, n.d.). According to the viewshed analysis, views of the Facility from the Logan Elm State Memorial Park are not anticipated.

The Betsch Fen State Nature Preserve, managed by the Nature Conservancy, is located approximately 3.3 miles southeast of the Project Area. Based on aerial imagery, the parcel is heavily wooded, surrounded by

agricultural land uses. According to the viewshed analysis, some visibility of the Facility may be possible for those recreating in this preserve.

Kinnikinnick Wildlife Area (WA) is located 3.3 miles southeast of the Project Area in Green and Union townships. This area borders the Scioto River, offering river access, and is heavily forested. The Kinnikinnick WA is a popular spot for hunters and birders and is mapped by the Cornell's Lab of Ornithology eBird database as a birding hotspot (Cornell Lab of Ornithology, 2020). According to the viewshed analysis, visibility of the Facility is not anticipated from the Kinnikinnick WA.

Circleville Canal WA is a heavily wooded, 4.32 acre area along the Scioto River located approximately 3.7 northeast of the Project Area. Based on aerial imagery, it appears to consist primarily of woodlands. According to the viewshed analysis, visibility of the Facility is not anticipated from the from the Circleville Canal WA.

Guy Zurmehly Jr. Memorial Park is a local park located approximately 4.3 miles west of the Project Area. Based on aerial imagery, it appears to have a pavilion, basketball court, and open space for recreational opportunities. The viewshed analysis indicates that visibility of the Facility is not anticipated from the Guy Zurmehly Jr. Memorial Park.

Calamus Swamp is 19 acre kettle hole managed by the Columbus Audubon Society and located approximately 5.3 miles northeast of the Project Area. A kettle hole refers to a hollow area that results from the melting of ice trapped in glacial deposits. Due to the geological history and depressional topography, the Calamus Swamp is now a large wetland area that provides habitat for numerous breeding and migratory birds traveling through the Scioto River corridor, as well as distinct plant communities and habitat for rare species (Columbus Audubon, 2020). This area offers recreational opportunities to birders, nature enthusiasts, and hikers. Due to the large distance between the Facility and the Calamus Swamp, and based on the results of the viewshed analysis, visibility of the Facility is not anticipated from this area.

Pleasant Valley WA is located approximately 5.4 miles south of the Project Area and consists predominately of mixed-oak forests with some open fields. This WA provides hunting, fishing, and birding opportunities (Cornell Lab of Ornithology, 2020). Due to the large distance between the Facility and the Pleasant Valley WA, and based on the results of the viewshed analysis, visibility of the Facility is not anticipated from this WA.

Hopewell Culture National Historical Park is made up of six different properties, three of which are located within 10 miles of the Project Area. These three properties, called the Hopeton Earthworks, Mound City Group, and Hopewell Mound Group, are located approximately 6.7, 6.8, and 8.8 miles, respectively, south of the Project Area. The properties are managed by the National Park Service, and are archaeologically significant to the Ohio River Valley. The various earthwork formations and other archaeological resources represent

different Native American groups from 200 B.C. to 500 A.D (National Park Foundation, n.d.). Most of the sites are in open fields, with some wooded areas. All three sites have walking trails, some of which offer guided tours (National Park Service, n.d.). Due to the large distance between the Facility and these sites, and based on the results of the viewshed analysis, visibility of the Facility is not anticipated from Hopewell Culture National Historic Park.

Great Seal State Park and Trails is located approximately 6.7 miles southeast of the Project Area and consists of approximately 1,862 acres of woodland (Ohio Development Services Agency, 2020). This park offers scenic views of ridgetops and the Scioto Valley and recreational opportunities such as hiking, hunting, basketball, sand volleyball, disc golf, horseshoe courts, mountain biking, and a playground. Based on the viewshed analysis, the Great Seal State Park is located well beyond the visual extent of the Facility, and therefore visual impacts are not anticipated.

Pickaway Plains Nature Preserve is located approximately 7.2 miles northeast of the Project Area, just south of the City of Circleville. Based on aerial imagery, it is primarily comprised of open fields and surrounded by agricultural land. This land is identified by the ODNR as a conservation easement, so it is unclear whether is serves recreational purposes. Visual impacts are not anticipated from the Facility, due to the preserve's distance from the Facility and the viewshed analysis results.

Elmon Richards Scioto River Conservation Area is located approximately 7.6 miles northeast of the Project Area. This conservation area is located adjacent to the Scioto River and provides fishing access points for the public. Based on the viewshed analysis, the Elmon Richards Scioto River Conservation Area is located well beyond the visual extent of the Facility, and therefore visual impacts are not anticipated.

Big Darby Creek is a federal and state designated scenic river unit located 8.1 miles at its closest point, north of the Project Area. State listed as a scenic river in 1984, Big Darby Creek was federally designated as a scenic waterway in 1994 by the National Parks Service's Rivers, Trails, and Conservation Program (ODNR, 2020). Big Darby Creek flows from Champaign and Union counties down to the Scioto River, and is fed by Little Darby Creek. Big and Little Darby creeks are nationally noted for their diversity and abundance of aquatic and terrestrial plants and animals, providing habitat for 86 fish and 41 mollusk species, including 13 state listed endangered species (ODNR, 2020). Based on the viewshed analysis, the Big Darby Creek is located well beyond the visual extent of the Facility, and therefore visual impacts are not anticipated.

Ted Lewis Park is located approximately 8.2 miles northeast of the Project Area in the City of Circleville. This park is surrounded by residential development and contains a playground, tennis court, basketball court, football field, baseball/softball field, pavilions, picnic tables, and a shelter. Ted Lewis Park also hosts various events for the community including youth sports programs and an event called "Friday in the Park," which

provides themed activities for children preschool age to sixth grade (The City of Circleville Ohio, n.d.). Based on the viewshed analysis, Ted Lewis Park is located well beyond the visual extent of the Facility, and therefore visual impacts are not anticipated.

Pickaway County Fairground is located approximately 8.2 miles northeast of the Project Area and is the location of the Pickaway County Fair and other events. The fairgrounds contain multiple agricultural buildings and an amphitheater, and is currently under consideration for new development efforts (Pickaway County Agriculture and Event Center, 2020). Due to the large distance between the Facility and the fairgrounds, and based on the results of the viewshed analysis, visual impacts are not anticipated.

Brad Lightle Memorial Park is located approximately 8.4 miles southwest of the Project Area in the Village of Frankfort. Based on aerial imagery, it contains a playground, basketball court, picnic areas, and baseball and softball fields. Given the large distance between the Brad Lightle Memorial Park and the Facility, and based on the results of the viewshed analysis, visibility of the Facility from the park is not anticipated.

There is one canoe launch documented by the ODNR along Big Darby Creek, located approximately 8.4 miles north of the Project Area. Given the large distance between the canoe launch and the Facility, and based on the results of the viewshed analysis, visibility of the Facility from the Big Darby Creek canoe launch is not anticipated.

Yoctangee Park is a local park located approximately 9.5 miles south of the Project Area in the downtown area of the City of Chillicothe. This park contains softball and baseball fields, tennis courts, basketball courts, pavilions, playgrounds, and picnic areas (Chillicothe Visitors Bureau, 2018). The Yoctangee Park also contains a boat ramp, providing access to the Scioto River. Due to the large distance between the Facility and Yoctangee Park, and based on the results of the viewshed analysis, visibility of the Facility is not anticipated from this the park.

The Trump Wildlife Habitat Hunting Preserve, offering hunting opportunities, is located approximately 9.5 miles north of the Project Area. Based on aerial imagery, it largely consists of open agricultural fields with a small wooded area in the western corner of the property. Visibility of the Facility from the Trump Wildlife Habitat Hunting Preserve are not anticipated due to the large distance between the Facility and the preserve.

Deer Creek WA is located approximately 9.7 miles northwest of the Project Area, adjacent to Deer Creek State Park. The Deer Creek WA provides recreational opportunities including birding, hunting, a shooting range, boating, fishing, camping, and more. All points of interest identified by the ODNR within this WA are located well outside the 10 mile study area, and only a small portion of the WA is in the study area. Due to

the large distance between the Facility and the Deer Creek WA, and based on the results of the viewshed analysis, visibility of the Facility is not anticipated from this WA.

Ross Lake WA is located approximately 9.8 miles southeast of the Project Area and consists primarily of forested land with some open fields surrounding Ross Lake. Ross Lake WA offers boating, fishing, birding, hunting, and hiking opportunities (Cornell Lab of Ornithology, 2020). Due to the large distance between the Facility and Ross Lake WA, and based on the results of the viewshed analysis, visibility of the Facility is not anticipated from this WA.

(4) Visual Impact

EDR prepared a Visual Resource Assessment (VRA) for the proposed Facility (Exhibit V). EDR staff who contributed to the report include licensed landscape architects, GIS professionals, and environmental specialists with experience preparing visual resource assessments, including several for applications to the OSPB. OAC 4906-4-08(D)(4) requires that visual impacts to recreational, scenic, and historic resources be evaluated within a 10 mile radius. However, based on the low profile of the proposed equipment, and the results of the visibility analysis presented herein, it was determined that 10 miles would be an excessive study area for this Facility. To define an appropriately sized visual study area (VSA), a viewshed analysis was conducted to better understand the Facility's area of potential effect. This viewshed analysis indicates that areas of potential Facility visibility do not extend beyond 5 miles (see Figure 5 of the VRA), with only small corridors and pockets of visibility extending beyond 2 miles from the Project. Potential Facility visibility will be largely concentrated within 0.5 mile of the proposed Facility components. The VSA encompasses approximately 128.3 square miles, including portions of the Pickaway County townships of Deer Creek, Wayne, and Pickaway, and the Village of Williamsport, and the Ross County townships of Deerfield, Union, and Green, and Village of Clarksburg.

(a) Project Visibility and Viewshed Analysis

The viewshed analysis conducted for the Facility incorporated screening effects of topography, structures, and vegetation by using lidar data. A digital surface model (DSM) of the VSA was created from the lidar data, which include the elevations of buildings, trees, and other objects large enough to be resolved by lidar technology. Narrow rows of deciduous vegetation were removed from the DSM. From the DSM, a viewshed analysis was conducted for the PV panels and the substation.

Based on the results of the viewshed analysis, PV panels will be screened from approximately 82.5% of the VSA by intervening landforms, vegetation, and structures. Similarly, the substation will be screened from approximately 83.9% of the of the VSA. Visibility will be concentrated within the Project Area, and the open fields immediately adjacent. The viewshed analysis also suggests that panel visibility is highest

within 0.5 mile, substantially diminishes between 0.5 and 1.5 miles, and beyond 1.5 miles only small areas of potential visibility exist. Additional information on methods and results of the viewshed analysis is provided in the VRA.

(b) Description of Scenic Quality of Existing Landscape

Landscape types within the VSA were categorized based on the similarity of various features, including landform, vegetation, water, and/or land use patterns, in accordance with established visual assessment methodologies. Pasture/cropland is the dominant landscape within the VSA (80.3%) and comprises most of the area that will host Facility components. Given the fact that agricultural land in this region typically offers the greatest potential for long distance views, this landscape type is likely to have the greatest opportunities for views of the Facility. Forest landscape is the second most predominate landscape, comprising approximately 13.5% of the VSA. Views of the Facility will be limited within forestland due to the presence of dense vegetation. Developed land comprises 4.1% of the VSA and includes the villages of Clarksburg and Williamsport, both of which have limited outward views due to the presence of buildings and closely situation houses, landscaped yards/planted vegetation, utility poles, and other visual clutter. Wetlands and open water landscapes comprise 1.8% of the VSA, primarily existing along the Scioto River where long distance views are limited due to the presence of tree-lined riverbanks and adjacent forested slopes. Grassland/herbaceous and scrub/shrub landscapes are the least prevalent and comprise less than 0.2% of the VSA.

In addition to these landscape types, the VRA reviewed visually sensitive resources within the VSA, including historic properties, scenic resources, public lands, recreational resources, and high use public areas. Additional information on these visually sensitive resources is included in paragraph (d) below and in the VRA.

(c) Landscape Alterations and Impact on Scenic Quality of the Landscape

Construction and operation of the proposed Facility will result in the alteration of existing landscape through the introduction of low-profile PV panels. However, the visibility and visual impact of the Facility will be highly variable, based on landscape setting, the extent of natural screening, the presence of other man-made features in the view, and distance of the viewer from the Facility. The most notable change includes the blocking of background and middle ground vegetation and structures by PV panels, thereby enclosing views that were once open and visible over longer distances. As distance increases from the PV panels, the panels become more difficult to perceive, and begin to appear as thin horizontal lines of grayish tan color. For additional details on landscape alterations and impacts, see Exhibit V.

(d) Visual Impacts to Landmarks of Cultural Significance

A total of 168 visually sensitive resources were identified within the VSA, including 121 properties of historic significance, 1 designated scenic resource, 32 public lands and recreational resources, and 14 high-use public areas. Figure 1.5 in the VRA shows the location of visually sensitive resources relative to the Project Area. Of the 168 resources identified within the VSA, 75 have the potential for Facility visibility. Additional information on visually sensitive resources is provided as Appendix E in the VRA (Exhibit V), which includes a list of all identified resources, their distance from the Facility, and estimated visibility of the Facility from the identified resource.

(e) Photographic Simulations

To illustrate anticipated visual changes associated with the propose Facility, photographic simulations of the Facility were developed from five selected viewpoints. These simulations allow the viewer to better evaluate visibility, appearance, and contrast with the existing landscape, with and without vegetative mitigation. The visual simulations are included as Appendix D to the VRA (Exhibit V) along with detailed discussions of each simulation. Viewpoints were selected to show representative locations at various distances from the Facility from public vantage points near the Project Area.

(f) Impact Minimization Measures

Project Area Location and Facility Layout

The proposed Facility is located in a rural, sparsely populated area. To further reduce impacts from those living in the area, the Applicant designed the Facility to account for setbacks to the fenceline from non-participating structures (300 feet), centerlines of public roads (50 feet), and non-participating parcel boundaries (50 feet).

Lighting

A Lighting Plan is included as Exhibit F to this Application. Lighting during construction is anticipated to be minimal, and will be restricted to construction hours (7:00 AM to 7:00 PM, or until dusk when the sun sets after 700 PM). To the extent practicable, lighting will be oriented toward the interior of the Facility, away from roadways and adjacent residences. Lighting during Facility operation will be downlit. Motion-activated lighting will be used at Facility entrances, the O&M building, and inverters.

Visual Screening

The introduction of screening will lessen the visual impact of the Facility. Native vegetation will be used to blend the Facility into the existing landscape, and this selection of material aids in the creation of ecological habitat. Visual screening introduces natural, vertical elements that break up the horizontal lines created by the PV arrays and fence line. This helps the Facility fall into the background vegetation rather

than stand out as a foreground element. For additional information, see the Landscape Mitigation Plan included as Appendix C to Exhibit V.

Facility Materials and Coloration

PV modules use non-reflective glass and are designed to absorb the light that hits the panels, reducing potential for glare. The fencing for the Facility will be a type of agricultural fencing with welded wire mesh supported on wooden posts, a form of fencing more traditionally utilized in agricultural settings. Relative to chain link fence, this fencing will help the Facility blend into the agricultural landscape of the area. The racking system for the panels allows panel rows to follow some variation in topography, limiting the landscape alteration needed for installation.

(E) AGRICULTURAL LAND

(1) Agricultural Land and Agricultural District Land Map

Agricultural districts and crop cover are shown on Figure 08-4. Information on agricultural districts and Current Agricultural Use Value (CAUV) parcels was obtained from the Ross and Pickaway county auditor's offices in June of 2020. All of the agricultural parcels within the Project Area are in the CAUV program, and therefore are not depicted as such in Figure 08-4. Additionally, in order to see the crop cover below the PV panels, the panels are not depicted on Figure 08-4. However, the fenceline is included, and is approximately representative of the agricultural area that will be covered by PV panels.

(2) Potential Impacts and Proposed Mitigation

(a) Acreage Impacted

Table 08-8 quantifies impacts to agricultural land uses based on defined vegetation clearing limits for Facility construction. Agricultural land use data was derived from land use codes included in parcel data.

Table 08-8. Impacts to Agricultural Land Use

Agricultural Land Use	Temporary Disturbance (Acres)[5]	Permanent Loss (Acres)	Total Disturbance (Acres)
Agricultural Vacant (100 or 110)			
PV Panels[1]	0.0	501.9	501.9
Access Roads[2]	10.6	19.4	30.0
Belowground Collection Lines[3]	5.2	0.0	5.2
O&M Building	0.0	0.0	0.0
Laydown Yards	9.7	0.0	9.7
Substation	0.0	0.0	0.0
Inverter Pads and Weather Stations[4]	3.2	2.1	5.3
Cash Grain or General Farm (101 or 111)			
PV Panels	0.0	528.3	528.3
Access Roads	11.1	20.3	31.4
Belowground Collection Lines[2]	10.6	0.0	10.6
O&M Building	0.3	0.1	0.4
Laydown Yards	9.2	0.0	9.2
Substation	0.0	3.7	3.7
Inverter Pads and Weather Stations	3.8	2.5	6.3
Other Agricultural Use (199)			
PV Panels	0.0	290.6	290.6
Access Roads	7.1	12.9	20.0
Belowground Collection Lines[2]	9.8	0.0	9.8
O&M Building	0.0	0.0	0.0
Laydown Yards	2.7	0.0	2.7
Substation	0.0	0.0	0.0
Inverter Pads and Weather Stations	1.8	1.2	3.0
Total	**85.1**	**1,383.0**	**1,468.1**

1. Permanent impacts to solar arrays includes the entire area underneath and between the panels, because that area will be taken out of its intended current use for 30-40 years.
2. Access roads will have a temporary width of 25 feet, and a permanent width of 16 feet.
3. A temporary, 15-foot wide work area will be required for belowground collection line installation.
4. Includes 91 inverter pads with an approximate area of 2,400 square feet, and nine weather stations with an approximate area of 2 square feet.
5. Temporary impact areas represent only the additional impact area during construction and do not include the permanent impact area. The temporary and permanent impact areas are added together in the total impact column.

Table 08-9 quantifies impacts to agricultural districts. All agricultural parcels in the Project Area are enrolled in the CAUV program, so impacts to CAUV parcels will be identical to impacts provided in Table 08-8.

Table 08-9. Impacts to Agricultural Districts

Facility Components	Temporary Disturbance (Acres)[5]	Permanent Loss (Acres)	Total Disturbance (Acres)
PV Panels[1]	0.0	845.3	845.3
Access Roads[2]	17.1	30.4	47.5
Belowground Collection Lines[3]	15.9	0.0	15.9
O&M Building	0.3	0.1	0.4
Laydown Yards	12.1	0.0	12.1
Substation	0.0	3.7	3.7
Inverter Pads and Weather Stations[4]	5.7	3.8	9.5
Total	**51.1**	**883.3**	**934.4**

1. Permanent impacts to solar arrays includes the entire area underneath and between the panels, because that area will be taken out of its intended current use for 30-40 years.
2. Access roads will have a temporary width of 25 feet, and a permanent width of 16 feet.
3. A temporary, 15-foot wide work area will be required for belowground collection line installation.
4. Includes 91 inverter pads with an approximate area of 2,400 square feet, and nine weather stations with an approximate area of 2 square feet.
5. Temporary impact areas represent only the additional impact area during construction and do not include the permanent impact area. The temporary and permanent impact areas are added together in the total impact column.

(b) Impacts on Agricultural Facilities and Practices

(i) Field operations

The Facility will occupy 1,383 acres of agricultural land, taking it out of use for approximately 30 years. Therefore, plowing, planting, cultivating, spraying, aerial applications, and harvesting will be halted on the land occupied by the Facility for its lifetime. Once the Facility has reached the end of its useful life, Facility components will be removed, and the underlying Project Area will be restored for potential agricultural use.

(ii) Irrigation

Potential interference to irrigation systems on non-participating parcels is not anticipated. Irrigation systems on participating parcels will be identified via coordination with participating landowners prior to construction.

(iii) Field drainage systems

Construction of the Facility could result in impacts to drain tile systems in the Project Area. The Applicant coordinated with the following stakeholders to identify and assess drain tiles within the Project Area: Ross and Pickaway counties, Ross and Pickaway Soil and Water Conservation Districts, a local drain tile installer, and participating landowners. This data has been aggregated and

is available for reference in the Drain Tile Mitigation Plan (Exhibit E). Some impacts to drain tile likely cannot be avoided, and additional mitigation measures are outlined in Exhibit E.

Overland drainage in the form of ditches or swales within the Project area is not anticipated to be significantly altered. Minimal grading is anticipated, and the Facility will follow existing contours to the extent practicable. Post construction stormwater controls will be implemented per Ohio EPA Permit No. OHC000005. It is anticipated that these controls will include the use of ditches or swales adjacent to Facility access roads. As noted previously, a Hydrology Study (Exhibit R) was completed for the Project Area, and no major drainage concerns in the form of flooding, ponding, or scour were noted across the Project Area.

(iv) Structures used for agricultural operations

Construction of the Facility may result in the removal of one agricultural structure, a barn east of Ebenhack Road, under agreement by the landowner. No other impacts to agricultural structures are anticipated.

(v) Viability as agricultural district land

Figure 08-4 depicts parcels within the Project Area that are enrolled in the agricultural district program. Once the Facility is constructed and operating on these parcels, the parcels will no longer be eligible for inclusion in the program. Upon decommissioning of the Facility, the parcels can be re-enrolled in the program.

(c) Proposed Mitigation Procedures

(i) Avoidance/minimization of damage to field tile drainage systems

Per the Drain Tile Mitigation Plan (Exhibit E), drain tiles will be avoided to the maximum extent practicable, and any known tiles will be illustrated on final construction drawings and flagged in the field for avoidance. Unavoidable damage to drain tile may occur during construction of the Facility. Additional details regarding assessment and repair of damaged tile is identified below.

(ii) Timely repair of damaged field tile systems

The Drain Tile Mitigation Plan identifies the procedures for assessing damaged drain tile for repair. The plan ensures that no adverse impacts to drain tile systems extend outside of the Project Area. If it is determined that a drain tile main was impacted, or if there is uncertainty regarding the impacted tile extending outside of the Project Area, repairs will be implemented to ensure the integrity of the greater drainage system. Lateral drain tile lines that are damaged and contained within the Project Area may not be repaired depending on the need to replace the lateral drain tile lines and subject to

individual landowner agreements previously negotiated during the leasing process. Repairs will be completed by a qualified contractor within 30 days of the discovery of damage, unless otherwise agreed to by the landowner. Additional information regarding repairs and repair specifications to tiles is provided in the Drain Tile Mitigation Plan (Exhibit E).

(iii) Topsoil segregation, decompaction, and restoration

The Applicant will take care to ensure that topsoil and subsoil are appropriately segregated throughout the site. Topsoil segregation ensures that vegetation can quickly establish following construction, and so that agricultural production can commence following Facility decommissioning. Topsoil that is displaced for laydown yards, workspaces, grading, or access roads will be stockpiled separately so that it can redistributed prior to final stabilization. Similarly, topsoil and subsoil will be segregated and subsequently backfilled during the installation of belowground collection lines. Excess materials, such as rock utilized for entrance pads, will be removed following construction. Upon removal, soil will be decompacted, regraded, and stabilized with a native, low-growth seed mix.

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Summary: Application with Cover Letter electronically filed by Mr. Michael J. Settineri on behalf of Yellowbud Solar, LLC